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THE EFFECTS OF CALL ON L2 VOCABULARY ACQUISITION: an Exploratory Study

DOUTORADO

Gisele Luz Cardoso

Florianópolis
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Tese apresentada a Banca Examinadora do Programa de Pós-Graduação em Letras/Inglês e Literatura Correspondente da Universidade Federal de Santa Catarina para a obtenção do título de Doutor em Letras.

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To my family and,especially, to
Manuela and Otto.

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ABSTRACT

Blended Learning (BL) has attracted the attention of L2 acquisition researchers, who understand that for L2 education to be successful, learners and teachers need to combine two dissimilar but complementary approaches, namely CALL and Face-to-Face interaction (Neumeier, 2005). This dissertation is 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' digital competence (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. The participants were 24 adult students enrolled in a Technical Computing Program at IF-SC/Gaspar. This study employed a mixed-methods design (Dörnyei, 2007) and adopted statistical and qualitative analytical procedures to interpret the data. The instruments of data collection employed in the statistical analyses included a paper-and-pen pretest, two paper-and-pen posttests and two computer-based posttests. As for the qualitative analysis, the data was collected through two online questionnaires, students' posts in forums on the Moodle platform, students' self-evaluations, and semi-structured interviews. The study yielded five main results. First, there was a significant amount of acquisition of L2 vocabulary, as shown by the participants' performance on the posttests as compared to the pretest. Nonetheless, there were no significant differences between the printed and the online posttests. Second, the effects of CALL are positive. Students reported enjoying the opportunity of performing activities prepared by the teacher on Moodle and of having immediate access to online dictionaries and search sites. Also, they 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 favored L2 vocabulary acquisition. Third, there was an increase in the participants' levels of DC within the period of the study. Fourth, there was no correlation between the participants' levels of DC and the computer-mediated posttests. Finally, taken together, the results show that the combination of two dissimilar but complementary approaches - CALL and Face-to-Face interaction – BL - (Neumeier,

2005) in an ESP course is well accepted by the students and contribute to L2 vocabulary acquisition. Results of this study add evidence to what Celani (2008) argues, i.e. ESP courses do not need to be connected to the teaching of reading only. In other words, ESP courses can be designed in a way so that other abilities may be developed. The incorporation of CALL in the process of teaching English allows the development of oral and written abilities and students' DC, enhancing their chances of engagement in tasks and of retention of new vocabulary, besides expanding ESP teaching far beyond materials such as books.

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RESUMO

Aprendizagem híbrida é uma abordagem de ensino-aprendizagem que tem atraído a atenção de pesquisadores de aquisição de vocabulário em L2, os quais entendem que para o ensino de L2 ser bem sucedido, aprendizes e professores precisam combinar duas abordagens diferentes, mas complementares: CALL e interação face-a-face (Neumeier, 2005). Esta tese é guiada pelo objetivo principal de investigar os efeitos de CALL na aquisição de novo vocabulário por adultos em um curso de Inglês para fins específicos (ESP). Ela também é guiada por quatro objetivos específicos: (1) analisar as reações, percepções e atitudes de alunos de ESP com relação às atividades de CALL; (2) verificar se houve aumento da competência digital (CD) dos participantes ao longo do curso; (3) investigar a relação entre CD e os testes mediados pelo computador; e (4) sugerir maneiras em que as atividades de CALL possam ser integradas em cursos de ESP para adultos. Os participantes foram 24 alunos adultos matriculados em um curso técnico de Informática do IF-SC/Gaspar. Este estudo empregou um design misto (Dörnyei, 2007) e adotou procedimentos analíticos estatísticos e qualitativos para interpretar os dados. Portanto, os dados foram analisados quantitativa e qualitativamente. Quanto à análise quantitativa, os resultados do pré-teste, do pós-teste imediato e do pós-teste de retenção impressos e do pós-teste imediato e pós-teste de retenção online foram analisados estatisticamente. Quanto à análise qualitativa, os dados foram coletados através de dois questionários online, das postagens dos alunos nos fórums da plataforma Moodle, de uma entrevista semiestruturada e das autoavaliações dos estudantes. O estudo produziu cinco resultados principais. Em primeiro lugar, houve uma quantidade significante de aquisição de vocabulário em Inglês, como mostrado pelo desempenho dos participantes nos pós-testes quando comparados com o pré-teste. Todavia, não houve diferenças significantes entre os pós-testes impressos e os online. Em segundo lugar, os efeitos de CALL são positivos. Os participantes relataram terem apreciado a oportunidade de executar as atividades no Moodle e de ter acesso imediato a dicionários online e sites de busca. Também declararam estarem conscientes do fato de que eles estavam aprendendo através da metodologia empregada. Ao mesmo tempo, eles tinham ciência de que as atividades tradicionais impressas contribuíam para o processo de aprendizado deles também. Deste modo, o ambiente híbrido de aprendizagem onde este estudo foi realizado favoreceu a aquisição de

vocabulário em L2. Em terceiro lugar, houve aumento do nível da CD dos participantes. Em quarto lugar, não foi encontrada uma correlação entre o nível de CD dos participantes e os pós-testes online. Finalmente, os resultados sugerem que a combinação de CALL com a interação face-a-face, ou seja, aprendizagem híbrida (Neumeier, 2005), em um curso de ESP é bem aceito pelos estudantes e contribui para a aquisição de vocabulário em L2. Os resultados deste estudo corroboram o que Celani (2008) argumenta: cursos de ESP não precisam estar conectados ao ensino de leitura somente. Em outras palavras, eles podem ser desenhados de uma maneira que outras habilidades possam ser desenvolvidas. A incorporação de CALL no processo do ensino de ESP permite o desenvolvimento de habilidades orais, escritas e do nível de CD dos estudantes, melhorando as chances deles de engajamento nas atividades e de retenção de novo vocabulário, além de expandir o ensino de ESP para além de livros didáticos.

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CHAPTER I
INTRODUCTION

1.1 PRELIMINARIES

This study was conducted in the context of research on teaching-learning English as a Foreign Language (EFL) within the Graduate Program in English (PPGI). In this context, it explores the areas of Computer Assisted Language Learning (CALL) and English for Specific Purposes (ESP), with a particular focus on English for Computing vocabulary.

I had always been an English teacher in Florianópolis, in public and private schools, before moving to the small city of Gaspar/SC in 2010 where I faced a new reality. For the first time, I was teaching in the context of a federal institute where technical and vocational courses are offered to the population of the city of Gaspar and its neighboring cities. In this context, I decided to continue my doctoral project and asked two groups of students to be the participants in the present study (the first group took part of the pilot study).

I had always used technologies in my classes, starting with tape recorders and video cassette recorders which were, later, replaced by CD/MP3 players and DVD players, respectively. Also, I enjoyed making use of the overhead projector before the multimedia projectors were available in the vast array of schools where I worked. Finally, with the popularization of personal computers and the implementation of computer labs in schools, especially in the private schools, I set out to learn how to integrate the new computer-technologies in my classes. Soon after that, the Internet became more popular, cheaper, accessible, and available in almost all of the schools in the city, including public schools. At that time, the challenge was to learn how to integrate the resources available through the Internet with the traditional face-to-face lessons in the classrooms.

Nowadays, there are other challenges. Internet-connected computers are available in almost all schools. It is much faster than in the past, and it offers many more resources. Students also have fast and easy access to Internet in their homes, on their mobile phones, tablets, I pads, and in many other increasingly smaller and portable digital devices. In light of this technological abundance, questions arose about the effect of all of these new computer technologies on education, in general, and on the process of Second Language Acquisition (SLA), in

particular. These questions were the initial motivation for developing a study that attempts to trace the effects of CALL on SLA.

As a graduate student in 2001, I began studying SLA and through the program and coursework my interest in the subfield of CALL was piqued. Subsequently, I was encouraged by relevant studies on CALL, such as (1) Almeida's (2004) study which investigated the perceptions of college students on the use of online tasks in an ESP course; (2) Souza (2003) whose case study aimed at investigating telecollaboration by means of computer-mediated communication; and (3) Pudo (2003) who examined the use of the Internet as a complement to an English attendance course, to mention but a few. Additionally, scholars such as Mark Warschauer and Carol Chapelle offer serious theoretically driven studies and papers. A first step in this research was a systematic review of literature on CALL (Cardoso & Mota, in press). The objective of this systematic review of the research was to examine the issues investigated by studies on CALL carried out in Brazil (between 2003-2008) and the methods of data collection and analysis. Results of the study point to the fact that within the field of SLA there is growing consensus on the benefits of using technological resources in teaching-learning EFL, as offer new opportunities for those learners who cannot take part in attendance courses, for instance, among other advantages. Also, results of the study point to the fact that CALL has to expand its investigation agenda and incorporate other themes such as the contributions of computer-mediated activities in L2 teaching-learning.

Of special relevance for the present study is the growing interest in researching CALL in order to unveil its potential in SLA, in general, and in teaching/learning vocabulary in particular. With this perspective, this dissertation aims at examining the effects of CALL on the acquisition of L2 vocabulary by adult EFL students. Carried out in an intact classroom environment, this study will show that it is possible to put into practice theoretically driven insights within instructional contexts.

In order to better describe the context, the place where this study was carried out and its participants, this chapter will first present a summary of the history of vocational education in Brazil, followed by a description of the technical program in Basic Computing offered at Instituto Federal de Santa Catarina/Campus Gaspar with an emphasis on the teaching of EFL in the just-mentioned program. After that, I will state the purpose and significance of this study. Finally, I will explain the organization of this doctoral dissertation.

1.2 VOCATIONAL EDUCATION IN BRAZIL

In Brazil, vocational[1] education dates back to 1909 when nineteen technical schools were created (Almeida, 2002; Almeida, 2010; Amorim, 2011; Brasil, 1909; Manfredi, 2002; Ramos, 2011). However, it was not until 1971 that a law regulating the educational system in the country was sanctioned and named National Education Law of Directives and Fundaments (Lei de Diretrizes e Bases da Educação Nacional, LDB, henceforth) (law number 5.692/71). As regards vocational education, the LDB placed secondary and technical courses on equal terms and prescribed the universal and mandatory professionalization for secondary education[2] to cater to the need for qualified professionals in the market. In other words, secondary education had to offer besides the propaedeutic studies the minimum required in each vocational area. Until 1996, then, public and private schools were required to offer both: technical courses and propaedeutic education for one or two years during the secondary years of schooling.

The LDB underwent many changes with respect to the mandatory professionalization and its second version, also known as the second LDB (number 9.394/96), which changed the structure of secondary and vocational education, putting an end to the duality between propaedeutic and vocational education as propaedeutic studies were no longer considered paramount (Manfredi, 2002, p. 116). The so called second LDB (1996) regulates vocational education (secondary level[3]) at Art. 36-A, by stating that secondary schools in Brazil can prepare students for technical professions as well[4]. Vocational technical education under

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[1] By way of explanation, according to Cambridge Dictionary Online (http://dictionary.cambridge.org/) the term "Vocational" is an adjective which characterizes something that provides the abilities and education which prepare someone to carry out a job. In this case, vocational education refers to "Educação Profissional in Portuguese". Conversely, the term "Professional" in English, differently from Portuguese" has to do with work that requires special training or education. It is the contrary of "amateur".

[2] Secondary education is the period which refers to the last years of the *Ensino Médio* in Brazil which corresponds to the 10th to the 12th years of schooling. Nowadays, secondary education is referred to as *Ensino Médio*, in Brazil.

[3] For the purposes of this study, I will refer only to vocational education at secondary level.

[4] In the original: "[...] o ensino médio, atendida a formação geral do educando, poderá prepará-lo para o exercício de profissões técnicas. (Incluído pela Lei nº 11.741, de 2008)" (Brasil, 1996). Retrieved September 02, 2012, from: http://www.planalto.gov.br/ccivil_03/Leis/L9394.htm, Seção IV-A - Da Educação Profissional Técnica de Nível Médio. Art. 36-A.

this law can be developed in two ways: (1) articulated within secondary school and (2) subsequent to it (for the students who have finished secondary school) (Brasil, 1996)[5]. Vocational technical education articulated within secondary school can be offered in two ways: (1) integrated: offered only to students who have finished elementary school (the course has to be planned in order for the student to be conducted to a vocational technical qualification at secondary level), in the same educational institution, and (2) concurrent: offered to students that are starting or finishing secondary school[6] (Brasil, 1996). The former must be offered in the same institution. The latter can be offered in two different institutions.

According to Manfredi (2002), the LDB (1996) was created to help the economic and technological development of the country by improving schools and vocational education, which were unfit given the significant number of unprepared, non-qualified and illiterate workers at that time (p. 115-16). The change in vocational education aimed at preparing citizens to receive basic and specific knowledge and abilities, leading to a plural/holistic development of the student, among other objectives (p. 116). The reforms aimed to modernize secondary and vocational education in the country, in such a way that they followed the technological advancements thereby meeting the requirements of the work market in terms of flexibility, quality and

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[5] In the original: "A educação profissional técnica de nível médio será desenvolvida nas seguintes formas: (Incluído pela Lei nº 11.741, de 2008)
I - articulada com o ensino médio; (Incluído pela Lei nº 11.741, de 2008)
II - subseqüente, em cursos destinados a quem já tenha concluído o ensino médio. (Incluído pela Lei nº 11.741, de 2008)". Retrieved September 02, 2012, from: http://www.planalto.gov.br/ccivil_03/Leis/L9394.htm, Seção IV-A - Da Educação Profissional Técnica de Nível Médio. Art. 36-B.

[6] In the original: "A educação profissional técnica de nível médio articulada [...] será desenvolvida de forma: (Incluído pela Lei nº 11.741, de 2008)
I - integrada, oferecida somente a quem já tenha concluído o ensino fundamental, sendo o curso planejado de modo a conduzir o aluno à habilitação profissional técnica de nível médio, na mesma instituição de ensino, efetuando-se matrícula única para cada aluno; (Incluído pela Lei nº 11.741, de 2008)
II - concomitante, oferecida a quem ingresse no ensino médio ou já o esteja cursando, efetuando-se matrículas distintas para cada curso, e podendo ocorrer: (Incluído pela Lei nº 11.741, de 2008)
a) na mesma instituição de ensino, aproveitando-se as oportunidades educacionais disponíveis; (Incluído pela Lei nº 11.741, de 2008)
b) em instituições de ensino distintas, aproveitando-se as oportunidades educacionais disponíveis; (Incluído pela Lei nº 11.741, de 2008) [...]". Retrieved September 02, 2012, from: http://www.planalto.gov.br/ccivil_03/Leis/L9394.htm, Seção IV-A - Da Educação Profissional Técnica de Nível Médio. Art. 36-C.

productivity (Manfredi, 2002, p. 128). On the other hand, secondary schools, according to the new law, aim at (1) consolidating and deepening knowledge acquired in Elementary School, thus giving continuity to studies; (2) preparing people for work and citizenship; (3) developing learners' awareness of themselves as social beings, including ethical formation and the development of the intellectual autonomy and critical thinking; and (4) the understanding of the scientific and technological grounds of the productive processes, relating theory with practice, in each school subject (Brasil, 1996)[7].

According to Ramos (2011), the history of vocational education in Brazil was marked by oppositions regarding the nature of the education that should be offered. The option for a vocational education integrated to propaedeutic studies prevailed and this predominance served as reference for the construction of a basic education system with quality for a long time. Therefore, still according to Ramos (2011), it can be concluded that the development of a vocational qualification during secondary school is a possibility legally supported by the LDB (1996) which was wrongly hindered by Decree 2.208/97. This decree represented a turn back against the equivalence between Secondary and Vocational Education. Eight years after the sanction of the second LDB, in 2004, a decree[8] established new orientations for vocational education in Brazil declaring that vocational education should be developed by means of vocational technical development following two premises: (I) the organization in vocational areas, according to the socio-occupational and technological structure and (II) the joint effort and articulation of education and work, science and technology (Ramos, 2011).

Technical schools and Federal Institutes (IFs) are in charge of offering vocational education in Brazil. One of these institutes - Instituto

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[7] In the original: "O ensino médio [...] terá como finalidades:
I - a consolidação e o aprofundamento dos conhecimentos adquiridos no ensino fundamental, possibilitando o prosseguimento de estudos;
II - a preparação básica para o trabalho e a cidadania do educando, para continuar aprendendo, de modo a ser capaz de se adaptar com flexibilidade a novas condições de ocupação ou aperfeiçoamento posteriores;
III - o aprimoramento do educando como pessoa humana, incluindo a formação ética e o desenvolvimento da autonomia intelectual e do pensamento crítico;
IV - a compreensão dos fundamentos científico-tecnológicos dos processos produtivos, relacionando a teoria com a prática, no ensino de cada disciplina. Retrieved September 02, 2012, from: http://www.planalto.gov.br/ccivil_03/Leis/L9394.htm, Seção IV. Do Ensino Médio. Art. 35.

[8] Decree 5.154/04.

Federal de Santa Catarina[9] (IF-SC) is made up of 19 campi and each campus has its own organizational, administrative, and pedagogical structures (Stroisch, 2012). The campus in the city of Gaspar (IF-SC/Gaspar, henceforth) – offers the program: "Curso Técnico em Informática de Nível Médio Concomitante ao Ensino Médio" (Middle School Computer Science Technical Course). It was in the specific context of this Institute and program that the present study was carried out. The next section will refer to this matter.

1.3 BASIC COMPUTING AND ESP

The program "Curso Técnico em Informática de Nível Médio Concomitante ao Ensino Médio" (Middle School Computer Science Technical Course) is also known just as "Técnico em Informática", informally. It is a technical program in "Basic Computing" (as it shall be named henceforth along this dissertation) and it is offered at IF-SC/Gaspar.

In the first semester of 2011, the classes started for the group who took part in the pilot study carried out prior to this study. In the same year, in the second semester, the classes started for the second group that participated in the present study[10]. The two-year program integrates students who had already finished secondary school or were finishing it.

The admission to the previously mentioned program is made through a public exam. Forty vacancies are offered in each new semester (IF-SC, 2010), thus, 40 students are able to register for the program. Along the second semester of 2011, several students dropped out the program for different reasons. Only 24 students continued the program until the end of that year.

According to the Pedagogical Project (IF-SC, 2010), the program on Basic Computing belongs to the subarea of "Information Technology" (IT). It is a course with 320 hours of general education and 960 hours of vocational education in a period of two years or four semesters. The students have 16 hours/classes per week. In general, the Program aims at (1) training future technicians, allowing them to be aware of how a computer works; (2) developing skills in the area of Basic Computing; and (3) training professionals with entrepreneurial

[9] IF-SC is a Federal Center of Technological Education in the state of Santa Catarina/Brazil.
[10] The two studies are described in Chapter 03.

visions[11]. To this end, knowledge regarding vocational education related to basic Computing is crucial. However, knowledge acquired in basic/general education is also important.

Therefore, also according to the Project, students are expected to achieve a series of specific abilities after concluding the program, such as "reading and interpreting manuals and technical documents in English" (IF-SC, 2010, p. 23)[12], to give an example. Thus, the course English for Specific Purposes (ESP) must also be included in the program curriculum[13] since knowledge of the English language is required in the main field of IT, and, more specifically, in the area of Computing. In fact, the ability to understand English terms and expressions generated in a globalized society is key to the IT area given the great number of terms and acronyms used without translation, as for example ADSL, which stands for "Asymmetric Digital Subscriber Line", or BIOS which stands for "Basic Input/Output System".

After contextualizing the present study, I shall now move to the statement of the purpose section.

1.4 STATEMENT OF THE PURPOSE

The reasoning underlying the present study is related to what was stated in the preliminaries of this dissertation which generated new questions: nowadays, it is impossible to think about education, generally speaking, and L2 education, to be more specific, without taking into consideration, the effects of all new computer technologies that are increasingly becoming more accessible, affordable, multimodal, and portable. In what follows, the central matter investigated in this study is concerned with whether L2 vocabulary acquisition can be

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[11] In the original: "O Curso Técnico em Informática tem como objetivo desenvolver competências e habilidades da área de informática voltadas para o trabalho em diversos setores, principalmente, para a área de desenvolvimento de sistemas, permitindo-lhe compreender o funcionamento do computador, suas possibilidades de configuração, criação de programas e integração com outras áreas. Visa também formar profissionais com visão empreendedora capaz de criar seu próprio empreendimento" (IF-SC, 2010, p.22).

[12] In the original: "Ler e interpretar manuais e documentos técnicos em Inglês" (IF-SC, 2010, p. 23).

[13] According to Brown (2001) a curriculum or a syllabus refers to "Designs for carrying out a particular language program. Features include a primary concern with the specification of linguistic and subject-matter objectives, sequencing, and materials to meet the needs of a designated group of learners in a defined context". (p. 16).

improved by CALL, in general, and the use of computer-mediated activities, to be more precise, in the context of an ESP course.

Besides investigating this central issue, it is also my intention to gain a better understanding of the reactions, perceptions, and attitudes of ESP students towards the use of CALL activities. In addition, I aim to investigate the relationship between digital competence and computer-mediated tests and to verify whether there is an increase on participants' digital competence as a byproduct of the ESP course. Finally, I also intend to suggest ways in which CALL can be integrated into ESP courses for adults.

It is my purpose to look into the above-mentioned issues since I see them as significant in the SLA area.

1.5 SIGNIFICANCE OF THE STUDY

I expect that, by investigating how L2 vocabulary acquisition can be enhanced by CALL in the context of an ESP course, the present study will contribute to existing research on CALL, L2 vocabulary acquisition, and ESP, especially in Brazil, where research in these areas is lacking. It is also expected that the present study will bring contributions for researchers who are interested in collaborating with studies on SLA, CALL, and L2 vocabulary acquisition in ESP courses, within the context of vocational education.

To the best of my knowledge, this is the only study on CALL and L2 vocabulary acquisition carried out in the context of an ESP course, and also within the context of vocational education, in Brazil. Finally, the present study will bring findings that might contribute to recent research on hybrid contexts of L2 vocabulary teaching-learning.

1.6 ORGANIZATION OF THE DOCTORAL DISSERTATION

Besides the introductory chapter (Chapter 1), the present dissertation is organized into 5 chapters. Chapter 2 reviews the literature pertinent to this study. It starts with a review of the literature on CALL and L2 vocabulary acquisition, followed by a review on Computer Assisted Vocabulary Acquisition. Next, the concepts of digital competence and digital literacy are distinguished. After that, a review of literature on ESP, and, finally, on Blended Learning, are presented.

Chapter 3 explains the methodology through which the present study was carried out. To this end, it starts stating the objectives and research questions posed for this study. It also includes information

about the context where this study was carried out and its participants. Moreover, it describes the materials and instruments of data collection employed. After that, it presents the methodology employed to measure participants' levels of digital competence and motivation, followed by an explanation concerning how the quantitative dataset was analyzed statistically. Next, the description of the research design and general procedures are presented. Finally, the pilot study which was conducted prior to this study is described.

Chapter 4 reports the results of the present study. It starts presenting the results of the statistical analyses of the quantitative dataset, followed by the results of the qualitative analyses. Finally, the correlational analyses carried out in order to verify the relationships concerning digital competence, motivation, and the posttests, are described.

In Chapter 5, the results reported in Chapter 4 are discussed in light of the research questions posed in the method section, and, also, in light of existing research on CALL, L2 vocabulary acquisition, ESP, and Blended Learning.

The last chapter of this dissertation - Chapter 6 - presents the conclusions of the present study. It starts posing the final remarks, followed by the limitations of this study. At last, the chapter ends presenting suggestions for further research and a few pedagogical implications.

CHAPTER II
REVIEW OF THE LITERATURE

2.1 INTRODUCTION

This chapter offers a review of the literature pertinent to the central issue investigated in this dissertation, that is whether L2 vocabulary acquisition can be enhanced by the use of computer-mediated (CALL) activities. To this end, this chapter is organized as follows.

In section 2.2, the challenges to define Computer Assisted Language Learning (CALL) will be reviewed. Section 2.3 will focus on studies that dealt with vocabulary acquisition[14] in a second or foreign language[15] (L2). Section 2.3.1 will be devoted to a review of the necessary conditions for vocabulary learning. After that, section 2.3.2 will address the issue of language-focused learning, followed by section 2.3.3 which will present strategies for L2 vocabulary teaching and learning. After reviewing the studies that dealt with vocabulary acquisition in L2, section 2.4 will describe the role of Computer Assisted Vocabulary Learning (CAVL, henceforth) in the retention and learning of new vocabulary in L2. Section 2.5 will review the concepts of competence and literacy which are related to the issue of digital technologies. Following the review of the concepts of literacy and competence, section 2.6 will discuss how these concepts are related to the concept and application in English for Specific Purposes (ESP) courses. Finally, section 2.7 will review the concept of Blended Learning (BL) and section 2.8 will offer a summary of the review of literature.

2.2 CALL

According to the European Association for CALL (EUROCALL, 2010[16]), Warschauer and Healey (1998), and Vetromille-Castro, Moor, Duarte, & Sedrez (2012), computers started to be used as a language

[14] In this dissertation, both terms learning and acquisition will be used interchangeably.
[15] In this dissertation, the terms second language and foreign language will be used interchangeably and referred to as L2.
[16] Retrieved Aug. 10, 2012 from EUROCALL - European Association for Computer-Assisted Language Learning: http://eurocall-languages.org/research/research_policy.html

teaching tool more than 30 years ago when research in CALL emerged. Hubbard (2009) claims that CALL has existed as a particular field for approximately 25 years if calculated by the existence of professional organizations and journals devoted to the subject[17].

Pérez Basanta (2010) views CALL as an interesting research field in the area of Second Language Acquisition (SLA) in general and vocabulary learning in particular. According to EUROCALL (2010), CALL has reached a high level of maturity as a research agenda helping to enhance language teaching and learning in general and in L2 in particular. CALL research belongs to the field of Applied Language Studies and, as such, is associated to work in education, especially pedagogy, educational psychology, policy and management, the nature of specific learning processes, in particular of learning styles, and classroom management, among others.[18]

Chapelle (2008, p. 01) suggests there is a close link and interface between CALL and the area of Applied Linguistics (AL, henceforth) since CALL can be seen as a subfield of AL given its concern with the use of computers for L2 teaching and learning.

Various concepts of CALL have been proposed throughout its history given the complex and dynamic nature of the field (Hubbard, 2009). In what follows, some of these concepts will be presented starting with Chapelle's (2010) concise concept of CALL. According to her:

> The expression 'computer-assisted language learning' (CALL) refers to a variety of technology uses for language learning including CD-ROMs containing interactive multimedia and other language exercises, electronic reference materials such as online dictionaries and grammar checkers, and electronic communication in the target language through email, blogs, and wikis (p. 66).

EUROCALL (2010) conceptualizes CALL in a more comprehensive way. For this association, CALL is an academic field which investigates the role of Information and Communication Tools

[17] Retrieved Aug. 10, 2012 from http://www.stanford.edu/~efs/callcc/callcc-edboard.pdf
[18] Retrieved Aug. 10, 2012 from EUROCALL: http://eurocall-languages.org/research/research_policy.html

(ICTs)[19] in language learning and teaching which offers interactive and communicative aid to develop the four language skills, namely listening, speaking, reading, and writing making use of the Internet. In addition, it involves the development of materials, pedagogical practice, and research to do so.[20]

In his turn, Hubbard (2012) goes further by stating that 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 (Hubbard, 2012).[21]

After presenting the three concepts of CALL provided by Chapelle (2010), EUROCALL (2010), and Hubbard (2004), it is possible to propose a concept of CALL to be adopted in this dissertation, namely that CALL and teaching can take place with or without the Internet as when CD-ROMs with interactive multimedia and exercises are employed by language learners and teachers or when a teacher makes use of an mp3 or a DVD player during a language class. Also, CALL can occur (with the help of the Internet) through the use of wikis and online reference materials such as dictionaries. These tools can be used to develop the four basic language skills, namely listening, speaking, reading and writing, in an interactive way, even if it happens through a small cell phone[22].

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[19] ICTs refer to technological tools that "make the production, distribution and exchange of information possible, and assist […] the teaching and learning process of the target language […]. As a consequence, "examples of ICT tools are: radio, TV, VCR and DVD, CD-ROMs and other resources offered by computers and the Internet (such as computer software and hardware, e-mail, discussion groups, forums, instant messaging, blogs, tele/videoconference, websites, etc.)" (Machado, 2009, p. 12).

[20] Retrieved Aug. 10, 2012 from EUROCALL: http://eurocall-languages.org/research/research_policy.html

[21] Retrieved Aug. 18, 2012 from Stanford University: http://www.stanford.edu/~efs/callcourse2/CALL1.htm, "What is CALL" section.

[22] Cell phones with access to the Internet have also been used by language learners. This kind of learning is known in the literature on the field as mobile learning. Mobile learning is the learning that occurs by means of mobile devices such as cell/mobile phones, media tablets, Ipods, and other mobile devices. These mobile resources which have mobile operating systems, have become more sophisticated and user friendly. They "are being

Once the concept of CALL has been reviewed here, I now turn to the description of CALL history as set forth by Warschauer and Healey (1998)'s excellent framework according to Bax (2003). EUROCALL states that this framework is divided into three tendencies: Behavioral CALL, Integrative CALL, and Communicative CALL. Moreover, this framework is said to include the theory that the development of CALL is a copy of technology development, linguistic, and instructional sciences.[23] The framework offered by Warschauer and Healey (1998) is divided into three main phases, as already stated: the behaviorist phase of CALL (1950s to1970s), the communicative phase of CALL (late 1970's and early 1980's), and the integrative phase of CALL (late 1980's and early 1990's), in chronological order.

The first phase of CALL - the behaviorist - (1950s to1970s) is also known as structural CALL (Jung, 2005) and was based on the behaviorist theory which saw learning as consisting of habit formation through the repetition of behavior. In the case of language learning, this behavior was acquired through the repetition of drills (exercises that required learners to repeat linguistic strings mechanically) (Jung, 2005; Warschauer & Healey, 1998). In this paradigm, computers were seen as mechanical tutors which provided extensive drills, grammatical explanations, and translations. Very important for the repetition of behavior was the feature of CALL that enabled learners to practice the behavior as much as they wanted since they did not depend on other people but only on the computer and on the learner.

The communicative phase of CALL (late 1970s and early 1980s) was based on cognitive theories which viewed learning as a progression of discovery, expression, and development. The Personal Computer (PC) was launched in the period of the communicative CALL and required the use of the target language (TL). Later, in the late 1980s and early 1990s, communicative language learning and teaching theory and practice were re-examined. Language teachers started to find ways to integrate learners in authentic environments and social contexts moving from cognitive-only theories to social or socio-cognitive theories. Approaches that attempted to make this integration were based on tasks, projects, and contents through which language skills (listening,

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used with great enthusiasm in many classrooms across the United States" (Warschauer, 2011, p. 38).

[23]Retrieved August 30, 2012, from EUROCALL: http://eurocall-languages.org/resources/history_of_call.pdf

speaking, reading, and writing among others) were developed and with it a new phase of CALL started, namely the integrative phase.

The integrative CALL phase (late 1980's and early 1990's) suggested that instead of using the computer to do isolated activities, learners should use technological tools to continue the process of language learning and use. Multimedia networked computers were the essential technology of integrative CALL and offered a variety of informational, communicative, and publishing tools, as well as opportunities for more integrated uses of technology (Warschauer & Healey, 1998). These three approaches to CALL coexist and are still used nowadays (Bax, 2003) as observed by Warschauer and Healey (1998) who state that "current uses of computers in the language classroom correspond to all three of the paradigms" above-mentioned (p. 59).

The aforementioned panorama about CALL phases proposed by Warschauer and Healey (1998) does not apply to Brazil. It was only in the late 1990, that CALL research started in Brazil effectively (Reis, 2009). After analyzing research conducted in Brazil, Reis (2009) proposes three phases for CALL research in this country: (1) Insertion of technology in foreign language classes (1998-2002); (2) Implementation and development of learning materials via digital technologies (2002-2006); and (3) Evaluation of language activities in the digital context and experience reports on computer-mediated teaching (2006-2009).[24](p. 56).

Whether the aforementioned advancements in technology and language pedagogy were efficient or not, nowadays, the debate seems to have moved away from the discussion of whether technology is essential for learning to focus on ways of promoting a more effective use of technology, particularly in pedagogical practices (Mouraz & Sousa, 2001). In the same line, Hubbard (2009) states that the issue is not whether to use the computers anymore, but in which ways to use them, since, as Bax (2003; 2011) and Chambers and Bax (2006) put, the field of CALL is reaching a status of normalisation and soon will be as common as traditional coursebooks, pens, or boards, and will no longer be special or unusual, reaching inconspicuousness. However, Bax

[24] In the original: "Fase 1 – Inserção de tecnologias nas aulas de línguas estrangeiras; Fase 2 – Implementação e elaboração de materiais didáticos por meio de tecnologias digitais; Fase 3 – Avaliação de atividades de linguagem no contexto digital e de relatos de experiência sobre o ensino mediado por computador". For more information on this issue, the reader is invited to visit https://sites.google.com/site/suzireispersonalsite/tese

(2003) also states that normalisation does not refer simply to the use of a technology normally or to its invisibility. Normalisation also refers to the positive contributions of a technology. Therefore, if a needs analysis were conducted "prior to the introduction of a new technology into any setting, it would help to ensure that learning be given greater priority over technology in the planning process (Bax, 2011, p. 09). Moreover, Bax (2011) adds that the just-mentioned needs analysis should be focused on learning and not on the learners per se because it is not enough for educators to shape their practice to fit learners' needs or accommodate to them. According to Bax (2011):

> Focusing on learning involves challenging what the learner states, believes, and wants. Without this element of challenge, the learner can never break away from preconceptions and rise to more critical levels of thinking and analysis (p. 09).

Returning to the framework offered by Warschauer and Healey (1998), different approaches to CALL have been used for language learning and teaching over the past thirty years. More recently, the ubiquity of and easier access to the Internet make its resources multiply and reach more students in all levels of education. According to Pérez Basanta (2010), Internet resources such as online dictionaries and grammars coupled with the exposure to and contact with authentic and comprehensible input provided are made available in the Internet and have contributed to instructional material support (Pérez Basanta, 2010, p. 176) and design, enhancing CALL applications. In the same vein, Chapelle (2001) also states that "CALL provides software tools and concepts for constructing a variety of authentic tasks, including video input and interactive communication" (p. 159). Also, CALL multimodal applications provide learning environments with digital sound, images, videos and texts integrated and put at the service of users to take direct control of those tools (Watts, 1997) thus leading to greater motivation (Warschauer, 1996) and autonomy (Blin, 2004; Carvalho, 2010; Neumeier, 2005).

Moving to CALL research, Vieira (2002) analyzed titles and abstracts of works presented in five events (conferences) between 2000 and 2001 in Brazil, showing that there was a continuing growth in the area of computer mediated language teaching and learning, which represented 26,3% of all presentations in that period, followed by a group of presentations that explored synchronous CMC (22%) and

studies on digital technology as a means (44%) and (17%) as an end. Regarding the language used in these studies, 46% were in the mother-tongue (Portuguese) followed by English as foreign language (30%). Vieira also found that most studies presented a theoretical reflection (37%), 19% were descriptive studies, and only 11% comprised experimental studies (Vieira, 2002). Still according to Vieira (2002), the tendency to prioritize qualitative and descriptive methodologies over quantitative and experimental studies may possibly be due to the newness of the theme in AL research and the speed with which new literacies have been implemented, making technological update a priority in relation to the research agenda in the area (p. 270-71).

Coleman (2005) revealed that CALL remains marginalized in many specialists' viewpoints. He is not alone since Chapelle (2005) has also expressed her concern about the future of CALL as an area of inquiry. Coleman cites important books in the SLA area (e.g., Dörnyei, 2001; Ellis, 1994; Ellis, 2003; and Skehan, 1998) that have omitted CALL research, suggesting that CALL and SLA are still seen as two distinct areas (Skehan, 2003).

Chapelle (2007) is very much concerned with the ubiquity of technology in L2 learners' lives and strongly suggests the integration of technology with theory, research, and practice in SLA by using computer assisted language research (CASLR) tasks in SLA research to operationalize learning conditions thus enabling researchers to test hypotheses about SLA and to collect data that allow the researcher to make inferences about learners' knowledge and strategies (Chapelle, 2001; Chapelle, 2007). CASLR tasks have proven to be effective to investigate learning conditions and they provide "a stable basis for theory development" (2007, p. 99).

According to Marzari (2012), "Technology has always been present in people's lives" (p. 56). In fact, it is an "integral part of people's daily lives" (Marzari, 2012, p. 56). Therefore, it has been "affecting and modifying the ways people think, behave or act" (Marzari, 2012, p. 56) and, we may say, L2 learners' lives and routines. As a consequence, there must be more research on L2 learning and on the role played by technology. In education in general, computers and the Internet, more specifically, are the most pervasive tools for learning and knowledge production in the 21st century and are to students what paper and pencils/pens were in the past (Warschauer, 2005, p. 37). Yet, changing technology without changing methodology is pointless. Indeed, Marzari (2012) states that "using technology without any apparent pedagogical goal may lead to frustration and disappointment

among learners" (p. 75). The change in methodology involves the development of literacy skills through content available on the Internet (Warschauer, 2005). As Warschauer (2011, p. 41) wisely states, "In the end, though, it will not be any particular device that transforms education, but rather how teachers and learners make use of the devices". In the same vein, Marzari (2012) puts forth the idea that "technology by itself is not going to solve all of humanity's problems, especially when it comes to education" (p. 57). The successful use of technology will depend on teachers' skills to use it well to achieve explicit educational results. Also, Marzari (2012) affirms that technology is "a source of essential tools for more engaged and motivated learning" (p. 63). Moreover, Ware and Warschauer (2005) analyzed the relationship between academic literacy and new media and concluded that the use of computers in education will not necessarily raise students' scores if students continue to be evaluated through traditional tests because these tests fail to adequately measure the broad range of literacy required nowadays.

Whether they are in the general educational field or in the SLA field, technologies in general, and ICTs in particular, play a relevant role that cannot be ignored. Regarding the role of CALL in L2 learning, it has continuously become part of language instruction and may soon become a mandatory instrument in language classes. In fact, to reinforce, according to Allum (2004), CALL "appears to have the capacity to strengthen learning as well as providing a useful link with class work" (Allum, 2004, p. 498). In addition, the just-mentioned author (2004) puts forth the idea that CALL can combine pedagogic tasks and modalities which would be thorny to convey as successfully by means of any other medium. Therefore, there is more likelihood that CALL can generate more learning than any other media (Allum, 2004, p. 500). Moreover, the area of CALL has been growing (Vetromille-Castro et al., 2012, p. 243) and changing very fast (Hubbard, 2009). In fact, it has changed as fast as the technology which feeds it (Hubbard, 2009). Therefore, these changes impose a fast pace to all those who want to keep track of new trends within CALL (Hubbard, 2009) and create the need for more research in the area of CALL and materials production to attend to the new paradigms which have been developing (Vetromille-Castro et al., 2012, p. 243).

Having provided this succinct review of literature on CALL, I will now move to the next section which, in turn, will present a brief review of the literature related to L2 vocabulary acquisition, besides stating the relevance of teaching, learning, and retaining L2 vocabulary.

2.3 L2 VOCABULARY LEARNING

> "Words, before they are used in a text,
> are just a set of possibilities,
> pointing imprecisely to a bank of
> concepts we have stored in dictionaries
> or in our minds"
> (Leffa, 1998, p. 192).

Vocabulary[25] acquisition used to be a neglected area within SLA studies (Meara, 1980; Pérez Basanta, 2010). This neglect is intriguing since learners claim to face difficulties with vocabulary in preliminary phases of L2 learning. Some even claim that vocabulary acquisition is the greatest source of problems in the process of acquiring an L2 (Meara, 1980, p. 01). Fortunately, the relevance of vocabulary for L2 development has regained attention becoming a recurrent topic in the area of SLA, in general, and English Learning and Teaching (ELT), in particular. Learners' lexical competence[26] is regarded as being as important as their grammatical competence since their oral and written productions depend upon a good command of vocabulary (Rigueira & Monteiro, 2007-2009). As Krashen (1989) underscores,

> Excellent reasons exist for devoting attention to vocabulary and spelling. First there are practical reasons. A large vocabulary is, of course, essential for mastery of a language. Second, language acquirers know this; they carry dictionaries with them, not grammar books, and regularly report that lack of vocabulary is a major problem (p. 440).

Nation (2001a, p. 01) claims that part of a language development program is the teaching and learning of vocabulary and Beglar and Hunt (2005, p. 07) say that several linguists and cognitive psychologists place lexis at the core of human language processing, emphasizing the fact

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[25] According to Cambridge Dictionary, vocabulary refers to "words used by a particular person or all the words that exist in a particular language or subject". Retrieved October 10, 2012, from http://dictionary.cambridge.org/dictionary/american-english/vocabulary?q=vocabulary.

[26] Lexical competence can be defined as the ability to use words in a language (Marconi, 1997).

that vocabulary acquisition is an important part of successful L2 learning (Beglar & Hunt, 2005, p. 07). Notwithstanding the importance of vocabulary for L2, SLA research has historically focused on only one aspect of language: grammar (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010; Pérez Basanta, 2010). There used to be a consensus in the past that L2 grammar should be taught whereas L2 vocabulary would be learnt naturally when learners were in contact with the L2. Thus, L2 vocabulary teaching was considered less important than L2 grammar teaching (Torreblanca-López, 2010). Fortunately, this scenario changed and vocabulary was rightly placed back on the spotlight in the 80's (Chacón-Beltrán et al., 2010). During the 1990s, vocabulary gained even more attention being considered "a key component in L2 learning for successful communication" (Chacón-Beltrán et al., 2010, p. 01). Nowadays, vocabulary is widely recognized as a central area of knowledge in any language (Chacón-Beltrán et al., 2010).

Given the panorama outlined for the relevance of vocabulary acquisition for L2 development, vocabulary teaching tools must be carefully included and considered in curriculum designs if we accept that "lexis is at the heart of language acquisition" (Pérez Basanta, 2010, p. 176).Yet, for vocabulary acquisition to take place effectively, some necessary conditions must be taken into consideration, and this is what the next subsection will touch upon.

2.3.1 Necessary conditions for vocabulary learning

According to Nation (2001a), the following conditions are necessary for vocabulary learning: (1) noticing[27], (2) retrieval, and (3) creative or generative use (p. 109). These are general processes that underpin the retention[28] of new vocabulary in an L2.

Firstly, students must notice the new items in order to learn them. For noticing to occur, there are two necessary conditions: interest and motivation. Teachers can increase interest and motivation and thus encourage noticing by using strategies such as making key words

[27] According to Schmidt's (1990) noticing hypothesis, learners have to "notice" the form in question before it can be processed further.

[28] Based on Cambridge Online dictionary which defines retention as the "ability to keep or continue having something" (retrieved October 10, 2012, from http://dictionary.cambridge.org/dictionary/american-english/retention?q=retention), for the sake of this study, retention is assumed to reflect the abilities learners have to continue keeping information in their minds.

salient, giving opportunities for word meanings to be negotiated, having students give definitions of new words in L2, or/and translate them to L1, to cite but a few (Nation, 2001a).

Vocabulary retrieval is the second necessary condition for words to be remembered once they are noticed (Nation, 2001a). According to Nation (2001a), "retrieval involves recall of previously met items" (p. 220) and helps strengthening the memorization of a word. In addition, retrieval can be productive and receptive. Productive retrieval occurs when the form of the word is retrieved (e.g., when learners have to write a word in L2 next to an image representing the word). Receptive retrieval occurs when the meaning of the word is retrieved (e.g., when learners are asked to translate a word from the L2 to their L1).

After noticing, when words are retrieved during tasks, the memory of those words is strengthened. The repeated encounters with words will lead to better retrieval. Words do not require their meanings for retrieval to occur. When words are repeatedly encountered, there are more chances for vocabulary learning to happen. Yet, repetition must be spaced, i. e., there must be an interval between the encounters with the words, in such a way that repetitions are increasingly spaced with a short gap between early meetings and much larger gaps between later meetings (Nation, 2001a). In order to emphasize and reinforce, Nakata (2008, p. 19) claims that the spacing effect is too powerful to be ignored.

The spacing of repetitions (Nation, 2001a, p. 76) results in safer vocabulary learning than massed repetition. Nation (2001a) distinguishes spaced repetition from massed repetition:

> Massed repetition involves spending a continuous period of time, say fifteen minutes, giving repeated attention to a word. Spaced repetition involves spreading the repetitions across a long period of time, but not spending more time in total on the study of the words […] the spaced repetition results in learning that will be remembered for a long period of time (p. 76).

The creative or generative use of vocabulary is the third major process in the retrieval of words (Nation, 2001a). The process of using words creatively occurs when previously met words are subsequently used in ways that differ from those previously met. For example: the word bridge is learned as a noun in the following context: "We drove

across Hercílio Luz bridge**".** After some time, the learner sees the same word again, this time as a verb, and in a different context, as in: "Swing music bridged the gap between popular and classical music"[29]. When the learner sees the word in a different context, s/he has to reconceptualize his/her knowledge, rethinking its meanings. As a consequence of this reconceptualization, the meaning of a word will be learned with confidence (Nation, 2001a).

Another important factor that contributes to vocabulary growth is reading. Nation (2001a) says that vocabulary knowledge and reading comprehension are very closely related to each other. Vocabulary knowledge can help reading, and reading can contribute to vocabulary growth. Therefore, by way of summary, noticing, retrieval, and creative/generative use are the three most important general processes that underline the retention of L2 vocabulary, although other issues also contribute to that, as, for instance, reading in L2.

After outlining the conditions for L2 vocabulary acquisition to take place, the next section will deal with the issue of how L2 vocabulary can best taught.

2.3.2 Language-focused learning

> "whenever we ask someone to tell
> us something that might be
> retrievable from our own memory,
> we rob ourselves of a learning
> opportunity"
> (Bjork, 1988, p. 398).

Nation (2007) recommends that a balanced language course divides its time into four main foci, namely (1) meaning-focused input, (2) meaning-focused output, (3) fluency development, and (4) language-focused learning. Due to space limitations, I will just briefly outline the four strands, focusing more on the fourth which I consider more relevant for this study, in general, and for this section, in particular.

The (1) meaning-focused input involves making use of words receptively. Thus, in this strand, learners' main focus is to understand and gain knowledge from listening and reading L2 activities. For this strand to work well, a large amount of input is necessary (Nation, 2007,

[29] Example extracted from Cambridge online dictionary. Retrieved August 30, 2012 from http://dictionary.cambridge.org/dictionary/american-english/bridge_7.

p. 02). The (2) meaning-focused output strand involves making use of words productively. Thus, in this strand, learners' main focus is to know how to speak and write in the L2. As one's output can be the other's input, the meaning-focused input strand can be blended with the meaning-focused output. The (3) fluency development strand should involve all the four language skills of listening, speaking, reading and writing. Like the meaning-focused input and the meaning-focused output strands, the fluency development strand is also meaning focused. These three meaning-focused strands should account for 75% of a language course. Finally, the (4) language-focused learning strand is related to deliberate or intentional learning. This strand has received several names in the literature, namely focus on form (FonF), form focused instruction (FFI), deliberate study and deliberate teaching, learning (as opposed to acquisition), intentional learning, just to provide some examples (Nation, 2007, p. 05).

Language-focused learning involves the intentional learning of spelling, vocabulary, grammar or another aspect of a language. Nation prefers the term "language-focused learning" since the concepts of FonF and FFI may "involve a deliberate focus on meaning as well as form, and need not involve instruction but can be the focus of individual autonomous learning" (Nation, 2007, p. 05). Some examples of deliberate teaching activities are giving pronunciation, translation, vocabulary, and memorization exercises, substitution drills, feedback about writing, vocabulary teaching strategy training, using word cards and explicit vocabulary instruction (Ma & Kelly, 2006; Nation, 2007). As for deliberate learning activities, some examples are guessing from context, using a dictionary or word cards, intensive reading, translation, application of strategies and getting feedback about writing. In the same vein, Ellis (1995) argues that

> learners' acquisition of new vocabulary can be strongly facilitated by the use of a range of metacognitive strategies: (i) noticing that the word is unfamiliar, (ii) making attempts to infer the word from context (or acquiring the definition from consulting others or dictionaries or vocabularies), (iii) making attempts to consolidate this new understanding by repetition and associational learning strategies such as semantic or imagery mediation techniques (p. 5).

As regards translation, several authors are in favor of its use in L2 classes (Bohunovsky, 2011; Checchia, 2002; Widdowson, 1979). Widdowson (1979) is in favor of its use especially when an L2 is used for specific purposes (as it is in the case in the present study). For Checchia (2002), translation is a natural process that always happens. To translate is to understand what is being communicated. It is an easy and fast way to present the meaning of words.

The aforementioned strand - Language-focused learning - is of particular relevance for the present study given the context in which it was carried out, namely, an ESP course; although Nation (2007) recommends that a good language course must balance the four strands leaving 75% for meaning-focused activities and 25% for language-focused learning activities.

There seems to be a general consensus among researchers that there is more learning and retention when acquisition takes place explicitly, deliberately, or intentionally (e.g. Chapelle, 2001; Del Valle, 2004; Elgort, 2011; Laufer, Meara & Nation, 2005; Laufer, 2010; Nation, 2001a; 2001b; 2005; 2008). Additionally, all research comparing deliberate, decontextualized vocabulary learning with vocabulary learning from context has found that given the same amount of time, deliberate learning always results in more learning (Nation, 2006, p. 495). To contribute to the fact that deliberate learning is more effective than incidental learning, Beglar and Hunt (2005) state that the mere exposure to a rich and meaningful input may not lead to the acquisition of new vocabulary. Therefore, to reinforce, FFI might be more efficient because learners learn the spelling and the meanings of the new words correctly. As regards assessment, "For most average learners […] tests provide an instrumental motivation[30] to attend to the material which is not attended to without the test." (Laufer, 2010, p. 22-23). Thus, intentional teaching will, naturally, be favorable to learning. Finally, for learning to occur effectively, both teachers and learners have to be engaged in this process, since deliberate learning is also "the responsibility of each learner" (Nation, 2006, p. 496). However, it is necessary that learners receive adequate training and encouragement from the part of their teachers.

[30] According to Gardner (1985), instrumentally motivated learners are learners whose motivation responds to environmental demands. Instrumental students like to satisfy their parents or their teachers, differently from integrative motivated learners who like the language for itself (Gardner, 1985).

Ellis (1995) puts forward the idea that "Humans are endowed with two dissociable learning abilities: implicit and explicit learning" (p.05). Regarding the incidental or implicit learning of words, Ellis (1995), states that it occurs when "the meaning of a new word is acquired totally unconsciously as a result of abstraction from repeated exposures in a range of contexts" (p. 05). However, Nation (2001a, p. 149) argues that only little incidental vocabulary learning takes place during the process of reading texts, for example. Also, the vocabulary acquired by means of incidental learning of words is essentially for recognition and scarcely for production (Paribakht & Wesche, 1996).

Having stated that deliberate/explicit learning and teaching is generally accepted to be more feasible in a language course than incidental learning and teaching, I will now describe two examples of empirical studies that corroborate the assumption that there is more learning when the focus is on deliberate learning[31].

In Paribakht and Wesche's (1996) longitudinal study, 38 ESL university learners were separated into two groups: (1) the intentional Reading Plus group and (2) the incidental Reading Only group. All the students read four texts and answered the same text comprehension questions. Nonetheless, the Reading Plus group performed enhanced vocabulary exercises which included activities to draw participants' attention to the target words. Also, they performed recognition, manipulation, interpretation, and production exercises. The Reading Only group read a few extra reading texts and answered more text comprehension questions. Results of Paribakht and Wesche's study led them to conclude that both groups presented significant vocabulary gains after three months. However, only the Reading Plus group moved from a recognition-only level. This study confirms the hypothesis that there is more learning when the focus on vocabulary is deliberate/intentional.

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[31] By way of summary, according to Xu (2010), incidental vocabulary learning refers to learners' acquisition of vocabulary knowledge during a language learning activity that is not intended for vocabulary instruction. In the same vein, for Dekeyser (2003), implicit learning is defined as "learning without awareness of what is learned" (p. 314). Therefore, "explicit learning can be defined as learning with awareness of what is learned" (Ma & Kelly, 2006, p. 39). It is beyond the scope of this dissertation to explore more deeply these two constructs. Thus, more emphasis is given only to explicit learning for the relevance it has for this study. In line with Ma and Kelly (2006), implicit learning is not excluded from explicit learning. Rather, it is "seen as one of the two complementary learning approaches that are necessary to vocabulary acquisition. The two would work best in combination with each other" (p. 18).

Elgort's (2011) study investigated whether deliberate decontextualized learning triggered L2 acquisition of vocabulary items. The goal of Elgort's (2011) study was to unveil whether vocabulary knowledge acquired by means of deliberate learning was accessed and stored similarly with existing L1 and L2 vocabulary knowledge. Forty-eight participants were first placed in an individual learning session where 48 decontextualized pseudowords[32] were introduced. The author made use of word lists and cards. At the end of the session, participants took home a set of word cards[33] to study their form-meaning and meaning-form connection during the period of seven days[34], following a recommended program based on spaced repetition in accordance with Nation's (2001a) recommendation for vocabulary learning. After a week, participants performed tests (including a dictation), to verify if the words had been learned. Results of the study led the author to conclude that deliberate learning "is not only an efficient and convenient but also a very effective method of L2 vocabulary acquisition" (Elgort, 2011, p. 399). Still in accordance with Elgort, deliberate learning should be only part of a "balanced learning approach" (p. 400), following Nation's four strands as already stated in the beginning of this section. Results of Elgort's study confirm that the inclusion of deliberate learning in an L2 study program is well justified.

Reiterating, Elgort (2011) examined if explicit decontextualized learning generated L2 acquisition of lexical items. One of the instruments he used was a dictation. Dictations have been considered by many as a behavioritic and decontextualized activity. Leffa (1998), for example, puts forth the idea that "Words, before they are used in a text, are just a set of possibilities, pointing imprecisely to a bank of concepts we have stored in dictionaries or in our minds" (Leffa, 1998, p. 192). However, there is also much evidence that dictations of isolated words promote deliberate learning and forces learners to recall from memory, word meanings, for example. Nakata (2008, p. 05) states that

[32] The words were not real to assure that participants did not know them before the experiment.

[33] The 48 pseudowords were printed together with their definitions.

[34] The period of seven days was chosen because it has been claimed that novel knowledge is integrated with the existing knowledge structures during sleep (Elgort, 2011, p. 374). Moreover and according to Nation (2001a), there should be adequate space for repetition of the new words. That is to say that learners need time to process words, use them, repeat them, meet them several times, either in the class period or on their own, and so on.

> A successful recall from memory yields superior retention to mere presentation of the target item because the very act of retrieving information from memory strengthens retrieval routes to memory. Hence, testing one's memory to recall the L2 word form or its meaning (retrieval practice) is beneficial to long-term retention (p.05).

Furthermore, by applying dictations, teachers can, simultaneously, motivate learners to retrieve from their own memories, L2 word meanings. In line with Bjork (1988), "whenever we ask someone to tell us something that might be retrievable from our own memory, we rob ourselves of a learning opportunity" (Bjork, 1988, p. 398).

Another study that deserves attention is Duquette, Renié, and Laurier's (1998) study which examined L2 vocabulary acquisition by 78 French learners in different learning environments. Vocabulary increase made by a group of learners in a multimedia context was assessed in opposition to vocabulary increase made by two control groups. One of the control groups used video support. Generally speaking, results indicate that all groups performed similarly. However, the researchers concluded that for there to be vocabulary gains, the lexical items must appear regularly. Also, the just-mentioned items must be presented in contexts where texts are associated to images before videos are presented, for example. This study could identify crucial input features which might assist learners to center their attention on unknown vocabulary items and to recall them.

All in all what really matters is what learners do to learn novel vocabulary. According to Ellis (1995), victorious learners employ appropriate cognitive[35] learning strategies which are adequate to the job of vocabulary acquisition. Some of these strategies include: (1) inferring the meanings of new words from context; (2) efficient utilization of dictionary; (3) semantic or imagery mediation between the L2 word and its L1 equivalent; and (4) deep processing for expansion of the new word with existing knowledge. To the extent that the meaning of vocabulary is concerned, an implicit vocabulary learning approach does not hold. Hence, "CALL has very useful roles to play in all of these

[35] According to Cambridge Online Dictionary, "cognitive" relates to or involves "the processes of thinking and reasoning". Retrieved December 25, 2012 from http://dictionary.cambridge.org/dictionary/american-English/cognitive?q=cognitive

different ways of promoting vocabulary acquisition" (Ellis, 1995, p. 15-16).

Finally, you may recall that, according to Nation (2007) a balanced language course divides 75% of its time into three strands, namely meaning-focused input, meaning-focused output, and fluency development, and 25% of its time into language-focused learning. Having in mind that language-focused learning refers to deliberate or intentional learning, the next section will provide suggestions of strategies for L2 intentional vocabulary teaching which may promote intentional vocabulary learning.

2.3.3 L2 vocabulary teaching: strategies

Learning new vocabulary is not an easy task and in that sense, any effort made by teachers to help this process represents a plus for L2 learners (Laufer, et al., 2005, p. 04). Several authors (among whom are Nation, 2001a, 2008; Laufer, et al., 2005) suggest the use of strategies[36] for teaching vocabulary in L2 and some of them will be reviewed in the paragraphs that follow.

Some strategies believed to be efficient for L2 vocabulary teaching include the creation of course books based on learners' specific needs, making sure that specific keywords are frequently presented (6 to 10 times along the course)[37]. Another strategy is to apply vocabulary tests (Nation, 2008; 2001b) once students' chances to remember words will be greater if they have to memorize them intentionally for tests.

Contrary to recommendations of the Communicative Language Teaching Approach, L1 should be used to explain the meaning of the new words by creating glossaries with unknown words in L2 together with their equivalents in the L1 or definitions in L2 (Laufer, 2005; Nation, 2008).[38] In addition, teachers should use and deal with new words in different ways: presenting them in isolation by making L2 word lists for the students to write their meanings in the L1, for instance, before presenting them inside a context (a text) or using new L2 words

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[36] According to Oxford Advanced Learner's dictionary, a strategy is a plan which is intended to achieve a particular purpose.

[37] Students may forget words that are not reviewed, repeatedly met, or used. The teacher must dedicate several minutes in each class to review words learned previously (Beglar & Hunt, 2005; Laufer, 2005; Meara, 2005).

[38] Glossaries with the translation of the new words in L1 following texts or exercises or the use of bilingual dictionaries are beneficial for text comprehension and the learning of new vocabulary (Laufer, 2005; Nation, 2008).

in vocabulary exercises after reading a text (Laufer, et al., 2005)[39]. Other strategies include activating new words through the use of association games in which links between words are made; giving more attention to the most frequent and, consequently the most common words in the L2; adapting texts that have less common words taking these words out or replacing them by more familiar ones (Laufer, et al., 2005). As regards learners' strategies, they include, but are not limited to, ignoring or trying to guess the meanings of unknown words through the context where they are inserted, checking meanings in a dictionary, trying to guess the meaning and then checking the meaning in a dictionary (Beglar & Hunt, 2005). It is important to recall Nation's (2001b; 2003; 2005; 2006; 2007; 2008) suggestion that a language course should be divided into activities that are focused on meaning and form as already stated in section 2.3.2. However, this division can vary depending on the students' proficiency level and needs (2001a)[40], and, I would suggest, it also depends on the purpose of the language course[41].

According to Beglar and Hunt (2005, p. 09), several strategies, such as making L2 word lists for the students to write their meanings in the L1, diverge from mainstream SLA recommendations because they are considered by many as "outdated and behaviorist". Conversely, empirical research has proved the efficacy of those techniques in "speeding up lexical acquisition, particularly in EFL settings (Beglar & Hunt, 2005, p. 09). In conclusion, the use of strategies can facilitate the very often arduous process of L2 vocabulary learning which is why strategies should be applied not only by teachers, but, also, should be taught to students so as to foster learners' autonomy maximizing learning.

Having reviewed some of the literature on CALL and vocabulary acquisition, I will now bring these constructs together in section 2.4.

2.4 CAVL

As could be seen in section 2.2, different approaches to CALL have been used for language learning in the past thirty years and, in the

[39] These two types of input are complementary and one reinforces the other (Beglar & Hunt, 2005).

[40] The mere exposure to a rich and meaningful input may not lead to the acquisition of new vocabulary; FFI might be more efficient because learners learn the spelling and the meanings of the new words correctly (Beglar & Hunt, 2005). It is very important to "strengthen the connection between form and meaning" (Nation, 2001, p. 101).

[41] An ESP course for example, has specific purposes as its name suggests.

last twenty years, for vocabulary learning in particular (Pérez Basanta 2010, p. 176). Computer Assisted Vocabulary Learning (CAVL) - an extension of CALL - is a learning methodology which supplies vocabulary learning principles that can be put into practice through the repetition and retrieval of target words with the help of an Internet-connected computer (Nation, 2001a, p. 108).

Although vocabulary learning has always been a focus of CALL (Ma & Kelly, 2006) it was not until the 1990's that a new CALL generation was created to offer access to and selection of lexical knowledge and lexical processing. According to Ma and Kelly (2006), nowadays "one common feature is situating vocabulary learning in context instead of treating it as an isolated activity, as was the case before" (p. 16). In the same vein, Hubbard (2009) states that nowadays, vocabulary is still one of the most common applications if we consider all the offers on the web. Hubbard (2009) explains that this is so because language learners give too much value to vocabulary and because dealing with vocabulary involves the handling of discrete items such as words, definitions, and translations and, as a consequence, it is not difficult to program or to administer.

As already mentioned, a new CALL generation started in the 1990's. At that time, a larger importance to vocabulary teaching and learning started to be given because of the creation of new technologies and new CALL software programs. These programs offered lexical knowledge access, word selection and processing (Pérez Basanta, 2010, p. 176). Nation (2001a, p. 108), suggests that an important approach to systematically analyze and evaluate CAVL software programs is to look at the vocabulary content of the material (what words are focused on and what aspects of word knowledge are covered), the presentation of the material (conditions for learning) and the monitoring of learners' performance (feedback and treatment of error provided). Nation (2001a, p. 108) also claims that it is worth considering the flexibility of the program in adapting students' needs to environmental constraints such as the amount of time available, modifying learning principles. The introduction of multimedia resources in computer technologies has provided many chances for L2 teachers and researchers to employ them in the L2 learning and teaching context. It is possible to combine diverse media and, consequently, control texts, sounds, images, and videos nowadays (Mohsen & Balakumar, 2011).

Among several programs and applications created around this time, it is worth mentioning that in 2003, Pérez Basanta coordinated the development of a CALL program at the University of Granada whose

main goal was to improve the lexical competence of college English students[42] by making use of the advancements of the new technologies placing more importance in the virtual learning or learning through a computer. The activities were designed with the aim to develop vocabulary in the form of collocations, idiomatic expressions, and lexical phrases. In addition, the activities aimed at promoting the use of metacognitive techniques (e.g., use of online dictionaries) (Pérez Basanta, 2010). Learners in the program were expected to develop their autonomy by means of interactive learning through the interaction in the virtual learning environment. Moreover, Internet was expected to provide both motivation and free access to a rich bank of authentic and content-rich material. Ma and Kelly (2006) reminds us that CALL programs have merits and limitations and that Pérez Basanta's (2003) program attempts to contextualize vocabulary avoiding isolated activities such as those used in the period of the first CALL generation.

Pérez Basanta (2010) is not alone in her concern regarding the pedagogic theories underlying CALL. Indeed, so as to address the criticism of a lack of theory in CALL programs and include a psycholinguistic account in computer-mediated courses, Peréz Basanta developed three hypotheses regarding lexical processing in that context. The first hypothesis assumes that learners have a better performance with concrete nouns, if compared to abstract nouns because concrete nouns can be visualized. Pérez Basanta believes that images[43] can help verbal information and lexical comprehension which is why computer multimedia resources can be very useful for vocabulary learning (Al-Seghayer, 2001; Groot, 2000; Laufer & Hill, 2000; Nikolova, 2002). The second hypothesis suggests that words are learnt only if they are contextualized. If words have to be presented in a context, instructions given through Internet resources may be suitable to contextualize words and serve as "bridges between the classroom and the real world" (Pérez Basanta, 2010, p. 180). Pérez Basanta (2003) also adds that the Internet

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[42] For further information on this program, see: (1) Pérez Basanta, C. (Coord.) (2003). ADELEX: Um programa para la evaluación y desarrollo de la competência léxica del inglés em um entorno virtual WEBCT para la Enseñanza universitaria. In: *Sello europeo a la innovación em la Enseñanza y aprendizage de lenguas extranjeras. Premios 2003* (pp. 111-43). Madrid: Ministerio Educación, Cultura y Desporte and (2) Pérez Basanta, C. (2004). Pedagogic aspects of the design and content of an online course for the development of lexical competence: ADELEX. ***ReCALL*****.** Cambridge University Press 16 (01) pp. 20-40. DOI:10.1017/S095834400400031X.

[43] Underwood (1989) underscores that "A commonplace principle of human learning [is] visual memory. We remember images better than words, hence we remember words better if it they are associated with images" (p. 19).

has the advantage of offering innumerous authentic materials in a way that coursebooks cannot (Pérez Basanta, 2003). The third hypothesis is in line with the "depth of processing hypothesis" (DOP)[44] which states that vocabulary acquisition happens depending on the type of activity required by the brain at the moment of learning. In addition, the just-mentioned hypothesis is related to learners' active role and interest which are decisive factors that can be affected by other factors such as motivation. Thus, if interest and motivation go hand-in-hand, Internet can offer something that other approaches cannot. The fact that students can work in their own pace and can engage in computer-mediated activities in a CALL environment might represent a solution to the problem of students' involvement and motivation. Since Internet is a motivating factor (Warschauer, 1996), Pérez Basanta (2010) concludes that the possibilities offered by the Web are capable of promoting vocabulary development. In conclusion, the program developed by Pérez Basanta (2003) tried to consider the three hypotheses offering a multimodal environment with resources such as audio and video, thus embedding activities in genuine contexts through the design of task-oriented learning to foster "deep processing of words" (Pérez Basanta, 2010, p. 181). By the same token, Ellis (1995, p. 13) puts forth the idea that "deep-processing" techniques can serve as highly effective mnemonics whether learners access the meanings of the words by inference from context, by asking someone, or by looking the word up in a dictionary. Regardless of the technique employed, students have to consolidate a new word if it is not to be an 'ephemeral knowing' (Ellis, 1995, p. 13).

As regards interaction, Internet promotes online interaction among learners and between learners and teachers through the use of Internet communication tools such as forums that aim at promoting discussions and collaborative learning. Forums are also used by the teacher to give feedback and to encourage and motivate learners. The

[44] "Depth of processing" refers to a hierarchy of processing phases: analysis of physical or sensory features, followed by matching the input against stored abstractions from precedent learning. Later phases "are concerned with pattern recognition and the extraction of meaning. Greater "depth" implies a greater degree of semantic or cognitive analysis. After the stimulus has been recognized, it may undergo further processing by enrichment or elaboration. For example, after a word is recognized, it may trigger associations, images or stories on the basis of the subject's past experience with the word" (Craik & Lockhart, 1972, p. 675). In sum, Craik and Lockhart (1972) postulate that "processing semantic properties of a word represents a deeper level than just processing its phonological features" (Groot, 2000, p. 65).

concept of scaffolding[45] can be related to the digital environment insomuch as it refers to the capacity that many CALL programs have to offer feedback (through forums, e-mails, chats, and others) which, according to Nation (2001a) and Carvalho (2010) may be beneficial when it establishes a positive relationship with performance in language. Similarly, Vetromille-Castro (2003) states that feedback is essential to promote interaction between the teacher and students in the virtual environment. For the author, the feedback helps to enhance the motivation and the guidance which learners need during the performance of CALL activities. In addition, Vetromille-Castro (2003) puts forward the idea that feedback, in the virtual environment needs to show the learners that what they are doing is correct or not, clarify doubts related to content and the use of the system, besides offering pedagogical orientation (p. 14). Moreover, according to Bax (2011), modern technologies can assist language teachers in the provision of interaction between learners and teachers (the experts) who dynamically "scaffold" "the experience, through planning, feedback, and advice, constantly checking that learning is taking place" (Bax, 2011, p. 10).

By way of summary and still in accordance with Nation (2001a, p. 109), the following conditions are necessary for vocabulary learning: noticing, retrieval, and generative use (see section 2.4). All conditions can be met by CAVL. Noticing can be encouraged through the use of colored, highlighted or flashing text. Retrieval can be encouraged by making the same words appear in different intervals of time. Generative use is encouraged through the presentation of vocabulary in a variety of contexts and forms: spoken, written and pictorial. Therefore, besides traditional contexts, the digital context where CAVL takes place seems to favor vocabulary acquisition as well. Additionally, for Ellis (1995, p. 13), CALL provides countless advantages for vocabulary acquisition for it offers the possibility to consult not only on-line dictionaries, but also contextual instances of usage, synonyms, antonyms and other associative thesaural information.

Having provided a brief review of the literature on CAVL, I shall now move to the next section of this chapter, defining the concepts of competence and literacy in this study.

[45] Originally, "scaffolding" is the name given to the process through which the more capable helps the novice to achieve a goal or to solve a problem that the novice could not achieve or solve by him/herself (Wood, Bruner, & Ross, 1976, p. 90).

2.5DEFINING COMPETENCE AND LITERACY

According to Philippe Perrenoud (2000), competence, generally speaking, is the ability one has to gather together a set of cognitive resources such as knowledge, capacities, and information to solve with effectiveness and pertinence a number of situations. Similarly, according to Brasil (1999), competence is the ability one has to gather together, articulate and put into action a series of values, knowledge and capabilities to an efficient and effective performance of activities required by the work nature[46]. Finally, according to Oxford Advanced Learner's dictionary, competence is the ability/skill one has to do something well or the ability/skill someone needs to do a specific job or task. In view of these broad and similar concepts for competence, it is important to differentiate competence from ability, since they are two interrelated terms. Competence refers to the articulation and mobilization of knowledge whereas abilities allow the competences to be put into action (Ramos, 2002). Thus, competence has a broader definition than abilities which are required to do certain jobs, for example, and are more specific.

Depending on the context, the term "competence" may be more specified, since this concept is a flexible one and can vary from context to context (Ramos, 2002). For example, if the context is a technological or digital one, the required competence, naturally, will be technological or digital. Almeida (2004) employs the term "Technological Competence" as learners' abilities to deal with the computer and its peripherals and operate specific programs. Almeida (2004) investigated the perceptions of college students on the use of online tasks in an ESP course. He wanted to compare participants' levels of motivation and levels of acceptance to online tasks with participants' levels of technological competence. Almeida (2004) defines "Technological Competence" as the learners' abilities in dealing with the computer and its peripherals and operate specific programs. To be more specific, for Almeida (2004), "Technological Competence" is defined as the participants' abilities regarding the use of specific computer parts, resources, and tools namely, using the mouse, the keyboard, browsers, search engines, text processors, and forums. Additionally, as the

[46] In the original: "a capacidade de mobilizar, articular e colocar em ação valores, conhecimentos e habilidades necessários para o desempenho eficiente e eficaz de atividades requeridas pela natureza do trabalho" (According to art. 6º from the Resolution CNE/CEB # 04/99).

participants' abilities in performing specific tasks on the computer namely, chatting, typing, reading texts, exchanging e-mails, listening to music, watching movies, finding information on the Internet, generally speaking, among other abilities.

Among several criteria for the use of CALL activities, Chapelle (2001) highlights that the most important criterion is their potential for language learning. According to Chapelle (2001), by means of CALL activities, several positive goals can be achieved, one of which merits attention here is the increase of the level of technological competence. Since the term "technological" may refer to other technologies besides computer technologies, the term "Digital Competence" (DC, henceforth) was selected instead in this dissertation since it may refer to digital technologies such as the computer technologies. Thus, DC is a more specific term if compared to "Technological Competence". Therefore, for the purposes of this study, DC refers to the same abilities described by Almeida (2004) when he defines "Technological Competence". What I call "Digital competence" Warschauer (2006) calls "Literacy through the computer" (p. 154). Moreover, he distinguishes "Literacy through the computer" from "Informational Literacy". The latter involves both, the specific knowledge concerning the use of the computer (e.g., knowing how to operate browsers and search engines) and abilities concerning critical literacy which are more comprehensive (e.g., analyses and evaluation of information sources) (Warschauer, 2006, p. 157). To recap, the term competence refers to the ability one has to mobilize, articulate and put into action a set of cognitive resources such as information, values, knowledge and capabilities to an efficient and effective performance of activities (Brasil, 1999; Perrenoud, 2000). It is different from digital literacy, though, as will be seen in the following paragraphs.

According to Brasil (2008, p. 50), the frequent/constant use of technologies, generally speaking, will bring, as a natural byproduct effect, the development of digital literacy.[47] I would add that the frequent use of ICT tools, or to be more precise, the specific use of an Internet-connected computer may develop learners' digital or computer literacy. Chapelle (2001) agrees that CALL helps to increase computer literacy at the same time it increases literacy in the target language. Moreover, both literacies are possibly "critical for success" (p. 165).

[47]Retrieved August 30, 2012, from http://bd.camara.gov.br/bd/bitstream/handle/bdcamara/3464/um_computador.pdf?sequence=1.

The expression “literacy by means of a computer”, appeared in the 1980’s with the advent of the personal computer (Warschauer, 2006, p. 154). At that time, it referred only to the basic operations with the computer, such as the ability to turn it on and off, open a folder, and save a file. This definition did not last long. After a decade or so, educators believed that it was too limited (Mascarenhas, 2009). Naturally, the concept of literacy has changed together with the development of new computer technologies. Thus, new literacies have been developed and received different names such as informational literacy, CMC literacy, electronic literacy, digital literacy, and others. Although all of them are important for the context of the present study, I will focus on the concept of digital literacy. Digital literacy, according to Ba, Tally, and Tsikalas (2002), is a set of routines employed while interacting with information technologies to learn, to work, and to have fun. Those routines include abilities to use text processors, emails, search engines, and in communicating through the Internet. Also, it includes abilities to use the web to find, gather, and judge information and to create web-based material (p. 06).

Moreover, Demo (2007) states that being digitally literate means being able to recognize necessary information in the computer, find it, evaluate it and use it effectively taking into account today’s novel informational world frame where, according to Mota, Xhafaj, and Cardoso (2009), “technology generates knowledge” (p. 124). Also, Demo (2007) affirms that nowadays one must be literate in ICT tools, technologies, information, media, and visuals, having in mind that critical thinking underlies digital literacy. Technology alone cannot replace interpretation (Mota et al. 2009, p. 124).

Additionally, Reis (2004), states that being digitally literate means knowing how to save documents, send information, and work with texts. Nowadays, students have been developing their digital literacies at the same time they relate text to images on the computer screen or to the audio, i. e., in a multimodal manner (Cestari, 2006). In the same line, Soares (2002) states that the pencil and the paper were replaced by the computer screen for textual production (Soares, 2002). The cognitive processes undergone by readers and writers in the computer screen are different from those achieved with the help of paper and pen (Soares, 2002, p. 151).

Ware and Warschauer (2005, p. 434) see literacy as related to the ability to use and interpret multiple semiotic resources in response to particular communicative and performative demands across a range of contexts. Accordingly, there are different kinds of literacies: ICT

literacy (ICTs refer to technological tools as already stated in section 2.2), and electronic literacy to cite two examples. Regarding electronic literacy, Warschauer (2002) classifies it as: (a) information literacy which relates to the capability of navigating on the Web to find and critically analyze and use the information originated there; (b) computer-mediated communication (CMC) literacy which refers to the ability to use the Internet as an information tool and (c) multimedia literacy which is the capacity one has to know how to produce texts on the Internet combining diverse multimedia and reading and interpreting media to convey a message. As regards multimedia literacy, it is considered a "significant educational feature" (Heberle, 2010, p. 103). Heberle (2010) states that multimedia literacy "refers to the use of different semiotic resources to produce or interpret meanings" (p. 101). Returning to the issue of electronic literacy, according to Warschauer (2002), electronic literacy is, nowadays, a life skill in great part. It is important to highlight that literacy involves interpretation also, and not only the use of resources. According to several authors (Kleiman, 1995; Soares, 2002; Tfouni, 1988;), being literate does not mean knowing how to read and write only. Literacy also consists of social practices of reading and writing which, according to Soares (2002), are inserted in new kinds of social reading and writing practices known as digital literacy (p.146) provided by the computer connected to the Internet.

Mota et al. (2009) carried out a systematic review on literacy in Brazil. Among the articles published in 43 journals analyzed in the area of language and education, in the period between 2003 and 2008 only two publications on digital literacy were found indicating the need to continue investigating and contributing to the studies about digital literacy in Brazil, a country with a large population of youngsters and adults learning new content through computer-technology.

However, the shift to multimodal literacies in traditional classrooms is a thorny one. Schools, including language learning contexts, are unwilling to adapt and to change (Warschauer, 2008). According to Ware (2008), schools are underutilizing the potentials of new technologies regarding L2 teaching and learning even where technological hardware is accessible. Lotherington and Jenson (2011) affirm that the just-mentioned move to a multimodal approach to learning and teaching takes for granted that the prime mode of transmission and production is digital. Thus, this move gives possibilities far beyond the single approach afforded by traditional teachers. Teaching and learning in a multimodal environment bears mutual authorship, together with the search for and creation of methods

that enlarge text production. Also, it helps L2 learners in their search for communicative goals and contextualized learning of coded TL forms (Lotherington & Jenson, 2011, p. 232).

It follows from the above account that digital literacy involves far more than simply dealing with computers and computer peripherals and operate specific programs. Therefore, it is important to review and differentiate DC from digital literacy. DC, in this dissertation, refers to the general abilities learners have to use computer parts and peripherals; to navigate on the Web; to type; to communicate; to read and write on the computer; to copy, paste, cut, and save documents; to listen to music; and to watch movies, among other abilities related to the computer and the Internet, without taking into consideration neither the quality of all these tasks or interpretation. On the other hand, digital literacy refers to all these abilities but it goes beyond that. It does not refer to the use of technology only. It also involves interpretation and quality of the performed task. Additionally, according to Gee (J. P. Gee, personal communication, September 04, 2012), to be digitally literate involves to be able to make use of the knowledge obtained through digital competence to transform knowledge and use it socially. Although I am fully aware of the importance and relevance of promoting and developing digital literacy in educational contexts, in the present study I take into consideration just one aspect of digital literacy, that is digital competence.

After differentiating digital competence from digital literacy, the next section will provide a review of the literature on English for Specific Puporses since this was the context used in this study.

2.6 ESP

One of the branches of General English (GE) or English Language Teaching (ELT) is English for Specific Purposes (ESP). This discipline originated in the 1960's (Hutchinson & Waters, 1987; Ramos, 2005) and is constituted by its own features such as students' needs' analysis and a course designed taking into account the content related to the learners' area of study (Ramos, 2005). ESP is not a specific methodology, a kind of language, or a teaching material. ESP is an approach[48] to language learning[49] and teaching that aims to meet

[48] At this point, it is necessary to distinguish the terms methodology and approach. In addition, because of the proximity and similarities of terms, it is also necessary here to define the terms "method" and "technique". Following Anthony (1963)'s definitions,

particular learners' needs[50]. Also, "what distinguishes ESP from General English is not the existence of a need as such but rather an awareness of the need" (Hutchinson & Waters, 1987, p. 53). For Hutchinson & Waters (1987), meeting learners' needs is the primary goal of an ESP course followed by the need to attend to the content related to the learners' area of study which would be a consequence (p. 53).

According to Hutchinson and Waters (1987), the demand for English courses tailored to specific needs was caused by two factors: (1) the expansion of the English language worldwide and (2) the increase of scientific research, technological developments and economic activities after the Second World War. As regards the development of ESP in Brazil, Ramos (2008) and Monteiro (2009) state that ESP has a fixed place in the field of language teaching and learning in Brazil where ESP courses started to emerge in the end of the 1970's.

In 1977, Professor Mª Antonieta Celani launched a project with a needs analysis which showed the route to be pursued by ESP courses in Brazil: development of English teachers; production of materials; reading skills teaching; and the construction of a national resource centre (Ramos, 2008, p. 66). After that, in the 1980's, the ESP project Projeto Nacional de Ensino de Inglês Instrumental was launched through seminars held in different Brazilian universities. As time went by, more teachers attended the seminars and their interest grew, making

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Brown (2001) himself conceptualizes methodology as "pedagogical practices in general (including theoretical underpinnings and related research). Whatever considerations are involved in "how to teach" are methodological" (p. 15). As regards the term "approach", it refers to "Theoretically well-informed positions and beliefs about the nature of language, the language learning, and the applicability of both to pedagogical settings" (p. 16). At last, a method consists of a "generalized set of classroom specifications for accomplishing linguistic objectives". On its turn, the term "technique" refers to "any of a wide variety of exercises, activities, or tasks used in the language classroom for realizing lesson objectives" (p. 16). In sum, according to Anthony (1963, in Richards & Rodgers, 2001), "approach is the level at which assumptions and beliefs about language and language learning are specified; method is the level at which theory is put into practice and at which choices are made about the particular skills to be taught, the content to be taught, and the order in which the content will be presented; technique is the level at which classroom procedures are described" (p. 19).

[49] According to Hutchinson and Waters (1987) teachers are able to influence what they teach. However, what learners learn is determined by the learners themselves. For the authors, learning is "a process in which the learners use what knowledge or skills they have in order to make sense of the flow of new information" (Hutchinson & Waters, 1987, p. 72).

[50] Hutchinson and Waters (1987) state that necessities refer to the kind of "need determined by the demands of the target situation; that is, what the learner has to know in order to function effectively in the target situation" (Hutchinson & Waters, 1987, p. 55).

it possible for more teachers to become familiar with the approach, causing the diffusion of ESP in Brazil (Ramos, 2008, p. 67).

At that time, most ESP students' necessities were related to reading texts concerning their area of studies. It was defined, then, that the focus of an ESP course should be the teaching of reading and the development of reading strategies. According to Amorim (2011), for a long time, the focus of ESP courses was the comprehension of written texts, since the access to the technical literature was the major purpose of the vocational education students. Holmes and Celani (2006) made the following suggestions for their ESP project in Brazil:

> No central or national textbook should be produced;
> no ready-made 'imported' methodology should be used;
> materials production should be based on local resources;
> […]
> a centre of communications should be established;
> the project should be open to the admission of other institutions and people;
> there should be no anxiety to obtain central support at the ministry of education (p. 112).

An appraisal of the work carried out by Projeto Nacional de Ensino de Inglês Instrumental from 1980 to 1986 was conducted between1985 and 1989. After this appraisal, the project was implemented in the former Escolas Técnicas Federais Brasileiras (ETFs) which, later, became the Centros Federais de Educação Tecnológica (CEFETs), and nowadays are known as the Institutos Federais de Educação, Ciência e Tecnologia (IFs) (Celani et al., 1988).

According to Ramos (2008), there are four legacies left by the Brazilian ESP project: (1) teachers and students became co-collaborators, responsible for their own development; (2) the use of Portuguese as the classroom language became a well-established procedure applied in the classroom by both ESP teachers and General English teachers; (3) the development of a "local" (Canagarajah, 2002) methodology for the teaching and learning of reading and reading strategies with emphasis on the use of authentic texts. As the ESP courses tended (and tend) to be very short, there was also the preoccupation to raise reading processes awareness to make learners capable of handling English written texts in a short period of time; and,

finally (4) the production of strategy-skill based materials. This point of view guided materials production and the teachers who were taking part of the Brazilian project became better prepared to produce their own materials and evaluate or adapt others to their particular group of students, instead of relying only on a textbook.

However, after more than thirty years of the ESP project, an ESP course in universities and technical schools consists of, basically, only one of the four macro-skills involved in an L2 competence: reading. The other skills, writing, listening and speaking are often ignored (Celani, 2008; Ramos, 2008) as are the changes in computer technology, for example.

Celani (2008) and Ramos (2008) emphasize that it is a mistake to say that ESP equals reading or that ESP is mono-skill (reading being the only relevant skill); other myths associated with ESP are that it is technical English[51]; it does not use a dictionary; it does not teach grammar; it has to be taught in Portuguese; it is taught only after the student has mastered the "basic"[52] English; it provides a "crippled" learning.

In trying to give ESP practitioners some guidance, Celani (2008) emphasizes that an ESP course must involve one or more than one of the following characteristics:

> (1) considering learners' reasons for learning and their learning necessities;
> (2) building basic capabilities and abilities for defined purposes;
> (3) using previous knowledge, or what the learners bring with them to the learning situation, i.e., what learners have, do and can do in the learning process;
> (4) allowing learners a voice;
> (5) making language use meaningful;
> (6) enabling students to see reasons for learning;

[51] Ramos (2008) gives three reasons for the term "Technical English" be associated to ESP. One of them, which is relevant for this study, is based on the fact that the Brazilian Technical Schools joined the Brazilian ESP Project in the 1980's and this fact may have contributed to this association.

[52] Ramos (2008) states that the term "basic" may vary depending on the context. What is "basic" for a waiter may not be basic for a pilot for example. Finally, this specific "myth" does not originate "from the ESP tenets in Brazil but from the language and learning views the professional adopts" (p. 74).

> (7) helping students develop sound individual strategies for learning;
> (8) changing unhealthy study habits;
> (9) breaking the old tradition of memorization and repetition of teacher-transmitted knowledge (p.418).

As a consequence, the approach used in an ESP course must not be dictated by a book, but by the social context. Thus, contents, teaching, materials and methodologies are determined by students' interests, by the social context and by students' background knowledge (Celani, 2008). In a nutshell, it is a spread belief or myth saying that teaching ESP is the same as teaching reading only. It is still interpreted like that by many practitioners in Brazil, though (Celani, 2008).

Having provided a historical review of the literature on ESP, besides conceptualizing the field, I will now move to the last section of this chapter which, in its turn, will touch upon issues related to BL.

2.7 BL

The idea of using computer technologies in tandem with traditional L2 classroom instruction is not new. In the last ten years or so, we have observed the implementation of a multimodal teaching-learning format, namely Blended Learning (BL), also known as hybrid learning (Carvalho, 2010; Hong & Samimy, 2010)[53] in several contexts.

BL has been attracting attention from researchers in the area of L2 acquisition (Hong & Samimy, 2010), 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, henceforth) interaction (Neumeier, 2005). Hong and Samimy (2010) go on to say that, the efficacy of CALL technology is widely recognized and corroborated by empirical studies (e.g. Kern, Ware & Warschauer, 2004; Warschauer, 1996). However, there is not enough research in the area of BL with most of the studies carried out so far attempting to understand the multidimensional aspects of the process of BL implementation by identifying critical factors involved in successful BL realization as well as informative pictures of learners' reactions to CALL modes under the BL environment (Hong & Samimy, 2010).

[53] In this dissertation the terms *hybrid* or *blended* learning are used interchangeably, and will be referred to as BL.

Thus, more quantitative and experimental studies are needed to advance BL research and theory.

With the continuous development of old technologies and the creation of new ones, we have been observing and experiencing their integration with more traditional learning programs creating BL. Multiple concepts and definitions have been put forward for the term BL. Table 1 presents ten of these in a chronological order.

Table 1
BL Concepts/definitions

1.	"…the ability to combine elements of classroom training, live and self-paced e-learning, and advanced supportive learning services in a manner that provides a tailored learning…" (Fox, 2002, p. 26).
2.	The mix of web-based technologies or of pedagogical approaches without technology; any form of instructional technology (e.g., CD, web-based learning) with FtoF instruction; instructional technology with actual job tasks with the aim of creating a pleasant learning and working outcomes. In sum, the blend can occur between any sort of educational technology and FtoF education led by teachers (Driscoll, 2002).
3.	The combination of FtoF teaching-learning with distance education delivery systems or technology-based teaching-learning (Kerres & de Witt, 2002).
4.	"the mingling together of FtoF and technology in ways that lead to a well-balanced combination" (Osguthorpe, & Graham, 2003, p. 229).
5.	The mix of standard FtoF teaching with computer technology/Internet components and e-learning formats. BL can take place in an environment which is simply standard FtoF instruction making use of computers and online means to improve specific courses. BL can also occur in exclusively e-learning (e.g., online or web-based) environments or in other environments where computer mediated communication (CMC) is employed. The contexts vary from K-12 schools to work places, for the purposes of learning and/or training (Mortera-Gutierrez, 2005).

6.	Any kind of learning which blends two learning modes and types of interaction: FtoF and computer assisted learning (CAL) and its most significant aim is to hit upon the best combination of the two modes for learners, contexts and goals. On the one hand, in the CAL mode, web-based self access learning material and Personal Digital Assistants (PDAs), for instance, can be used. On the other, in the FtoF mode, the possibilities are too numerous to be stated here. CAL refers to computer-mediated learning whereas FtoF learning and teaching refers to instructional environments which work in a classroom-based or other setting, without computers (Neumeier, 2005).
7.	A learning/educational approach which mixes diverse kinds of educational strategies and technologies. More recently, BL refers, in general, to the combination of FtoF and distance education or online learning activities and makes use of all kinds of educational technologies (Köse, 2010).
8.	An intrinsically multimodal context in which L2 instruction is not necessarily restricted to either FtoF-only or CALL-only modes (Hong & Samimy, 2010).
9.	The mix of e-learning with typical FtoF teaching (Hubackova, Semradova, & Klimova, 2011).
10.	The combination of CALL and face-to-face classrooms within a single physical environment or of traditional activities carried out in the classrooms with online activities (Hinkelman & Gruba, 2012).

As can be seen in Table 1, the concepts of BL vary across the years. However, all of them agree that BL refers to the blend of two or more technologies with FtoF instruction and interaction. As BL is an educational approach that can be used for any kind of learning and not necessarily in the context of language learning, and as it can take place in workplaces as well as for training workers, the concepts provided by Hinkelman and Gruba (2012) and Hong and Samimy (2010) are more relevant for this study. These authors consider BL as the combination of two learning modes: CALL and FtoF learning.

Hinkelman and Gruba's (2012) concept of BL is very interesting and is more in line with the present reality in several contexts (e.g., in

regular schools which make use of individual laptop computers) nowadays where the combination of CALL and FtoF classrooms within a single physical environment coexist. Today, it is possible to see in the same classroom, CALL/online activities together with traditional activities which are not mediated by technologies. Actually, as wisely put forward by Paiva (2012), the books and the computers are in the schools and can perfectly live in harmony. However, it is important to take into account that the computers provide language social practices that cannot be offered in paper (p. 26). Also, Allum (2004) claims that "from a pedagogical point of view […] giving access to both paper and computers might make learners feel more comfortable and result in improved retention" (Allum, 2004, p. 488). By the same token, Allum (2004) argues that CALL is capable of including wide-ranging and repeated production chances with immediate feedback. Hence, the just-mentioned feature of CALL makes CALL a "potentially attractive option for vocabulary teaching" (Allum, 2004, p. 488).

With regard to interaction, it can be FtoF or through CMC. For Hinkelman and Gruba (2012), in Blended Language Learning (BLL, henceforth) environments,

> The spatial and pedagogic boundaries are no longer clear and separated, as they have been between CALL laboratories and face-to-face teaching rooms. By combining both online and face-to-face technologies inside one classroom space, the concept of a learning environment requires reconceptualization for both CALL and Second Language Learning theory (p. 48).

In the same vein, I agree with Hong & Samimy (2010) who state that, despite the benefits of CALL activities, they should be used with other more traditional activities so as to combine BL and CALL in FtoF interactions (Hong & Samimy, 2010) promoting motivation (Warschauer, 1996) and learners' autonomy (Blin, 2004; Carvalho, 2010; Neumeier, 2005).

After analyzing the concepts in Table 1, and for the purposes of this study, I will refer to the combination of computer mediated (CALL) activities and paper-and-pen (traditional or without the mediation of technology) activities within two learning environments: a Learning Management System (LMS) within a CAL classroom (i.e. the computer lab) and a traditional classroom, as Blended Language Learning (BLL).

In both environments there can be FtoF interaction. In the CAL environment, besides FtoF interaction, there is also computer-mediated interaction via CMC. In addition, because students have homework assignments and also have to study for tests, they have other environments for L2 learning besides the BLL environments, such as their homes, work places, their school library, among others. Also, in a LMS, online activities can be associated to FtoF activities, in a straight manner. This is also called a "face-to-face plus online" version of blending (Motteram & Sharma, 2009, p. 90).

In sum, while BL has many definitions, within language learning programs, it can be defined more easily by focusing on the spaces and materials assigned to teachers. Thus, for the purposes of this study, BLL is the blend of two learning modes: CALL and FtoF learning. This definition is specific to SLA and localized to a secondary learning context.

There are many advantages in the application of BL. One of them is that BL gives students autonomy (Carvalho, 2010), as already stated. Therefore, besides the traditional paper-and-pen activities and materials, pedagogical materials that can be supported by a virtual multimodal platform which puts together audio, video, images, links, and other elements should be planned, designed and made available for students. Virtual teaching-learning platforms refer to LMSs which are flexible and multimodal software programs developed on a pedagogical methodology to support the virtual or BL process. Blackboard, WebCT and Moodle[54] are commonly used in distance learning contexts (Carvalho, 2010). The latter, Moodle, was the LMS used in the context of this study as shall be seen in more details in the method section (3.6). The LMS can be considered a parallel classroom where the integration between online and offline activities takes place. Thus, synchronous and asynchronous activities are conducted in class and out-of-class (Hinkelman & Gruba, 2012). When LMSs are fed by the teachers with online and offline activities and other complementary materials, learners can access them from other places and other moments without the presence of the teacher. Naturally, paper-and-pen activities can also be performed the same way. Whether activities are printed or computer

[54] Moodle is an acronym for "Modular Object-Oriented Dynamic Learning Environment". Moodle is a free software used as support and complement to learning, executed in a virtual environment. Moodle official site is: http://Moodle.org/ (Available at: http://Moodle .com.br/site/exemplo-02/, retrieved September, 26, 2011). The Moodle platform is the virtual learning and teaching environment used in all IF-SC campi. That is the reason why this is the platform used in the present study.

mediated, the learning process depends in most part upon students' willingness to learn and his ability to work autonomously in the case of BL, in particular. Therefore, BL promotes more autonomous learners (Carvalho, 2010).

Also according to Carvalho (2010), BL motivates students to discard their role as passive receptors of information to build up novel forms of construction of their own knowledge. Students gain more self-confidence and self-esteem in a hybrid environment and there are features in BL that favor more motivation when compared with pure e-learning environments, for example. The BL environment permits teachers' closeness with their students even in online interaction, because learners can feel the teachers' presence (Carvalho, 2010). It is important to add that, according to Neumeier (2005), motivation needs to be maintained and restored for the success of any learning process (p.175).

Another advantage of BL is the amount of flexibility it can bring to students (Köse, 2010; Neumeier, 2005). For example, students have the freedom to choose performing an online-activity or not since the use of learning materials or communication tools available in a course can be made optional or compulsory (Neumeier, 2005, p. 171). However, for non-experienced CALL users, lots of optional work is likely to provide negative results in the whole course. Thus, more mandatory work should be offered (Neumeier, 2005, p. 171).

A third advantage of BL is the improvement of students' academic achievements provided by the blend of different education techniques and technologies (Köse, 2010). Other advantages of BL in specific contexts are related to cost savings and using a range of educational strategies that catch students' attention to course content. In addition, by mixing FtoF instruction with other educational techniques, students can be allowed to access knowledge from anywhere until they meet FtoF with teachers (Köse, 2010) through LMSs, for instance. Also in accordance with Köse (2010), BL combines different advantages of FtoF education and e-learning guaranteeing a successful learning environment for students. Finally, the author states that, on the one hand, an e-learning system can ensure the flexibility that cannot be guaranteed in a FtoF environment. On the other, FtoF education process ensures the socialization in which the students will require supervision for learning and interacting with their classmates in an improved way.

In sum and to restate, some of the most relevant advantages of teaching-learning in a BL for this study are that it promotes motivation, autonomy, flexibility, socialization and interaction. One of the

advantages worth describing in more detail is the fact that BL promotes interaction. As already stated, the BL environment allows teachers to be closer to learners even in online interaction, because learners can feel the presence of the teacher (Carvalho, 2010). Interaction can be facilitated by the employment of LMSs which combine synchronous (e.g., chat tools) and asynchronous (e.g., forums and e-mails) communication tools which are resources that facilitate communication in distance and BL environments where "FtoF interaction and synchronous or asynchronous computer-mediated interaction coexist and blend with each other" (Neumeier, 2005, p. 174). Learners and teachers interact with each other through different ways. In a FtoF environment, interaction can take place through pair or group work, for example. In a CALL environment Neumeier (2005) states that it can take place through, with, and at computer/network: (1) through computer/network: student to student(s), teacher to student(s), among others; (2) with computer/network: student and teacher to computer; computer to student, and student to computer to different student; and (3) at computer/network: student and student or teacher in collaboration at the computer (p. 173). Finally, LMSs also provide ways for teachers and tutors to give learners electronic feedback, which, in turn, according to Neumeier (2005) and Vetromille-Castro (2003) promotes interaction.

As regards teaching methods, still in accordance with Neumeier (2005), a new method in the BL environment is yet to emerge. For now, what has been done is using a combination of methodologies in both the FtF and in the CALL environment, given the flexibility of BL courses. Additionally, "BL courses are only going to foster successful language learning if they are carefully designed on the basis of an analysis of the participants' needs and abilities" (p. 176). In line with Hubackova et al. (2011), BL used in a EFL/ESP teaching is an example of a very progressive and useful methodology.

Finally, according to Neumeier (2005), while planning and implementing CALL materials, it has become obvious that a systematic examination into the factors that shape the BLL and teaching is missing and much needed. It is necessary to know which arrangement of modes provides the most advantageous basis for language learning and teaching given the specific conditions available. Neumeier (2005) states that the development of BL materials and environments have been led by practice instead of research, although "basing material development on intuitions that are informed by experience has often proved to be a good starting point" (p. 164). Thus, a principled BL approach is needed and in that sense this study contributes to research in the area of CALL,

in general and BL, in particular since, although research in CALL has proliferated, research on BL implementation in L2 instructional settings is still lacking (Hong & Samimy, 2010; Neumeier, 2005), in spite of the fact that BL has been abundantly applied in L2 learning-teaching contexts (Neumeier, 2005).

A Blended Language program seems to be especially appropriate for an ESP course, given that it allows for the customization of learning suiting students' needs, something which would not be feasible in traditional classes (Arnó-Macià, 2012, p. 95). Research into most favorable conditions for the design and implementation of BL in ESP contexts has highlighted the idea that FtoF and online interactions require a more carefully planned and integrated curriculum. How the manifold possible combinations can be optimized for effective teaching-learning is something that requires further consideration. It is a job which requires also a review of the teachers' and learners' roles. They have to adopt flexible roles as experts, tutors, collaborators, and so forth (Arnó-Macià, 2012; Neumeier, 2005).

Repeating Chapelle's (2001) appeal to documenting methodically how CALL shapes language learning, this dissertation provides a careful and detailed description of a study which was carried out in a BLL environment, within an ESP course, where features of CALL were applied.

2.8 CONCLUSION OF THE CHAPTER

Chapter two presented the review of the literature considered relevant for this dissertation and was divided into six sections, apart from the introduction: (1) first, the concept of CALL was reviewed; (2) second, a review of the literature on L2 vocabulary learning was presented, followed by the description of the necessary conditions for vocabulary learning, the issue of language-focused learning, and strategies for L2 vocabulary teaching; (3) third, the literature on CAVL was reviewed; (4) fourth, the concepts of DC and digital literacy were stated and distinguished; (5) fifth, the concept, origins and characteristics of ESP courses were presented; finally (6) the concept and features of BL were offered. Now it is possible to move to the next chapter which will describe the methodology employed in this study.

CHAPTER III
METHOD

3.1 INTRODUCTION

This chapter describes the methodological procedures carried out in order to investigate, primarily, the effects of the integration of CALL on vocabulary acquisition in an ESP course for adults. To this end, the chapter is organized into twelve sections: (1) the first section describes the objectives of the study; (2) the second section outlines the research questions; (3) the third section describes the context in which the study was carried out; (4) the fourth section describes the participants of the study with their profile; (5) the fifth section describes the materials used in the ESP course/study; (6) the sixth section describes the instruments used for data collection; (7) the seventh section describes the procedures employed to measure participants' levels of DC; (8) the eighth section presents the procedures employed to measure participants' level of motivation; (9) the ninth section describes how the statistical analyses were conducted; (10) the tenth section describes the research design, followed by the eleventh section (11) which presents the procedures applied in the study. The last section of this chapter (12) is dedicated to the description of the pilot study carried out prior to the current study.

3.2 OBJECTIVES

This section outlines the goals of this research endeavor. This dissertation is guided by the primary aim of investigating the effects of CALL on the acquisition of new vocabulary in an ESP course for adults. This general goal can be broken down into 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' digital competence along the ESP course and the duration of the study; (3) to investigate the relationship between digital competence and the computer-mediated tests; and (4) to suggest ways in which CALL activities can be integrated into ESP courses for adults.

Having presented the objectives of this study, I will now move to the following section which will present the research questions (RQs) of this study.

3.3 RESEARCH QUESTIONS

In order to reach the objectives of the present study, five 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?

Having presented the five RQs of this study, I will now move to the following section which will present the context in which this study was conducted.

3.4 CONTEXT

The present study was conducted at the Federal Institute of Santa Catarina - IF-SC[55] – in the city of Gaspar, where I work as an English and Portuguese teacher. At this institute, technical programs are offered for free for the population in Gaspar and its neighboring cities (see Section 1.2).

Students are admitted to the technical programs at this institution after passing a competitive public examination. Forty vacancies are offered in each new semester for each technical program. Thus, forty students who have the highest grades are able to register for these programs. One of the programs offered at IF-SC/Gaspar is the two-year technical program in "Basic Computing" (see its curriculum in Appendix CC) which aims at preparing students to be computer technicians (see Section 1.3). In the first semester of the just-mentioned program, students take the following courses, besides the English course: Basic Computing, Computers Architecture, Introduction to Programming, and Administration.

In order to carry out the present investigation, the English course, which is part of the curriculum of the "Basic Computing Program", was given in two different settings, (1) a classroom with 40 desks, a white board, the teacher's netbook computer and a data show/multimedia projector and (2) the computer laboratory with 40 Internet-connected computers, a white board, the teacher's netbook computer and a data

[55] *Instituto Federal de Santa Catarina – campus Gaspar.*

show/multimedia projector. Thus, each student had access to his/her own individual computer with Internet connection in every class taught in the computer lab.

Students' access to the Internet was controlled by the teacher-researcher. For example, when students-participants were invited to take computer-mediated tests (as shall be explained later in this chapter), they had access to the Moodle platform, only, where the tests were found. Thus, they could not access online dictionaries or search sites. When students-participants were not taking a test, they could access everything available on the Internet. However, access to social networks such as MSN, Orkut and Facebook could be limited by the teacher-researcher through a link created by the Information Technology (IT) technicians who work at IF-SC/Gaspar.

Having presented the context in which this study was conducted, I shall now move to the following section which describes the participants of this study.

3.5 PARTICIPANTS

An intact group of 24 students (age range 16 to 48 years, with a mean of 26.6 years) of the English course, enrolled in the evening shift of the technical program "Basic Computing"[56] at IF-SC were the participants of the present study. Although 40 registrations were initially made for this course, only 24 students followed the program and the present study, until the end of the year (a list with reasons for dropping out and mortality rate in the sample can be found in Appendix M). The 24 students had two English classes per week, on the same day - Tuesdays. Each class lasted for 55 minutes, from 06:30 pm to 07:25 pm and from 07:25 pm to 08:20 pm, respectively. Therefore, there was one meeting per week with their English teacher and a total of 40 hours per semester. The English course started on July 26th and finished on December 20th, 2011, totaling 40 hours. Another English course would not be offered along the "Basic Computing" program (see Appendix CC for the entire program syllabus).

The 24 participants of the study answered a general background/survey online questionnaire (the beginning-of-the-term questionnaire) in Portuguese (L1) based on Almeida (2004) in order for

[56] Recap that the original name (in Portuguese) of the program "Basic Computing" is "Técnico Concomitante ao Ensino Médio em Informática" (see Section 1.3). Its main objective is to prepare students for a career in Basic Computing, as already stated.

me to have an idea of the group's profile. The questionnaire assessed, mainly, students' biographical information, linguistic and computing experience, besides levels of abilities and comfort concerning computer use, as can be seen in Appendix B. According to the 24 participants' answers, five of them (20.8%) were women and nineteen (79%) were men. Thus, the majority of the participants were young male adults. Most of them (75%) worked during the day and had already finished high school. Only six participants (25%) had not completed high school and they spent their mornings or afternoons attending high school classes. As regards their linguistic background, all of them reported having had EFL classes at school for about four to eight years. All of them had studied or were still studying in public schools, except for two students (8.3%), who were studying in a private school in the city of Gaspar. These students had two registrations, one in each institution.

As reported by some participants in the semi-structured interviews (described in section 3.7.7), the quality of their EFL classes at their schools was not very good. Only 2 students (8.3%) reported having had some English classes in private language institutes. One of them had been taking an EFL course for two and a half years. All the others had not had any other experience with EFL besides their experience at regular schools. In sum, while this research was carried out, only six participants (25%) were having EFL besides the ESP classes taught at IF-SC which were part of the study. In relation to participants' experience with computers, the analysis of the questionnaire suggests that this was a rather heterogeneous group. They demonstrated several abilities related to computers and felt comfortable performing computer-mediated tasks. Their level of DC at the beginning of the course was not very high, but enough to do the activities proposed in the above-mentioned program. Half of the participants reported preferring working in the computer lab and performing computer-mediated activities instead of pen and paper ones. Finally, most students declared expecting to learn English in order to be able to understand the technical words or terms related to computing.

Having presented the participants of this study, I shall now move to the next section which will present the materials designed for the ESP course.

3.6 ESP COURSE MATERIALS

The materials used in the ESP course were carefully selected and designed in line with the literature reviewed in Chapter 02. I had the intention to plan and design English activities and materials which would complement each other alternating more traditional paper-and-pen activities (without the mediation of technologies) with CALL activities, tests and other materials with the purpose of teaching the ESP course in the context of Basic Computing.

In addition, in the design of the materials, students' necessities were taken into consideration. In this sense, the materials had to consider learners' reasons for learning, students' previous knowledge, besides fostering meaningful language use and trying to break the tradition of memorization of teacher-transmitted knowledge, according to Celani (2008) (see Section 2.9). I did not interfere in the objectives planned for this course prior to this study, and, also, I could carry out the ESP course at the same time, since it was conducted with an intact group of participants.

Hence, the following materials were employed: (1) a booklet with printed texts and activities in English related to Basic Computing (see Appendix L)[57]; (2) digital texts published on the Moodle platform and related activities; (3) hypertexts and related activities; (4) digital and online activities related to Basic Computing; and, finally (5) reference materials displayed on the Moodle platform and on my wiki page: http://teachergiseleifsc.wikispaces.com/[58].

Having presented the materials employed in the ESP course, I will now turn to section 3.7 where I present the instruments used for data collection.

3.7 INSTRUMENTS OF DATA COLLECTION

This study employed a mixed-methods design (Dörnyei, 2007) and adopted both statistical and qualitative analytical procedures to

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[57] These texts and activities were organized in a booklet designed by the teacher-researcher using websites and books related to general English, ESP, and basic Computing. The booklet provided links to relevant sites in the areas of general English, ESP, and basic Computing. Some of these links guided students to specific online activities. For the sake of illustration, Appendix L shows a sample of the booklet.

[58] A *wiki* is a kind of Blog where several pages are created and there can be interactivity with the students. The wiki mentioned here was created through the following Website: www.wikispaces.com/.

triangulate the data. 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 (CPIMpost); (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 on the Moodle platform; (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.

In what follows, the instruments of data collection are thoroughly described.

3.7.1 The Pretest

At the beginning of the course, on August 2nd (08/02/2011), a paper-and-pencil pretest (see Appendix C) was administered. The pretest included three texts and several different questions which tapped participants' previous knowledge, including the following computer-related vocabulary: monitor, screen, display, printer, speakers, mouse, keyboard, case/"tower", motherboard, CPU/processor, (RAM) memory, CD/DVD drive, video card, sound card, hard disk drive, and floppy disk drive, Central Processing Unit, Compact Disk, Electronic Mail, Hard Disk, Laser Printer, Modern Computer, Operating System, Personal Computer, Web Page, Secondary Memory, Primary Memory, Data storage devices, input devices, and output devices.

The 24 participants of this study were not told on the first day of class that there would be a test in the following meeting. Thus, the test was a surprise for all the group. I told them the reason why I was applying the test and asked them to answer the questions they knew. The elements in the test they did not know, they should not worry about. After that, all tests were scored from 0 to 100 and the scores were compared with students' performance on the posttests. In other words, later, students' performance on the pretest was compared with students'

performance on the posttests. However, students came to know about their initial grades, only in the end of the semester.

3.7.2 The Paper-and-pen immediate posttest

On September 27th (09/27/2011), after six weeks of classes, a paper-and-pen immediate posttest (PPIMpost) was administered to the 24 students-participants. It was the same as the pretest in the sense that the lexical items tested were the same (see Appendix D). Participants were told beforehand about the test and were instructed to study for it. Again, all tests were scored by the teacher-researcher using a scale from 0 to 100 and the scores were compared across tests.

3.7.3 The Computer-mediated immediate posttest

On October 04th (10/04/2011), one week after the paper-and-pen posttest, a computer-mediated immediate posttest (CPIMpost) was administered to the 24 students-participants through the Moodle platform. This test was a different version from the first posttest (see Appendix E) and aimed at evaluating the same lexical items as in the pretest. However, other lexical items were included: hardware, software, modem, and power supply, laser printer and ink-jet printer, smartphone, netbook, notebook, handheld computer, tablet, and desktop computer, to accept, to process, to produce, and to store. These lexical items were taught through activities in the printed booklet and through the Moodle platform which was fed with activities weekly. In addition, extra printed materials were prepared by the teacher-researcher whose aim was to reinforce the teaching of new vocabulary either in isolated activities or through the use of reading activities or activities with technical texts.

Participants were informed that they would be tested again and were advised by the teacher to study for the test. Once participants had not had previous experience using the Moodle platform, an online test was simulated and administered in two versions on the Moodle platform. These mock tests were referred to as “Simulado 1” and “Simulado 2”. Thus, when participants took the second immediate posttest, they already knew how the test worked. Once more, all tests were corrected by the teacher-researcher using a scale of 0 to 100. The scores were compared across tests.

3.7.4 The Delayed posttests

On November 08th (08/11/11), at the end of the study, two delayed posttests were administered (1) the computer-mediated delayed posttest (CPDEpost) (see Appendix F), and (2) the paper-and-pen delayed posttest (PPDEpost) (see Appendix G). Both tests were administered in the computer laboratory. As soon as participants finished one test, they started the other. One group (chosen at random) called group 01 (G1, henceforth) took the CPDEpost first and then the PPDEpost while the other group called group 02 (G2, henceforth), took the PPDEpost first and then the CPDEpost. This procedure was adopted in order to control against practice order effects on the tests. The participants of G1 were P2, P3, P15, P20, P18, P12, P10, P19, P16, P17, and P9, and the participants of G2 were P6, P23, P5, P13, P11, P1, P8, P21, and P7.

In sum, G1 took the CPDEpost first and then the PPDEpost and G2 took the PPDEpost first and then the CPDEpost, on the same day, in the computer laboratory. The two posttests aimed at checking whether participants had retained vocabulary over time (one month after the administration of the immediate posttests), in line with Ellis (1995) who puts forward that the effectiveness of vocabulary learning activities are better measured by long-term retention tests (e.g., by means of delayed posttests) instead of by short-term retention (e.g., by means of immediate posttests). Again, the tests were corrected by the teacher-researcher using a scale of 0 to 100 and the scores were compared across tests.

3.7.5 The Beginning-of-the-term questionnaire

A general background online[59] questionnaire (Appendix B) in Portuguese (L1) based on Almeida (2004) was designed to assess participants' biographical information as well as linguistic and computing background knowledge. The questionnaire, applied on August 09th , included 52 items divided into four sections: (1) the first section consisted of 16 questions regarding participants' biographical information such as age, gender, marital status, education, place of work, study, and living and whether they had an Internet-connected computer at home; (2) the second section consisted of six questions related to participants' linguistic (EFL) background knowledge; (3) the

[59] The online questionnaire was designed through a Google tool and was made available through my wikipage: http://teachergiseleifsc.wikispaces.com/

third section contained 10 questions about participants' computer background knowledge and included questions such as the frequency with which they used a computer and/or accessed the Internet; whether or not they liked to have classes in the computer lab and whether they enjoyed performing computer-mediated activities. As for the fourth and last section (4), it was divided into two parts: the first contained nine questions related to participants' ability levels regarding the use of specific computer parts and tools (e.g., the mouse, the keyboard, browsers, search engines, text processors). The second contained ten questions concerning students' levels of comfort while performing specific computer-related tasks (e.g., typing, reading texts, and exchanging e-mails). Appendix N presents all the questions related to levels of abilities and comfort translated to English and designed to measure participants' digital competence levels , as will be explained in section 3.8. Lastly, the 24 participants were also invited to describe their expectations in relation to the ESP course.

3.7.6 The End-of-the-term questionnaire

Another questionnaire (Appendix H) based on Almeida (2004) was administered after three months of classes[60], on November 22nd. Several questions were the same as in the first online questionnaire and aimed at comparing participants' responses in the beginning of the course with their responses in the end of the course, at least in part. This end-of-the-term questionnaire also aimed at checking participants' level of motivation when they performed specific tasks on the computer.

The questionnaire consisted of 45 items organized into five sections: (1) the first section contained eight statements regarding participants' preferences concerning the use of the computer and the Internet; (2) the second section consisted of nine questions related to participants' abilities in using specific computer parts, tools, and performing specific tasks (e.g., using the mouse, the keyboard, forums, browsers, search engines, text processors, e-mails, and chatting); (3) the third section contained ten questions assessing participants' comfort levels in performing other specific tasks in the computer (e.g., typing, reading texts, exchanging e-mails, listening to music, watching movies, and finding information on the Internet), similarly to the first questionnaire. As for the fourth section (4), it consisted of five questions

[60] This online questionnaire was also designed through a Google tool and was made available through my wikipage: http://teachergiseleifsc.wikispaces.com/

with respect to participants' motivation levels regarding five specific activities performed through the computer: using an online dictionary, using search engines (e.g., Google), reading online texts about computing in English, doing English online activities and reading their classmates posts in the forums. The fifth and last section (5) contained 12 questions assessing participants' opinions about interactions and feedback. Participants were also asked which activities they enjoyed performing the most. Besides the five sections, participants were invited to state whether their expectations in relation to the ESP course were met.

The analysis of participants' answers to both questionnaires will be presented in Chapter 04 and discussed in Chapter 05.

3.7.7 The oral semi-structured interview

At the end of the course, individual oral semi-structured interviews with some students chosen at random were conducted (see Appendix I) only in order to have more information regarding their impressions and opinions about the ESP course. Specific questions were also asked to confirm information obtained from both online questionnaires and the forum posts.

I decided for individual oral semi-structured interviews for two reasons, namely (1) I could modify the questions at the moment I was asking them and, therefore, ask other questions that came to my mind, and (2) the individual responses could be compared to each student's performance on the pretest and the posttests. All interviews were recorded and kept for future analysis.

3.7.8 Field notes

Throughout data collection, I took some relevant field notes registering observations in respect to learners' attitudes, reactions, and behavior, in general, during the classes. My objective was to gain awareness of students-participants' level of acceptance regarding both environments where the classes were conducted. Additionaly, the field notes aimed at verifying students-participants' level of acceptance towards the traditional activities besides the CALL activities and the exams applied by me. Accordingly, I could make changes along the ESP course, if necessary, in order to keep them motivated and engaged all the time.

3.7.9 The forums on the Moodle platform

Eleven topics were created on the Moodle platform so that participants always had a new activity every time they went to the computer lab. Participants were asked to express their opinions about various items in the ESP course, by posting their comments in each new forum. However, since the forums were not mandatory, not all participants did so. All posts left by the teacher and by the students are shown in Appendix J and were used to triangulate the data. Chapter 04 will present the analyses of the forum posts.

3.7.10 Students' self evaluations

On November 22nd, the participants were also invited to write a paragraph evaluating the ESP course and their performance along the semester, up to that moment. Students wrote their paragraphs and sent them to me by means of one of the Moodle resources. Their original paragraphs in their L1 can be seen in Appendix Q. Twenty two students sent their self-evaluations. Chapter 4 will present the self-evaluations during data analyses and Chapter 5 will bring a discussion about them, triangulated with the other instruments of data collection.

Having described the instruments employed for data collection, I shall now move to the next section which will describe the procedures I followed in order to measure participants' level of DC.

3.8 MEASURES OF DIGITAL COMPETENCE

In order to measure participants' level of DC at the beginning of the course (DC1, henceforth) and, still according to Almeida (2004), the answers to the questions from the fourth section of the beginning-of-the-term questionnaire were analyzed. The just-mentioned questions addressed participants' ability to use specific computer parts and tools (e.g., mouse, keyboard, printer, browsers, search engines, text processors, and others), besides their level of reported comfort to perform specific tasks on the computer (e.g., typing, reading texts, and exchanging e-mails) as already stated earlier in this chapter (see Appendix N). To that end, the following formula was employed:

$$DC = \frac{(A \times 2) + C}{3}$$

In the above formula, “DC” is the index/level of digital competence, which is the weighted arithmetic mean (Stevenson, 1981) of the values corresponding to the abilities and comfort levels with computer-Internet resources. These levels could vary from 0% to 100%. Also in the aforementioned formula, “A” corresponds to the ability to use computer-Internet resources, which is the weighted arithmetic mean of the percentages attributed to the answers provided by the specific Likert-scales of the beginning-of-the-term questionnaire (Appendix B). Thus, the following criterion was employed to arrive at the final means percentages.

1 Null – 0%
2 Weak – 25%
3 Good – 50%
4 Very good - 75%
5 Great – 100%

According to the above-mentioned criterion, every time a participant selected “1” in the 5-point Likert scale, I attributed 0% for that selection. Similarly, for each level “2” chosen, the value of 25% was given. For level “3”, 50% was given, for level “4”, 75%, and, lastly, 100% was given for the participants who selected level 05 in the scales concerning ability levels. To exemplify, one of the statements of the just-mentioned questionnaire is displayed next:

Escolha o nível que melhor descreve a sua habilidade em trabalhar com o teclado e as funções de cada tecla (“Esc”, “Ctrl”, “Alt”, “Del”...)					
	1 (0%)	2 (25%)	3 (50%)	4 (75%)	5 (100%)	
Nula	○	○	○	○	○	ótima

Note: the percentages were not presented to the participants.

Finally, “C” corresponds to “comfort” which is the arithmetic mean of the percentages attributed to the answers of the beginning-of-the-term questionnaire, following to the subsequent criteria:

1 Very uncomfortable - 0%
2 Uncomfortable – 25%
3 A little comfortable – 50%
4 Comfortable – 75%
5 Very comfortable – 100%

Using the same methodology for calculating the ability level, every time a participant selected "1" in the 5-point Likert scale, I attributed 0% for that selection. Similarly, for each level "2" chosen, the value of 25% was given. For level 3, 50% was given, for level 4, 75%, and, finally, 100% was given for the participants who selected level 05 in the scales regarding comfort levels.

Still following Almeida (2004), for the calculation of the DC, the level of the abilities to use computer-Internet resources was multiplied by 2 because it was considered more relevant than the level of comfort. Then, the ability level (x 2) was added to the comfort level and this result was, at last, divided by three.

As for the level of DC2, again, participants' level/index of DC was measured, this time with basis on the participants' answers to the end-of-the-term questionnaire (Appendix H). The answers which were taken into consideration belonged to the second section of the questionnaire which presented nine questions regarding participants' ability and comfort levels to use specific computer and Internet tools. Recapitulating, these questions were also asked in the beginning-of-the-term questionnaire. The calculation and formula used this time were also the same as the ones used to measure the level of DC1, already presented in this subsection. Lastly, the values obtained for the DC1 and DC2 of each participant are displayed in Table 2.

Table 2
Participants' level of DC1 and DC2

Participants	DC1	DC2
P1	59%	67%
P2	45%	70%
P3	56%	85%
P5	94%	95%
P6	81%	62%
P7	82%	85%
P8	43%	69%
P9	31%	34%
P10	89%	92%
P11	65%	67%
P12	98%	96%
P13	68%	77%
P15	63%	52%
P16	69%	74%
P17	85%	85%
P18	56%	66%
P19	46%	70%
P20	58%	80%
P21	93%	96%
P23	94%	100%
Means	**69%**	**76%**

As presented by Table 02, participants' level of DC1 was measured before the application of the ESP course and their level of DC2 was measured at the end of the course. The total means of DC1 was 69% and of DC2 was 76%, demonstrating an increase in the participants' level of DC along the study. Further discussion regarding these results will be seen in section 4.4 (Chaper 4).

In line with the exploratory nature of this research, the reason why I decided to measure students' levels of DC was that I wanted to determine whether the integration of CALL in the ESP classes, caused students to develop their DC levels. You may recall that a secondary goal of this study was to investigate if there was any development of participants' DC level as already stated in Section 3.2. In addition, I had the intention to compare students' levels of DC with their performance on the computer-mediated tests as shall be seen in Chapter 04.

Next, I will describe the procedures adopted to measure the levels of students' motivation.

3.9 MEASURES OF MOTIVATION

Participants' levels of motivation at the end of the course were measured following Almeida (2004), although Almeida (2004) was interested in calculating participants' level of acceptance of online tasks so as to compare this level with the level of DC. In order to do so, Almeida (2004) took into consideration students' answers regarding their level of motivation in performing ten (10) specific tasks on the computer and the Internet and, also, students' answers to a specific question about students' perceptions regarding the online tasks. Conversely, I had a different goal for the end-of-the-term questionnaire which aimed at, also, tapping participants' level of motivation. This motivation level was calculated according to the answers to five questions in the fourth section of the just-mentioned questionnaire (Appendix H). The questions were related to computer-based activities (e.g., using an online dictionary, using search engines, reading online texts about Computing in English, doing English online activities, and reading students' posts in the forums).

Differently from Almeida (2004), I did not intend to compare participants' levels of motivation or levels of acceptance to online tasks with participants' levels of DC. The ultimate objective of measuring participants' motivation level was to see if there would be any relationship between participants' levels of motivation and their performance on the posttests. Thus, following Almeida (2004), the percentages attributed to each level of the 5-point Likert scale were the following:

1 Very demotivated – 0%
2 A little demotivated – 25%
3 Indifferent – 50%
4 Motivated – 75%
5 Very motivated – 100%

By way of explanation, in the forth section of the end-of-the-term questionnaire (Appendix H) there were five (5) statements: (1) using an online dictionary, (2) using search engines, (3) reading online texts about Computing in English, (4) doing English online activities, and (5) reading students' posts in the forums. For each statement, the participants had to select in a 5-point Likert scale their level of motivation (1 = very demotivated to 5 = very motivated) concerning the just-mentioned statements. For each selected level, a percentage was

given. For instance, if a participant had selected level "1", I attributed 0%. If the participant chose level "2", I attributed 25%, and so on. Lastly, I calculated participants' means percentage taking into consideration their answers to the five (05) statements. Consequently, the values for each of the 20 participants (n = 20) who answered the second online questionnaire, can be visualized in Table 3.

Table 3
Participants' level of motivation

Participants	**Motivation Level**
P1	60%
P2	10%
P3	50%
P5	60%
P6	100%
P7	80%
P8	80%
P9	70%
P10	55%
P11	90%
P12	60%
P13	85%
P15	75%
P16	45%
P17	85%
P18	75%
P19	70%
P20	75%
P21	70%
P23	80%
General means	**69%**

As indicated by Table 3, the total means of the group of 20 participants was 69%, measured at the end of the ESP course. Further discussion on this matter will be seen during the correlational analyses in section 4.4 of the results chapter (Chapter 4) and in Chapter 5.

Having described the procedures I made use of in order to measure participants' levels of DC and motivation, I will now move to

the following section which will describe how the quantitative dataset were analyzed statistically.

3.10 STATISTICAL ANALYSES

To reiterate, this study employed a mixed-methods design (Dörnyei, 2007) since part of the data was analyzed statistically and part qualitatively. This section will describe the procedures employed to analyze the quantitative dataset statistically. Two types of analysis, generally speaking, were conducted: comparisons of means and correlations.

The statistical analyses were performed using the Statistical Package for Social Science (SPSS) - Version 19.0, and comprised descriptive statistics, comparison of means, and correlations. All comparisons of means and correlations were two-tailed and the alpha level for all statistical tests was set at .05.

In what follows, I will first describe the methods used for the comparisons of all the means and then I will describe the procedures used for the correlational analysis, in the next paragraphs.

3.10.1 Comparison of means

This subsection will describe the statistical analysis of participants' performance on the five tests used in the study:

(1) the pretest;
(2) the paper-and-pen immediate posttest (PPIMpost);
(3) the computer-mediated immediate posttest (CPIMpost);
(4) the paper-and-pen delayed posttest (PPDEpost); and
(5) the computer-mediated delayed posttest (CPDEpost).

In order to investigate the effects of CALL on the acquisition of L2 vocabulary, descriptive statistics for the five tests were computed through the SPSS program. Then, the Shapiro-Wilk test was used to determine whether the distribution of each dataset differed significantly from a normal distribution. Results showed that only the dataset of the pretest were normally distributed. The dataset of the four posttests differed significantly from a normal distribution.

After running the Shapiro-Wilk test to determine whether all the dataset was normally distributed, the statistical methodology was decided. Non-parametric tests were run since it was verified that the dataset originated from the posttests were not normally distributed.

Therefore, the Friedman complete blocks design, a non-parametric test, was used in the comparison of the five conditions together. The results (Chapter 04) showed significant differences, especially in the pretest, if compared with the posttests.

After that, post hoc Wilcoxon signed-rank tests were carried out in order to identify specific differences between the means. To reiterate, pair wise contrasts for mean differences of the conditions between tests were done through Wilcoxon signed-rank tests to compare the mean scores. Thus, the tests were compared, and ten pairs were formed: Pretest x PPIMpost; Pretest x CPIMpost; Pretest x PPDEpost; Pretest x CPDEpost; PPIMpost x CPIMpost; PPIMpost x PPDEpost; PPIMpost x CPDEpost; CPIMpost x PPDEpost; CPIMpost x CPDEpost; and, finally CPDEpost x PPDEpost.

As already explained in subsection 3.7.4, participants were divided into two groups (G1 and G2) to take the delayed posttests in different orders. In this sense, G1 took the CPDEpost first and then the PPDEpost and G2 took the PPDEpost first and then the CPDEpost, on the same day, in the laboratory. You may recall that this procedure was adopted to control against practice order effects. The two tests aimed at checking whether participants had retained vocabulary over time. The Mann-Whitney U Tests (MWUTs) were employed considering that the two samples (G1 and G2) are independent. In sum, MWUTs were used to compare mean scores of both delayed tests performed by the two groups.

3.10.2 Correlational analyses

After applying statistical tests to the dataset derived from students' performance in the five tests to verify differences in their performance, correlational tests were employed to test whether there was any relationship between participants' level of DC1 and participants' level of DC2. Additionally, it was verified whether there was any relationship between participants' level of DC2 and their performance on the computer-mediated posttests. Finally, it was also verified whether there was any correlation between participants' level of motivation and the four posttests. To this end, correlational tests were applied as well.

In order to decide which correlational tests to use, firstly the Shapiro-Wilk test was applied to the dataset to check for normal distribution. The dataset derived from the levels of DC1 and DC2 were normally distributed. Therefore, the Pearson product-moment

correlation test (Pearson's r) was used to compare both levels. The same pattern was observed in the dataset derived from the levels of motivation. However, as regards students' performance on the posttests, the dataset was not normally distributed. Consequently, a non-parametric test had to be used, namely the Spearman's rank correlation test or Spearman's rho, in order to compare students' performance on the posttests and their levels of motivation.

One of the aims of the correlational tests used was to find out if there was an increase on participants' level of DC along the ESP course and the duration of the study. Additionally, correlational tests were employed to investigate the relationship between participants' level of DC and their performance on the computer-mediated posttests and between participants' level of motivation and their performance on the posttests. The reasons why I decided to investigate the relationship between these variables were already stated in sections 3.8 and 3.9. The next chapter (Chapter 04) will provide the results of all the statistical tests.

After explaining how the quantitative dataset were analyzed statistically, I will now move to the next section which will present the design of this research, followed by the description of the procedures specifically designed for this study, as well.

3.11 RESEARCH DESIGN

Aiming at addressing the research questions of the present research, a research design was employed as can be seen in Table 4.

According to Table 4, the present study was conducted with 24 participants who performed one pretest before the ESP course, followed by two immediate posttests, and two delayed posttests after the course. The tests were administered in four different phases of the research and were counterbalanced to avoid practice effects.

Table 4
The research design

Phases, classes, Period	**Design**
Participants: N=24	
1st phase	
1, 2 (Aug.)	paper-and-pen pretest (diagnostic test).
3, 4 (Aug.)	beginning-of-the-term questionnaire
2nd phase	
5-18 (Aug./Sept.)	ESP course
3rd phase	
19-22 (Sept.)	paper-and-pen immediate posttest
23, 24 (Oct.)	computer-mediated immediate posttest
25, 26 (Nov.)	Feedback on the posttests and administration of other activities not related to the tests
4th phase	
27, 28 (Nov.)	paper-and-pen and computer-mediated delayed posttests
5th phase	
29, 30 (Nov.)	end-of-the-term questionnaire

In addition, two online questionnaires were administered: one in the first phase of the research and the other on the fifth and last phase. All data collection instruments were already described in section 3.7 of this chapter.

Next, the following section will describe the procedures employed in this study.

3.12 Procedures

In order to reach the goals stated in the beginning of this chapter, a series of procedures were followed and will be described in this section (see Table 5). Participants of the study were preparing themselves to be Computer Technicians after completing a two-year Technical Program. The 40-hour English course which is part of the Technical Program is offered just once in the program and in the first semester only. It is understood in this course that students' needs are

basically understanding and improving their vocabulary in English related to Basic Computing. Thus, the texts and activities chosen/selected and applied in this study tried to meet these students' necessities, as previously stated in section 3.6.

As already mentioned in the review of the literature in this study, an ESP course consists traditionally and mainly, of reading comprehension activities and those to promote the development of reading strategies. Yet, this study also acknowledges the fact that other abilities/skills besides reading should be integrated in an ESP course (e.g., listening and writing), in order for the course to be more dynamic and motivating, leading to better retention of L2 vocabulary. Also, activities which involve integrated skills such as listening and writing, or reading and writing, or reading and listening, for example, may supposedly, cause positive effects on the retention of new vocabulary in English, as well. To restate, I tentatively suggest that activities that integrate two or more skills might promote better retention of vocabulary in another language.

You may recall that the main objective of this study was to verify the effects of CALL in the acquisition and retention of vocabulary in an ESP course and, to that end, specific procedures were used with the group of participants in two different conditions: with and without the mediation of the computer and in two different settings: in a traditional classroom and in a computer laboratory, as can be seen in Table 5.

Table 5
Meeting/dates, classes, summary of procedures and settings

Period/ Classes	**Procedures**	**Settings**
02/08/11 Classes 1, 2	Introduction of the teacher, the group and the booklet; distribution of the Letter of Consent; and administration of the paper-and-pen pretest.	Whole group in the classroom
09/08/11 Classes 3, 4	Administration of paper-and-pen activities; Continuation of introduction to the booklet; administration of the beginning-of-the-term online questionnaire; introduction to Moodle platform and the virtual environment of the ESP course.	Whole group in the classroom first, and then in the lab

Period/ Classes	Procedures	Settings
16/08/11 Classes 5, 6	Administration of paper-and-pen activities: wordsearch and two vocabulary tests: L2/L1 and L1/L2; types of computers, computer parts (booklet unit 1); administration of computer-mediated activities: video presentation ("Types of computers") and "introductions" (1st forum at Moodle - topic 01).	Whole group in the classroom first, and then in the lab
23/08/11 Classes 7, 8	Administration of paper-and-pen activities: Acronyms (booklet, unit 1) and correction/feedback of the two vocabulary tests; administration of computer-mediated activities: video presentation ("Learn English: Computers") and "Acronyms" (Glossary at Moodle - topic 2).	Whole group in the classroom first, and then in the lab
24/08/11 Classes 9, 10, 11, 12[61]	Administration of paper-and-pen activities: Acronyms (in the booklet – Review and other acronyms); "Input, Output and Storage devices": new vocabulary (booklet) and slide presentation about the topics; cognates (booklet); administration of computer-mediated activities: video presentation ("Learn about computers"), and the 2nd forum: "Opinion about the use of computers/Internet in the English classes" (Moodle topic 3).	Whole group in the classroom first, and then in the lab
30/08/11 Classes 13, 14	Administration of paper-and-pen activities: review on cognates; false cognates (extra material – handouts and booklet); "Nominal groups" (Booklet unit 1), and extra English exercise (handout) on vocabulary related to computers; administration of computer-mediated	Whole group in the classroom first, and then in the lab

[61] Exceptionally.

Period/ Classes	Procedures	Settings
	activities - video presentation: "Understanding the parts of your computer" and Online Crossword (Moodle topic 4).	
13/09/11 Classes 15, 16	Administration of paper-and-pen activities: written exercise about computer parts and verbs (review); Feedback/correction of the exercise given on August 30; administration of computer-mediated activities and a simulation of an online test (Simulado 1 - Moodle topic 5).	Whole group in the classroom first, and then in the lab
20/09/11 Classes 17, 18	Administration of paper-and-pen activities: written exercise about computer parts and hardware; "The Motherboard" (booklet unit 2); "How to install a motherboard" (booklet unit 2 – to be continued); Administration of another simulation of an online computer-mediated test (Simulado 2 - Moodle topic 6).	Whole group in the classroom first, and then in the lab
27/09/11 Classes 19, 20, 21, 22[62]	Presentation of a video: "How to install a motherboard" (booklet unit 2; Moodle topic 7); Administration of the paper-and-pen immediate posttest and a dictation of ten words and nominal groups.	Whole group in the classroom
04/10/11 Classes 23, 24	Administration of the computer-mediated immediate posttest; Glossary: "computer parts" on Moodle (topic 8); 3rd Forum: participants' opinions about the activities published in topic 8.	Whole group in the classroom first, and then in the lab

[62] Excepcionally.

Period/ Classes	Procedures	Settings
01/11/11 Classes 25, 26	Feedback, comments and correction of the activities	Whole group in the classroom first, and then in the lab
08/11/11 Classes 27, 28	Paper-and-pen and computer-mediated delayed posttests.	Whole group in the lab
22/11/11 Classes 29, 30	Feedback on the tests taken on November 08th. Answer to the end-of-the-term online questionnaire. Students' self-evaluations (via Moodle).	Whole group in the classroom first, and then in the lab.

According to Table 5, a series of reading comprehension and vocabulary activities were employed during the course (13 meetings or 30 classes/hours). Half of them were printed and the other half was on the Moodle platform (virtual). These two types of activities – printed and digital – were as similar as possible in content and design, the difference being only the means of presentation. All computer-mediated (CALL) activities involved the use of an Internet-connected computer to access pages with texts to read, consult online dictionaries, or solve online exercises inside Moodle or by accessing external links.

On the first meeting with the group, all participants signed a consent form agreeing to participate in the study (Appendix A).Those participants who were under 18, asked their parents to sign the letter of consent. Participants had their names changed by numbers to protect their identities. In the same meeting, a paper-and-pen pretest (Appendix C) was administered in the classroom in order to verify Basic Computing in the English Language background knowledge (see subsection 3.7.1). In the second meeting, the teacher took the group to the computer lab where they answered the beginning-of-the-term online questionnaire (Appendix B).

From the third to the eighth meeting, the teacher administered paper-and-pen activities in the classroom and computer-mediated activities in the computer laboratory. That is, I applied the ESP course

specially designed to the group. Table 5 shows when the meetings with the whole group took place (dates), the summary of the procedures, and the settings where the classes occurred. The paper-and-pen and the computer-mediated immediate posttests were administered in different meetings with the group, immediately after the ESP course.

About a month after the administration of the immediate posttests, the PPDepost and the CPDepost were administered in the same meeting at the computer lab (see subsection 3.7.4).

At last, on November 22nd, I provided students the feedback of the delayed tests and, also, asked them to answer the end-of-the-term questionnaire. Subsequently, I asked them to write a short paragraph evaluating the course and their performance along it. The students were supposed to deliver this self-evaluation by means of the Moodle platform, on the same day, or later (see appendix Q).

The period of this study, then, finished on November 22nd. After that, the English course continued normally, following the original course plan. It came to an end in late December.

Finally, after presenting the description of the procedures specifically designed for this study, I will now move to the following and last section of this chapter which will present the procedures of the pilot study that was carried out prior to this study.

3.13 THE PILOT STUDY

This section aims at describing the pilot study (Cardoso, 2011) which was conducted prior to the present study in the first semester of 2011 with another group of students.

The pilot study had two purposes: (1) to investigate participants' reactions, perceptions, impressions and attitudes concerning the use of CALL in an ESP course and (2) to test specific instruments of data collection which will be described in this section.

3.13.1 Context and Participants

The participants of the pilot study were 34 adult students enrolled in Computer Science Technical Program at IF-SC/Gaspar. This program was the same as the one observed in this study, and, consequently, has the same curriculum (see appendix CC). Their ESP teacher was also this researcher. In sum, the context and the teacher were the same. The participants were different, though.

The study was conducted in an intact classroom environment where the ESP course was taught and at the computer lab with 40 Internet-connected computers. Recall that there were 34 participants in the study and so there was one Internet-connected computer per student-participant. No Websites were blocked while the pilot study was carried out so unlike the present study, participants in the pilot study had free access to the Internet.

According to the participants' answers to an online survey questionnaire, some conclusions could be drawn regarding their profile. The online survey questionnaire showed that 79% of them had computers and Internet at home and accessed the Internet on a daily basis. Also, 62% remained connected to the Internet for 1-3 hours every day and 32% accessed MSN first and 29% accessed Orkut as soon as they connected to the Internet at home. Additionally, 29% reported that chatting with friends through MSN is what they liked to do on the Internet the most and 21% stated that they enjoyed to play games the most on the Internet. Eighteen percent (18%) of the participants declared they preferred to chat with friends through Orkut. Finally, other participants reported that they preferred to do school homework, read the news and informative texts, send scraps (messages) to friends, and read and write e-mails on their Internet-connected computers. Only 23% of the respondents had studied or were studying EFL in a private language institute. Finally, all participants had had EFL classes at school before.

3.13.2 Instruments of data collection and analysis

The instruments of data collection employed for the pilot study were the following: (1) two online questionnaires; (2) oral and individual semi-structured interviews; and, finally, (3) students' posts in the forums on the Moodle platform. All data were analyzed qualitatively.

The two online questionnaires[63] were administered to the participants by means of my wiki page (http://teachergiseleifsc.wikispaces.com)[64] which was created especially for the ESP course. The first questionnaire aimed to find out participants' personal data, their linguistic background knowledge in the English language, their use of Internet-connected computers, and their

[63] These questionnaires were elaborated using a Google tool available at http://www.google.com.br/.
[64] The term *wiki* was already explained in section 3.6.

experiences with computers. The questions of the second questionnaire tapped participants' opinions regarding the materials used in the ESP course.

Participants were also interviewed orally and individually in order to clarify issues in the questionnaires and their posts in the forums[65]. All interviews were recorded and saved for further analysis.

The forums served as instruments of asynchronous communication and interaction among the members of the group and between them and the teacher-researcher. Participants received constant electronic and motivational written feedback from me about their posts to which they contributed on a volunteer basis since no credit was offered for participating in the discussion forums. Participants were encouraged to make a weekly contribution by posting comments in the forums available on Moodle. The forum questions aimed to promote interaction since the forums were an environment where students could leave their opinions in respect to the ESP classes at the computer lab.

In sum and as already stated, data were gathered through two online questionnaires, oral and individual semi-structured interviews and, finally, through students' posts in the forums on the Moodle platform. All data were analyzed qualitatively and no statistical analytical procedures were adopted.

3.13.3 Materials

To reiterate, the goal of the pilot study was to investigate students' reactions, perceptions, impressions and attitudes concerning the use of CALL in an ESP course. The following materials were used to investigate that issue: (1) a booklet organized by the teacher-researcher (in both printed and digital versions) with several links to sites with English activities which could be performed online or sites only with information about the English language; (2) activities on the wiki page created for that course by the teacher-researcher; (3) activities on the Moodle platform and, (4) complementary printed/traditional activities (without the mediation of technology). All materials were specially tailored for this group considering the needs of the English course[66].

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[65] Forums were opened in the virtual learning and teaching environment of the course: Moodle, and available at: http://moodle.gaspar.ifsc.edu.br/

[66] The specific objectives of the 40-hour English course (translated to English) are: (1) to read and interpret texts related to Computing in the English language; (2) to construct

CALL was integrated in the ESP course by means of the use of: (1) asynchronous (e.g., e-mails and forum posts) and synchronous interaction (e-chats) and communication tools; (2) online research of new vocabulary and computing terms; (3) search engines (e.g., Google); (4) my wiki page; (5) videos in English retrieved from a video site (http://www.youtube.com/), and (6) online activities on the Moodle platform distributed in ten different topics. In sum, there were two kinds of activities: the paper-and-pen/traditional activities (without the mediation of technology) and the computer-mediated (CALL) activities. Both of them were similar in design and different in relation to the means employed.

3.13.4 Data analysis and discussion

In order to systematize the data obtained through the posts in the forums on the Moodle platform and the answers to the two online questionnaires the data were organized into categories. First of all, so as to investigate participants' reactions regarding the computer-mediated activities on Moodle, I asked participants to express their opinions about them in one of the forums. In general, participants claimed to enjoy working with the Moodle platform and declared they liked the activities proposed by the teacher. However, one participant was indifferent and reported that for him, it did not matter whether the activity was performed on Moodle or whether it was a printed activity.

> *Eu gosto das tarefas no MOODLE, mas pra mim é indiferente se for no papel ou no MOODLE mesmo, eu aprendo das duas maneiras, não tenho preferência por nenhuma atividade, o que conta é o aprendizado.*

Second, as regards DC and L2 knowledge, the analysis of the answers to the questionnaires and messages posted by the 34 participants led me to the conclusion that these learners had a sufficient level of DC and had basic knowledge of English since they were capable of performing the activities on Moodle easily, in spite of the fact

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knowledge, accessing different technologies fostering citizenship and the insertion of individuals in the work market; and (3) the use of the English language as an access tool to information, in accordance with the memorandum of the course "Inglês Técnico"/ESP of the technical program "Técnico Concomitante ao Ensino Médio em Informática"/Basic Computing at IF-SC/Campus Gaspar (2010).

that I had not measured the level of DC with deeper scrutiny if compared to this study.

Third, participants were asked in another forum about their opinions regarding the use of the computer and the Internet in the ESP course. Around 62% of the group evaluated it as positive. Thirty-five per cent (35%) indicated that using the computer and the Internet in the ESP course was beneficial since students could solve their questions and doubts about new vocabulary in English by using online dictionaries. By way of example and not limitation, the following excerpts taken from the forums serve to illustrate the aforementioned findings:

> *Outro ponto importante seria mencionar que todo material colocado no computador não ensina somente o Inglês mas também aprimora outras áreas*
>
> *Eu gosto das atividades no MOODLE, acho elas legais, não vejo nada contra elas..*
>
> *...sempre que entrarmos no MOODLE tem algo para fazermos nesta disciplina....*
>
> *as atividades do MOODLE são otimas, faceis de compreender, esta disponivel a qualquer momento, se quisermos refazer em casa ou antes de estudar pras provas.....*

On the other hand, 10% of the participants evaluated, at the same time, positively and negatively, the use of the computer and the Internet in the English classes, presenting some disadvantages that the free, simultaneous and easy access to the Internet could bring to the academic development. They also criticized the easy access because it motivated them to do other things[67] leading them to be distracted and not able to pay attention to the classes. There seemed to be more chances for them to be distracted in the computer lab, in spite of the fact that the teacher did not allow them to access sites that did not refer to the course.

Finally, participants made comments that highlight the value, relevance, significance, and importance of the ESP classes in the computer lab. By way of illustration, two participants declared:

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[67] For example: play games, chat with classmates through the chat tool on Moodle, or visit sites that had nothing to do with the classes, as was observed by the teacher frequently.

ficamos diretamente ligados com o curso de informática aprendendo cada vez mais recursos

o curso é de informática então aprendemos exatamente o que vamos usar nas outras matérias.

In general, participants reported feeling comfortable working in the computer laboratory, although six students reported they were indifferent to the place where the ESP classes were taught.

In the second online questionnaire, participants were also asked their opinions regarding the wiki page created by the teacher and most of them reported that it was a necessary tool. By consulting the wiki page, students had access to links to online dictionaries. It was observed that, while consulting online dictionaries, students performed activities more rapidly, because they soon found the meanings of the new words they were looking for. Also, students asked little support to the teacher while performing the activities, because with the help of the Internet, they could solve their doubts in a more independent and autonomous manner.

Finally, the most important roles of the Internet for the participants, in this case, were: (1) to provide access to Moodle (which was the virtual place for synchronous and asynchronous interaction which registered everything the learners did inside the platform and served as a source for study and consultation when students were at home or at school) and (2) to provide access to different reference sources (e.g., online dictionaries or the Google translation tool[68]). This may have contributed to participants' autonomy and for the development of the capacity to solve, in an autonomous manner, problems of vocabulary and text comprehension.

[68] I observed that the sources that were utilized the most in the Internet were: Google translator (http://translate.google.com.br/) and Michaelis online dictionary (http://michaelis.uol.com.br/moderno/ingles/index.php). The latter was the one recommended by the teacher. However, specialized technical dictionaries in the area of Computing were also suggested by the teacher through the wiki page. For example: http://dictionary.reference.com/, http://quark.fe.up.pt/cgi-bin/orca/glossario, http://www.dicweb.com/index.htm, and http://www.techterms.com/,http://www.clubedohardware.com.br/dicionario/all.

3.13.5 Conclusions of the pilot study

Overall results of the pilot study point to the conclusion that its participants thought that both the traditional classroom (without computers) and the computer lab (with individual personal computers for each student) are appropriate places for learning English. Also, CALL activities should be interspersed with other activities in the traditional classroom where face-to-face interactions occur, promoting more interaction, motivation, and engagement. In addition, the aforementioned results are in line with several authors' ideas (e.g., Arnó-Macià, 2012; Neumeir, 2005) regarding Blended Language programs (see section 2.7).

Moreover, the instruments employed in the pilot study (the online questionnaires, the interviews, and students' posts in the online forums) have shown to be appropriate instruments for data collection. For that reason, they were replicated in the present study.

Finally, regarding the content of the ESP course, results of the pilot study suggest that it does not need to be linked to the teaching of reading strategies and reading and interpretation of technical texts only. Other skills can be developed with digital tools to practice listening and writing skills, for instance. This way, an ESP course can go beyond the limits of printed materials, such as books, incorporating other sources of linguistic and digital input and practice.

3.14 CONCLUSION OF THE CHAPTER

In Chapter 03, the objectives of this study were restated and the research questions were presented with the context, the participants of this study and the group's profile followed by the presentation of the materials and instruments of data collection. After that, the procedures to determine learners' levels of DC and motivation in performing specific activities on the computer were presented followed by the description of the statistical analyses, the research design, and the procedures employed in this study. Finally, the pilot study conducted before the present study was described.

The next chapter (Chapter 4) outlines and discusses the results of this study.

CHAPTER IV
RESULTS

4.1 INTRODUCTION

As already stated in Chapter 03, the first and main goal of this study was to investigate the effects of Computer Assisted Language Learning (CALL) on L2 vocabulary acquisition in an English for Specific Purposes (ESP) course. Aiming at reaching this goal, the following research question was asked: "What are the effects of CALL on the acquisition of new vocabulary in English in an ESP course for adults?". With the aim of providing a response for this research question, participants' performance on the five tests were run on the SPSS software and analyzed statistically. The results of the statistical tests will be presented in this chapter in section 4.2.

The second goal was to analyze the reactions, perceptions, and attitudes of ESP students towards the use of CALL activities. In order to reach this goal, the following RQ was asked: "What are the participants' reactions, perceptions, and attitudes towards the use of CALL activities in the ESP classes?". To answer the just-mentioned RQ, the following sources of data were compiled and analyzed qualitatively: (1) students' answers to the two online questionnaires, (2) students' posts in the forums on the Moodle platform, and (3) students' self evaluations. All these data were analyzed qualitatively and the analysis will be found in this chapter in section 4.3.

As for the the third goal, it was to find out if there was any increase of the participants' level of DC along the ESP course. With the objective of attaining this goal, the following RQ was asked: "Was there any increase of the participants' digital competence from the beginning to the end of the ESP course?".

The fourth goal was to investigate the relationship between DC and the computer-mediated posttests. With the aim to achieve this goal, the following RQ was asked: "Was there any relationship between digital competence and the computer-mediated tests?". In order to reach the third and fourth goals, statistical correlational tests were employed, also by means of the SPSS program and the results will be presented later in this chapter in section 4.4. Finally, the fifth goal was to investigate the ways CALL can be integrated into ESP courses for adults. Aiming at reaching this goal, the following question was asked:

“In which ways can CALL be integrated into ESP courses for adults?”. The answer for this question, in particular, and for the others, will be provided in Chapter 05.

Therefore, this chapter is organized into six sections. Firstly, this chapter provides the quantitative and statistical results of the study carried out to investigate the effects of CALL on the acquisition of new vocabulary in English, in relation to RQ1 posed in the method section. Secondly, the present chapter presents the qualitative analysis of research results of the present study regarding RQ2 posed in the method section, as well. Thirdly, correlational analyses will be presented to find out whether or not there was any increase in participants’ level of DC from the beginning to the end of the ESP course, in relation to RQ3. Additionally, correlational analyses applied to participants’ level of DC and their performance on the two computer-mediated posttests will be presented, with respect to RQ4.

At last, students’ level of motivation and their performance on the four posttests will be compared by means of a correlational test to investigate whether there is any relationship between the two variables, as well.

4.2 THE STATISTICAL ANALYSIS

The most useful tests for this dissertation were those which would: (1) compare the means in the pre- and posttests to see if there had been any general improvement over the ESP course in the whole cohort ("within-subjects" analysis); (2) compare the means between conditions ("within-subjects" analysis); and (3) compare the means of two independent samples (groups of individuals), in this case G1 and G2 to see whether one group had made significantly more progress than the other ("between-subjects" analysis) in the two delayed posttests.

For the above, first, the descriptive statistics and the Shapiro-Wilk test were run to check for normal distribution. After that, Friedman Test (instead of the One-way repeated measures ANOVA which is its parametric equivalent) was employed. Then, the non-parametric Wilcoxon Signed Rank Test was used (instead of the Paired Sample T-test which is its parametric equivalent) to establish whether there was a difference within groups in the various outcome measures. To restate, a Wilcoxon Signed Rank Test was calculated to determine if the difference in scores between pre and post-intervention assessment was significant. After that, the non-parametric independent samples Mann-Whitney U Test (MWUT) (instead of the Independent Sample T-test

which is its parametric equivalent) was carried out to compare the means of the two groups - G1 and G2 - to verify differences in progress in the two delayed posttests. By way of explanation, a non-parametric sample is one where the sample is not sufficiently large for one to be able to make reasonably safe generalizations. Nonparametric analysis is required for small samples such as this one where normality, or safe generalizability, cannot be assumed (the sample size was small: n = 20).

As already stated in the beginning of this chapter, one of the goals of the present study was to investigate the effects of CALL on the acquisition of new vocabulary in English. Aiming at reaching this goal, the following question was asked: "What are the effects of integrating CALL in an ESP course for adults?". To provide a response for the just-mentioned research question, students' performance on the five conditions, namely (1) pretest; (2) paper-and-pen immediate posttest (PPIMpost); (3) computer-mediated immediate posttest (CPIMpost); (4) paper-and-pen delayed posttest (PPDEpost); and (5) computer-mediated delayed posttest (CPDEpost) were run on SPSS and analyzed statistically[69]. This section presents/reports the descriptive statistical analyses and the statistical analyses of the quantitative results of the five conditions students were submitted to.

Since four participants (P4, P14, P22, and P24) did not answer the second questionnaire, their performance on the five conditions will not be taken into consideration. I took this decision because I wanted to correlate students' level of DC1 with their level of DC2. Also, I wanted to correlate students' level of DC2 with their performance on the computer-mediated posttests, for instance. To do so, I needed the answers of the two online questionnaires, as already explained in the method section. Section 4.4 will present all the correlational analyses which were obtained after the analysis of the responses for the aforementioned questionnaire. Therefore, only the dataset from the 20 remaining participants will be taken into account for the statistical and correlational analyses.

[69] For the purposes of this study, only the grades obtained in the 05 conditions were taken into consideration. However, the teacher also applied other tests such as two short vocabulary tests, two dictations (20 words), and the "simulados" on Moodle. Also, several activities presenting and exploring the same target lexical itens were applied, as already stated in chapter 03.

4.2.1 The descriptive statistical analyses

The pretest, the PPIMpost, the CPIMpost, the PPDEpost, and the CPDEpost comprised the main set of variables analyzed in the present study. To obtain an overview of the data represented by those variables as well as to check for normal distribution, descriptive statistical analyses were run.

I will now move to the description of the results of the descriptive statistical analyses of each test, starting with the pretest.

4.2.1.1 The Pretest – descriptives

As already stated in section 3.7.1, a diagnostic pretest was applied in the beginning of the course, on August 2nd (see Appendix B). It had the purpose to diagnose students' knowledge and background regarding the English language and technical terms related to computing. My intention at the beginning of the semester was to find out whether students knew specific words, which are basically some parts of a common computer.

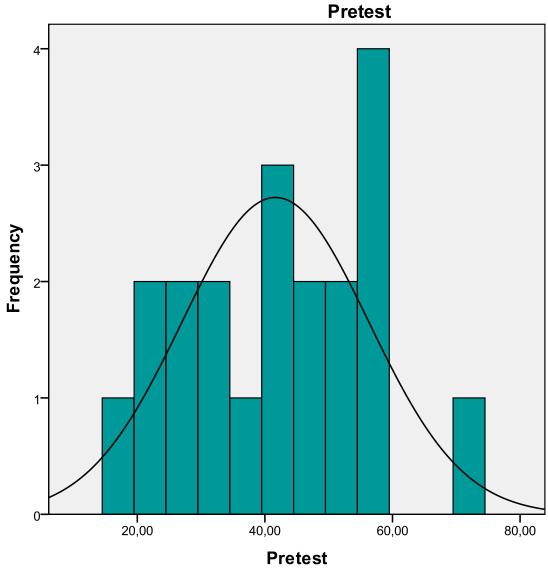
It is important to highlight that the students came to know about their first grades only at the end of the semester and they never saw their diagnostic tests. I was afraid they could be upset due to the low grades. Table 6 presents the results of the descriptive statistics for the total test scores.

Table 6
The pretest

Descriptive statistics	
Mean	41.65
Median	41.5
Standard Deviation	14.65
Minimum	17
Maximum	73
n = 20	

As can be seen in Table 6, the grades were low (mean = 41.65), probably for two reasons: (1) students' background in the English language in general and (2) lack of knowledge concerning the technical terms related to basic computing in both languages: English and Portuguese. The histogram in Figure 1 helps to illustrate students' performance on the pretest.

Figure 1
Histogram - The pretest



The results of the descriptive statistics for the pretest (Table 6) and the histogram (Figure 1) indicate an almost symmetric distribution (SD = 14.65) leading to a normal distribution of the dataset. The mean was 41.65 which was very similar to the median, which was 41.5.

4.2.1.2 PPIMpost - descriptives

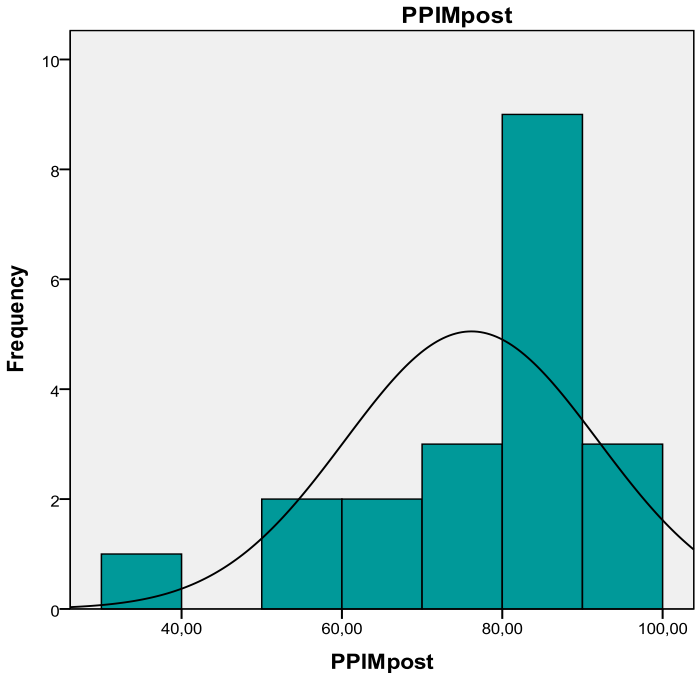
As already stated in section 3.7.2, after around one and a half months of classes, a paper-and-pen immediate posttest was applied (Appendix D) to the group in the classroom. The results of the descriptive statistics for the PPIMpost, can be seen in Table 7.

Table 7
Paper-and-pen immediate posttest

Descriptive statistics	
Mean	76,15
Median	80,5
Standard Deviation	15,79
Minimum	32
Maximum	96
n = 20	

Table 7 sums up the descriptives in which the mean average of the group in the PPIMpost was higher than in the pretest (76.15). As for the median, it was 80.5, the standard deviation was 15.79, the maximum grade was 96 and the minimum was 32. Figure 2 illustrates students' performance on the PPIMpost.

Figure 2
Histogram - PPIM post



By analyzing the histogram (Figure 2) and the descriptives, it can be observed that the data distribution was not normal.

4.2.1.3 CMIMpost - descriptives

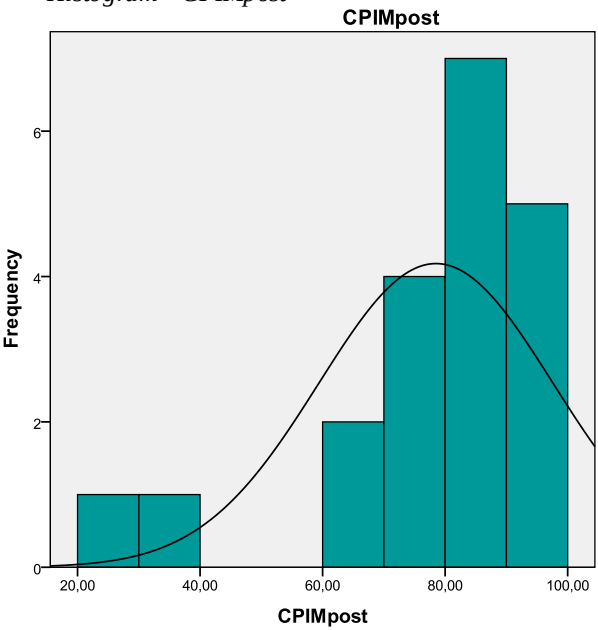
As already stated in section 3.7.3 of the last chapter, one week after the PPIMpost, a CPIMpost was applied through the Moodle platform (Appendix E). The results of the descriptive statistics for the CPIMpost, can be seen in Table 8.

Table 8
Computer-mediated immediate posttest

Descriptive statistics	
Mean	78.5
Median	83.5
Standard Deviation	19.1
Minimum	23
Maximum	99
n = 20	

As can be seen in Table 8, the mean average of the group in this posttest was higher than in the pretest and in the PPIMpost: 78.5. The median was 83,5 and the standard deviation, was 19,1, the maximum grade was 99 and, finally, the minimum grade was 23. The histogram in Figure 3 helps to illustrate students' performance on the CPIMpost test.

Figure 3
Histogram – CPIMpost



By analyzing the histogram (Figure 3) and the descriptives, it can be observed that the data distribution was not normal.

4.2.1.4 Delayed posttests – descriptives

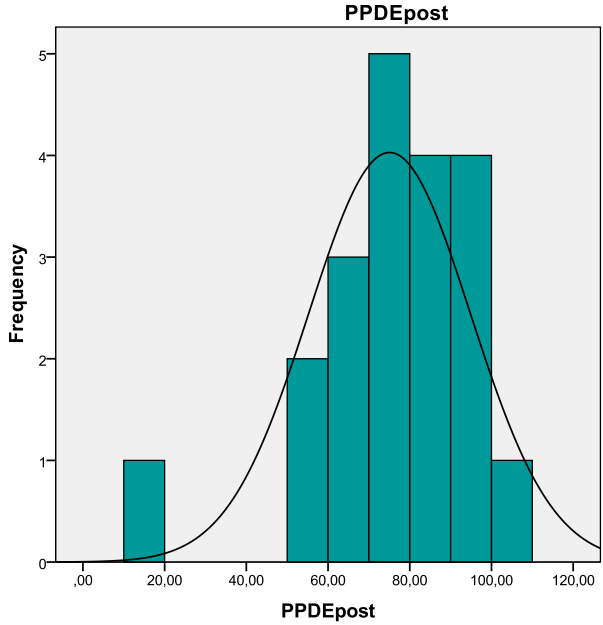
As already stated in the method section, two delayed posttests were applied in the computer lab: (1) the CPDEpost (see Appendix F), and (2) the PPDEpost (see Appendix G). I asked one group which I called G1 to take the computer-mediated test first and then the paper-and-pen one: the participants of this group were: P2, P3, P15, P20, P18, P12, P10, P19, P16, P17, and P9. The other group, which I called G2 took the paper-and-pen test first and then the computer-mediated one. The participants of this group were: P6, P23, P5, P13, P11, P1, P8, P21, and P7. The results of the descriptives for the PPDEpost can be seen in Table 9.

Table 9
Paper-and-pen delayed posttest

Descriptive statistics	
Mean	**75.05**
Median	78
Standard Deviation	19.8
Minimum	15
Maximum	100
n = 20	

As can be seen in Table 9, the mean average of the group in the PPDEpost was 75.05, the median was 78, and the standard deviation was 19.8. The maximum grade was 100 and the minimum was 15. The histogram in Figure 4 illustrates better the participants' performance on the PPDEpost.

Figure 4
Histogram - PPDEpost



By analyzing the histogram (Figure 4) and the descriptives, once more, it can be observed that the data is not normally distributed.

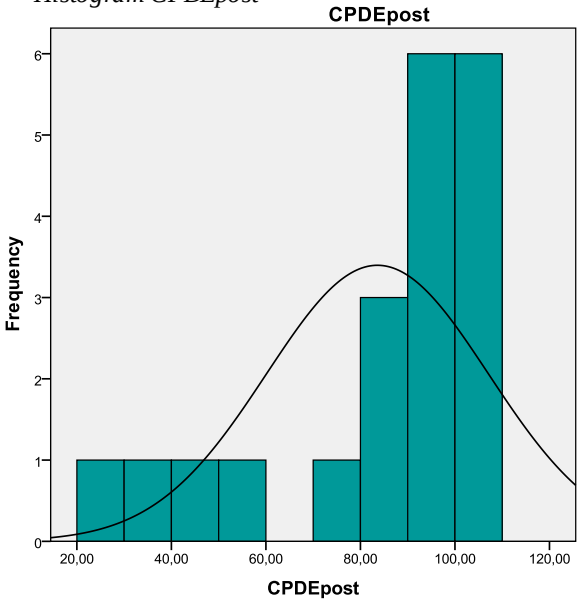
The results of the descriptive statistics for the CPDEpost can be seen in Table 10.

Table 10
Computer-mediated delayed posttest

Descriptive statistics	
Mean	**83.6**
Median	97
Standard Deviation	23.49
Minimum	25
Maximum	100
n = 20	

As can be seen in Table 10, the mean average of the group in the CPDEpost was 83.6, the median was 97, and the standard deviation was 23.49. The maximum grade was 100 and the minimum was 25. The histogram in Figure 5 illustrates the participants' performance on the CPDEpost.

Figure 5
Histogram CPDEpost



By analyzing the histogram (Figure 5) and the descriptives, again it can be observed that the data is not normally distributed.

4.2.1.4.1 Testing effects: PPDEpost

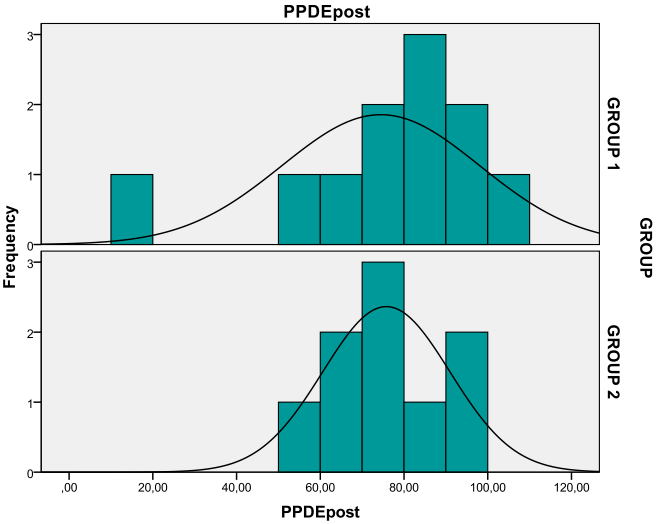
As already stated in subsections 3.7.4 and 4.2.4, G1 took the computer-mediated test first and then the paper-and-pen one. On its turn, G2 took the paper-and-pen test first and then the computer-mediated one. Table 11 displays the descriptive statistics of the PPDEpost.

Table 11
Testing effects: the paper-and-pen delayed posttest

The descriptive statistics			
G1		G2	
Mean	**74.45**	Mean	**75.78**
Median	81	Median	76
Standard Deviation	23.66	Standard Deviation	15.18
Minimum	15	Minimum	51
Maximum	100	Maximum	95
n = 11		n = 09	

As Table 11 shows, the mean grade in the PPDEpost was higher in G2: 75.78. As for G1, this value was 74.45. The opposite happened for the values of the median which was 81 for G1 and 76 for G2. G1 presented more variability (SD = 23.66) than G2 (SD = 15.18). After presenting the descriptive statistics, the histograms in Figure 6 illustrates students' performance on the PPDEpost.

Figure 6
Histograms – PPDEpost - G1 & G2



As shown by the two histograms (Figure 6) and by the descriptives, the dataset distributions of both groups – G1 and G2 - were not normal.

4.2.1.4.2 Testing effects: CMDEpost

As already stated, G1 took the computer-mediated test first and then the paper-and-pen one and G2 took the paper-and-pen test first and then the computer-mediated one. Table 12 presents the descriptive statistics for the CPDEpost.

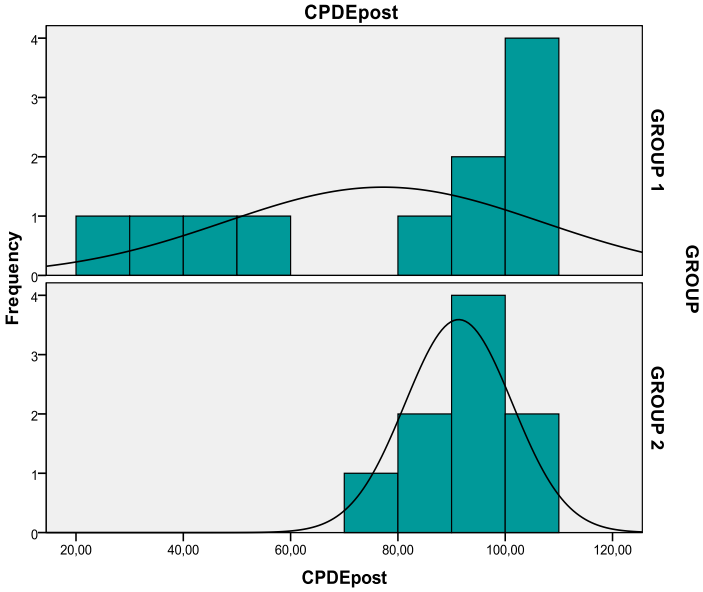
Table 12
Testing effects (CPDEpost)

The descriptive statistics

G1		G2	
Mean	**77.27**	Mean	**91.33**
Median	97	Median	97
Standard Deviation	29.5	Standard Deviation	10
Minimum	25	Minimum	74
Maximum	100	Maximum	100
n = 11		n = 09	

As shown by Table 12, G2 presented a higher grade mean in the computer-mediated condition – 91.33 – than G1. For G1, this value was 77.27. The value of the median was 97 for both groups. G1 has more variability of the data (SD = 29,5) than G2 (SD = 10). The histograms in Figure 7 illustrate the performance of both groups – G1 and G2 - in the CPDEpost.

Figure 7
Histograms – CPDEpost (G1 & G2)



Both histograms in Figure 7 and the descriptive statistics in Table 12 do not indicate normal distribution of the dataset. Next, the groups' performance – G1 and G2 - are presented in Table 13, by way of illustration.

Table 13
Participants' performance per group (G1 & G2

G1	CPDE post	PPDE post	G2	PPDE post	CPDE post
P2	100	78	P6	95	99
P3	100	76	P23	95	90
P15	100	85	P5	89	100
P20	100	100	P13	78	97
P18	98	91	P11	76	80
P12	97	81	P1	70	100
P10	89	84	P8	64	99
P19	57	92	P21	64	74
P16	47	64	P7	51	83
P17	37	53			
P9	25	15			

4.2.1.5 Summary of the descriptive statistics

After presenting the descriptive statistics of each test, namely (1) pretest; (2) PPIMpost; (3) CPIMpost; (4) PPDEpost; and (5) CPDEpost, separately, I will present now the summary of the descriptive statistics of the results of the five tests altogether in Table 14.

Table 14
The descriptive statistics for each variable

	M	Med	Sd	Min	Max
Pretest	41.65	41.5	14.65	17	73
PPIMpost	76.15	80.5	15.79	32	96
CPIMpost	**78.5**	**83.5**	**1.1**	**23**	**99**
PPDEpost	75.05	78	19.8	15	100
CPDEpost	**83.6**	**97**	**23.49**	**25**	**100**

n = 20

Note: the mean (M) the median (Med), the standard deviation (SD), the minimum (Min) scores and the maximum (Max) scores in each test.

As can be seen in Table 14, there is a great variability in the students' performance along the five conditions. The descriptives indicate somehow that the dataset in not normally distributed as indicated also by the histograms presented in this section.

4.2.1.6 The Shapiro-Wilk test

The Shapiro-Wilk test for normal distribution was run between the five conditions, as displayed in Table 15.

Table 15
Checking for normal distribution of the five conditions

Shapiro-Wilk test results for normal distribution

	Statistics	p-value (2-tailed)
(1) Pretest	0.96	**0.61***
(2) PPIM post	0.88	0.02
(3) CPIM post	0.82	0.00
(4) PPDE post	0.88	0.02
(5) CPDEpost	0.73	0.00

n = 20
*p > .05

As can be seen in Table 15, the results of the Shapiro-Wilk test for normal distribution indicate that the only dataset which is normally distributed is the one corresponding to the pretest ($p = 0.61$; $p > .05$). This result corroborates the results of the descriptive statistics already presented. Thus, the data corresponding to the four posttests were not normally distributed. As the delayed posttests were taken by two subgroups – G1 and G2, the data corresponding to these two groups had to be checked for normal distribution separately.

To recap, G1 took the computer-mediated test first and then the paper-and-pen one and G2 took the paper-and-pen test first and then the computer-mediated one. Again, the Shapiro-Wilk test for normal distribution was run between the two conditions and the two groups. Table 16 presents the results of the test.

Table 16
Checking for normal distribution (G1 x G2)

The Shapiro Wilk test results			
	Groups	Statistics	p-value (2-tailed
PPDEpost	G1	0.83	0.02
	G2	0.94	**0.60***
CPDEpost	G1	0.76	0.00
	G2	0.83	0.04

n = 20
*p > .05

According to Table 16, the data of the PPDEpost is not considered normal for group 01 ($p = 0.02$; $p < 0.05$) and it is considered normal for group 02 ($p = 0.60$; $p > 0.05$). As for the data of the CPDEpost, it is not considered normal for group 01 neither for group 02 ($p = 0.00$; $p < 0.05$ and $p = 0.04$; $p < 0.05$, respectively).

In this subsection, descriptive statistics were reported for each of the five conditions and the Shapiro-Wilk test was run to check for normal distribution. Since the assumption of normality was not met for the majority of the cases, non-parametric statistics were calculated for analysis as shall be seen in the following subsection.

4.2.2 The statistical analysis

The last subsection presented the descriptives for each of the five conditions. Also, results of the Shapiro-Wilk test were presented. Since the assumption of normality was not met for the majority of the cases, non-parametric statistics were calculated for means analysis (Friedman Test – Complete block design, Wilcoxon Signed Ranks, and Mann–Whitney U) as already stated in the beginning of this section. The tracking data were also analyzed as a potential source of corroborating evidence for the research questions addressed in this study.

4.2.2.1 The Friedman Test

In order to find out if there was any difference between participants' performance on the five conditions, namely (1) pretest; (2) PPIMpost; (3) CPIMpost; (4) PPDEpost; and (5) CPDEpost, the data

gathered from each condition were run on SPSS. In order to compare the means in the pre- and posttests to see if there had been any general improvement over the ESP course in the whole cohort ("within-subjects" analysis), the non parametric Friedman Test - Complete Block Design was applied instead of the One-way repeated measures ANOVA which is its parametric equivalent. Friedman Test was chosen due to the lack of normality of the data as already observed in the previous section (see Appendix T). Table 17 presents the results of the test.

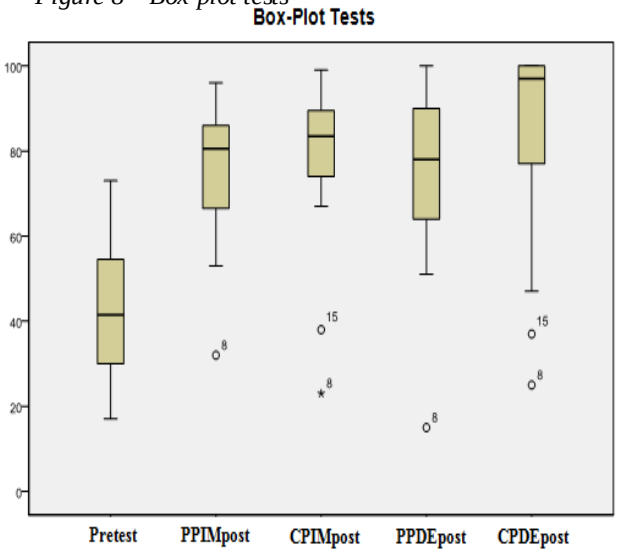
Table 17
The five conditions compared

	Friedman Test
statistics	42.70
p-value	**0.00***

n = 20
*p < .05 (2-tailed)

As shown by Table 17, there is a significant difference among the five conditions (p = 0.00; p < 0.05). However, it is not possible to know where the difference is exactly. For the sake of illustration, the boxplot in Figure 8 also contributes to show that there are differences between the five conditions, especially when comparing the pretest with the posttests.

Figure 8 – Box-plot tests



Although knowing that there are differences between the five conditions is important, the tests do not tell us where the difference is exactly. Therefore, other tests had to be applied. For this reason, the next subsections will present the results of the Wilcoxon signed-rank tests which were applied to find out, firstly, if there were statistically significant differences between the pretest and the immediate and delayed posttests.

4.2.2.2 The Wilcoxon signed-rank tests

The Wilcoxon signed-rank tests were applied to find out whether there were statistically significant differences between the tests (see Appendix U). Firstly, I will present the results of the tests carried out to see whether there were differences between the pretest and the posttests individually. Secondly, the results of the tests applied to see whether there were differences between the posttests will be presented.

4.2.2.2.1 Pretest x PPIMpost

Table 18 presents the result of the Wilcoxon signed-rank test which compared students' performance on the pretest with their performance on the PPIMpost.

Table 18
The Pretest x PPIMpost

Wilcoxon signed-rank test	
Wilcoxon	- 3,84
p – value	0.00*

n = 20
*p < .05 (2-tailed)

As can be seen in Table 18, there are differences among the students' performance on the pretest and on the paper-and-pen immediate posttest (p = 0.00; p < .05). This can be taken as evidence that students' performance on the first posttest (PPIMpost) was superior than their performance on the pretest, which was a disgnostic test, actually. This result will be discussed in the next section (Chapter 5).

4.2.2.2.2 Pretest x CPIMpost

Table 19 presents the result of the Wilcoxon signed-rank test which compared students' performance on the pretest with their performance on the CPIMpost.

Table 19
Comparing the pretest x CPIMpost

Wilcoxon signed-rank test	
Wilcoxon	-3,92
p-value	0.00*

n = 20
*p < .05 (2-tailed)

As can be seen in Table 19, there are differences between the students' performance on the pretest and on the CPIMpost (p = 0.00; p < .05). Also, this result can be taken as confirmation that participants' performance on the second posttest (CPIMpost) was superior than to performance on the pretest. This result will be discussed in the next section (Chapter 5).

4.2.2.2.3 Pretest x CPDEpost

Table 20 presents the result of the Wilcoxon signed-rank test which compared students' performance on the pretest with their performance on the CPDEpost.

Table 20
Comparing the pretest x CPDEpost

Wilcoxon signed-rank test	
Wilcoxon	- 3.92
p-value	**0.00***

n = 20
*p < .05 (2-tailed)

As can be seen in Table 20, there are differences among the students' performance on the pretest and on the CPDEpost (p = 0.00; p < .05). Once more, it can be taken as support that participants'

performance on the computer-mediated posttest was better than their performance on the pretest. This result will also be discussed in Chapter 5.

4.2.2.2.4 Pretest x PPDEpost

Table 21 presents the result of the Wilcoxon signed-rank test which compared students' performance on the pretest with their performance on the PPDEpost.

Table 21
Comparing the pretest x PPDEpost

Wilcoxon signed-rank test	
Wilcoxon	-3.81
p-value	**0.00***

n = 20
*p < .05 (2-tailed)

As can be seen in Table 21, there are differences between students' performance on the pretest and on the PPDEpost ($p = 0.00$; $p < .05$). Yet again, this result can be taken as indication that students' performance on the paper-and-pen posttest was superior to their performance on the pretest. Therefore, statistically significant differences were found between students' performance on the pretest and the four posttests: printed and online. This is to say that the ESP course which started after the pretest caused positive effects on participants' performance as observed by their performance on the posttests, i. e., after the course.

Having observed that there are statistically significant differences between the pretest and all the four posttests, as demonstrated by the results of the Wilcoxon signed-rank tests, I will now compare only the posttests. First, a comparison of the immediate posttests will be presented, followed by a comparison of the delayed posttests.

4.2.2.2.5 PPIMpost x CPIMpost

The Wilcoxon signed-rank test was applied again, this time to compare the immediate posttests, namely PPIMpost and CPIMpost. The result is presented in Table 22.

Table 22
Comparing the PPIMpost x CPIMpost

Wilcoxon signed-rank test	
Wilcoxon	-1.00
p-value	0.31*

n = 20
*p > .05 (2-tailed)

As can be seen in Table 22, there are no statistically significant differences between the students' performance on the paper-and-pen immediate posttest and the computer-mediated immediate posttest (p = 0.31; > .05). This can be taken as evidence that participants' performance on the immediate posttests, which were taken immediately after the ESP course, was similar. The means – paper-and-pen or the computer – did not alter students' performance. This result will be further discussed in subsection 4.2.2.3 of the current chapter and later in the discussion section (Chapter 5).

4.2.2.2.6 CPDEpost x PPDEpost

The Wilcoxon signed-rank test was applied again, this time to compare the delayed posttests: CPDEpost and PPDEpost. The result is presented in Table 23.

Table 23
Comparing PPDEpost x CPDEpost

Wilcoxon Signed Ranks	
Wilcoxon	-2.03
p-value	**0.04***

n = 20
*p < .05 (2-tailed)

As can be seen in Table 23 there are statistically significant differences between students' performance on the paper-and-pen and on the computer-mediated delayed posttests (p = 0.04; p < .05). This result can be taken as confirmation that participants' performance on the delayed posttests, which were taken in a later time, after the immediate posttests, was not the same. The means – paper-and-pen and the

computer – this time, interfered in students' performance. This result will be further discussed in subsection 4.2.2.3 and later in Chapter 5.

Having displayed the results of the Wilcoxon signed-rank tests, the next subsection will present a summary of the results described so far.

4.2.2.3 Interim results

In this subsection, firstly, results of the Friedman test carried out to see whether there were differences between the pretest and the posttests were presented. Secondly, the results of the Wilcoxon tests applied to see whether there were differences between the pretest and the posttests, individually were displayed. Finally, Wilcoxon tests were run again to see whether there were differences between the posttests. Firstly, results of the Friedman test indicate that there are statistically significant differences between students' performance on the pretest and on the four posttests. Secondly, results of the Wilcoxon tests show that there are statistically significant differences between students' performance on the pretest and on the posttests, also, corroborating Frieman's test result. Based on these results, it is possible to infer that the ESP course designed for this study caused statistically significant and positive effects on participants' performance as a result of the course.

Additionally, results of the Wilcoxon tests show that there were no statistically significant differences between students' performance on the immediate posttests - PPIMpost and the CPIMpost ($p = 0.31$; $p > .05$) - that is, regardless of the test participants took (computer or paper-and-pen), there was no statistically significant differences for the performance on the immediate posttests. The scenario changes when it comes to the delayed posttests in which statistically significant differences were found between the PPDEpost and CPDEpost ($p = 0.04$; $p < .05$). Taken together, results of the Wilcoxon tests show that there was no statistically significant difference in performance on the immediate posttests whereas there was a statistically significant difference in the performance on the delayed posttests. In sum, results of the Wilcoxon tests suggest that participants learned new lexical items as a result of the ESP course and could retain[70] them even one month

[70] Cambridge Online Dictionary states that "to retain" is the ability one has "to keep or to continue to have something". In other words, to retain means to continue keeping information in your mind, for the sake of this study. There are other two words which

after the ESP course had finished. The time variable, in this case, may have influenced students' performance, somehow. Chapter 5 will thoroughly discuss these results.

Next, the computer-mediated tests: CPIMpost and CPDEpost will be compared by means of the Wilcoxon test as well to see whether there were statistically significant differences between them.

4.2.2.4 CPIMpost x CPDEpost

Table 24 presents the results of the Wilcoxon Signed Ranks test which compared the CPIMpost and the CPDEpost.

Table 24
Comparing CPIMpost x CPDEpost

Wilcoxon signed-rank test	
Wilcoxon	-1.939
p-value	**0.052***

n = 20
*p > .05 (2-tailed)

As can be seen in Table 24, the result from the Wilcoxon Signed Ranks test indicate that there was no significant difference between students' performance on both computer-mediated posttests, in spite of the fact that the p value was only a little higher than .05 ($p = 0.052$; $p > .05$). Therefore, it can be assumed that the 20 participants performed similarly on the computer-mediated tests either just after the ESP course (October, 4th) or later (November, 8th). This result will be further discussed in subsection 4.2.2.8 and later in Chapter 5.

Next, the paper-and-pen posttests – the PPIMpost and the PPDEpost - will be compared by means, also, of the Wilcoxon test.

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may confuse the reader: "recall" and "remember". The just-mentioned dictionary states that "to recall" something means "to bring the memory of a past event into your mind" and "to remember" means "to be able to bring information back into your mind" or "to keep information in your mind". (http://dictionary.cambridge.org/dictionary/american-english).Thus, both terms are used interchangeably in this study.

4.2.2.5 PPIMpost x PPDEpost

Table 25 presents the results of the Wilcoxon Signed Ranks test which compared both printed posttests: the PPIMpost (taken on September, 27th) and the PPDEpost (taken on November 8th).

Table 25
Comparing the PPIMpost x PPDEpost

Wilcoxon signed-rank test	
Wilcoxon	-0.34
p-value	**0.73***

n = 20
*p > .05 (2-tailed)

As can be seen in Table 25, there are no statistically significant differences between the two paper-and-pen posttests (p = 0.73; p > .05). Thus, it can be assumed that the 20 participants performed similarly on the paper-and-pen posttests either just after the ESP course, in September, or later, in November. This result will be further discussed in subsection 4.2.2.8 and later in Chapter 5.

Next, the CPDEpost and the PPIMpost will be compared by means, also, of the Wilcoxon test. Note that this comparison was made just to complement the results.

4.2.2.6 CPDEpost x PPIMpost

Table 26 presents the results of the Wilcoxon Signed Ranks test which compared the CPDEpost and the PPIMpost.

Table 26
Comparing CPDEpost x PPIMpost

Wilcoxon signed-rank test	
Wilcoxon	-2,01
p –value	**0,04***

n = 20
*p < .05 (2-tailed)

As can be seen in Table 26, there are statistically significant differences between the PPIMpost and the CPDEposttests ($p = 0.04$; $p < .05$). This result indicates that the performance on the two tests was statistically different. Recap that the general means for the PPIMpost was 76.15 and the general means for the CPDEpost was 83.6, as already presented in Table 14 of subsection 4.2.1.5. Thus, according to the descriptive statistics, it was already expected that there would be a statistically significant difference between them. Considering that one month passed between the two tests, I can tentatively say that there was consolidation of what was learned by the students, besides the fact that they were motivated to overcome their previous results. This result will be further discussed in subsection 4.2.2.8 and later in Chapter 5.

In the following subsection, the CPIMpost and the PPDEpost will be compared by means of the Wilcoxon test. Note, also, that this comparison was made just to complement the results.

4.2.2.7 CPIMpost x PPDEpost

Table 27 presents the results of the Wilcoxon Signed Ranks test which compared the PPDEpost and the CPIMpost.

Table 27
Comparing the PPDEpost x CPIMpost

Wilcoxon signed-rank test	
Wilcoxon	-1,10
p –value	**0,27***

n = 20
*p > .05 (2-tailed)

As can be seen in Table 27, there are no statistically significant differences between the PPDEpost and the CPIMpost ($p = 0.27$; $p > .05$). This result will be further discussed in the next subsection and later in Chapter 5.

In the following subsection, interim results will be presented.

4.2.2.8 Interim results

Wilcoxon signed-rank tests were applied to find out whether there was a statistically significant difference between the performance on the computer and the paper-and-pen posttests. Results of the

Wilcoxon test indicated that there was no significant difference between students' performance on the computer-mediated posttests ($p = 0.052$; $p > .05$)[71]. Results of this test also showed that there was no statistically significant difference between the two paper-and-pen posttests ($p = 0.73$; $p > .05$)[72].

Taken together, results of the Wilcoxon tests show that, regardless of the means utilized participants' performance did not vary across the posttests. In other words, participants' performance was similar in the posttests and did not vary as a result of the means used in the test (computer or paper-and-pen).

On the other hand, results of the Wilcoxon tests show that there are statistically significant differences between the CPDEpost and the PPIMpost and between the CPDEpost and the PPDEpost. As a coincidence, results of the Wilcoxon tests ($p = 0.04$; $p < .05$) for both pairs of tests, were the same. Therefore, the CPDEpost, whose general means was of 83.6, the highest of all, was the only posttest that really differed from the printed posttests. This is, probably, due to the fact that students found it easier than the others or more motivating to do. Chapter 5 will discuss this matter.

Finally, just to complement the results, results of the Wilcoxon tests showed that there were no statistically significant differences between the CPIMpost and the PPDEpost ($p = 0.27$; $p > .05$).

4.2.2.9 Summary of all results

In this subsection, I will present the summary of the Wilcoxon test results comparing the performance between the pretest and the posttests. Then, results of the Wilcoxon test which compared the CPDEpost and the PPIMpost, and the PPDEpost and the CPIMpost will be summarized, just to complement the results, since I did not want to compare these tests at first.

Firstly, results of the Wilcoxon tests demonstrated that there were statistically significant differences between students' performance on the pretest and the four posttests suggesting that the procedures designed between the pre and the posttests which were applied in the light of several researchers' suggestions in the area of L2 vocabulary acquisition

[71] Recap that the means of the CPIMpost was 78.5 and the means of the CPDEpost was 83.6.

[72] To recapitulate, the means of the PPIMpost was 76.15 and the means of the PPDEpost was 75.05.

(e.g. Ellis, 1995; Nation, 2001, 2008; Laufer, Meara, & Nation, 2005; Beglar & Hunt, 2005; Laufer, 2010; Perez Basanta, 2010), CALL (e.g. Chapelle, 2007; Perez Basanta, 2010), and ESP (e.g. Celani, 2008; Ramos, 2008), were valuable and effective and yielded significant and positive effects on participants' performance on the posttests.

Secondly, results of the above-mentioned tests showed that there were no statistically significant differences between participants' performance on the immediate posttests ($p = 0.31$; $p > .05$). Participants' performance on the immediate tests was uniform and regardless of the medium (computer or paper) this performance was significantly better than the performance on the pretest indicating that there were gains across tests.

Conversely, statistically significant differences were found between participants' performance on the delayed posttests - PPDEpost and CPDEpost ($p = 0.04$; $p < .05$). Participants' performance on the CPDEpost test was better than that on the PPDEpost test although it is not possible to say whether this difference is due to the means used or the tests themselves. Perhaps, it can be speculated that students found the CPDEpost easier or more motivating to take, than the other posttests. This assumption will be further addressed in the discussion section (Chapter 5). All things considered, results of the Wilcoxon tests indicated that the 20 participants retained the new lexical items learned during the ESP course, regardless of the means of the tests applied, even one month after the ESP course had finished.

Subsequently, the computer-mediated posttests - CPIMpost and CPDEpost - were compared by means of the Wilcoxon test again. Results indicate that there was no significant difference between students' performance on the computer-mediated posttests ($p = 0.052$; $p > .05$) suggesting that when students took the computer tests, be it immediate or delayed, their performance was uniform. Results of the same test demonstrated that there were no statistically significant differences between the two paper-and-pen posttests – PPIMpost and PPDEpost - ($p = 0.73$; $p > .05$), either. This result suggests that participants' performance on the printed posttests was uniform and that when students took the printed posttests, be it immediate or delayed, their performance was uniform. Recap that the level of difficulty was assumed to be the same in the two tests.

Taken together, Wilcoxon's results propose that participants' performance was uniform across tests and maintained across intervals (immediate and delayed) suggesting that regardless of the medium, they learned the content taught during the ESP course. Also, results of the

Wilcoxon tests showed that there were no statistically significant differences between the performance on the PPDEpost and the CPIMpost tests ($p = 0.27$; $p > .05$). Conversely, results of the Wilcoxon tests showed that there were statistically significant differences between the performance on the CPDEpost and the PPIMpost tests ($p = 0.04$; $p < .05$). You may recall that there are statistically significant differences between the performance on the CPDEpost and the PPIMpost tests ($p = 0.04$; $p < .05$) and the CPDEpost and the PPDEpost tests ($p = 0.04$; $p < .05$). Thus, the CPDEpost, when compared with the paper-and-pen posttests showed a statistically better performance suggesting that the CPDEpost was easier or more motivating to take than the paper-and-pen posttests. Recap that the level of linguistic difficulty in both tests (computer and paper-and-pen) was assumed to be the same.

Given the assumption that the level of linguistic difficulty in both tests was the same, it is possible to put forward the idea that the CPDEpost was easier because of differences other than the linguistic content of the test. Perhaps the level of difficulty is related to motivation (to take the computer-mediated test). This hypothesis will be further discussed in the discussion section (Chapter 5) of this dissertation.

4.2.2.10 Mann-Whitney U test: results

This subsection will report on the results of the MWUT which was used to compare the means of the CPDEpost and the PPDEpost taken on the same day by G1 and G2 (see Appendix V). To recapitulate, G1 took the CPDEpost first and then the PPDEpost and G2 took the PPDEpost first and then the CPDEpost. Subsection 3.7.4 already explained why the participants were divided into two groups (G1 and G2) to take the delayed tests in different orders.

The performance of the 20 participants on the delayed posttests was compared by means of the non-parametric independent samples MWUT. MWUTs were applied to the dataset taking into consideration that the two samples - G1 and G2 - are independent. In other words, MWUTs were used to contrast mean scores of the delayed tests: CPDEpost and PPDEpost performed by both groups. Also, MWUTs were carried out to compare the means of the two groups to verify differences in progress in the two delayed posttests.

Next, the comparisons will be made: PPDEpost G1 vs PPDEpost G2 and CPDEpost G1 vs CPDEpost G2. First of all, Table 28 presents the results of the MWUT which was run to determine if differences exist between the performance of G1 and G2 in the PPDEpost.

Table 28
PPDEpost G1 x PPDEpost G2

Mann-Whitney test	
Z statistics	-0.34
p- value	**0.73***

n = 20

*p > .05 (2-tailed)

As can be seen in Table 28, there is no statistically significant difference between the performance of G1 and G2 in the PPDEpost (p = 0.73; p > .05).

Once more, the MWUT was run, this time to determine if differences exist between G1's and G2's performance on the CPDEpost. Table 29 presents the results.

Table 29 CPDEpost G1 x CPDEpost G2

Mann-Whitney Test	
Z statistics	-0.38
P - value	**0.70***

n = 20
*p > .05 (2-tailed)

As can be visualized in Table 29, there is no statistically significant difference between the performance of G1 and G2 on the CPDEpost (p = 0.70; p > .05). Next, box-plot tests were also run by way of illustration as can be seen in Figures 9 and 10.

Figure 9

Box-plot test - PPDEpost G1 x G2

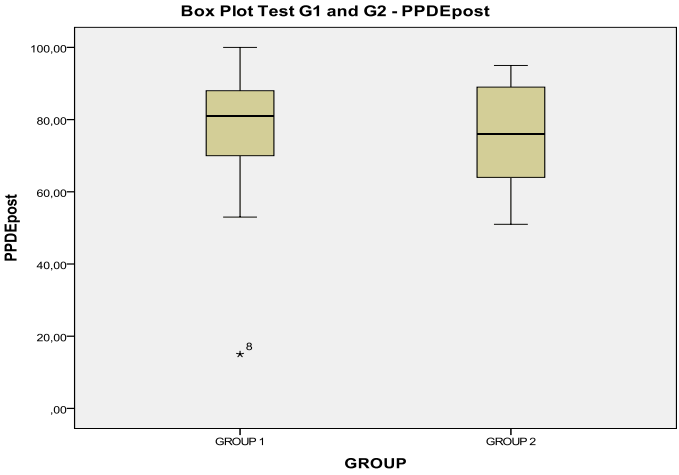


Figure 10

Box-plot test - CPDEpost G1 x G2

Observing Figures 9 and 10, it is possible to infer once more, that there are no statistically significant differences between the performance of G1 and G2 either on the CPDEpost or in the PPDEpost.

In this subsection results of the Mann-Whitney U Tests which were carried out to compare the means of G1 and G2 to verify differences in progress in the two delayed posttests, were displayed. It could be observed that no statistically significant difference was found between the performance of group 1 and group 2 on the PPDEpost ($p = 0.73$; $p > .05$) nor in the CPDEpost ($p = 0.70$; $p > .05$). That is to say that, regardless of the order of test performance, the results remained the same. In other words, students performed better in the CPDEpost, taking it before or after the PPDEpost. These results will be further discussed in the next subsection and in the discussion section (Chapter 5).

Next, to terminate this chapter, I will present a conclusion of the statistical analyses.

4.2.3 Conclusions on the statistical analyses

This final subsection aims at presenting the conclusions regarding the statistical analyses performed on the data obtained from the 20 participants on the five different conditions: pretest, PPIMpost, CPIMpost, PPDEpost, and, finally, the CPDEpost. After checking for normal distribution, it was necessary to apply nonparametric tests on the data obtained. It was statistically confirmed that there was a difference in participants' performance along the ESP course indicating that the design and procedures carefully applied for the target group yielded noteworthy positive effects.

As a result of descriptive analyses, it can be concluded that participants' performance on the pretest was poorer than that on the posttests, suggesting that they had learned and, therefore, performed better, in the end of the ESP course when the posttests were administered. To corroborate the descriptive analyses, the results of the Friedman test showed that there were statistically significant differences between participants' performance on the pretest and on the four posttests, as expected by the descriptives. In other words, the ESP course designed for this study produced positive and considerable effects on participants' performance on the posttests. Furthermore, results of the Wilcoxon tests showed that there was no statistically significant difference between participants' performance on the immediate posttests ($p = 0.31$; $p > .05$), whether they were made through paper-and-pen or computer - PPIMpost and CPIMpost. 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. Also, this result indicates that the tests had the same level of difficulty as planned a priori. You may recall that participants had, probably, studied for these two tests, as recommended by the teacher, which may explain why their performance was uniform and better than that in the pretest.

Wilcoxon tests were also applied to find out whether there were statistically significant differences between tests performed by means of the computer and the paper-and-pen. Results of the Wilcoxon test indicate that there was no significant difference between participants' performance on the computer-mediated ($p = 0.052$; $p > .05$) or the paper-and-pen posttests ($p = 0.73$; $p > .05$) suggesting that, regardless when the tests were applied – immediately after the course or one month after the end of the course (delayed) - students' performance was the same. It suggests also that the tests had the same level of difficulty as carefully planned and controlled a priori to avoid practice effects. Yet, statistically significant differences were found between the CPDEpost and the PPIMpost ($p = 0.04$; $p < .05$) and between the CPDEpost and the PPDEpost tests ($p = 0.04$; $p < .05$). Thus, the CPDEpost, when compared with the paper-and-pen posttests, presented statistically significant differences showing better results for the CPDEpost. Whether this difference was due to the means used or the tests themselves is yet to be determined. Perhaps, students found the CPDEpost easier or more motivating to take, than the other tests. This issue will be addressed again in the discussion section of this dissertation (Chapter 5).

Next, by the sake of illustration, Table 30 presents a summary of the results derived from the Wilcoxon tests which were applied to compare differences in all the general means.

Table 30
Summary of results of Wilcoxon tests

Wilcoxon tests	p value	Difference?
CPIMpost x PPIMpost	p = 0.31; p >.05	no
PPDEpost x CPDEpost	p = 0.04*; p <.05	yes
CPIMpost x CPDEpost	p = 0.052; p >.05	no
PPIMpost x PPDEpost	p = 0.73; p >.05	no
CPDEpost x PPIMpost	p = 0.04*; p <.05	yes
PPDEpost x CPIMpost	p = 0.27; p >.05	no

*p< .05
n = 20

According to Table 30, six pairs of tests were compared. Differences emerged only between CPDEpost vs PPDEpost and CPDEpost vs PPIMpost. Therefore, students' performance on the online delayed posttest was statistically different and superior if compared with the other tests. It is important to observe that, in spite of the fact that there was not a statistically difference between the CPIMpost and the CPDEpost (p = 0.052; p >.05), the p value approached 5%. In other words, even if the result of the statistical test does not provide significance, it can be speculated that students' performance on the online delayed posttest (CPDEpost) was also superior, if compared to the other online test.

In sum, results of the Wilcoxon tests showed that participants could retain and recall the new lexical items learned during the ESP course even one month after the ESP course had finished. Also, it can be concluded that, even a month after they had taken the immediate posttests, participants maintained a similar performance. It is important to remember that participants were warned about all the posttests, since it was my intention to promote L2 deliberate teaching-learning.

When the PPDEpost and the CPDEpost which were applied for G1 and G2 (on the same day, but in different orders) to analyze testing effects were compared, results of the MWUTs showed that there were no testing effects. In other words, it could be observed that no statistically significant difference was found between the performance

of G1 and G2 in the PPDEpost ($p = 0.73$; $p > .05$) nor in the CPDEpost ($p = 0.70$; $p > .05$). By way of illustration, Table 31 presents a summary of the results derived from the Mann-Whitney U Tests which were applied to compare differences in all the general means of G1 and G2.

Table 31
Mann-Whitney U Test G1 vs G2

MWUT	**p value**	**Difference?**
PPDEpost G1vs G2	$p = 0.73$; $p > .05$	no
CPDEpost G1vs G2	$p = 0.70$; $p > .05$	no

n = 20

As indicated by Table 31, results of the MWUTs suggest that, regardless of the order of test performance, the results remained the same. It also suggests that the participants of this study performed better in the CPDEpost, taking it before or after the PPDEpost. Thus, the order of presentation did not affect test results.

Section 4.2 has presented the results and a brief discussion of the descriptive and statistical analyses of the quantitative results of this study with the aim at answering the first research question proposed for this study: "What are the effects of CALL on the acquisition of new vocabulary in an ESP course for adults?".

Next, section 4.3 will display the qualitative analysis of this study, so as to address the research question which asked what the participants' reactions, perceptions, and attitudes towards the use of CALL activities are in the ESP classes.

4.3THE QUALITATIVE ANALYSIS

As already stated in section 4.1, one of the goals of this study was to analyze the reactions, perceptions, and attitudes of ESP students towards the use of CALL activities, and, to achieve this specific goal, a research question was asked: "What are the participants' reactions, perceptions, and attitudes towards the use of CALL activities in the ESP classes?". Three sources of data were compiled and analyzed interpretatively with the aim to answer the just-mentioned research question: (1) students' responses to the beginning-of-the-term survey questionnaire; (2) students' responses to the end-of the term questionnaire; and (3) students' posts in the forums on the virtual learning environment: Moodle.

To reiterate, two online questionnaires were answered: one in the beginning of the course and the other in the end of the course. However, four students did not answer the end-of the term questionnaire and they are: P4, P14, P22, and P24. Therefore, only the answers corresponding to the 20 participants who answered both questionnaires were taken into account for the statistical analysis (Section 4.2), for the correlational analysis (Section 4.4), and for part of the qualitative analysis (regarding the participants' answers for both questionnaires). It was necessary to eliminate the answers of the 04 participants who did not answer the second questionnaire due to the comparison of the participants' answers in both questionnaires which was made to calculate students' levels of digital competence in the beginning and in the end of the study. In other words, for me to compare students' level of DC1 and DC2, I had to eliminate the answers of participants P4, P14, P22, and P24.

Lastly, the forum posts published by the students on the Moodle platform and the participants' self-evaluations (N = 24) sent to the teacher also through the just-mentioned platform will be taken into consideration in sections 4.3.3 and 4.3.4, respectively. To reiterate, the data set obtained from the forums and from the students' self-evaluations (N = 24) were analyzed qualitatively and the analysis will be found in sections 4.3.3 and 4.3.4 of this chapter, respectively.

4.3.1 The beginning-of-the-term questionnaire

A general background online questionnaire - the beginning-of-the-term survey questionnaire - based on Almeida (2004) was answered by the 24 participants in order for this researcher to have an idea of the group's profile as a whole before the period of investigation and application of the ESP course. However, as already stated in the previous section, four students did not answer the end-of-the-term questionnaire. Therefore, it is not possible to consider their answers in the above-mentioned questionnaire either. More information concerning the beginning-of-the-term questionnaire and the way it was designed was already explained in subsection 3.8.1 of the last chapter. The just-mentioned questionnaire can be seen in Appendix B.

4.3.1.1 Preliminary information

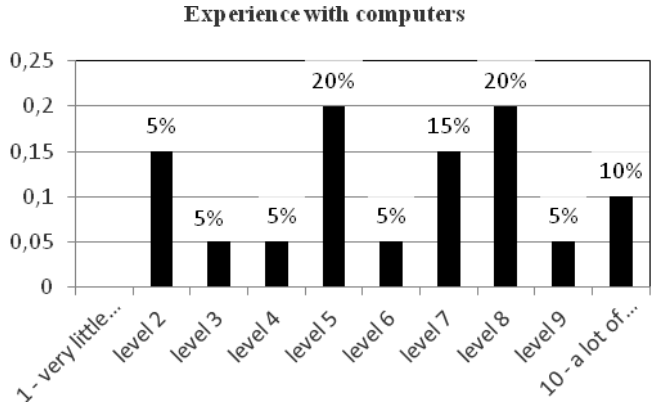
According to the 20 participants' answers to the beginning-of-the-term questionnaire, the students were, in their majority, young male adults (age range 26.6 years). Seventy five percent (75%) of them

worked during the day and had finished high school already and 25% had not finished high school yet.

With respect to their English background, all of them reported having had English classes at school and having studied in public schools. Only 8.3% were studying in a private school in the city of Gaspar. Other two students reported having had some English classes in some language schools. One of them had been taking an English course for two and a half years. All the others have not had any other experience with the English language besides their experience at their regular schools. In sum, while this research was going on, only 25% students were having English classes besides the ESP classes at IF-SC. The others, 75% who had finished high school already and were older students had spent some years only working when they decided to go back to school in 2011 at IF-SC.

As regards their experience with computers, this group had to choose on a 10-point Likert scale (1 = very little experience to 10 = a lot of experience), their level of experience regarding computing. Only 10% indicated 10 as their level of experience. In a tentative to summarize the heterogeneous results of this question as can be seen in Figure 11, 35% of the group indicated levels between 2 and 5 and 55% selected levels 6 to 10. Nobody selected level 01. In sum, I can tentatively conclude that, in the beginning of the course, most of the participants had a moderate level of experience with computers.

Figure 11
Experience with computers in the beginning of the course



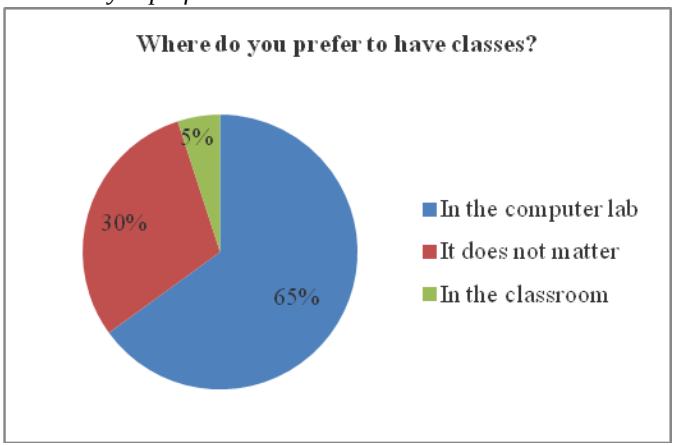
n = 20

Fifty-four percent (54%) of the participants reported using a computer every day and 25% reported using one, three times a week. Considering that these students were taking a technical program in Computing, they spent many hours per day during this research at IF-SC in one of its computer labs with other teachers. Only two students reported that they never used a computer in another place besides IF-SC.

As regards having an Internet-connected computer at home, 91% of the participants reported having one and just two reported not having one, but they could access the Internet in another place (a friend's or relative's home). According to what some students told me during the interviews, I found out that one of them, P9, had an Internet-connected computer at home but he had acquired it very recently. Therefore, his experience with computers was very little. Also, he started learning how to use a computer during this course only. Another student, P19, told me that she did not have an Internet connection in the beginning of this course, but a few weeks after answering the questionnaire she had the Internet installed in her place. Two students, P2 and P3, who were brothers, had access to the Internet in their cellular phones. Most students (58%) reported during the interviews that they remained connected to the Internet from one to three hours per day on another period of the day that is not when they were at the institution (IF-SC), at night.

When asked what students liked to do the most in their Internet-connected computers, 66.6% - i.e. the majority of the group- reported enjoying reading the news and informative texts in the Internet and 33.3% reported enjoying chatting through MSN. In sum, this is what they did the most. When asked if they enjoyed going to the computer lab at IF-SC, they had a 5-point Likert scale (from 1 = a little to 5 = a lot) to select their levels. Fifty-eight percent (58%) of the students chose levels 5 or 4, that is, the majority of the population of this study enjoyed (a lot) going to the computer lab. When asked whether they preferred having classes at their regular classroom or at the computer lab, their answers can be seen in Figure 12.

Figure 12
Where do you prefer to have classes?

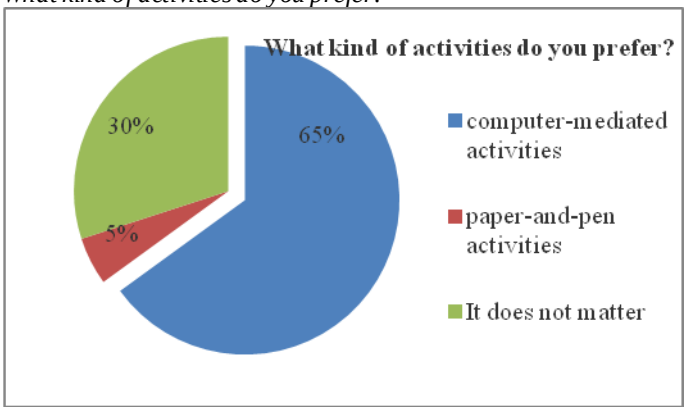


n = 20

As can be seen in Figure 12, 65% of the participants declared that they preferred having classes at the computer laboratory and 5% reported preferring having classes in the traditional classroom. As for the others, (30%) it did not matter which room to have classes.

When asked whether the participants preferred doing paper-and-pen activities or doing activities in the computer, the results can be observed in Figure 13.

Figure 13
What kind of activities do you prefer?



n = 20

As observed in Figure 13, when asked whether they preferred doing paper-and-pen activities or doing activities on the computer, 65% of the participants declared they preferred the computer-mediated activities, 30% were indifferent and 5% reported preferring the paper-and-pen ones, as can be observed in Figure 13.

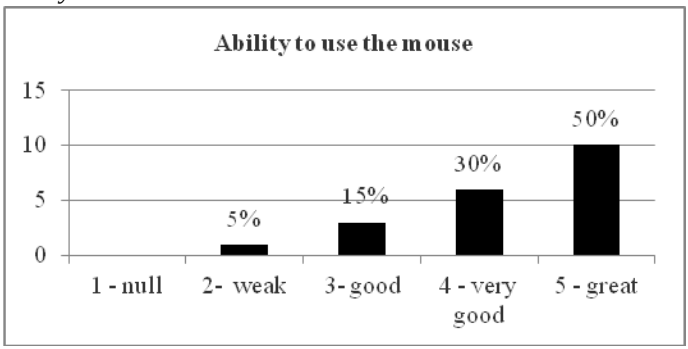
Finally, the 24 participants were asked about their expectations regarding the English classes. Students' expectations before the ESP classes were not very high (see Appendix K). Mostly, 41.6% of the students declared expecting to learn English in order to be able to understand the technical words or terms related to computing. Some answers were very vague demonstrating that the participants were not very specific concerning their real expectations or did not know what to expect exactly in the beginning of the course. Perhaps, they did not want to write a lot in the questionnaire or simply wanted to learn more, in general. Participants' answers to the beginning-of-the-term questionnaire and the group profile in general before the study, will be further discussed in subsections 4.3.1.4. and 4.3.5, and in the discussion section (Chapter 5).

4.3.1.2 DC1

This subsection will report what the students declared, in the beginning-of-the-term questionnaire, in relation to their level of abilities and comfort regarding computing in general and concerning their abilities with the use of the computer, the Internet and their respective tools, specifically. It is important to remember that these questions were adapted from Almeida (2004), who investigated the perceptions of college students on the use of online tasks in an ESP course. Hence, based on Almeida (2004), the answers to the questions regarding levels of abilities and comfort were taken into account to define each student's level of digital competence in the beginning of the course (DC1) and in the end of the course (DC2). As for DC2, it will be described in the next section (Section 4.3.2). Recap that the term DC is used in this dissertation only to describe the participants' abilities in dealing with the computer, its peripherals, the Internet, and operate specific programs related or not to the computer-mediated activities performed by the students within the duration of the study. Therefore, as can be seen in the next figures, students had to choose in a 5-point Likert scale (from 1 = null to 5 = great) their level of abilities concerning the use of computers.

Regarding the level that best described students' abilities to work with the mouse (e.g., left and right keys, double-click, among others), the results can be seen in Figure 14.

Figure 14
Ability to use the mouse

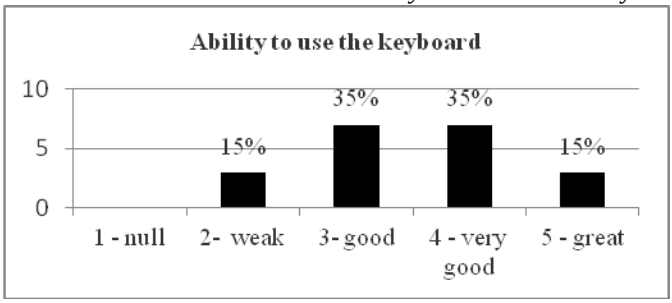


n = 20

As demonstrated by Figure 14, most students (80%) selected levels 04 or 05. That is to say that the majority of the participants knew very well how to use a computer mouse.

Regarding the level that best described students' ability to work with the keyboard and the functions of each key (e.g., "Esc"; "Ctrl"; "Alt"; "Del"; to cite a few), the results can be visualized in Figure 15.

Figure 15
Level that best described students' ability to work with the keyboard



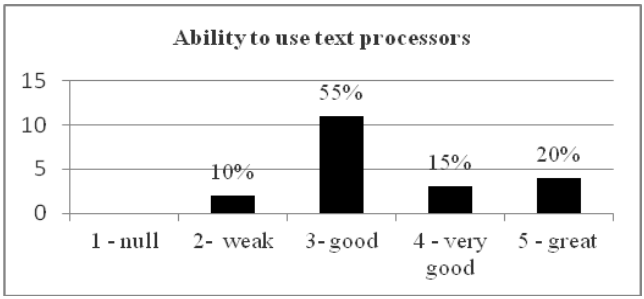
n = 20

According to Figure 15, most students (70%) selected levels 03 and 04, and just a few of them - 15% - chose level 05: "great". That is to say that the majority of the participants did not know all the functions of each key of a computer keyboard.

Regarding students' level that best described their abilities to work with a word processor (e.g., typing texts, page setup, select, copy, and paste, to cite just a few examples), the results can be seen in Figure 16.

Figure 16

Level that best describes students' abilities to work with a word processor

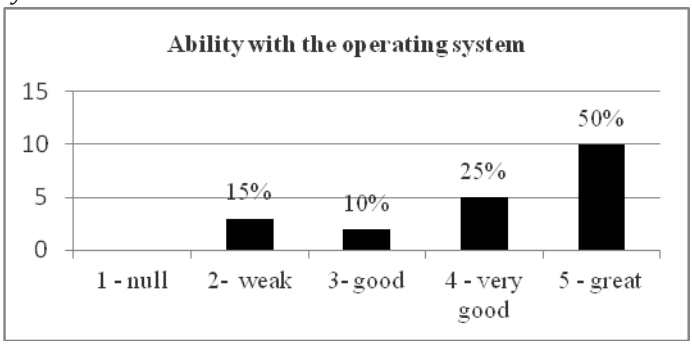


n = 20

As can be seen in Figure 16, most students (55%) selected level 03. That is to say that the majority of the participants did not know very well how to use word processors. In other words, they had difficulties in typing texts, copying, pasting, formatting, among other abilities.

Regarding participants' abilities to work with their computer operating system, such as creating folders, copying and moving files, among other things, the results can be visualized in Figure 17.

Figure 17
Level that best describes students' abilities to work with the computer operating system

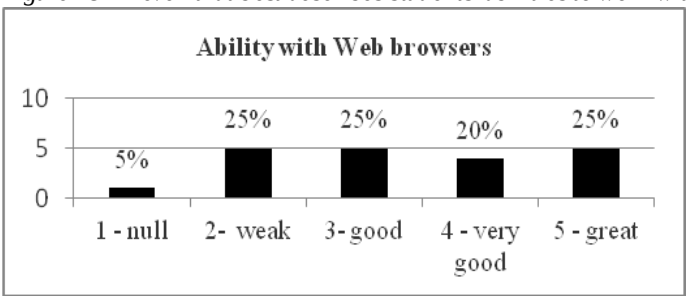


n = 20

According to Figure 17, the majority of the participants (75%) knew how to work with their computer operating system, such as creating folders, copying and moving files, among other things, since most students selected levels 04 or 05.

As regards students' abilities in working with Web browsers such as saving Web pages and working offline, for example, students' answers can be seen in Figure 18.

Figure 18 – Level that best describes students' abilities to work with browsers

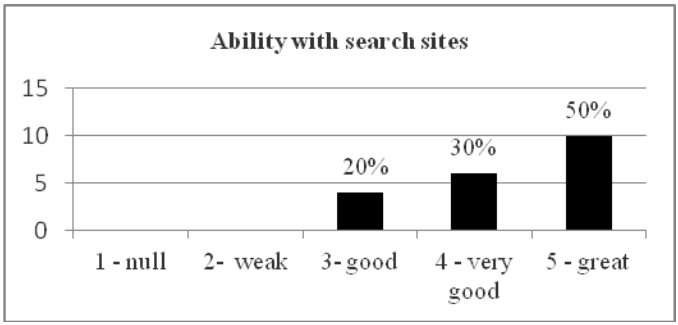


n = 20

According to Figure 18, only 05 students (25%) considered their abilities in working with a Web browser great. Seventy-five percent (75%) selected levels 01 to 04. That is to say that the majority of the participants did not know (very) well how to work with browsers, like saving Web pages and working offline, for example.

With respect to using search engines (e.g., Google) to make simple and advanced searches, the answers of the 24 participants are presented in Figure 19.

Figure 19
Level that best describes students' abilities to work with search engines



n = 20

According to Figure 19, 80% of the students selected levels 05 or 04. That is to say that the majority of the participants knew (very well) how to use a search engine like Google to make simple and advanced searches, or considered being very good or great in performing these tasks in the computer.

Regarding working with e-mails, such as writing and viewing them, inserting and saving attachments, and replying, among other abilities the answers of the participants are presented in Figure 20.

Figure 20
Level that best describes students' abilities to work with e-mails

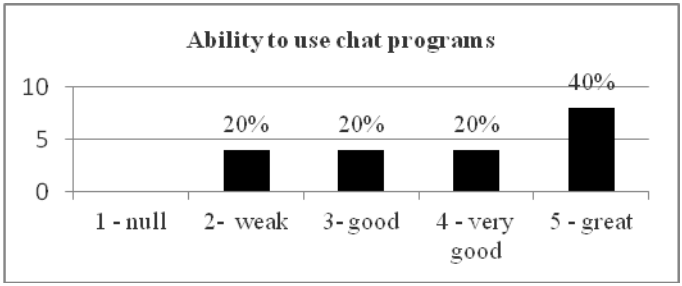
n = 20

As demonstrated by Figure 20, most participants in the group (14 students or 70%) selected levels 04 or 05. That is to say that the majority of the participants knew (very well) how to work with e-mails, such as writing and viewing them, inserting and saving attachments, and replying, among other abilities.

With respect to work with chat programs, Figure 21 shows the participants' answers to the question which refers to this matter.

Figure 21

Level that best describes students' abilities to work with chat tools/programs



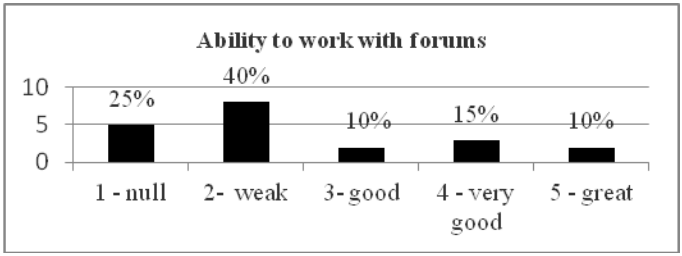
n = 20

As can be seen in Figure 21, 60% of the participants selected levels 04 or 05. Also, nobody selected level 01. Therefore, a significant part of the population of this study knew (very well) how chat programs worked.

As regards working with online forums, the participants' answers can be visualized in Figure 22.

Figure 22

Level that best describes students' abilities to work with online forums



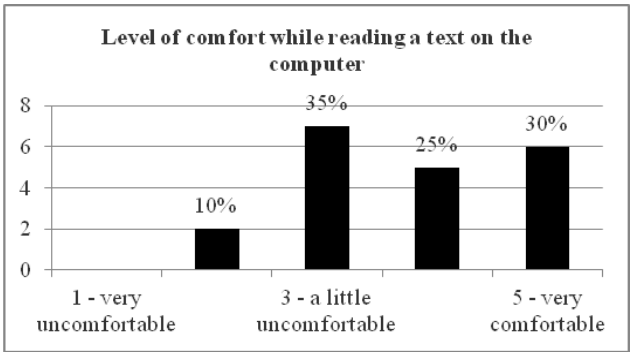
n = 20

According to Figure 22, a significant number of students – 65% - declared that their ability to work with online forums was weak/null (levels 01 and 02). Just a few of them (10%) selected level 05. That is to say that the majority of the participants, in the beginning of the course, did not know how to work with online forums very well. As a matter of fact, most of them came to know what online forums were, after the ESP course started. Further discussion regarding participants' answers and the group profile before the study, will be further discussed in subsection 4.3.1.4.

Having provided participants' answers regarding their abilities with the use of the computer, the Internet and their respective tools, I will now present participants' answers regarding their levels of comfort while performing specific tasks on the computer (e.g., read and write texts on the computer, among others). To recapitulate, the answers to the questions regarding levels of abilities and comfort were taken into account to define each student's level of digital competence at the beginning of the course (DC1). Therefore, as can be seen in the next figures, the participants of this study had to choose on a 5-point Likert scale (from 1 = very uncomfortable to 5 = very comfortable) their level of comfort concerning the use of the computer and the Internet in general and their respective tools.

In Figure 23, it is possible to see the participants' answers when asked about their level of comfort while reading texts on the computer screen.

Figure 23
Students' level of comfort while reading a text on the computer

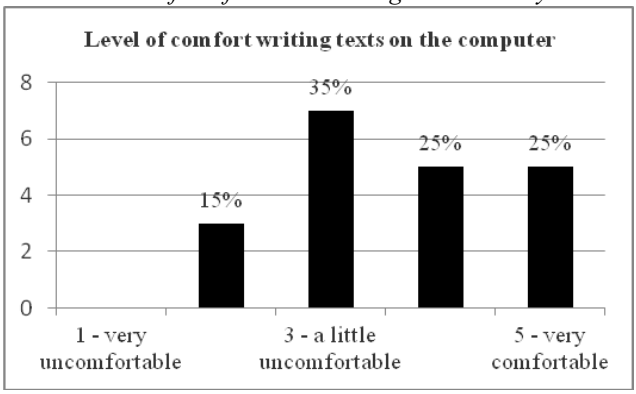


n = 20

As can be seen in Figure 23, a significant number of students (55%) selected levels 04 or 05, which means that the participants felt (very) comfortable to read a text on the computer screen. However, it cannot be ignored that 09 students (45%) felt uncomfortable or a little uncomfortable while reading texts on the computer screen.

Regarding writing texts directly on the computer screen, the participants' answers can be visualized in Figure 24.

Figure 24
Students' level of comfort while writing a text directly on the computer

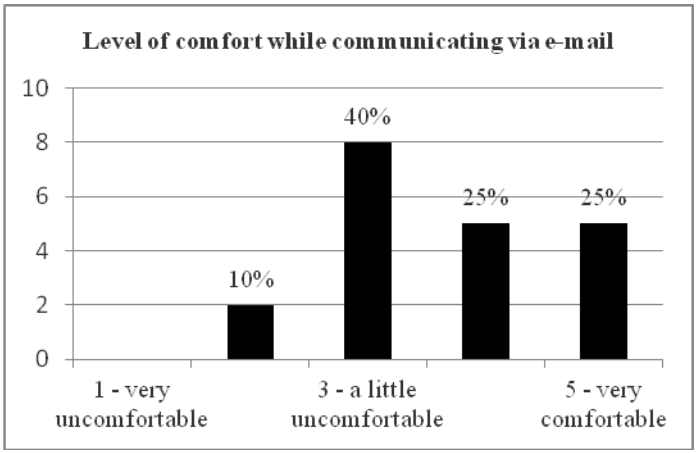


n = 20

Thus, concerning writing texts directly on the computer screen, 50% of the group selected levels 04 or 05 and 50% chose levels 02 or 03, which means that at the same time that 50% of the students felt comfortable while writing texts directly on the computer screen, the same percentage of participants felt uncomfortable. It cannot be generalized, as can be seen in Figure 24.

Regarding students' levels of comfort while communicating with someone via e-mail, the results can be observed in Figure 25.

Figure 25
Students' level of comfort while communicating with someone via e-mail



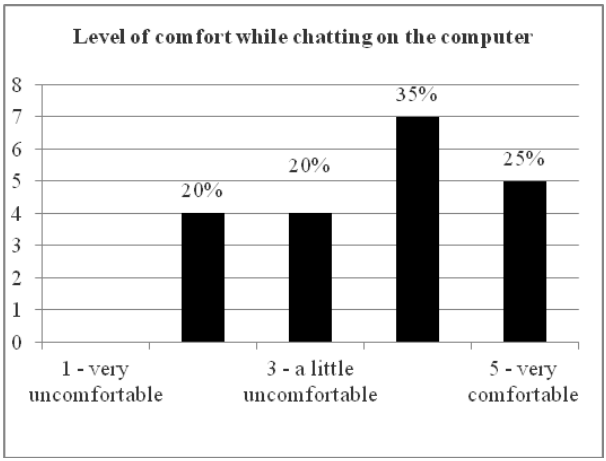
n = 20

Similar to the level of comfort while writing texts directly on the computer screen, 50% of the group selected levels 04 or 05 and 50% chose levels 02 or 03, which means that at the same time that 50% of the students felt comfortable while communicating with someone via e-mail, the same percentage of participants felt uncomfortable, as can be observed in Figure 25. Once more, it cannot be generalized.

As regards communicating with people through chat programs such as MSN, the results can be seen in Figure 26.

Figure 26

Students' level of comfort while talking to someone through chat programs

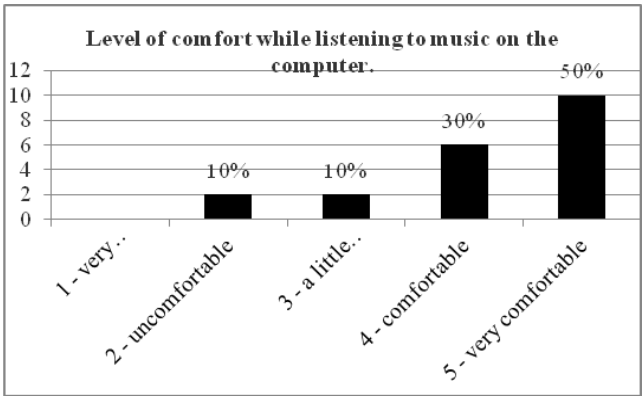


n = 20

As can be seen in Figure 26, 60% of the participants selected levels 04 or 05, which means that most participants felt (very) comfortable while communicating or chatting with people through chat programs (e.g., MSN). However, 40% of the students did not feel very comfortable performing this task in the beginning of the term.

Next, Figure 27 presents the results concerning participants' level of comfort while listening to music on their computers.

Figure 27
Students' level of comfort while listening to music on the computer

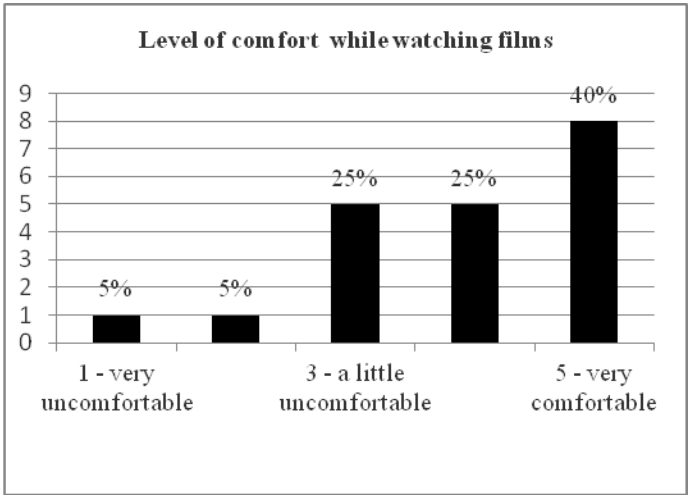


n = 20

As observed through Figure 27, most students (80%) selected levels 04 or 05, which means that 80% of the participants felt (very) comfortable while listening to music on their computers.

Figure 28 displays participants' answers concerning their levels of comfort while watching movies on the computer screen.

Figure 28
Students' level of comfort while watching movies on the computer screen

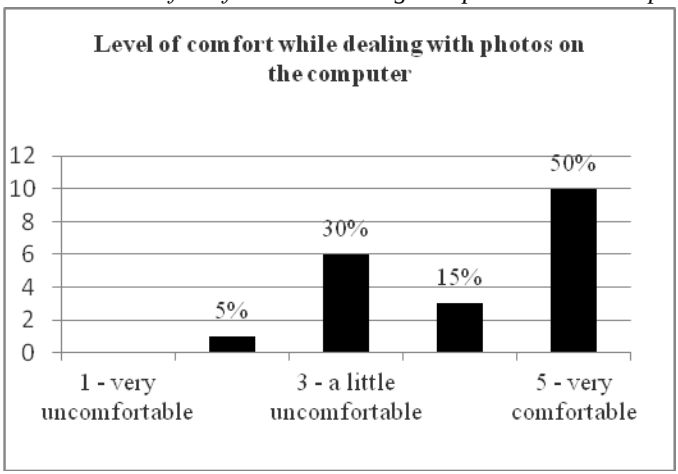


n = 20

As can be visualized in Figure 28, most students (65%) selected levels 04 or 05, which means that the participants felt (very) comfortable while watching movies on the computer screen.

Next, Figure 29 shows students' level of comfort while viewing, saving, and editing photos on their computer screens.

Figure 29
Students' level of comfort while dealing with photos on the computer

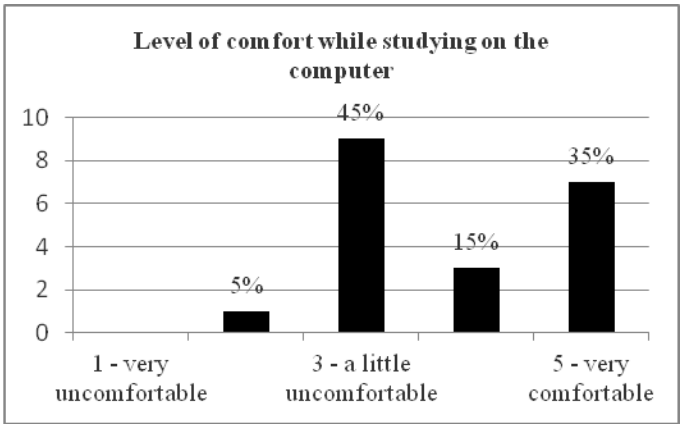


n = 20

As illustrated by Figure 29, 65% of the students selected levels 04 or 05, which means that the majority of the participants of this study felt (very) comfortable while viewing, saving, and editing photos on their computer screens.

As regards studying with the assistance of the computer, Figure 30 presents the answers of the 20 students.

Figure 30
Students' level of comfort while studying with the assistance of the computer

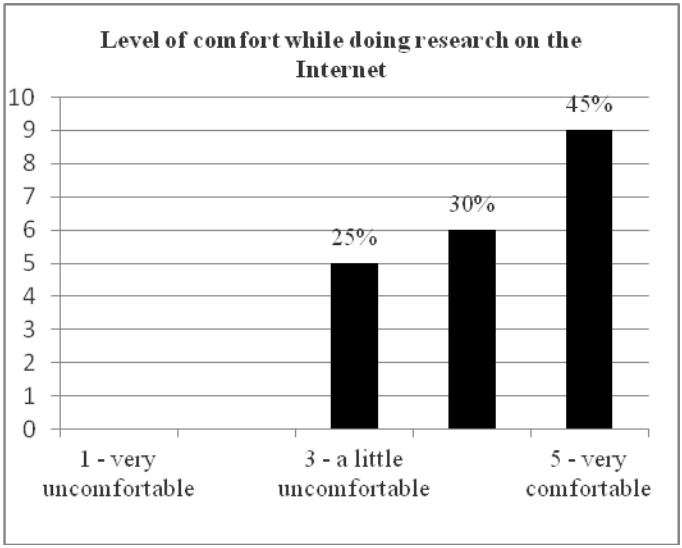


n = 20

Thus, regarding studying with the assistance of the computer, as can be seen in Figure 30, 50% of the students selected levels 04 or 05 and 50% selected levels 02 or 03, which means that at the same time that half of the group felt (very) comfortable while studying with the assistance of the computer like using CD-ROMs, reading and making slides, the other half felt (a little) uncomfortable.

Next, Figure 31 presents students' answers regarding their level of comfort while doing research, reading and selecting information on the Internet, appropriately.

Figure 31
Students' level of comfort while doing research on the Internet

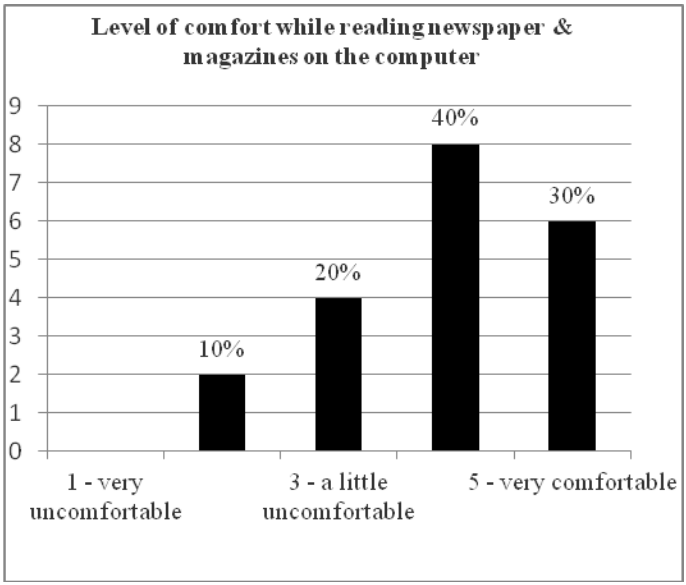


n = 20

As presented by Figure 31, most students (75%) selected levels 04 or 05, which means that these participants felt (very) comfortable while doing research, reading and selecting information on the Internet, properly.

Figure 32 provides the information regarding the participants' level of comfort while reading newspapers and/or magazines on the computer, being it online and/or offline.

Figure 32
Students' level of comfort while reading newspapers/magazines on the computer



n = 20

As displayed by Figure 32, most students (70%) selected levels 04 or 05, which means that these participants felt (very) comfortable while reading newspapers and/or magazines on the computer, being it online and/or offline.

Having provided the results of the beginning-of-the-term questionnaire, the next subsection will present the conclusions concerning students' level of digital competence at the beginning of the ESP course (DC1).

4.3.1.3 Level of DC1

The formula to measure participants' level of DC1 was adapted from Almeida (2004) and explained in section 3.8 of the previous chapter. After all the calculations were done, the level of DC was obtained. As already presented in the just-mentioned section, participants' level of DC1 was 69%. After calculating students' level of DC1, it was verified that the participants of this study did not have a very high level of DC before the application of the ESP course. The

formula applied to achieve this result was already presented in section 3.8 of the last chapter (Chapter 03). The motivation that led me to measure students' levels of DC was because I wanted to verify whether, because of the integration of CALL in the ESP classes, students also developed their DC levels as a byproduct effect. The development of DC level was, also, a secondary goal of this study as already stated in section 3.2.

As could be seen in the previous subsection, at the beginning of the course, students practically did not have a high level of abilities performing tasks on their computers. By way of example, the participants did not know how to participate or use the online forums on Moodle. Just 25% of the participants declared they had a very good or great ability with them. Also, students' abilities to work with word/text processors and Web browsers were not very high and needed to be improved along the course. Concerning students' levels of comfort, in general, they did not feel very comfortable in communicating with people via e-mails, doing research using the computer or studying with the assistance of the computer, to give some examples.

I can cautiously conclude that the participants of this study had several abilities related to computers and felt comfortable performing several tasks in their computers. Their level of DC at the beginning of the course, then, was not very high, but enough to do the activities proposed by their teachers in the program. Section 4.3.5 of the current chapter will present summary of the qualitative analyses.

After presenting the results of the first questionnaire, and discussing a little about paticipants' digital competence, I can now move to section 4.3.1.4 which will provide the group's profile at the beginning of the course. The just-mentioned profile was constructed after the analysis of the students' answers to the questions of the beginning-of-the-term questionnaire.

4.3.1.4 The group's profile

According to what was presented in section 4.3.1.1, in respect to experiences with computers, only a few participants declared having a lot of experience with computers, although 54% of them declared they used a computer everyday and 91% reported they had an Internet-computer at their homes at the beginning of the course. Moreover, what participants did the most on their Internet-connected computers was reading the news and informative texts. Also, the majority of the students enjoyed going to the computer lab and preferred doing

computer-mediated (CALL) activities if compared to paper-and-pen activities. Finally, half of the group enjoyed the classes at the computer lab.

Regarding DC, the majority of the participants, on the one hand, did not know all the functions of each key of a computer keyboard or how to use Word processors very well. In addition, they did not know (very) well how to work with Web browsers or how to work with online forums very well. On the other hand, they knew (very well) how to use a search engine like Google to make simple and advanced searches, or considered being very good or great at performing these tasks on the computer. Also, they knew (very well) how to work with e-mails and how chat programs worked. Nobody selected level 01 (null = no ability at all) in this part of the beginning-of-the-term questionnaire. Therefore, it is possible to infer that this was a very heterogeneous group. It is not possible to say that most of them had a high or a low level of experience regarding dealing with computers due to the heterogeneity of their answers at the beginning of the course.

According to what was observed in the last sub section, most students, on the one hand, felt (very) comfortable reading and writing texts on the computer screen. Also, they felt (very) comfortable communicating with people through e-mails as well as by means of chat programs. Moreover, they felt (very) comfortable while listening to music and watching movies on the computer screen. On the other hand, they did not feel (very) comfortable while studying with the assistance of the computer. Regarding their level of comfort to view, save, and edit photos on their computer screens, 65% of the participants declared feeling (very) comfortable. Seventy percent (70%) of the participants felt (very) comfortable while reading newspapers and/or magazines on the computer, being it online and/or offline. Also, most students (75%) felt (very) comfortable while doing research, reading and selecting information on the Internet, appropriately. To sum up, none of them declared feeling very uncomfortable performing any of the just-mentioned tasks.

Furthermore, along the course, the participants learned new computer skills and improved others as will soon be stated. Lastly, according to participants' answers (see Appendix K), students' expectations before the ESP classes were not very high. Although a significant number of students declared expecting to learn English only to be able to understand vocabulary related to computing, several answers were unclear what makes me infer that the participants were not

very precise in respect to their real expectations. Perhaps, they did not know what to expect exactly at the beginning of the course.

Having analyzed the participants' answers in the first online questionnaire, I will now move to the next subsection which provides the results of the end-of the term questionnaire.

4.3.2 The end-of the term questionnaire

As already stated in section 3.7.6 of the last chapter, on November 22nd, another questionnaire - the end-of-the term questionnaire - also based on Almeida (2004) was applied as can be seen in Appendix H. Its aim was to gather more information from the students after 03 months of ESP classes. Twenty (n = 20) out of twenty-four (N = 24) students answered this second online questionnaire. Several questions regarding students' experiences with computers and their level of DC were the same as the first online questionnaire, since it was necessary to compare their responses in the beginning of the course with their responses after the end of the ESP course. Thus, it was also designed to assess, essentially, students' computing experiences and students' level of DC, among other aspects.

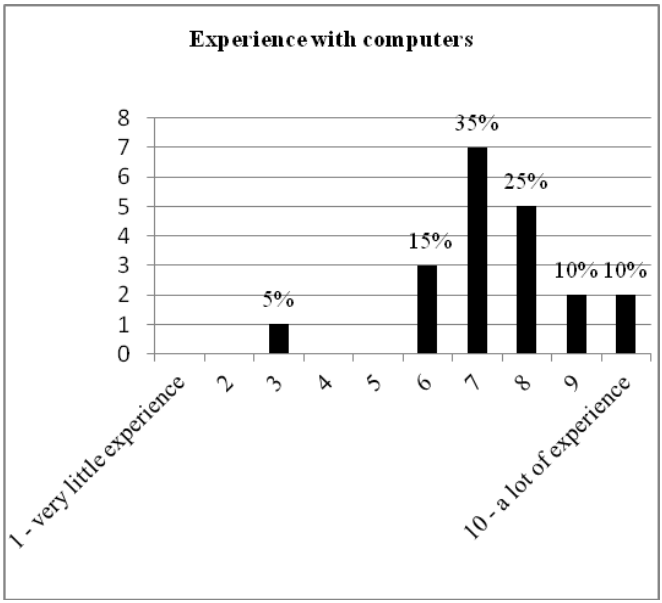
The above-mentioned questionnaire had forty-five (45) items to be responded separated into 05 sections. Besides the 05 sections, the participants were also invited to state whether their expectations in relation to the ESP course were met, as already stated in section 3.8.9 of the last chapter (Chpater 03). To reiterate, four participants did not answer the end-of-the-term questionnaire.

4.3.2.1 Participants' experiences with computers

The first section of the end-of-the term questionnaire, as already stated in section 3.8.9, had eight questions about participants' preferences regarding the use of the computer and the Internet, such as whether they preferred having classes in the computer lab or in the classroom, and whether they preferred doing paper-and-pen activities or computer-mediated activities.

One of the questions asked about students' experiences with computers. The group had to choose on a 10-point Likert scale (1 = very little experience to 10 = a lot of experience), their level of experience regarding computing as can be seen in Figure 33.

Figure 33
Experience with computers in the end of the course



n = 20

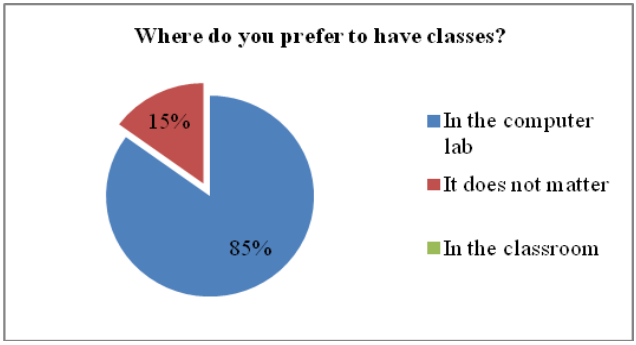
As shown by Figure 33, most students indicated 07 or 08 (60%) as their level of experience regarding computing. Only 20% indicated levels 09 or 10. Perhaps the group in general was too modest to admit they had a lot of experience with computers, even being part of a technical program in the field of Computing.

Next, students had to mention the first thing they did when they accessed the Internet. Eleven participants (55%) affirmed that they checked or read their e-mails first. Five participants (25%) reported they accessed social network sites such as Facebook. Four participants watched or read the news on the Web. One of them reported doing different things such as accessing Orkut or gaming sites and another one said he accessed Google first.

When asked what the students liked to do the most in the Internet, 50% of the participants declared that they enjoyed accessing social network sites and the other half reported preferring to do research. When asked what social network site they preferred, ten of them (50%) reported preferring to access www.facebook.com. The others reported preferring MSN or Orkut. Just one said he did not like any of them.

The next question asked students to say whether, in that semester, they preferred having the ESP classes in the classroom or in the computer laboratory, as can be seen in Figure 34.

Figure 34
Where do you prefer to have classes?

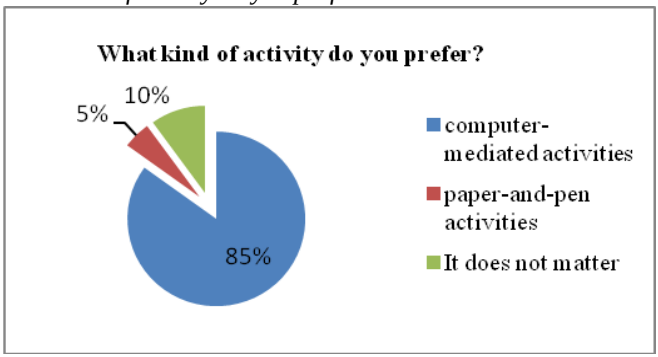


n = 20

Figure 34 shows that most of the students (85%) reported preferring having classes at the computer lab. Only 15% of the participants said it did not matter. Nobody declared preferring the classroom.

The last question in the first section asked whether students preferred doing paper-and-pen activities or computer-mediated activities, as demonstrated by Figure 35.

Figure 35
What kind of activity do you prefer?



n = 20

According to Figure 35, the majority of the students (85%) reported they preferred performing computer-mediated activities. For 10% of the group, it did not matter the means used to perform activities: paper or computer. In addition, it is important to highlight that only 5% declared preferring printed activities. The results of both online questionnaires will be further addressed and thoroughly analyzed in subsections 4.3.2.8 and 4.3.5 and, also, in the discussion section (Chapter 5).

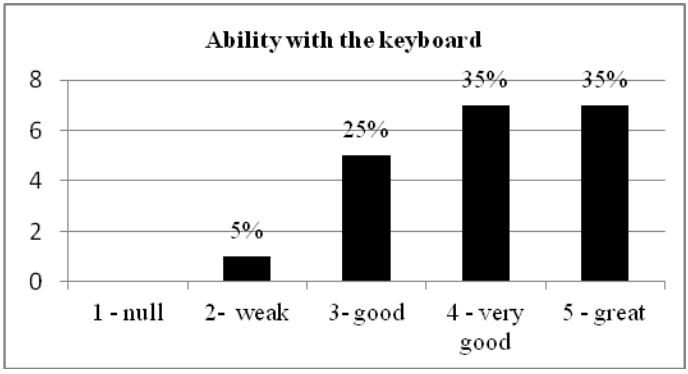
Next, I will provide the results of the second online questionnaire which are related to participants' level of DC at the end of the ESP course.

4.3.2.2 DC2

In order to measure participants' level of DC at the end of the course, they had to answer nine questions in the second section of the end-of-the-term questionnaire regarding their abilities to use specific computer parts, tools, and tasks. To do so, participants had to choose in a 5-point Likert scale (from 1 = null to 5 = great) their level of abilities regarding the just-mentioned tasks.

The first question asked students their level of abilities concerning the use of the keyboard and some of its keys ("Esc", "Ctrl", "Alt", "Del"), as can be seen in Figure 36.

Figure 36
Ability with the computer keyboard

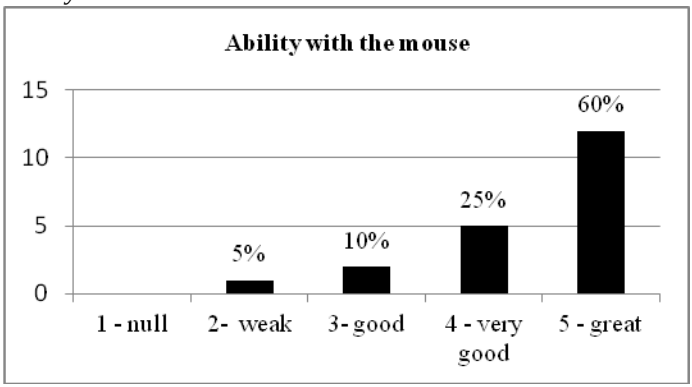


n = 20

According to Figure 36, seventy percent (70%) of the participants selected either levels 05 or 04, i. e., the majority of the participants considered they had a great or a very good ability with the computer keyboard. Only one out of 20 participants considered his ability with the keyboard weak.

The second question asked students their level of abilities concerning the use of the mouse (e.g., right and left keys, double click), as can be sen in Figure 37.

Figure 37
Ability with the mouse

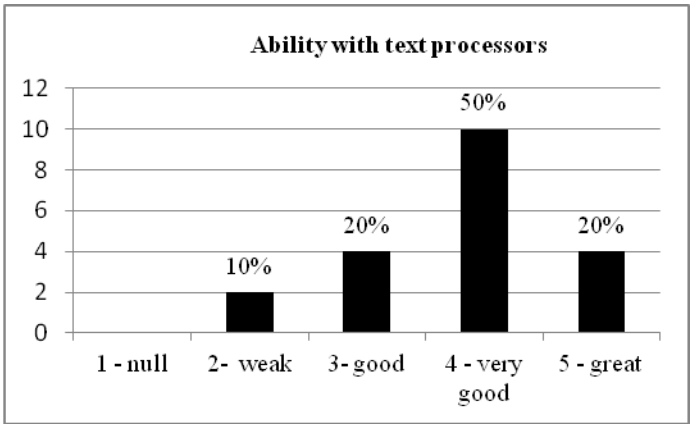


n = 20

Figure 37 demonstrates that most of the students – 85% - selected levels 05 or 04, i. e., seventeen participants considered very good or great their abilities with the mouse.

The third question in the second section asked the level that best described their ability in working with text processors (e.g., type a text, configure pages, select, copy and paste, among others), as can be seen in Figure 38.

Figure 38
Ability with text processors

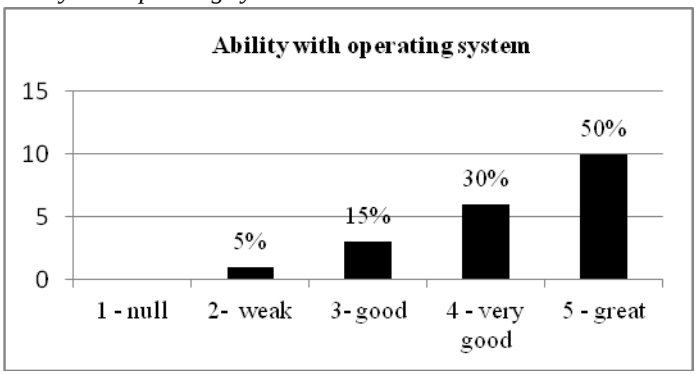


n = 20

According to Figure 38, seventy percent (70%) of the participants declared that their level was 04 or 05 in performing the above-mentioned tasks.

The fourth question asked the level that best described their ability in working with the operating system of their computers (e.g., create folders, copy, move, rename files, and others), as can be seen in Figure 39.

Figure 39
Ability with operating system

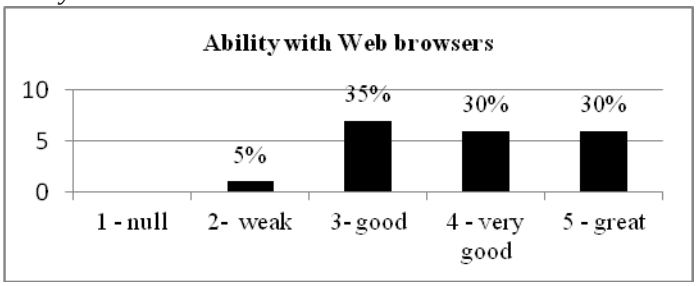


n = 20

As can be seen in Figure 39, eighty percent (80%) of the participants declared that their level was 04 or 05 in performing the above-mentioned tasks.

The fifth question asked the level that best described their ability in working with Web browsers (e.g., save pages, work offline, favorites, among other tasks), as can be seen in Figure 40.

Figure 40
Ability with Web browsers

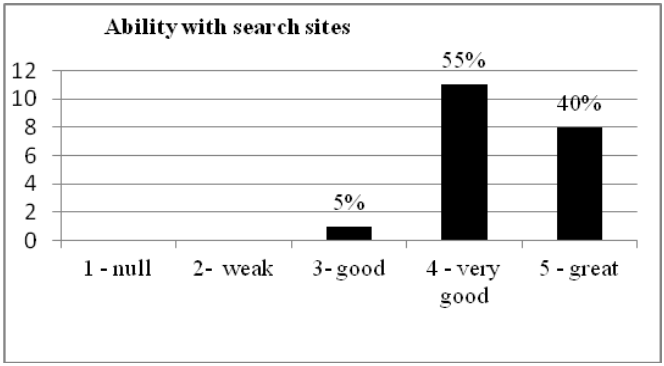


n = 20

Sixty percent (60%) of the participants declared that their level was 04 or 05 in performing the just-mentioned tasks, as can be seen in Figure 40.

The sixth question asked the level that best described their ability in using search sites such as Google to do simple and advanced research, as can be seen in Figure 41.

Figure 41
Ability with search sites

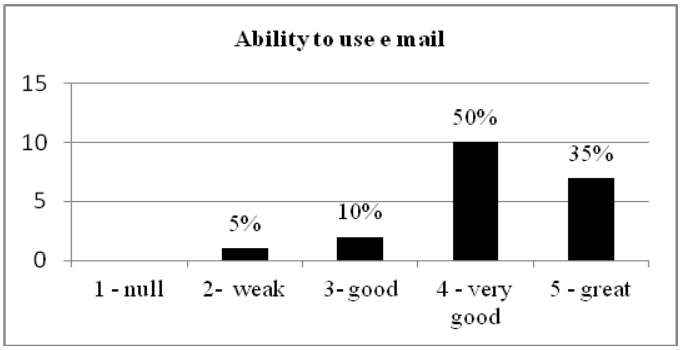


n = 20

Ninety-five percent (95%) of the participants declared that their level was 04 or 05 in performing the above-mentioned task, as can be seen in Figure 41.

The seventh question asked the level that best described their ability in reading, answering, and writing electronic mails (e-mails), as well as inserting attachments, as can be seen in Figure 42.

Figure 42
Ability to use e-mails



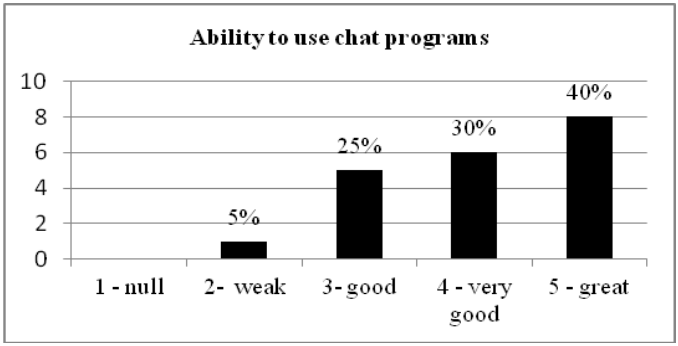
n = 20

Eighty-five percent (85%) of the participants declared that their level was 04 or 05 in performing the above-mentioned task, as can be seen in Figure 42.

The eighth question asked the level that best described their ability in using chat tools (e.g., sending online and offline messages), as can be seen in Figure 43.

Figure 43

Ability to use chat programs



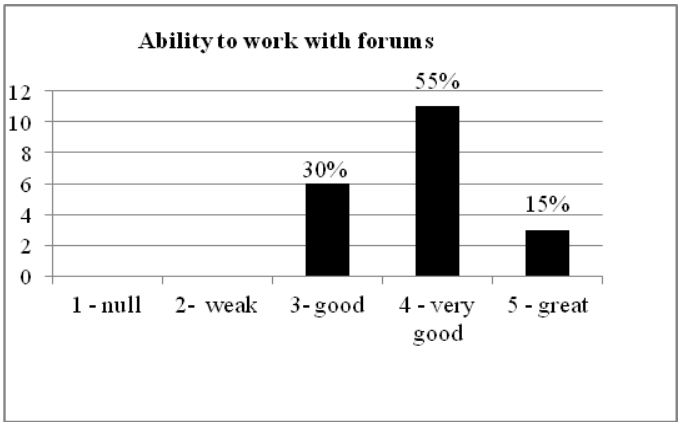
n = 20

Seventy percent (70%) of the participants declared that their level was 05 or 04 in performing the above-mentioned task, as can be seen in Figure 43.

The ninth question asked the level that best described their ability in working with online forums on the Moodle platform, as can be seen in Figure 44.

Figure 44

Ability to work with forums



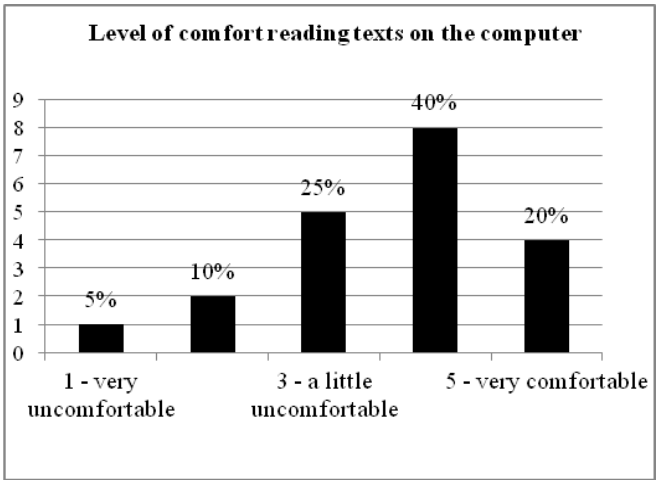
n = 20

According to Figure 44, seventy percent (70%) of the participants declared that their level of ability in working with online forums on the Moodle platform was 04 or 05.

Having provided the results concerning ability levels in performing specific tasks on the computer, I will now present the results related to comfort levels, also while performing specific tasks on the computer. Recapitulating, in order to measure participants' level of DC at the end of the course, they also had to answer ten questions in the second section of the end-of-the-term online questionnaire regarding their levels of comfort while performing other specific tasks on the computer. To do so, participants had to choose in a 5-point Likert scale (from 1 = null to 5 = great) their level of comfort regarding the just-mentioned tasks. The first question asked students their level of comfort while performing tasks on their daily lives such as reading texts on the computer screen, as can be seen in Figure 45.

Figure 45

Level of comfort reading texts on the computer

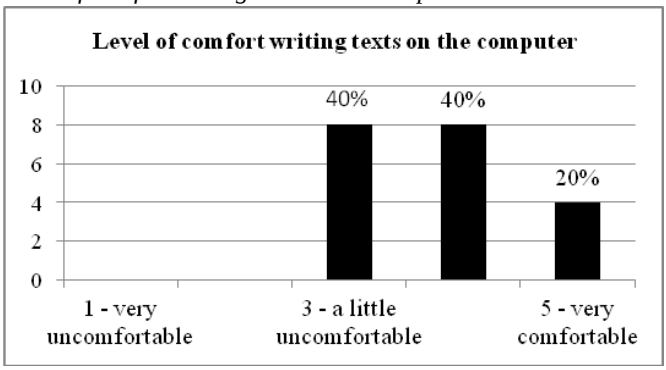


n = 20

According to Figure 45, most students (60%) selected levels 04 or 05, i.e., the majority of the students felt (very) comfortable while performing tasks in their daily lives such as reading texts on the computer screen, at the end of the ESP course.

The second question asked students their level of comfort while performing tasks on their daily lives such as writing texts on the computer, as can be seen in Figure 46.

Figure 46
Level of comfort writing texts on the computer

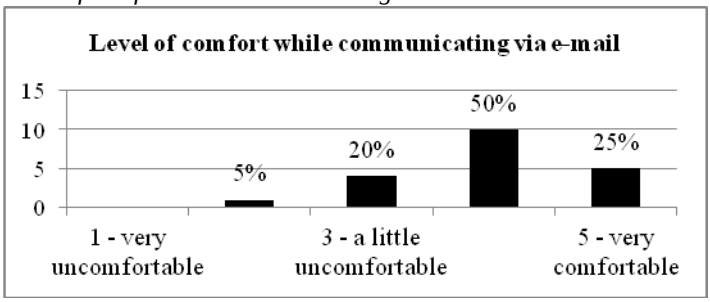


n = 20

Figure 46 presents the results of the second question which asked students their level of comfort while performing tasks on their daily lives such as writing texts on the computer. Again, most students (60%) selected levels 04 or 05. Hences, most students felt (very) comfortable while writing texts on their computers.

The third question asked students their level of comfort while performing tasks on their daily lives such as communicating with someone through e-mails, as can be seen in Figure 47.

Figure 47
Level of comfort while communicating via e-mail



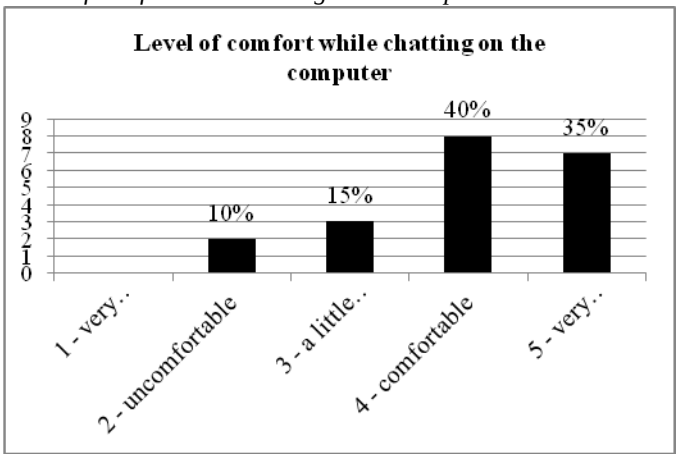
n = 20

According to Figure 47, once more, most students (75%) selected levels 04 or 05. Therefore, most students felt (very) comfortable while communicating with someone through e-mails.

The fourth question asked students their level of comfort while performing tasks on their daily lives such as talking to someone through chat programs such as MSN, as can be seen in Figure 48.

Figure 48

Level of comfort while chatting on the computer



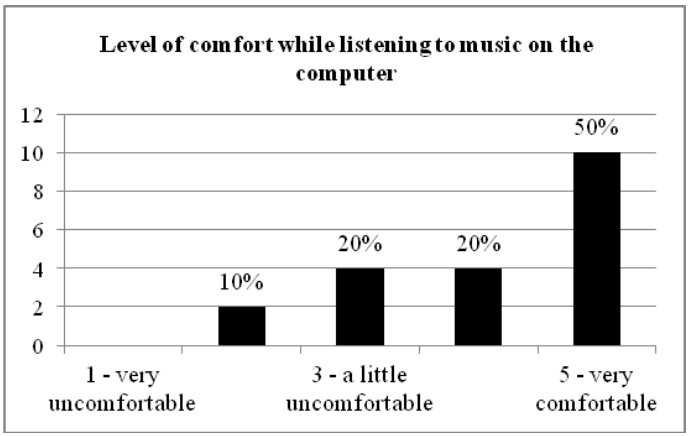
n = 20

As shown in Figure 48, again, most students (75%) selected levels 04 or 05. Thus, most students felt (very) comfortable while talking to someone through chat programs such as MSN.

The fifth question asked students their level of comfort while performing tasks on their daily lives such as listening to music on the computer, as displayed in Figure 49.

Figure 49

Level of comfort while listening to music on the computer



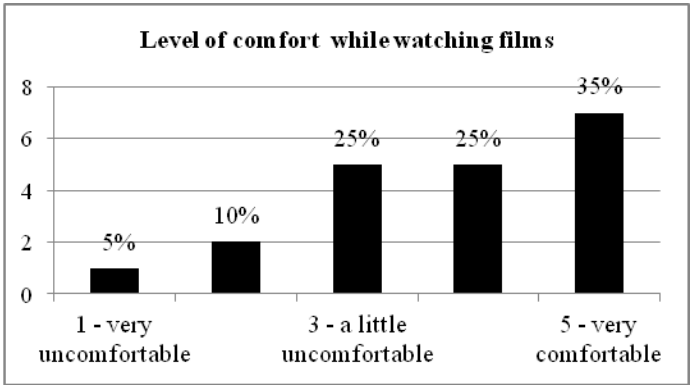
n = 20

According to Figure 49, the majority of the participants (70%) selected levels 05 or 04. Hence, most students felt (very) comfortable while listening to music on the computer.

The sixth question asked students their level of comfort while performing tasks on their daily lives such as watching films on the computer, as shown in Figure 50.

Figure 50

Level of comfort while watching films

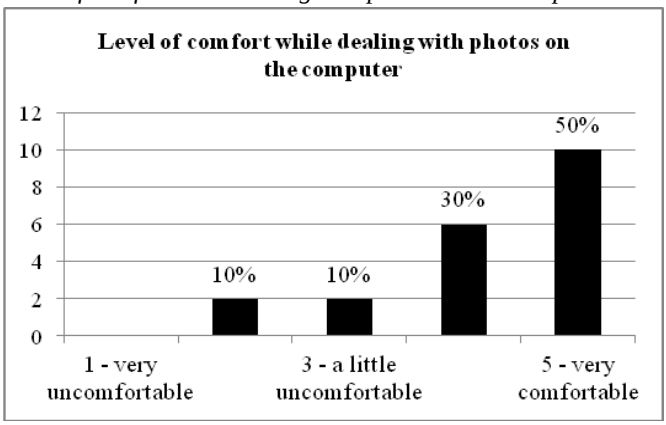


n = 20

This time, the answers were very heterogeneous as presented in Figure 50. On the one hand, the majority of the students (60%) selected levels 05 or 04. Thus, 60% declared feeling (very) comfortable watching films on the computer. On the other hand, it cannot be ignored, 25% selected level 3; 10% level 2; and 5% level 1. Therefore, at the same time there were participants who felt (very) comfortable watching films on the computer, there were the ones who felt (very) uncomfortable, as well.

Moving to the seventh question, it asked students their level of comfort while performing tasks on their daily lives such as visualize, save, and modify photographs on the computer, as can be visualized in Figure 51.

Figure 51
Level of comfort while dealing with photos on the computer

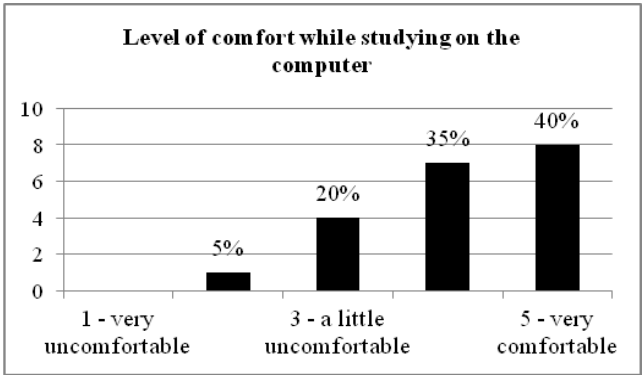


n = 20

According to Figure 51, most students (80%) selected levels 05 or 04. Thus, most students felt (very) comfortable to deal with photographs on their computers.

The eighth question asked students their level of comfort while performing tasks on their daily lives such as studying with the help of the computer (e.g., using CD-ROMs, reading and making slides using Power Point, for example). The results are presented in Figure 52.

Figure 52
Level of comfort while studying on the computer

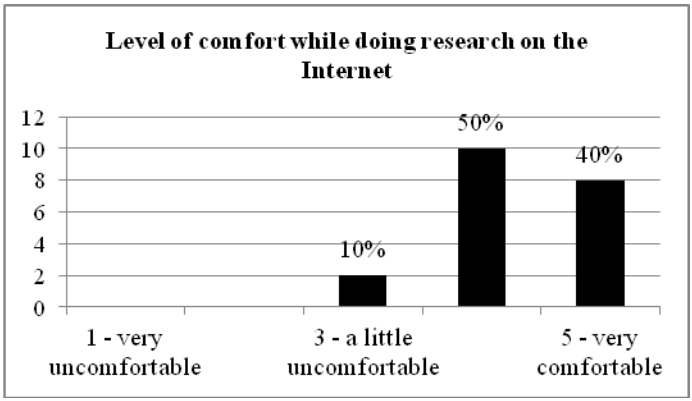


n = 20

Figure 52 shows that most students (75%) selected levels 04 or 05. Hence, 75% of the group felt (very) comfortable while studying with the help of the computer.

The ninth question asked students their level of comfort while performing tasks on their daily lives such as doing research on the Internet, reading information and choosing information appropriately (see Figure 53).

Figure 53
Level of comfort while doing research on the Internet

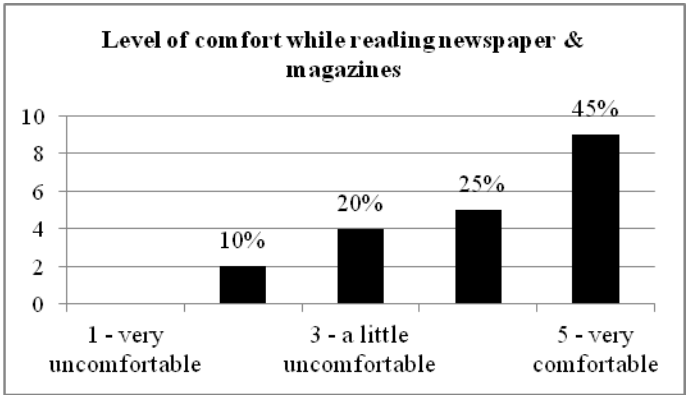


n = 20

As can be seen in Figure 53, most students (90%) selected levels 04 or 05. This is to say that almost all of the participants of this study felt (very) comfortable while doing research on the Internet, reading information and choosing information suitably.

The tenth question asked students their level of comfort while performing tasks on their daily lives such as reading newspapers and magazines on the computer online/offline (see Figure 54).

Figure 54
Level of comfort while reading newspaper & magazines



n = 20

Figure 54 demonstrates that the majority of the participants of the present study (70%) selected levels 05 or 04. In other words, 70% felt (very) comfortable while reading newspapers and magazines on the computer being it online or offline.

4.3.2.3 Levels of DC1 and DC2

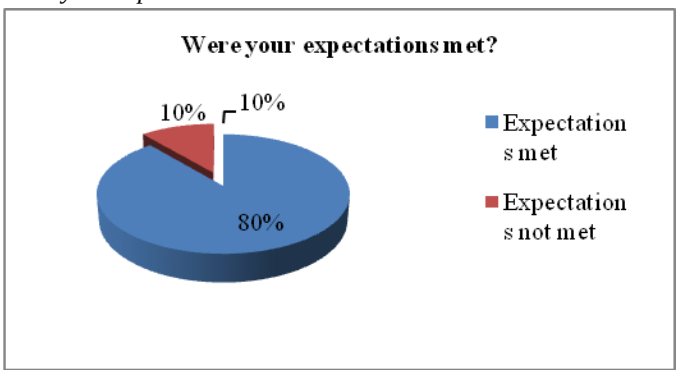
This section will present the participants' levels of DC1 and 2. All the participants' answers regarding their levels of DC were calculated manually by me using the formula adapted from Almeida (2004) and already explained in section 3.8 of the previous chapter. After all the calculations were done, both levels of DC were obtained. As already presented in the just-mentioned section, participants' level of DC1 was 69% and their level of DC2 was 76%. Hence, there was an increase of the participants' level of DC along the course. Section 4.3.5 of the current chapter presents a summary of the qualitative analyses and section 4.4 presents the correlational analyses between both indexes of DC.

Having presented the results concerning participants' levels of DC, I will now turn to subsection 4.3.2.4 where I discuss the results concerning whether participants' expectations were met after the end of the course.

4.3.2.4 Participants' expectations

After the tenth question of the end-of-the-term questionnaire, students were asked to state whether their expectations regarding the ESP course were met. As can be seen in Appendix O, eleven students (55%) directly declared "yes" to this question and five (25%) declared "yes" indirectly. In sum, it is possible to conclude that, on the one hand, 16 participants (80%), that is, the majority of the population of this study, had their expectations met at the end of the ESP course. On the other hand, two students (10%) reported directly that their expectations were not met and three of them stated that they had expected to learn about computer programming. Finally, one of them suggested offering another ESP course along the two-year technical program. Figure 55 shows a graph representing students' answers.

Figure 55
Were your expectations met?



n = 20

As it is possible to see in Figure 55, 80% of the students declared that they had their expectations met at the end of the ESP course and 10% reported that their expectations were not met. It is interesting to observe that students' expectations before the ESP classes were not very high (see Appendix K) as already stated in subsection 4.3.1.1. Mostly, almost 42% of the students reported expecting to learn English to understand the technical vocabulary related to Computing. At the same time, there were answers which were very unclear demonstrating that the participants were not very specific regarding their real expectations or did not know what to expect exactly at the beginning of the course. Possibly, generally speaking, they basically expected to learn more about English. In conclusion, what I can infer for sure is that for the 42% of the students who declared wanting to learn technical vocabulary related to Computing, their expectations were really met.

Having presented the results concerning participants' expectations, I will now turn to subsection 4.3.2.5 where I discuss the results concerning participants' levels of motivation at the end of the course.

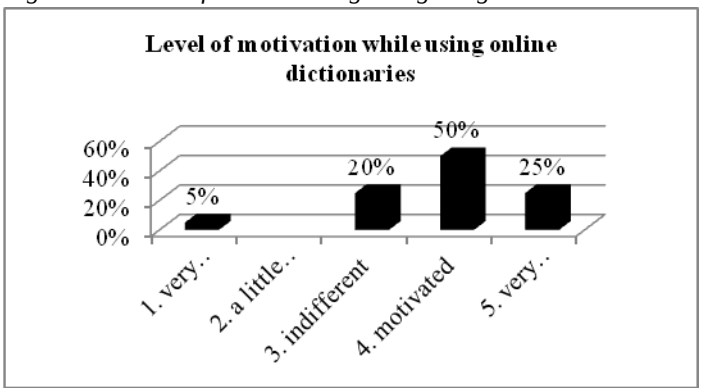
4.3.2.5 Motivation

In the fourth section of the end-of-the-term questionnaire, students had to choose in a 5-point Likert scale (from 1 = very demotivated to 5 = very motivated) their level of motivation regarding activities performed on the computer, such as using online dictionaries, using search engines (e.g., Google), reading texts in English about

Computing, doing English online activities and reading their classmates posts in the forums on the Moodle platform. Accordingly, the fourth section was made up of five questions.

The first question asked students their level of motivation in relation to using online dictionaries. The results can be seen Figure 56.

Figure 56 - Level of motivation regarding using online dictionaries.

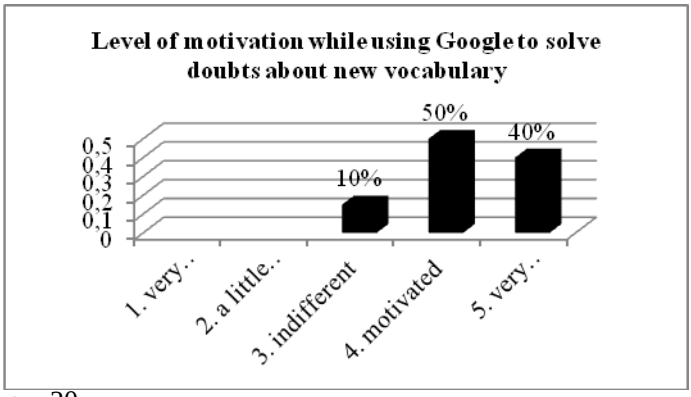


n = 20

Figure 56 indicates that most of the participants (75%) selected levels 04 or 05. This is to say that 75% of the students felt (very) motivated to use online dictionaries. According to my field notes and observations, the online dictionary students made use of was the Moderno dicionário de Inglês: Michaelis: http://michaelis.uol.com.br/moderno/ingles/index.php which was recommended by me. However, students preferred to use a translation engine, Google Translator: http://translate.google.com/ for it was easier to use and faster, according to what some participants told me during the interviews and classes, and according to the next figure (Figure 57).

The second question asked students their level of motivation in relation to using Google Translator to solve their doubts regarding new vocabulary. Figure 57 displays the results.

Figure 57
Level of motivation while using Google to solve doubts about new vocabulary

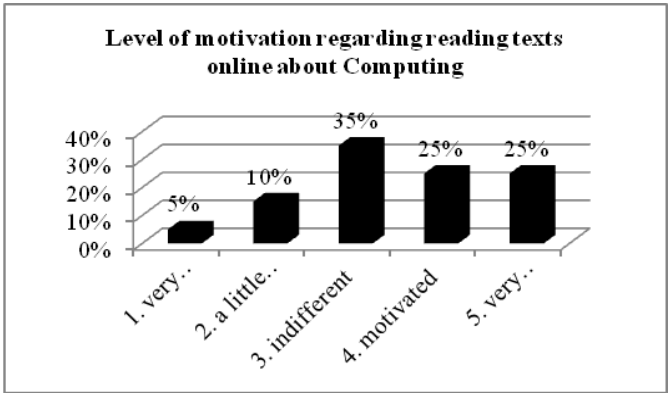


n = 20

As can be seen in Figure 57, most of the participants (90%) selected levels 05 or 04, which means that 90% of the students felt (very) motivated to use the Google translator tool to solve doubts about new vocabulary.

The third question asked students their level of motivation in relation to reading texts online about Computing. The answers were very heterogeneous here, as can be seen in Figure 58.

Figure 58
Level of motivation regarding reading texts online about Computing

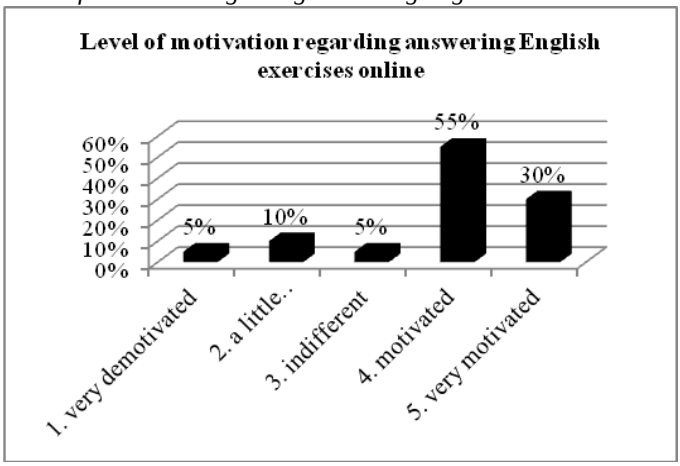


n = 20

As can be seen in Figure 58, fifty percent (50%) of the students selected level 04 or level 05 and the other half selected levels 01, 02, and 03. Thus, only half of the group felt (very) motivated to read texts online on Computing.

The fourth question asked students their level of motivation in relation to answering English exercises online, an indicated in Figure 59.

Figure 59
Level of motivation regarding answering English exercises online

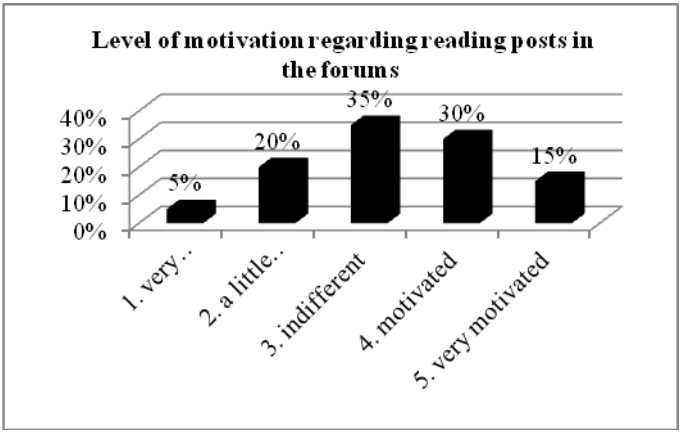


n = 20

The majority of the participants (85%) selected level 04 and level 05, as can be seen in Figure 59. In other words, 85% of the students felt (very) motivated to answer English exercises online.

The fifth question asked students their level of motivation in relation to reading the posts left by their classmates in the forums available on the Moodle platform, as can be visualized in Figure 60.

Figure 60 – Level of motivation: reading posts in the forums on Moodle



n = 20

The answers were very heterogeneous here. As can be seen in Figure 60, only 45% of the students selected level 04 or level 05, i.e., only 45% felt (very) motivated to read the posts left by their classmates in the forums on Moodle. Actually, to be more precise, just 15% felt very motivated to do so. If compared to the third question which asked students their level of motivation in relation to reading texts online about Computing (see Figure 58), 50% of the students felt (very) motivated to perform this activity. Thus, I can tentatively infer that my participants did not enjoy reading so much, generally speaking.

According to students' answers to this part of the second questionnaire related to motivation levels, I can conclude that the 20 participants, on the one hand, felt motivated to use Google translator to solve their doubts regarding new vocabulary and to answer English exercises online, and, on the other hand, did not feel motivated at all to read the forum messages or online English texts on Basic Computing. Further discussion regarding motivation levels will be seen later in this chapter (Section 4.3.5).

Having presented the results of the second questionnaire regarding motivation levels, I will now turn to the next subsection where I discuss about the measure of students' level of motivation.

4.3.2.6 Level of motivation measured

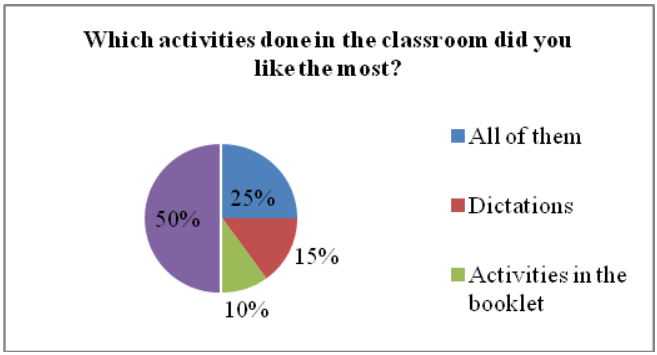
As already stated in Section 3.9, the participants' level of motivation at the end of the course was measured following Almeida (2004) who was interested in calculating participants' level of acceptance of online tasks as he wanted to compare this level with the level of technological competence (see Section 2.5 to understand the author's definition of technological competence). Thus, he took into consideration students' answers regarding their level of motivation in performing ten specific tasks on the computer and also their answers to one specific question about students' perceptions regarding the online tasks. I did not aim that. Therefore, the motivation level was calculated only according to the answers to five questions in the fourth section of the end-of-the-term questionnaire, regarding some activities performed through the computer, such as using an online dictionary or translator, reading online texts on Computing in English, doing English online activities, and reading their classmates posts in the forums, as presented in the last subsection (4.3.2.5) and, also, in section 3.9 of the method section (Chapter 3). In conclusion, the group's motivation level, measured in November (2011) was 69%. This value was compared to students' performance on the posttests, as shall be described in subsection 4.4.5, part of section 4.4 which will provide all the correlational analyses. Further discussion concerning motivation levels will be seen in section 4.3.5 of this chapter.

Returning to the end-of-the-term questionnaire, its fifth and one before the last section contained twelve questions regarding students' opinions with reference to some important issues such as which activities they enjoyed performing the most and the least. Moreover, they were asked about interaction and feedback. At last, students were invited to leave free messages. The next subsection will provide the results of the above-mentioned part of the questionnaire.

4.3.2.7 Other information

The first question of the fifth section of the second online questionnaire asked students which activities done in the classroom they liked best. Figure 61 presents a graph with students' answers.

Figure 61
Which activities done in the classroom did you like the most?

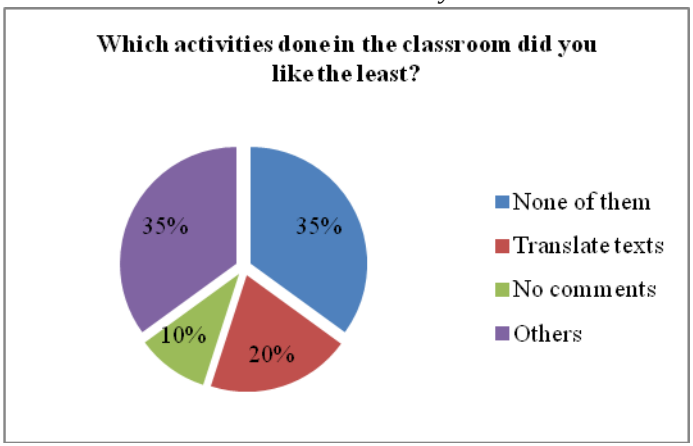


n = 20

As can be seen in Figure 61, 25% of the participants declared they liked all activities done in the classroom and 15% liked the dictations best. The other answers varied: one student preferred the activity about the "motherboard", another one preferred the repetitive activities, and the others preferred the activities done in the booklet, the online tests or the slides (see Appendix P1 for more details).

The second question asked students what activities done in the classroom they liked the least. Figure 62 presents the results.

Figure 62
Which activities done in the classroom did you like the least?

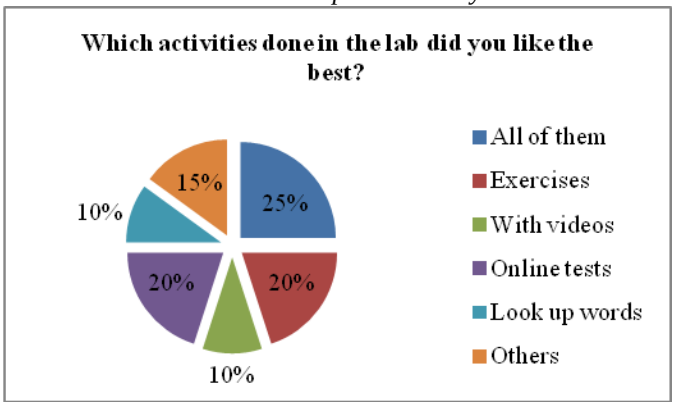


n = 20

Figure 62 indicates that 35% of the participants reported they liked all the activities, that is, there were not any activities they did not like. Four students (20%) declared they did not like to translate texts and two students (10%) preferred not to leave a comment about this issue. One participant reported he did not like to look up words in the dictionary and another one declared he did not like the repetitive activities (Appendix P2 presents students' original answers).

The third question asked students what activities done at the computer lab they liked the best, as presented in Figure 63.

Figure 63
Which activities done at the computer lab did you like the best?

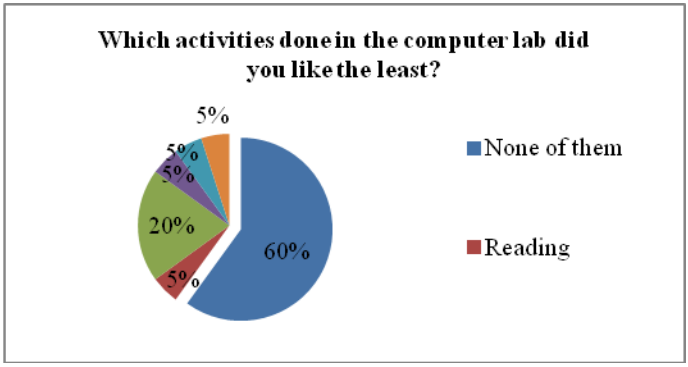


n = 20

As presented in Figure 63, 25% of the participants declared they liked all of the activities done at the computer lab. That is to say that 25% of the group enjoyed all CALL activities. Twenty percent (20%) reported they liked the exercises (e.g., on Moodle and the repetitive ones) and 20% reported they preferred the online tests (see Appendix P3 for more details).

The fourth question asked students what activities done at the computer lab they liked the least, as can be seen in Figure 64.

Figure 64
Which activities done at the computer lab did you like the least?



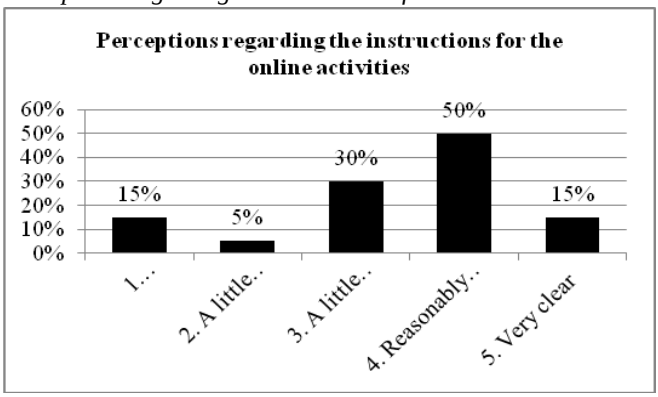
n = 20

As can be seen in Figure 64, most of the participants (60%) declared that there were no activities done at the computer lab they liked the least. In other words, most students (60%) liked all CALL activities (Appendix P4 presents participants' answers).

The fifth question asked students: "Comparing with the activities performed in the classroom, were there more difficulties to perform tasks online on the Moodle platform? If so, which ones?" The majority of the participants who answered this questionnaire (75%) declared they did not have any difficulties performing the online tasks on the Moodle platform (see Appendix P5 for more information).

The sixth question of the second questionnaire asked students to choose what best described their perceptions regarding the online activities undertaken during the ESP course with respect to the instructions for the performance of the tasks. In a 5-point Likert scale students had to select from 01 (incomprehensible) to 05 (very clear) the level that best described their perceptions, as can be seen in Figure 65.

Figure 65
Perceptions regarding the instructions for the online activities

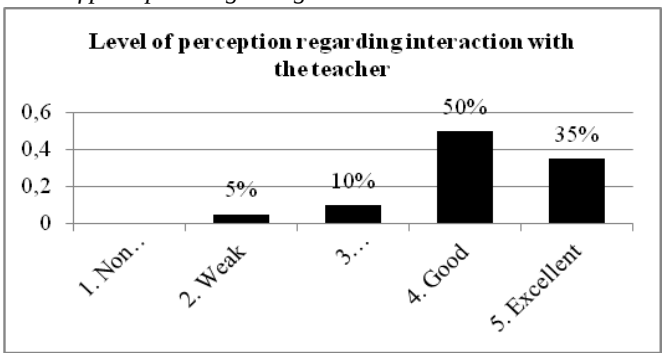


n = 20

Figure 65 indicates that 65% of the participants selected levels 04 or 05. That is to say that most students thought that the instructions of the online activities done during the course were clear. Taking this result into consideration, it is possible to infer that most students did not have difficulty in understanding CALL activities.

The seventh question asked students to choose what best described their perceptions regarding the interaction with the teacher. In a 5-point Likert scale, students had to select from 01 (nonexistent) to 05 (excellent) the level that best described their perceptions, as displayed by Figure 66.

Figure 66
Level of perception regarding interaction with the teacher

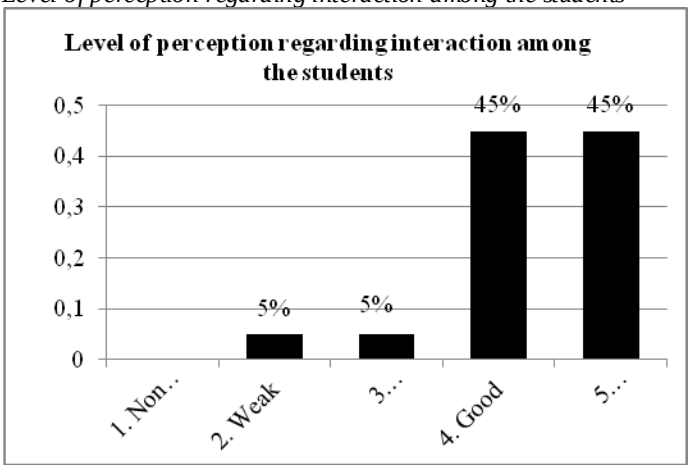


n = 20

As can be seen in Figure 66, 80% of the participants chose level 05 or 04. Thus, most of them thought that the interaction with the teacher was either good or excellent and I am convinced I developed a good rapport with the class, as can be inferred through several comments and answers the group have left in the second questionnaire or in other instances (e.g., the interviews).

The eighth question asked students to choose what best described their perceptions of the interaction among themselves. Again, in a 5-point Likert scale, students had to select from 01 (nonexistent) to 05 (excellent) their levels of perceptions (see Figure 67).

Figure 67
Level of perception regarding interaction among the students



n = 20

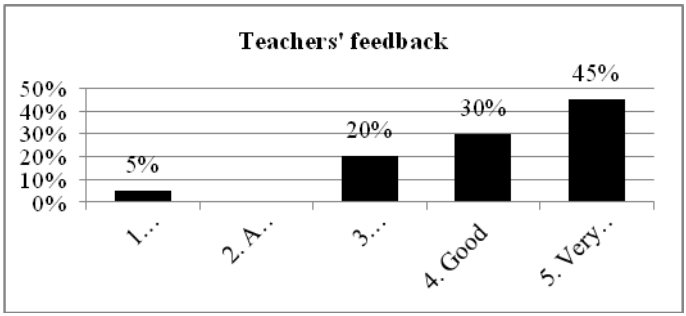
Figure 67 indicates that 80% of the participants chose either level 05 or 04. Hence, the majority of the students considered excellent or good their level of interaction among themselves. The same number of students had the same opinion regarding interaction with the teacher. Thus, interaction between teacher and students and among the group, was not a problem. On the contrary. The good level of interaction in the class as a whole contributed to the good acceptance of the study from the part of the participants. This fact may explain somehow the positive results obtained by the group in general, as already discussed in section 4.2.

The ninth, tenth, and eleventh questions asked students to choose in a 5-point Likert scale (from 01 = not efficient to 05 = very

productive/efficient) their perceptions about the feedback given by the teacher (9th) and the feedback given automatically by Moodle (10th). In the eleventh question, students had to evaluate their learning process at the end of the ESP course.

Figure 68 presents students' responses to the ninth question.

Figure 68
Perceptions on teacher's feedback

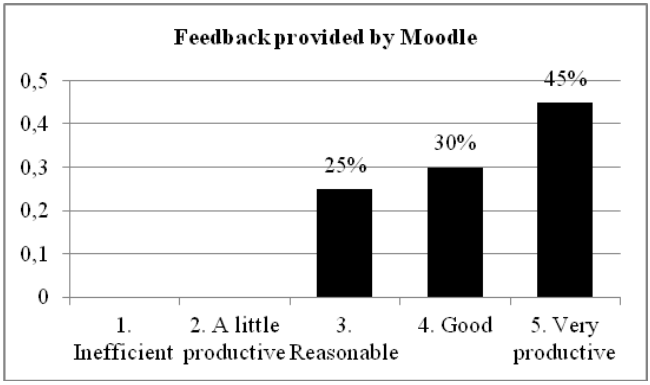


n = 20

As can be seen in Figure 68, 75% of the participants chose level 05 or 04. That is to say that most participants thought that the feedback given by the teacher was very productive or good.

Students' responses to the tenth question can be visualized in Figure 69.

Figure 69
Perceptions on the feedback provided by Moodle

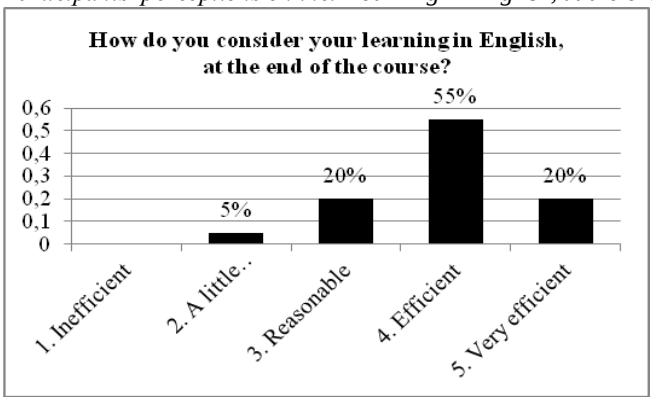


n = 20

For the tenth question, 75% of the participants chose level 05 or 04. That is to say that most participants thought that the feedback given automatically by Moodle was very productive or good, as presented by Figure 69. The same pattern could be seen for the teacher's feedback in Figure 68. Hence, with respect to feedback, being it electronic or not, students had, in general, positive reactions. This fact can explain, at least partially, why my participants kept contributing to this research all through the course.

Figure 70 displays students' answers for the eleventh question.

Figure 70
Participants' perceptions on their learning in English, at the end of the course.



n = 20

For the eleventh question, 75% of the students selected level 04 or 05 according to Figure 70. In general, most students evaluated their learning process at the end of the ESP course as (very) efficient, although 25% did not think so.

Finally, in the last question of the end-of-the-term questionnaire, students were asked to leave free messages (see Appendix R) and sixteen of them have left messages. I will highlight only the ones I think are more relevant for this study.

Firstly, P2 suggested that the teacher present videos with captions not related to Computing when they got tired about Computing. In fact, the videos the teacher displayed on Moodle and presented to the group, did not have captions[73]. Thus, some students complained about it. In addition, P8 suggested that, at the end of each class, the teacher should have announced if the following class would be in the classroom or in the computer lab, for them to be better prepared for the class (e.g., bringing dictionaries). However, after students had learned how to access and use online dictionaries, they rarely brought dictionaries to the classes in the classroom. Usually, I used to take some for them to consult. Next, P10 and P20 affirmed that the questionnaires were too long. They were not the only ones to complain about it. According to my field notes and interviews, other students made the same complaint. Unfortunately, I had not previewed this would happen. Perhaps that is why four participants did not answer the second questionnaire. Furthermore, P11 self evaluated his performance saying that his learning process was good, but he still had difficulties in writing some words in English. After that, P12 declared that there was a lot of interaction between the teacher and the students and among the students as well. He also reported she wanted the ESP course to last forever and P19 suggested that the course had a longer duration. At last, P15 reported that he wanted the ESP course to continue in the second semester of the technical program. These last positive comments help me to infer that, in general, students accepted well the design and procedures adopted along the ESP course and the duration of the study.

Having discussed about students' answers to the second online questionnaire applied after the ESP course, I will now provide the profile of the group that was created when the ESP course finished.

[73] The reason I did not select videos with captions is because I did not find any available on the Web.

4.3.2.8 The group's profile

This subsection presents the group's profile at the end of the course. This profile was constructed according to the analysis of the answers of the end-of-the-term questionnaire. According to what was stated in the last subsections, the end-of-the-term questionnaire (Appendix H) aimed at gathering information from the students after three months of ESP classes. Accordingly, it was designed to assess, essentially, students' level of DC2, similarly to the beginning-of-the-term questionnaire. Furthermore, it was designed to assess students' level of motivation at the end of the course and their perceptions regarding specific aspects of the course. The participants were also invited to state whether their expectations in relation to the ESP course were met or not.

Concerning participants' experience with computers, only 10% of the students declared having a lot of experience regarding computing, and when asked to mention the first thing they did when they accessed the Internet, in general, participants stated that they checked or read their e-mails first or accessed social network sites such as Facebook, which was their favorite network site. Moreover, when asked what they enjoyed doing in the Internet, they declared that, in general, they liked to access social network sites and to do research. In addition, most students reported they preferred performing computer-mediated (CALL) activities and having classes at the computer laboratory. Nobody declared preferring the traditional regular classroom or the traditional paper-and-pen activities (without the mediation of computers).

Regarding students' level of abilities concerning using the computer keyboard, the mouse, working with text processors, working with the operating system of their computers, working with Web browsers and search sites, dealing with e-mails, using chat tools, and working with online forums on the Moodle platform, most participants declared that their level was very good or great.

When asked about their comfort level while reading or writing texts on the computer screen, communicating with someone through e-mails or chat programs, listening to music or watching films on the computer, dealing with photographs on the computer or studying with the help of the computer, doing research on the Internet, and reading newspapers and magazines on the computer, most students stated that they felt (very) comfortable performing the aforementioned tasks.

After calculating their abilities and comfort levels at the end of the course to construct their level of DC, it was concluded that students

increased their level of DC since at the beginning of the course it was 69% and at the end it was 76%. (see further discussion on this matter in subsection 4.3.5, section 4.4, and in Chapter 5).

Concerning expectations in relation to the ESP course, most participants reported that they were met in that semester (see Appendix O), although, at the beginning of the course, it was observed that the students did not have great expectations concerning their future English course (see Appendix K). Possibly, as the experience of taking part in a technical program in Computing was something novel for most part of the students, according to my field notes, they did not know what to expect, exactly, at first.

When asked about participants' motivation level concerning using online dictionaries or Google translator to solve their doubts regarding new vocabulary and answering English exercises online most of them declared feeling (very) motivated doing so. Conversely, when asked about their motivation level to read texts online about Computing, the only half of the group reported feeling (very) motivated and when asked about their motivation level concerning reading the posts left by their classmates in the forums on the Moodle platform, only 45% reported feeling (very) motivated.

When asked which activities done in class they liked best, 15% of the participants declared they liked all activities done in the classroom. The other answers varied, but nobody reported not enjoying any of them. Finally, when they were asked about which activities done in the classroom they liked the least, 35% of the participants reported they liked all the activities, that is, there were not activities they had not enjoyed. As for the computer laboratory, twenty-five (25%) of the participants declared having enjoyed all activities done in the laboratory. The others declared preferring other activities, but nobody reported not having liked any of them, and when asked which activities done in the computer lab they liked the least, 60% of the participants declared they liked all the activities. In a tentative to summarize, it can be concluded that most of the participants enjoyed all the activities performed either in the laboratory or in the classroom. There were just a few exceptions.

When asked whether they had difficulties performing online tasks on the Moodle platform, most students declared they did not have any difficulties performing the just-mentioned tasks. In addition, when asked about the instructions for the performance of online activities undertaken during the ESP course, most of them reported they were (very) clear. Afterwards, when asked to choose what best described their

perceptions regarding interaction with the teacher, and interaction among themselves, most of the participants riported they were excellent or very good. When asked about the feedback given by the teacher and by Moodle, most participants thought that both kinds of feedback were good or very productive. Finally, when asked to evaluate their learning process at the end of the ESP course most students evaluated it as (very) efficient.

Lastly, analyzing the messages left by the participants in the second questionnaire (see appendix R), it is important to consider three of them: (1) the length of the questionnaires (two participants affirmed that the questionnaires were too long); (2) the good level of interation in the class; and, finally (3) the duration of the course (the 40-hour ESP course was considered too short for some participants).

Having provided the results of the end-of-the-term questionnaire, I will now turn to the next subsection where I present the messages students left in the forums proposed by me on the Moodle platform.

4.3.3 Students' posts

Seven (07) forum topics were created on the Moodle platform[74]. Every time students went to the computer laboratory, they had something new to do, to see, to watch or a forum where they should write something (the messages or initial statements posted in the seven forums by the teacher in chronological order can be seen in Appendix J1). Students were asked to give their opinions or post their comments in each forum, in a weekly basis. It was not a mandatory activity. As a consequence, not all 24 students left posts in all seven forums (all students' original posts are displayed in Appendix J2 in chronological order). Also, the forums were always "open". It means that students who had not left messages when they were asked to do so, they could do it later (in Appendix J2, besides each message, it is possible to see also the date each one was posted). I will now present the students' posts that I consider more relevant for this study, separated into five categories: (1) CALL in the ESP classes; (2) The English classes; (3) The activities on Moodle; (4) The discussion forums; and, finally, (5) students' performance.

[74] Available at: http://Moodle.gaspar.IF-SC.edu.br/course/view.php?id=40

4.3.3.1 CALL in the ESP classes

Apart from the first forum where students just had to introduce themselves, the second forum was used for students to leave their opinions about the use of the computer/Internet in the ESP classes, that is, the use of CALL in the English classes. In this forum, there are 22 posts (as can be seen in Appendix J2 – II). As can be observed, all posts present only positive comments. There is just one negative comment which concerns the speed of the Internet at the institution (IF-SC/Gaspar) that was slow, as can be observed in the following post:

> *Com o computador as aulas ficam mais dinâmicas e o acesso a informação é mais rápido, embora nossa conexão seja lenta no IFSC – Gaspar (P6, on August, 24th).*

Although the connection or speed to the Internet was relatively slow sometimes, it was always possible to carry out the activities proposed. It is important to note, however, that, at the same time P6 complained about the slow conection, he also acknowledged the fact that with the computer, the classes became more dynamic and the access to information fast. Hence, the negative aspect he raised was not a great problem. Next, I will highlight the posts I think are more relevant and deserve attention.

Firstly, P18 acknowledged that the use of the computer and the Internet in the English classes was very important for the development of students' learning because they could practice what they were learning in their everyday lives. Then, P7 and P17 reported that with the computer and the Internet they could learn better. Subsequently, P1 reported that it was very good to learn together with the computer because it was with the computer that these students would have to interact and use what they were learning in the English classes. After that, P15 affirmed that it was very important to use the computer and the Internet in the English classes because students could solve all their doubts. On his turn, P3 thought that the use the computer and the Internet in the English classes was important because the students could do research about the issues present in this language that interested them. Then, P6 and P10 reported that with the computer, the access to information was faster. In P22's opinions, the use of the computer in the classes made the classes more pleasant, improving their learning. In P8 and P20's opinion, the use of the computer and the Internet in the

English classes was important because they could visualize the videos posted by the teacher. Also, P20 added that students could do research in the online dictionaries, and the students who did not have the printed booklet, could follow it through the computer (the digital version). On their turn, in P22, P16 and P13's opinions the classes were more dynamic with the computer and the Internet. Then, P4 declared that the use of the computer and the Internet in the English classes were good tools because their use made research easier. Next, P2 reported that, together, computing and English help in the process of globalization and consequent social inclusion and P19 stated it was important to use the computer with the Internet because it made learning easier, especially because they were enrolled in a Computing program. Finally, P11 declared that the classes were very good and entertaining.

The posts of these 16 participants above (most part of the group) reveal that they had evaluated the ESP course positively since its beginning. In general, it can be inferred that because of the easy access to the Internet, students had developed a certain autonomy since several of them declared that because of the Internet, the easy access to information made learning easier and faster.

According to students' posts, my field notes and some interviews, I can reach the conclusion that, after students had learnerd how to use the Moodle platform and also after they were instructed by the teacher to use online dictionaries, they became more autonomous and independent. In case they had problems with new vocabulary, for instance, they knew exactly what to do. I noticed that, at the beginning of the course, I had to give a considerable amount of assistance regarding the use of the computer, the Moodle platform, and the online dictionaries. However, after the group was instructed, the participants learned and were able to solve their doubts and problems by themselves. As a consequence, the assistance given by the teacher was not always necessary.

A last point to be taken into consideration is the high motivation level the participants of this study had at the beginning of the course (recap that this was the first opinion forum of the semester), a time when they were having contact with a new environment, a new group, a different way to learn, among other aspects. This inference can be corroborated by the several instances where students declare their satisfaction with the course. By way of example and not limitation, the reader is invited to observe the following comment:

> *É muito importante o uso do computador nas aulas de inglês, para o desenvolvimento do nosso aprendizado, pois vamos colocar em pratica o que aprendemos no nosso dia a dia (P18, on August 21st)* [75]

P18's comment is of particular importance because it reveals the link the participant observed between the English classes and the real world, since he reports that what they were learning, they could put into practice.

4.3.3.2 The English classes

In the third forum, students were asked to leave their opinions and suggestions concerning the English classes up to that moment, i.e., after about four weeks of classes (see all messages in Appendix J2 – III, in chronological order).

Fourteen students have left posts in this forum. Firstly, P18 acknowledged that the English classes were very interesting and creative with the videos and exercises. Then, P9 said that with the videos, it was easier to learn. Next, P1 thought he was enjoying the classes very much and that he could interact and learn in a simple way without any hurry. Subsequently, P13 reported that the evaluation through Moodle platform was nice and really interesting. Afterwards, P6 declared he enjoyed the exercises that helped him retain new vocabulary. In addition, he thought that the repetition of several terms made everything easier, even being boring sometimes. This way, he thought, it was difficult to forget things. Also, P18 and P6 felt they were learning very much followed by P20 who declared that the classes were very good, the activities were very interesting, and similarly to P1, he thought that he could learn in a simple way without any hurry. Later, P12 reported that the classes and explanations were excellent and he agreed that everything was being thought in a simple way, and because of this, he could learn. Finally, he declared that the activities were good because they helped students retain new knowledge. Therefore, he could memorize all the words better. Moreover, P19 agreed that the classes were simple, in a way

[75] In English: "It is very important the use of the computer in the English classes, for the development o our learning, because we will put into practice what we learn in our day-by-day".

students could understand. After that, P3 reported that the contents of the classes were very clear because of the repetitions followed by P24 who thought that the English classes were very profitable. Then, P19 agreed with P18. He thought that he could learn better with the videos and exercises and P3 agreed that the videos facilitated the learning process. On his turn, P11 reported that the time of the classes passed very fast and P10 declared that, sometimes, he felt he became stressed with all the repetitions. However, P10 realized that it was a very good way to learn. He could realize this through the results of his tests. Subsequently, P22 thought that all the repetitions were a little boring but worked well because most of the students performed well in the exams. P22 added that the repetitions were important for the students to be able to memorize the new vocabulary.

All in all, participants manifested their enthusiasm with the course and raised only positive commentaries in its respect. The only aspects concerning the course some students complained about, was regarding the "repetitions". When they cite "repetitions", they are referring to the vocabulary exercises that I repeated following Nation's (2001a) suggestion: vocabulary retrieval is the second necessary condition for words to be remembered once they are noticed. Retrieval helps strengthening the memorization of a word and the repeated meetings with words leads to better retrieval (see Chapter 2).

Lastly, by way of example and not limitation, P7 acknowledged that the classes were useful, especially because he had difficulties with English. However, he felt he was learning easily because of the methodology of the classes. Also, the exercises on Moodle, exams, and other exercises were making him learn better than other opportunities he had to learn English, as can be observed in his original message:

> *As aulas de Inlgês para mim está sendo muito útil, principalmente porq eu nao tenho muita facilidade na matéria, mas pelo modo que estamos aprendendo, está facilitando muito minha aprendizagem, ainda tenho dificuldade, mas os exercícios no moodle, provas, trabalhos, e explicações está me trazendo um conhecimento muito melhor do q eu já tive em outras oportunidades. Espero melhorar muito mais em cada aula, obrigado Professora pela força. (P7, on November, 03rd)*[76]

[76] In English: "The English classes for me have being useful, mainly because the subject is not easy for me, but because of the way we are learning, it is making my learning easier, I still have difficulty, but the exercises on moodle, exams, project works, and

Through P7 commentary, which was posted only in November, it is possible to infer that the experience he was having at IF-SC in the English classes was unique. According to his comment and my field notes, not only P7 but, also, other students reported that they had not experienced English classes in other educational contexts the way they were experiencing at IF-SC with me. Hence, the BL environment students were inserted in, was a completely novel experience, I can propose, for all 24 participants of this study and was very well accepted as can be inferred through their commentaries and observations in the forums, for example.

4.3.3.3 The activities on Moodle

In the fourth forum, students were asked to leave their opinions and suggestions about the activities posted on Moodle platform for the ESP classes, in general. They also had to report which activities they liked the most and the least. In this forum, 11 students have left posts, and there are 16 commentaries (see Appendix J2 – IV), besides the teacher's feedback. This forum was opened in November. Recap that at that time, students had had three months of classes already.

Firstly, P21 reported that he liked the activities posted on the Moodle platform very much, especially the "Simulados"[77]. Similarly, P20 reported he thought the activities on Moodle platform were very interesting and he preferred the videos and the "simulados". Then, P2 and P24, both reported they liked the activities on Moodle platform but preferred the videos. Next, P24 recommended that there were fewer "simulados". Subsequently, P11 reported that he was enjoying the activities on the Moodle platform because everything was in the site and, this way, everything became easier to learn. Later, P3 said that he liked the activities on the Moodle platform because there were many activities from several places and sites. Afterwards, P19 reported she loved the activities on Moodle; she liked the "simulados" because the "simulados" motivated her to study more; she also liked the videos, but

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explanations are bringing a much better knowledge if compared to what I had in other opportunities. I hope to improve much more in each class, thanks Teacher for the incentive. (P7, on November, 03rd).

[77] Recapitulating, since the participants had not had previous experiences using the Moodle platform, two online tests were simulated and administered on the Moodle platform. These two mock tests were referred to as "Simulado 1" and "Simulado 2". The first "simulado" was applied on September 13th and the second on September 12th.

it would be better if they had captions in Portuguese. P7 stated that the activities on the Moodle platform were very good and organized and made the learning process easier for him, because he used to have difficulties in learning English. P8 and P10, both reported that the activities on the Moodle platform were good because they could follow the activities at home, in case they had to be absent in some classes. Differently, P6 said that the activities on the Moodle platform were a little confusing, because sometimes he did not know what to do first. On the other hand, P24 said that the activities on Moodle platform were profitable and P16 reported that the above-mentioned activities (i.e., the CALL activities) complemented the classes given in the traditional classroom. Finally, he also affirmed that the tests on Moodle contributed to the learning process.

By way of example, I will present, now, four commentaries left by P4, P21, P20, and P19:

> *As atividades no Moodle estao sendo bem aproveitadas, entre elas prefiro as atividades de visualização de video, mas acho que deveria ter menos simulados. (P24, on September 20th)*[78]
> *Olá theacher, gosto muito das atividades do moodle, principalmente os testes simulados, gosto de tudo, se poder faça mais testes simulados... abraço (P21, on September 20th)*[79].
> *Eu acho bem interessante as atividades postadas no moodle. As atividades que eu mais gosto são os videos e os simulados. Está bom assim, não tenho nenhuma sugestão. (P20, on September 20th)*[80].
> *Adoro atividades no Moodle, gosto dos simulados por que nos estimula a estudar mais, gosto dos videos tambem, mais acho que deveria ter legenda pois fica mais facil entender. Bya! Bya! (P19, on September 24th)*[81].

[78] In English: "The activities on Moodle have been very useful, among which, I prefer the videos, but I think that there should been fewer "simulados".
[79] In English: "Hi, teacher, I like the activities on moodle, especially the "simulados", I like everything, if you can apply more "simulados".
[80] In English: "I think the activities posted on moodle are very interesting. The activities I liked the most are the videos and the "simulados". It is good this way, I do not have any suggestions."
[81] In English: " I love the activities on moodle, I like the "simulados" because they stimulate to study more, I like the videos too, but I think they should have captions because with captions they are easier to understand".

P21, P20, and P19 demonstrated through their comments that they had really enjoyed performing the "Simulados". That said, however, what one student considers advantageous, another student may find problematic. On his turn, P24 suggested that there should be fewer simulados. Besides the good acceptance of the "simulados", students also welcomed the videos. Probably, these were the two activitities the students liked the most, besides the other online tests (see Appendices P3 and P4).

Similarly, in the sixth forum, students were asked to leave their opinions about the activities on topic eight on the the Moodle platform. Seven students participated of this forum (see Appendix J2 – VI). Three of them - P24, P13 and P20 - thought that the activities were very good because it was a different way to exercise what they had learned in the classroom. P24 thought that all the activities were interesting because they allowed the access to several different resources, and this is what made Moodle different from other resources or learning environments. P5 reported that the activities helped her to understand the Computing language. Lastly, P11 thought that the activities were very good because students could learn more and in real time. Once more, it can be observed the positive comments made by the paticipants.

4.3.3.4 The discussion forums

In the fifth forum, students were asked to leave their opinions about the discussion forums available on the Moodle platform (see Appendix J2 – V). Nine participants took part of this forum. Five participants - P1, P20, P3, P11 and P19 - reported that the discussion forums were very good to express their opinions. On his turn, P3 added that the forums on Moodle were good also because they could see their classmates' opinions. Finally, P10 added that the teacher also could "situate herself" and teach in a way, as simple as possible and two participants in this forum - P1 and P6 - declared that the forums were democratic.

Again, just a few participants interacted in this forum. At least, it can be inferred that the forums were important from students' point of view because it was a place for them to express themselves and to leave their opinions about the course, as five of them reported, for example.

Next, I will turn to the next subsection where I present the posts left in the last forum.

4.3.3.5 Students' performance

In the seventh and last forum, students were asked to evaluate their performance in the ESP course in 2011. They had to say if it was excellent, proficient, sufficient or insufficient[82]. This time, I insisted more on their participation, and 20 students left their contributions (see Appendix J2 – VII). Fourteen participants evaluated their performances clearly.

Eight participants - P13, P12, P20, P2, P22, P1, P24, and P15 – evaluated their performance on the ESP course as excellent. Moreover, P24 and P13 added that they were satisfied with the methodology of the classes. On his turn, P12 also added that the activities helped because they were similar and the tests, too. P2 declared that he had difficulties to remember some words. P24 and P22 also reported that the large quantity of exercises had a positive effect on the results.

Three students - P18, P8, and P7 - evaluated their performance on the ESP course as proficient**.** In addition, P8 added that he was surprised by the fact that he had learned so much. P7 also added that, although he had always had difficulties learning English before this ESP course, he learned very much during this course. Furthermore, he had opportunities to be updated.

Three students - P21, P6, and P 11 - believed that their performance was sufficient. Also, P21and P6 reported that they were not very good in English. On his turn, P21 said he wanted to improve by studying more. However, it was difficult for him to study because of lack of time. P6 declared he had not studied for the last test and confessed that this ESP course was very easy for him because of the large number of activities.

Six students did not state their level of performance, clearly. P10 declared that he had studied for some tests and not for some others. He added that he had to improve. P19 thought his performance was good, but that he could be better. P3 reported that he was doing well. He added that the contents were very repetitive, and this was something that made it difficult to forget things. P16 and P17 believed that their performance was not very good and P17 added that he enjoyed the ESP classes because he felt he was learning new things. He also added that he wanted to improve.

[82] Excellent, proficient, sufficient or insufficient (or in Portuguese, in the original: *Excelente (E), Proficiente (P), Suficiente (S)* or *Insuficiente*) are the four performance levels attributed to students at IF-SC, since no grades are given to them. The best of the four levels is E, followed by P, and then S. The last one – I – is the worst.

Finally, P5 declared that, at the beginning, her performance was bad, but later she improved and wanted to have an excellent performance. Her original message is presented below, by way of illustration:

> *Sendo sincera comecei bem mal, mais depois fui do Insuficiente para o Suficiente e agora está chegado para o Proeficiente e ainda chego lá no Excelente (P5, on November 08th).*[83]

As a matter of fact, P5 really improved along the course and the study. In order to support this evidence, her performance in all five tests demonstrate her improvement. In the pretest she got 40. In the two immediate posttests she obtained 61 and 75, respectively. Later, she achieved a superior performance by getting 89 in the PPDEpost and 100 in the CPDEpost. Hence, P5 demonstrated that she was really excited, enthusiastic, and motivated to overcome her difficulties, even if this motivation was just an instrumental motivation (since her level of motivation measured at the end of the course was only 60%). As already stated, exams are capable of promoting an instrumental motivation to attend to the material that would not be attended to without the exams (Laufer, 2010, p. 22-23). In conclusion, tests also aim at practicing, exercising, and learning, besides being appropriate instruments for assessment and to provide the instrumental motivation learners need to continue improving.

The next subsection will present a summary of the messages left by the participants in the forums proposed on the Moodle platform.

4.3.3.6. Summary of the forum messages

In this subsection, I will summarize the messages left by the participants in the forums proposed on the Moodle platform. To better organize students' posts, the messages were separated into five categories. An average of 13 students participated in each forum.

Students acknowledged that the use of the computer and the Internet in the English classes were very important, good, dynamic, and pleasant. They could learn better and do research about the issues present in English. Also, the access to information was faster, improving

[83] Translating to English: "Being sincere I started very badly, but then I went from the Insufficient to the Sufficient and now I am getting near the Proficient and I will get the Excellent".

and facilitating their learning. They could also look up words in online dictionaries, making the process of doing research easier. It is important to highlight and repeat that P2, in particular, declared that, together, Computing and English helped in the process of globalization and consequent social inclusion. That was a very meaningful and mature statement reported by a 16-year-old student. He was aware of the importance of knowing how to use an Internet-connected computer and, also, of the relevance of the English language, specially in the context of the Internet and in the context of Computing. As Arnó-Macià (2012, p. 92) wisely puts, it is important to teach English specifically for learners to function well and fully in the context of the Internet, since the English language is seen as a lingua franca in the just-mentioned context. Accordingly, besides being considered a lingua franca internationally, it is considered the same in the virtual world, and P2 was aware of that.

Moreover, students thought that the English classes were very interesting, creative, profitable, simple, or useful. They commented on the fact that with the videos and exercises it was easier to learn and that everything was done in a simple way without any hurry. The evaluations applied through the Moodle platform were interesting and the repetitions of several terms made everything easier, and consequently, it was difficult to forget what was taught during classes. In addition, the activities were good because they helped students retain new knowledge. Therefore, they could memorize better all the words. Also, the exercises on Moodle, exams, explanations, and other exercises were making students learn well and the time of the classes passed very fast. On the other hand, a few students also complained about all the repetitions. One student declared that sometimes he felt stressed and two students affirmed that the classes were boring because of all the repetitions. However, they acknowledged the fact that the repetitions worked well for most students performed well on the exams.

Furthermore, students accepted well the activities proposed on the Moodle platform. By way of example, the adjectives they used to describe these activities were: interesting, good, organized, and profitable. Also, students reported that the activities made the learning process easier. Students liked the activities suggested such as the visualization of videos and the performance of the "simulados". Moreover, they declared that everything was available on Moodle and, this way, the content became easier to learn. They could follow the activities at home, in case they had to be absent in some classes and the activities complemented the classes given in the classroom. In addition, the online tests on Moodle contributed to the learning process.

Also, students thought that the activities on Moodle were very good and interesting. One of the reasons which may explain that might be that doing the activities suggested was a different way to exercise what they had learned in the classroom. Furthermore, it allowed the access to several different online resources, and this is what made Moodle different from other resources or learning environments. The activities helped to understand the Computing language and students could learn more and in real time.

In addition, students reported that the discussion forums were democratic and very good to express their opinions. Finally, regarding students' performance, the majority of the participants who took part of this forum, evaluated their performance in the ESP course as excellent (n = 8) and three of them as proficient.

According to what was declared in the forums, I can conclude that the participants, in general, felt and were aware of the fact that they were learning and improving along the course. Furthermore, they felt happy about the methodology of the classes and with the large quantity of exercises which had a positive effect on the results.

After providing a summary of the results regarding the forums, I will now present what students reported in their self evaluations.

4.3.4 Students' self evaluations

At the end of the course, students were asked to write a paragraph evaluating their performance on the ESP course (Appendix Q presents all the participants' writings in this task in their L1). This subsection will present some of the students' comments translated to English.

P1 thought that he had improved his abilities in reading and listening in L2. Also, he realized that he had learned and that it was easier for him to understand texts in English. Therefore, P1 was aware of his learning process and could observe the development of two language skills: written and oral comprehension (reading and listening, respectively). His performance on the tests was very good (see Appendix DD for students' performance on the five tests).

Moreover, P2 declared that he had participated in all forums on Moodle, but he did not participate in the classes very much nor did all the requested activities. In addition, he could not concentrate very well in the classes, accessed some social network sites sometimes, and did not study much for the last exam. He felt demotivated to learn English, in spite of the fact that he wanted to be able to speak English fluently.

Finally, he reported that he had difficulty to recognize a word when it was pronounced. Hence, P2 still had difficulties with pronunciation, i.e., his oral comprehension skill was not fully developed. However, according to the results of his tests, P2 performed really well. He got 55 in the pretest, 96 and 80 in the immediate posttests, and, finally, 78 and 100 in the delayed posttests, what leads me to conclude that, even feeling demotivated (his level of motivation was 10%), P2 did a good job. Perhaps the course was not challenging enough for him.

Furthermore, P3 reported that the ESP course was very productive. However, the booklet could have been more updated, since technology develops and changes very often. Interestingly, he thought he had improved his learning in the English language and became to know vocabulary related to Computer parts at the same time he learned about them. He thought that the ESP classes were not difficult for him. One of the reasons was that many words in English are cognate words. He also realized that with all the written evaluations, students could follow their progress in the subject. Finally, he reported that he had participated well in almost all the activities. His performance on the tests was very similar to P3, but his level of motivation was higher: 50%.

Moreover, P4 made an appraisal of the ESP course. P4 realized that the ESP classes incremented the Technical Program students were enrolled in, and they helped in the knowledge and development of the classes in general because of the interesting activities which incremented students' knowledge. Thus, P4 acknowledged the fact that, at the same time the learners were learning English, they were also learning about Computing.

P6 declared that the ESP course was profitable and what really caught his attention was the teacher's high level, her methodology, and how she took advantage of all available time of the classes, without wasting time. As for the exercises, they could be done calmly. However, similarly to P3, he is aware of the fact that technology develops and changes very often, so the vocabulary related to Computing, for example, gets outdated fast, as well.

P8, P10, and P11reported that the ESP course was very good, but should have been offered only in the second semester of the program when students would learn more concerning Computing and, then, they could take more advantage of the English classes.

In addition, P10 declared that the ESP course was used as a starting point for students to deepen their learning of the language, and, therefore, learn more than just the technical English. Also, she

acknowledged the fact that she had really learned everything that was taught and she was aware of this fact considering her performance on the tests at the end of the course. She realized she was really learning and improving.

P11 declared that the ESP classes were very creative and with the classes at the computer lab, it was possible to learn more. He added that he participated well in the classes and was always present. Although, he still had difficulties in writing the English words, he could understand them well because he worked as a computer technician. Hence, P11 demonstrated he was motivated to learn, specially because he worked in the field of computing. To support this statement, his level of motivation was high: 90%, although his performance on the tests was not vey high: 65 was his general mean.

Furthermore, P12 reported that she had not participated much in the classes, but her performance was very good (general mean: 80). She was aware that she had learned a lot with all the activities, tests and exercises. Also, she had several opportunities to recover bad grades, because there was a good number of tests about the same subjects, something that made the understanding of the contents easier. Finally, the English course had met her expectations and the teacher was able to make students learn.

Additionally, P13 declared he could understand better the words, and some computer and Internet commands. The ESP course was very profitable and he considered himself more capable to exercise the functions proposed by the Technical Program. Finally, he reported he participated well of the classes and liked his performance on the course (general mean: 81; level of motivation: 85%). Besides being motivated to perform several tasks, P13 also performed well on the tests.

Also, P17 declared that the ESP classes were interesting because they happened in the classroom and in the laboratory. Consequently, students could learn better how to interpret texts and construct sentences. However, he also declared that he still had to improve and learn more, specially his L2 vocabulary (his general mean was 49, only). Finally, he reported he had not taken part of the classes much and had to improve in this aspect too (motivation level: 85%). Hence, although P17 was highly motivated, his performance on the tests was not very good. His level of difficulty must have been very high.

P18 reported that the ESP course was very interesting and profitable with videos and exercises. He was aware that he had learned and reviewed some contents. He considered himself a dedicated student

and his performance was good. In fact, P18 achieved 27 in the pretest and 98 in the CPDEpost. Thus, as he declared, his performance was really good. In addition, his level of motivation was somewhat high as well: 75%.

P19 thought that the course was very good because she could learn more about computers and peripherals. She wished the course was longer. She thought the teacher did an excellent work. Every time she had a problem, the teacher had a solution. As regards her performance, she was aware that she had learned a lot considering that, at the beginning of the course she did not know anything about English (she got 50 in the pretest). At the end, she could say that she knew a lot, though (she succeed and achieved 92 in the PPDEpost). Hence, P19 was aware of the fact that she had learned, in spite of her difficulties at the beginning of the course and the semester.

P20 affirmed that the ESP classes were very good and he took advantage of all of them. He learned different things and some things he learned in English he could relate to another course: Computers Architecture. He also stated that the subjects were very well explained with several printed and online activities and with the booklet. He declared he did not take part of the classes fully, especially during translation exercises. However, he did all the activities and homework assignments that the teacher proposed. Actually, as demonstrated by his comment, he felt very motivated (motivation level: 75%). As a consequence, I suppose, his performance was very good, as well. His first grade was 41 (in the pretest) and the others were: 83, 99, 100, and, finally, 100 again. As a matter of fact, P20 succeeded in obtaining the best performance if compared to his classmates (see Appendix DD).

After presenting some students' self evaluations regarding their performance on the ESP course, subsection 4.3.4.1 will present a summary of these evaluations.

4.3.4.1 Summary of participants' self evaluations

Generally speaking, students evaluated their own performance and the ESP course, positively. It is possible to reach this conclusion by highlighting the positive comments the participants made in their evaluations and through the positive adjectives used to describe the course. Based on students' own words, the course was very productive, profitable, good, creative, interesting, and easy for most of the students. Also, it was very nice, excellent, well planned, and with many exercises.

In addition, participants evaluated both environments where the classes took place, positively. According to two students, the ESP classes were interesting and it was possible to learn more because they happened in the classroom and in the laboratory. Overall results indicate that students 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, it was easier for the students to understand English tests and they learned Computer-related vocabulary at the same time they learned about Computing. In addition, with all the written evaluations, students could follow their progress and the ESP classes incremented the Technical program students were taking.

As for the teacher, she was able to teach and make students learn and understand. Also, she could always solve students' doubts. All in all, they thought the teacher did an excellent work and had a solution to students' problems with learning.

Having provided a short summary of the participants' self evaluations, I will now provide some conclusions about the qualitative analyses.

4.3.5 Conclusions on the qualitative analyses

This subsection aims at presenting a summary of the conclusions of the qualitative analyses in order to analyze the reactions, perceptions, and attitudes of ESP students in relation to the use of CALL activities in the ESP course. To this end, three sources of data were compiled and analyzed: (1) students' answers to the two online questionnaires; (2) students' posts in the forums available in the virtual environment; and (3) students' self evaluations.

To begin, a profile of the group before the start of the ESP course and another one after the course finished were constructed. According to the answers of both questionnaires in respect to experiences with computers, at the end of the course, students felt they had acquired more experience with computers. This was already expected for two reasons, namely (1) students used computers with other teachers in the Technical Program, as well, and (2) they spent an average of 50% of the ESP course in the computer laboratory.

Moreover, the activity the participants did the most on their Internet-connected computers was reading the news and informative texts at the beginning of the course and at the end of the course they

declared they preferred to access social network sites such as Facebook and to do research. I observed that their preference for Facebook increased along the course. At the beginning, there were students who did not have any profile in this social site. However, along the course, profiles were created and students became more motivated to interact through this social site, as well. Perhaps it is because the teacher also had a profile there and many students and, also, the institution (IF-SC) had a profile on Facebook.

Regarding their preferences in relation to going to the computer laboratory or to the classroom and doing computer-mediated (CALL) activities or printed activities, 65% reported preferring performing CALL activities and, also, having classes in the computer laboratory. This number increased at the end of the course, when 85% of students reported preferring performing CALL activities and, also, having classes in the computer lab. Nobody declared preferring the classroom or the traditional paper-and-pen activities.

In respect to DC, by way of illustration, Table 32 shows the nine tasks regarding students' ability levels.

Table 32
Students' abilities

01	02	03
to use a computer mouse	80%	85%
to use a computer keyboard	50%	70%
to work with operating systems	75%	80%
to work with e-mails	70%	85%
to work with chat tools/programs	60%	70%
to use search engines	80%	95%
to use word/text processors	35%	70%
to work with Web browsers	45%	60%
to work with online forums	25%	70%

Note: Column 01 = Students' abilities; Column 02 = percentage: levels 4 to 5 = very good or great - beginning of the course; Column 03 = Percentage: levels 4 to 5 = very good or great - end of the course

As can be seen in Table 32, the percentages show how many students selected levels 4 (very good) or 5 (great). It can be seen the differences between their perceptions at the beginning of the course and at the end of the course, clearly. One of the abilities deserves more attention than the others: the ability to work with online forums. At the beginning of the course, students did not know how to participate on the forums, at all. Just 25% of the participants declared they had a very good or great ability with them. However, when asked again at the end of the course, 70% of them reported being very good or great at working with forums. Obviously, it was already expected that they would increase the just-mentioned level for the teacher taught them how to use the forums and stimulated them to take part of them by leaving posts

and answering the questions the teacher often asked and also reading and responding to their peers' posts, frequently.

Other abilities were improved by the learners: working with text processors and Web browsers. Students' abilities to work with text processors increased considerably from 35% to 70% and their abilities to use Web browsers also increased from 45% to 60%. Additionally, Table 33 shows the ten tasks concerning students' comfort levels only in order to illustrate and better visualize their perceptions.

Table 33
Students' comfort levels

1	**2**	**3**
reading texts on the computer screen	55%	60%
writing texts on the computer screen	50%	60%
communicating with people via e-mails	50%	75%
communicating with people via chat programs	60%	75%
listening to music on the computer	80%	70%
watching movies on the computer	65%	60%
doing research using the computer	75%	90%
studying with the assistance of the computer	50%	75%
dealing with photos on the computer	65%	80%
reading newspapers/magazines on the computer	70%	70%

Note: Column 1 = Students' comfort levels performing some computer-mediated tasks; Column 2 = percentage: levels 4 to 5 = (very) comfortable - beginning of the course; Column 3 = Percentage: levels 4 to 5 = (very) comfortable - end of the course.

According to Table 33, the percentages show how many students selected levels 4 (comfortable) or 5 (very comfortable). Some differences can be seen between their perceptions at the beginning of the course if compared to them at the end of the course. However, the

differences here are not so expressive as the ones observed in Table 32. It is interesting to observe how some participants felt more comfortable at the end of the course communicating with people via e-mails, studying with the assistance of the computer, and doing research using the computer.

Moreover, students' level of DC1 was 69% and of DC2 was higher: 76% , which indicates that students' level of DC increased along the semester. This increase can be justified by two reasons: (1) students developed specific computer skills and learned others by means of the ESP course which, frequently employed CALL activities; and (2) through the course "Computers Architecture" which was part of the Technical Program as well.

In respect to students' expectations at the end of the course, 80% of the participants reported they were met in that semester, although, at the beginning of the course it was observed that the students did not have great expectations.

As regards motivation, Table 34 presents the students' percentage level (4 or 5) regarding the five statements offered in the end-of-the-term questionnaire in relation to motivation.

Table 34
Students' level of motivation

Statements	**Percentage (level of motivation – 4 or 5)**
1 using Google to solve their doubts regarding new vocabulary	90%
2 answering English exercises online	85%
3 using online dictionaries to solve their doubts regarding new vocabulary	75%
4 reading texts online about Computing	50%
5 reading the posts left by their classmates in the forums on Moodle platform	45%

n = 20

As can be seen in Table 34, the activities the participants were more motivated to do was to use the translation engine: Google translator (http://translate.google.com/) to solve their doubts regarding

new vocabulary, since it was easier to use and faster, according to what some participants told me during the interviews and classes, although the teacher also recommended other online dictionaries, such as the Moderno dicionário de Inglês: Michaelis (http://michaelis.uol.com.br/moderno/ingles/index.php).

Also according to Table 34, the participants felt very motivated to perform online English exercises. However, they did not enjoy reading online texts about Computing or the posts left by their classmates in the forums on the Moodle platform. As a consequence, it can be inferred that the students preferred doing activities that were more dynamic and faster, or easier, as they commented. Using a translation engine was more convenient than using a dictionary and doing online activities was better since they did not have to "write", only type and many of the activities provided immediate electronic feedback. Concerning feedback (see subsection 4.3.2.7), 75% of the students considered the feedback provided by Moodle good or very productive. Students were asked to do online activities in the Internet through external and internal links displayed on Moodle. Several of these activities offered immediate feedback. This CALL feature was very well accepted by the students, which may explain somehow why they manifested more preference for these kinds of activities if compared to the traditional and printed ones (without the mediation of the computer and without immediate feedback).

Regarding the activities done in the classroom and in the computer lab, in general, most of the participants enjoyed all the activities performed either in the lab or in the classroom and they did not have problems with the instructions for the online activities done during the ESP course. Participants declared they were (very) clear.

Concerning interaction with the teacher and among themselves, the participants reported they were excellent or very good. The same pattern was observed with respect to the feedback given by the teacher and by the Moodle platform. They were considered good or very productive by most part of the class. As regards their learning process at the end of the ESP course, in general, the majority of the students evaluated it as (very) efficient.

Lastly, learners enjoyed the environments where the classes were undertaken and felt comfortable doing the majority of the activities proposed. On the other hand, answering long questionnaires and reading (texts or posts) were not something very pleasant to do, as could be inferred through participants' answers and comments.

As regards the messages left by the participants in the forums proposed on the Moodle platform, overall results point to the fact that students' perceptions toward the ESP course are positive, as demonstrated by their posts. First of all, students were aware that the use of the computer and the Internet in the English classes were very important, good, dynamic, and pleasant. They could learn better and do research about the issues present in English. Also, the access to information was faster, improving and facilitating their learning. They could also use online dictionaries, making the process of doing research easier. Second, students thought that the English classes were very interesting, creative, good, excellent, profitable, or useful. Also, with all the videos and exercises, it was easier to learn and retain new vocabulary. Third, the evaluations carried out through the virtual platform were interesting and innovative. Fourth, the repetition of several terms made everything easier, thus it was easy to memorize things. Finally, the activities offered through the virtual environment (Moodle), the exams, explanations, and other activities made students learn well.

Regarding students' performance, eight students evaluated their performance in the ESP course as excellent and three of them evaluated it as proficient. The participants were aware of the fact that they were learning and improving along the course, felt satisfied with the way the classes were being carried out, and with the numerous exercises which had a positive effect on the test results, generally speaking.

At last, students evaluated their own performance and the ESP course positively, in general. They thought the course was very productive and interesting. Furthermore, students were aware of the fact that they had learned vocabulary related to Computing at the same time they learned about the field.

On the other hand, there were a few negative comments: (1) one student declared he could not concentrate very well during the classes and, sometimes, accessed some social network sites; (2) two students reported that the booklet could have been more updated; (3) three students thought that the ESP course should have been offered in the second semester of the program and not in the first, and, finally, (4) just one student reported that the ESP classes were a little difficult and complicated. Further discussion regarding the qualitative analyses, will be displayed in Chapter 5.

Once having presented the qualitative results and analyses based on the questionnaires, forum posts, and students' self evaluations,

basically, I can now turn to the last section of this chapter where I provide the correlational analyses carried out in this study.

4.4 THE CORRELATIONAL ANALYSES

The objective of this subsection is to present the results of the correlational analyses carried out to verify the relationship between the level of DC1 and the level of DC2. Additionally, this section aims to present the correlational analyses results employed to check the relationship between the index of DC2 and the computer-mediated tests, and, also, between students' level of motivation and their performance on the four posttests. However, before that, the descriptive statistics of the dataset have to be analyzed for normal distribution.

4.4.1 Checking the descriptives

This subsection will present the descriptive statistics of the DC1, DC2, and students' motivation levels (see Appendix W, as well). These levels were already presented in Chapter 3. Table 35 presents the results of descriptives of the just-mentioned variables.

Table 35
Descriptives (DC1, DC2, and motivation levels)

Variables	M	Med	SD	Min	Max
DC1	69%	67%	20%	31%	98%
DC2	76%	76%	17%	34%	100%
Motivation	69%	73%	20%	10%	100%

n = 20

As can be seen in Table 35, the mean percentage of DC1 was 69% and DC2 was 76% which indicated that students' level of DC increased along the semester. Students developed computer skills and learned others by means of the ESP course and also through the course "Computers Architecture" which was part of the technical program as well (see the program curriculum in Appendix CC).

As for students' level of motivation, which was measured only once, the descriptives show a means percentage of 69%, which is not very high. However, the motivation levels varied from 10% to 100%, as the Table also shows, which means that some students felt really

motivated to perform specific activities using the computer, while others did not.

Next, only for the sake of illustration, Figures 71, 72, and 73 display the histograms generated by SPSS in relation to both levels of DC and the level of motivation.

Figure 71
Histogram – DC1

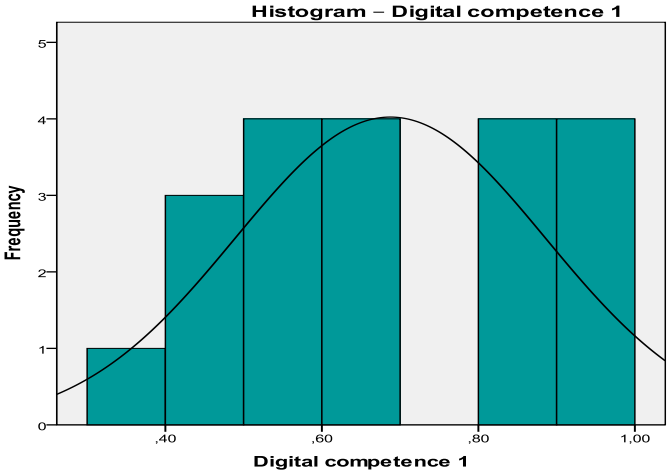


Figure 72 - Histogram – DC2

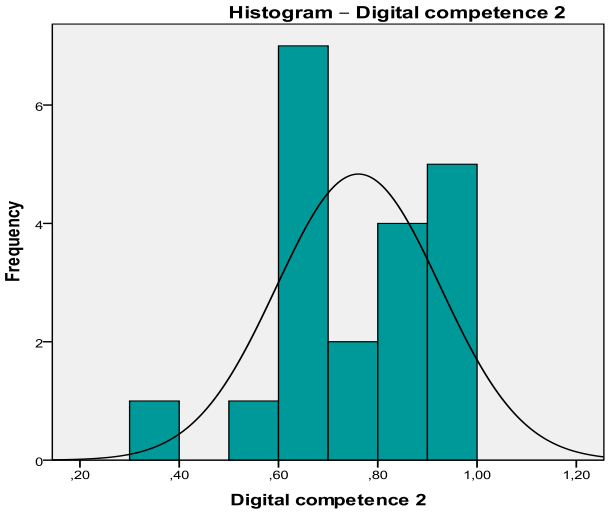
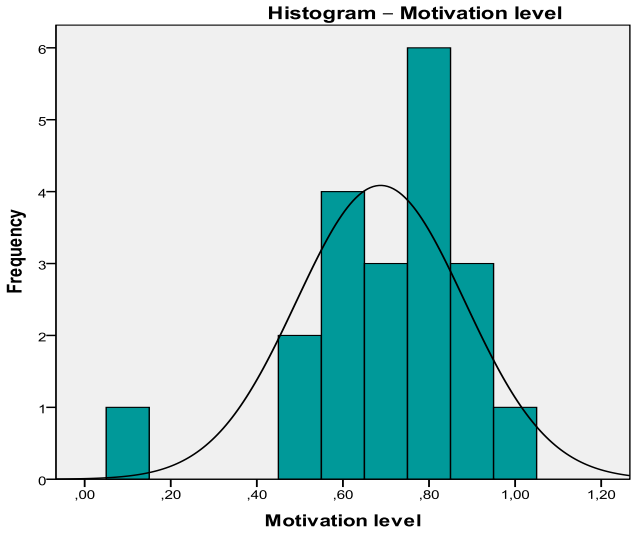


Figure 73
Histogram – Motivation level



As can be visualized in Figures 71, 72, and 73, the data set derived from the levels of DC and motivation is normally distributed.

After presenting the descriptives of students' levels of DC and motivation, besides the histograms provided by the SPSS software, the next subsection will offer the results of the tests used to confirm the normality of the dataset distribution.

4.4.2 Checking for normal distribution

The goal of this subsection is to offer the results of the Shapiro-Wilk test for normal distribution of the dataset derived from the students' levels of DC1, DC2, and motivation, as can be visualized in Table 36.

Table 36
DC1, DC 2, and motivation levels

Shapiro-Wilk test for normal distribution		
	Statistics	**p value (2-tailed)**
DC1	0.94	0.34*
DC2	0.94	0.28*
Motivation	0.90	0.052*

n = 20
*p > .05

According to Table 36 and the histograms (Figures 72, 73, and 74), both DC and Motivation levels come from a normally distributed population (p>.05). Thus, parametric correlational tests can be applied, at first.

Having checked for normal distribution, I can now turn to the next subsection where I provide the results of the correlational tests between the variables already presented: DC1 and DC2 levels; DC 2 level and students' performance on the computer-mediated tests; and, finally, students' levels of motivation and the posttests.

4.4.3 DC1 x DC2

So that I could have a better insight of the relationship between the level of DC1 and the level of DC2 and also to further explore it, I decided to run a correlational test to see whether this relationship really existed. Having observed that the dataset regarding both DC indexes were normally distributed in Table 35, a parametric statistical test was applied to verify if there was any correlation between the two variables: the level of DC 1 and the level of DC2. Thus, for this analysis, the Pearson's Correlation (Pearson's r) test was adopted. The results of this test can be seen in Table 37. After that, by way of illustration, Figure 74 will show the scatterplot provided by the SPSS software (see also Appendix W for more results).

Table 37
DC1 x DC2 compared

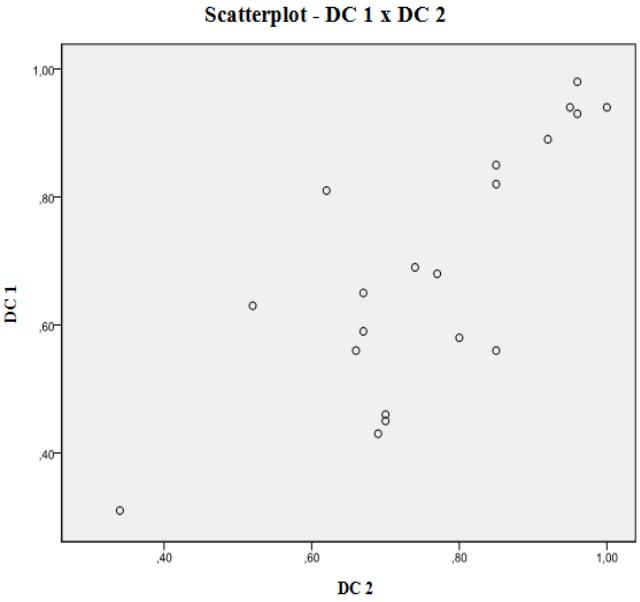
Pearson's r	
r	0.77
p -value	**0.00***
n = 20	

Note: r = Pearson's correlation; n = number of participants

*p < .05 (sig. 2-tailed).

Figure 74

Scatterplot - DC1 x DC2



As can be visualized in Table 37 and confirmed in the scatterplot above (Figure 74), when the two levels of DC were correlated, a correlation was found ($r = 0.77$; $p < .05$) and, therefore, reached statistical significance. As a consequence, there is a correlation/relationship between the two variables. In other words, students' level of DC was higher at the end of the course, if compared to their DC level at the beginning.

4.4.4 DC2 x the computer-mediated tests

This subsection will analyze the association between the level of DC2 and the students' performance on the two computer-mediated posttests, namely CPIMpost and CPDEpost. I decided to compare the level of DC measured at the end of the course, because, supposedly, students had improved their abilities and comfort levels in relation to performing specific tasks on the computer, and developed or learned others, as already stated in the method section (Chapter 3). Having improved their level of DC, they would perform better on the computer-mediated posttests, something that required a better level of DC. Hence, I expected that students with higher levels of DC would perform better on the computer-mediated tests, as well.

The correlation between students' level of DC2 and their performance on the CPIMpost and CPDEpost was made by means of the Spearman's rank correlation Coefficient (Spearman's rho) non-parametric test, since the dataset distribution of all posttests were not normal (see subsection 4.2.5). To restate, Spearman's Test was used to search for possible relations between DC 02 and the computer-mediated tests. Tables 38 and 39 present the results of the above-mentioned test.

Table 38
DC2 x CPIMpost

Spearman's rho	
r	0.01
p - value	**0.96***
n = 20	

Note: r = Spearman's correlation;
n = number of participants
*p > .05 (sig. 2-tailed)

Table 39
DC2 x CPDEpost

Spearman's rho	
r	-0.08
p-value	**'2***
n = 20	

Note: r = Spearman's correlation;
n = number of participants
*p > .05 (sig. 2-tailed)

As can be seen in Tables 38 and 39, the correlation between the index of DC2 and the CPIMpost and the CPDEpost is not significant (r = 0.01; p > .05; r = -0.08; p > .05, respectively). Accordingly, there is no correlation between students' level of DC and their performance on both computer-mediated tests. For the sake of illustration, the scatterplots (Figures 75 and 76) show the lack of association between the two variables.

Figure 75
Scatterplot - DC2 x CPIMpost

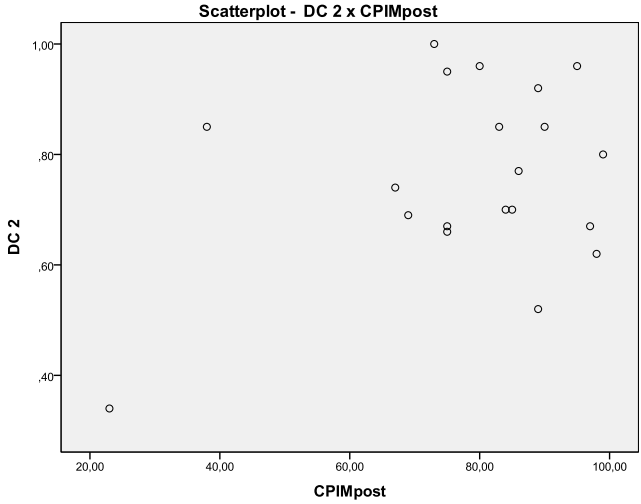
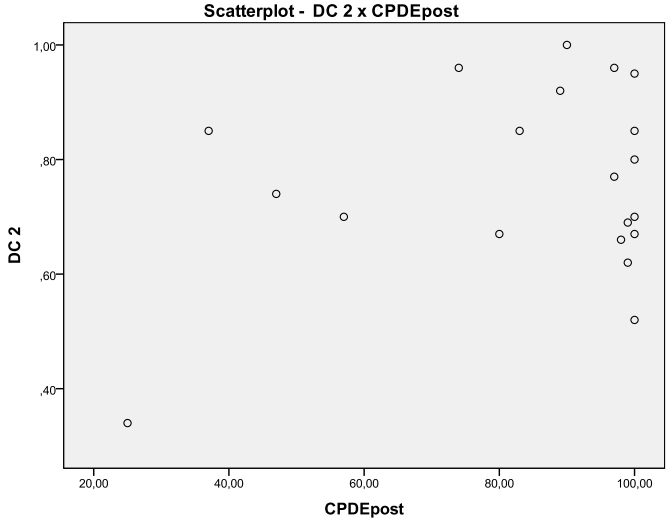


Figure 76
Scatterplot - DC2 x the CPDEpost



By way of illustration, the scatterplots in Figure 75 and Figure 76 confirm the results of the Spearman's test which indicate that there is no correlation between both variables: the index of DC2 and the CPIMpost and the CPDEpost.

4.4.5 Students' level of motivation vs the posttests

Just as a matter of curiosity and exploration, since it was not the main focus of this study, I decided to run a correlational test between students' level of motivation and their performance on the posttests. I wanted to investigate whether students with a higher level of motivation also performed better in the tests. In the same line, I expected that less motivated students performed worse in the tests. In addition, I intended to investigate the construct "motivation" to contribute, although only partially, to research on the just-mentioned issue, since, there is not much research regarding motivation in the L2 learning process in CALL or BL environments (Oliveira, 2005), in spite of the fact that motivation is one of the most important determinants of L2 learning attainment and, in view of that, the last 30 years have observed a substantial amount of research that examines the nature and function of motivation in the L2 learning development (Dörnyei, 1994).

Next, the analysis of the association of the students' level of motivation and their performance on the four posttests, namely (1) PPIMpost, (2) CPIMpost, (3) PPDEpost, and (4) CPDEpost, will be presented. The correlations between students' level of motivation and their performance on the posttests were carried out, again, through the Spearman's rank correlation Coefficient Test, since the dataset distribution of all posttests were not normal, as already stated earlier in this chapter (subsection 4.2.1.6). To restate, Spearman's rank order correlation Tests were used to seek for probable relations between the participants' level of motivation and their performance on the posttests. Tables 40 to 43 display the results of the tests and Figures 77 to 80 show, just for the sake of illustration, the scatterplots generated by the SPSS software.

Table 40
Students' level of motivation x PPIMpost

Spearman's rho	
r	- 0.20
p-value	**0.37***
n = 20	

Note: r = Spearman correlation;
n = number of participants
*p > .05 (sig. 2-tailed)

Figure 77
Scatterplot - Motivation x PPIMpost

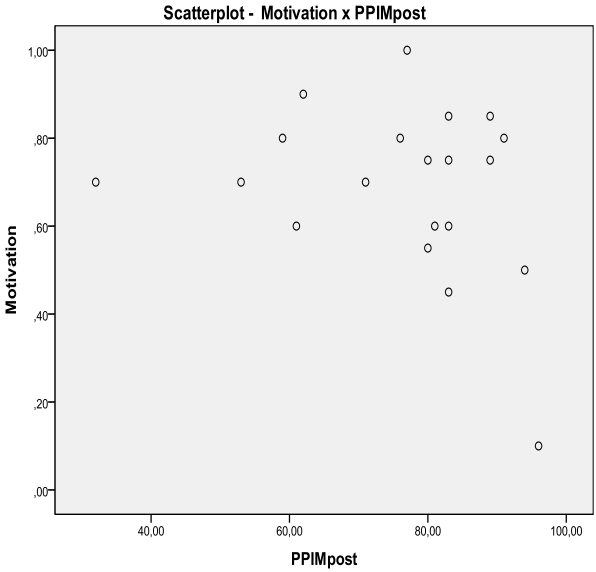


Table 41
Students' level of motivation x CPIMpost

Spearman's rho	
r	- 0.12
p-value	**0.60***
n = 20	

Note: r = Spearman correlation;
n = number of participants
*p > .05 (sig. 2-tailed)

Figure 78
Scatterplot - Motivation x CPIMpost

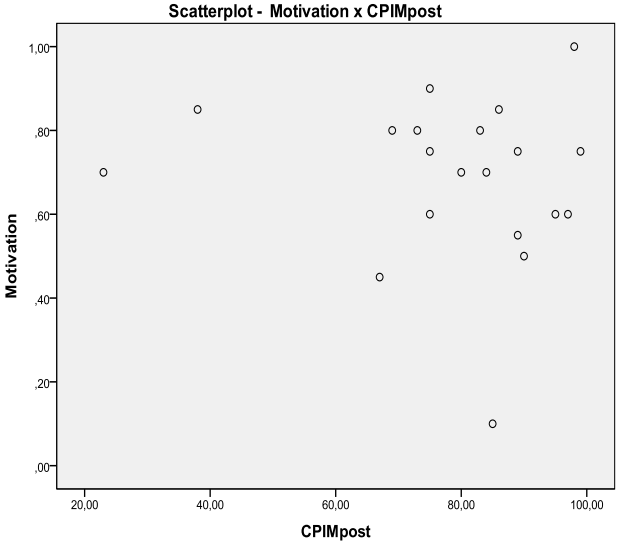


Table 42
Students' level of motivation x PPDEpost

Spearman's rho	
r	0.08
p – value	**0.73***
n = 20	

Note: r = Spearman correlation;
n = number of participants
*p > .05 (sig. 2-tailed)

Figure 79
Scatterplot - Motivation x PPDEpost

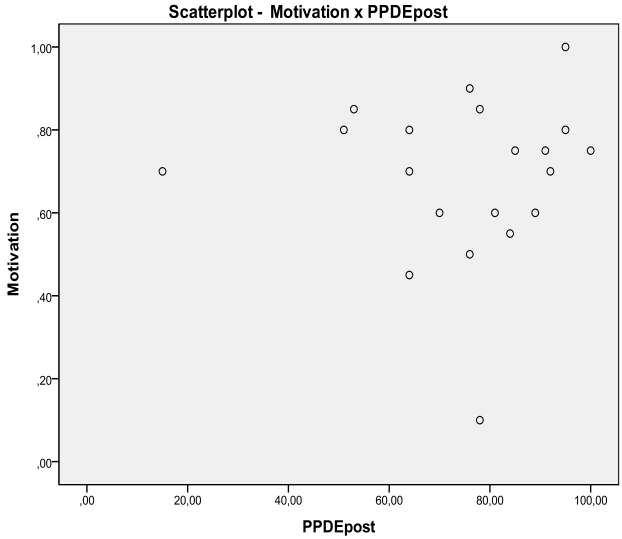
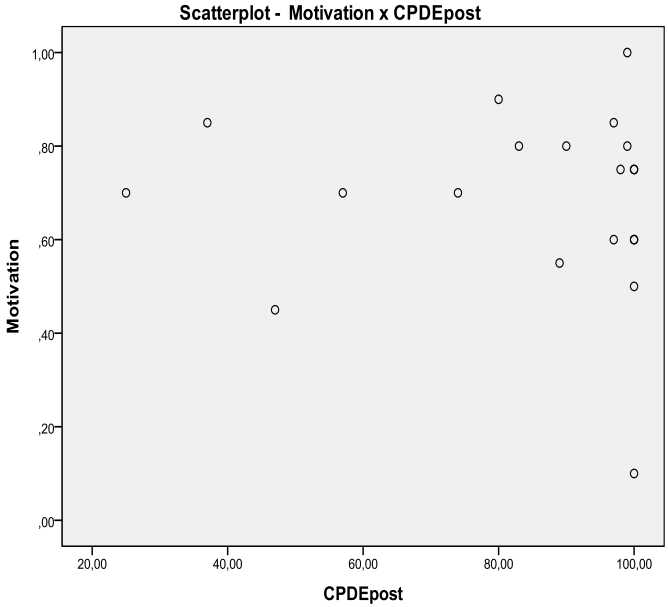


Table 43
Students' level of motivation x CPDEpost

Spearman's rho	
r	-0.19
p – value	**0.41***
n = 20	

Note: r = Spearman correlation;
n = number of participants
*p > .05 (sig. 2-tailed)

Figure 80
Scatterplot - Motivation x CPDEpost



As can be seen through Tables 40 to 43 and illustrated by the scatterplots in Figures 77 to 80, the correlations between students' motivation level and their performance on the four posttests were not significant. Hence, after comparing students' motivation level and their performance on the PPIMpost, no relationship was found ($r = -0.20$; $p > .05$). After that, when comparing students' motivation level and their performance on the CPIMpost, no correlation was found either ($r = -0.12$; $p > .05$). Next, after comparing students' motivation level and their performance on the PPDEpost, once more, no association was found ($r = 0.08$; $p > .05$). Finally, when comparing students' motivation level and their performance on the CPDEpost, no correlation was found either ($r = -0.19$; $p > .05$). This is to say that there is no correlation between the each pair of variables. In conclusion, in spite of the fact that learners, generally speaking, performed well on the posttests (if compared to their performance on the pretest), their motivation levels were not high. Perhaps, the motivation to perform well on the posttests was just to receive good grades, i.e., to obtain good results, and not because learners were integratively motivated to perform well on the exams,

According to Gardner (1985), integrative motivated learners are the ones who like the language for itself.

Section 4.4.6 will present a brief conclusion regarding the correlational analyses.

4.4.6 Conclusions on the correlations

After presenting the results of the correlations[84], this subsection will bring a conclusion from what was observed through the statistical test results. First of all, the indexes of DC1 and DC2 presented normal distribution. Therefore, a parametric test (Pearson's r) was applied in order to analyze the relationship between the above-mentioned indexes. The levels presented a significant association. In other words, there is a tendency in the increase of the index of the DC1 when the index of the DC2 increases. Consequently, statistically significant correlations were observed between DC1 and DC2, which means that at the end of the study, the participants' level of DC was significantly better. In other words, the students improved their levels of DC significantly along the ESP course.

In contrast, for the other associations, a non-parametric test (Spearman's) was employed for the analysis, since the data set derived from the posttests were not normally distributed. The results showed that there was no relationship 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 either. It is important to bear in mind that, given the small number of participants (n = 20) in this study, these analyses must be considered exploratory and the results treated cautiously. Further discussion on these conclusions will be found later in the discussion section (Chapter 5).

In Section 4.5, the summary of all results will be presented.

[84] All results generated by the SPSS program can be visualized in Appendix W.

4.5 SUMMARY OF ALL RESULTS

4.5.1 Summary of the quantitative findings

This final subsection aims at presenting the conclusions regarding the statistical analyses performed on the data set obtained from the 20 participants in the five different conditions: pretest, PPIMpost, CPIMpost, PPDEpost, and, finally, the CPDEpost.

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 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 effect on participants' performance on the posttests.

Thirdly, results of the Wilcoxon 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. Result of the Wilcoxon test indicate that there was no significant difference 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, it indicates 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. Further discussion will be presented in Chapter 5.

When the PPDEpost and the CPDEpost which were applied for G1 and G2 (on the same day, but in different orders) to analyze testing

effects were compared, results of the MWUTs showed that there were no testing effects. Therefore, regardless of the order of test presentation, the results remained the same: the participants performed better on the CPDEpost, taking it before or after the PPDEpost. Hence, the order of presentation did not influence test results.

The next subsection will provide a summary of the qualitative findings.

4.5.2 Summary of the qualitative findings

This subsection aims at presenting a summary of the qualitative findings. 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.

To begin, according to the answers of both questionnaires, the students felt they had acquired more experience with computer at the end of the course and their preference for Facebook increased along the course. Also, they showed preference for performing CALL activities and, also, having classes at the computer lab if compared to the traditional paper-and-pen activities and the classroom. In addition, the participants increased their levels of DC (DC1 = 69% and DC2 = 76%) along the course.

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 on 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. They thought the instructions for the performance of online activities were (very) clear.

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.

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.

Last of all, students appreciated the printed and the online evaluations because, through them, they could follow and monitor their progress in the L2 learning progress along the course. In addition, 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. Also, students could learn new words related to Computing during the ESP course that they could use in other courses at IF-SC.

Conversely, a few students thought that the ESP course should have been offered in the second semester of the program and not in the first and the booklet should have been more updated. Finally, just one student declared that the ESP classes were a little difficult and complicated.

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 restrict to just an irrelevant number of participants. Thus, the negative comments and complaints may not be generalized.

4.5.3 Summary of the correlational analyses

This subsection brings the summary of the correlational analyses presented in section 4.4. First of all, Pearson's r was applied to analyze the relationship between DC1 and DC2 indexes. The indexes presented a significant association. Thus, there is 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[85]. Oliveira (2005) argues that motivation is one of the important variables that interfere in the learning process besides the intellectual variables. Unfortunately, according to Oliveira (2005), there are not enough studies which investigate motivation per se in the contexts of L2 instruction in CALL environments, and, much less, I would add, in BL environments. "Few research has been conducted considering the theories of motivation regarding L2 teaching and learning mediated by the computer" (Oliveira, 2005, p. 15). Thus, the results of the present study cannot corroborate the results of other studies.

A discussion of the results obtained will be offered in Chapter 05. Now, I will move to Section 4.6 to conclude this chapter.

4.6 CONCLUSION OF THE CHAPTER

Chapter 04 has presented and analyzed the quantitative and qualitative dataset collected for this study. First of all, participants' performance on the five tests were run on the SPSS statistical program and compared. Secondly, students' responses to the two online questionnaires, students' posts in the forums on the Moodle platform, and, also, students' self evaluations were analyzed qualitatively. Additionally, correlational analyses were carried out between participants' level of DC1 and DC2. At last, the relationship between DC2 and the computer-mediated posttests was tested, followed by an investigation of the relationship between students' level of motivation and the four posttests.

In light of the results presented in Chapter 04, the next chapter, Chapter 05, will bring the answers for four research questions proposed for this study, including the answer to RQ5: "In which ways can CALL be integrated into ESP courses for adults?".

[85] By way of illustration, the reader is invited to see all outputs generated by the SPSS program in Appendices S to BB).

CHAPTER V
DISCUSSION

5.1 INTRODUCTION

The central concern investigated in this dissertation is whether L2 vocabulary acquisition can be enhanced by the use of CALL activities. Guided by this issue, a primary goal was established: to investigate the effects of CALL on the acquisition of vocabulary in English. Additionally, four other specific goals were proposed: (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 in the participants' level of DC within the duration of the course; (3) to investigate the relationship between students' level of DC and their performance on the computer-mediated posttests; and (4) to investigate the ways CALL can be integrated into ESP courses for adults.

In order to reach the objectives of this study, five research questions were pursued: RQ1: What are the effects of CALL on the acquisition of new vocabulary in English in an ESP course for adults?; RQ2: What are the participants' reactions, perceptions, and attitudes towards the use of CALL activities in the ESP classes?; RQ3: Was there any increase in the participants' digital competence from the beginning to the end of the ESP course?; RQ4: Was there any relationship between digital competence and the computer-mediated tests?; RQ5: In which ways can CALL be integrated into ESP courses for adults?

This section aims at answering the five proposed RQs as well as discussing the results obtained through the quantitative, statistical, and qualitative analyses described in the results section (Chapter 04).

5.2 ANSWERING RQ 1

What are the effects of CALL on the acquisition of new vocabulary in an ESP course for adults?

With the aim of providing a response for the effects of integrating CALL in an ESP course for adults, the performance of the 20 participants who answered the two online questionnaires on the five tests: (1) the pretest, (2) the PPIMpost, (3) the CPIMpost, (4) the PPDEpost, and, (5) the CPDEpost were analyzed in Chapter 04.

Thus, in order to answer the above-mentioned RQ, according to the results presented in the last chapter, it is possible to infer that, in general, the effects were positive. Students evaluated well the

opportunities to perform CALL activities and, consequently, performed well in the posttests too. To be more specific, through the descriptive statistics and the results of the Friedman test, it can be inferred that the participants' performance on the posttests was much superior to the pretest, corroborating the fact that the design and procedures planned and applied during the ESP course were effective.

As for the results of the Wilcoxon tests presented in Chapter 04, they suggest that participants learned new lexical items as a result of the ESP course and could recall and retain them even one month after the ESP course had finished. The time variable, in this case, may have influenced students' performance, somehow. Based on these results, it is possible to say that the ESP course designed for this study caused statistically significant and positive effects on participants' performance as a result of the course. It is important to remember that participants were forewarned about all the posttests, since it was my intention during the ESP course to promote deliberate learning. The decision to forewarn students of the tests intended also to promote extrinsic motivation. According to Dörnyei (1994), extrinsic motivation refers to external factors such as an extrinsic reward (e.g., a good score) or the avoidance of punishments. On the other hand, Bandura and Schunk (1981) put forward the idea that tests can be influential motivators in long lasting, permanent behaviors such as language learning, for example. Tests work as progress indicators that supply immediate encouragement, self-encouragement, and feedback. Additionally, they help to mobilize and preserve effort. Although the correlational tests did not indicate any relationship between students' levels of motivation and the posttests, students, in general, performed relatively well on the tests. That is to say that, regardless of the fact of being motivated or demotivated, students had the desire to obtain good marks. Also, the fact that the knowledge of the English language is very important for those working in the field of Computing, as it is widely recognized, may be considered another external motive for students to do their best in the English classes. Thus, the desire to get good grades and to be well prepared for a career in Computing may have led the participants of this study to perform well on the exams, regardless of their motivation level.

Returning to the issue of language-focused learning (see section 2.5), it involves the intentional learning of specific aspects of a language (e.g., vocabulary). There seems to be a general consensus among researchers that there is more learning and retention when acquisition takes place explicitly, deliberately, or intentionally (e.g. Chapelle, 2001; Del Valle, 2004; Elgort, 2011; Laufer et al., 2005; Laufer, 2010; Nation,

2001a; 2001b; 2005; 2008). For this reason, the participants of this study were forewarned about all the posttests applied, so that they could study in advance and be better prepared for the exams. Moreover, according to Chapelle (2001) results of studies in CALL environments have overpoweringly privileged "explicit learning conditions in these settings; however, researchers have cautioned that results from laboratory settings may have limited generalizability to L2 classrooms" (p. 141). Since this study was conducted in an intact classroom, its results can be generalized to L2 classrooms, regardless of the fact of having or not internal validity[86] (Chapelle & Jamieson, 1991).

Additionally, results of the Wilcoxon tests showed that, regardless of the means utilized (computer or paper-and-pen), students' performance did not vary across the posttests. In other words, participants' performance was similar on the posttests and did not vary as a result of the means used in the test. The only posttest that presented a significant difference when compared with the others was the CPDEpost whose general means was of 83.6, the highest of all. This is, probably, due to the fact that students found it easier than the others or more motivating to do. Recap that when the CPDEpost was compared with both paper-and-pen posttests, the difference was statistically significant ($p = 0.04$; $p < .05$). However, with regard to the CPIMpost, when compared with both paper-and-pen posttests, the difference found was not statistically significant ($p=0.31$; $p > .05$ (CPIMpost x PPIMpost) and $p=0.27$; $p > .05$ (PPDEpost x CPIMpost)). Therefore, I cannot conclude that there was any difference because of the means utilized. Otherwise, there would be a difference also in the CPIMpost when compared with the paper-and-pen posttests.

Emerson and MacKay's (2011) study also reveal that there are no significant differences between traditional forms of evaluation when compared to computer-based formats of evaluation. However, the authors highlight the fact that their results were not robust and the way they designed their computer-based tests was too similar to the more traditional versions of the same test. They argue that if the online version of the test was made using more interactive media or using more other digital resources, a different picture would have emerged. On the other hand, Roever (2001) provides valuable information concerning computer-based tests (CBTs). He states that CBTs are able to offer:

[86] According to Chapelle and Jamieson (1991), validity refers to "the degree to which research findings accurately reflect reality" (p. 38).

> Feedback on the test results immediately upon completion of the test. They can also provide immediate feedback on each test taker's responses -- a characteristic that is very useful for pedagogical purposes. The seamless integration of media enhances the testing process itself, and the tracing of a test taker's every move can provide valuable information about testing processes as part of overall test validation (p. 85).

I fullly agree with Roever (2001) with respect to feedback automatically provided by the Moodle program. Obviously, the feedback was programmed by me. However, the fact that students received this feedback immediately after the submission of their responses – one by one - motivated them to perform increasingly better. Thus, electronic, online, and automatic feedback "is very useful for pedagogical purposes" (Roever, 2001). To reinforce, Allum (2004) puts forward the idea that CALL has a distinctive characteristic if compared to paper-and-pen activities: CALL can comprise wide-ranging opportunities with instant feedback. This feature makes CALL a striking opportunity for vocabulary teaching (p. 488).

Concerning computer familiarity, according to Kirsch, Jamieson, Taylor, and Eignor (1998), familiarity with computers might influence the performance of the test takers. Nevertheless, computer familiarity is a learner's characteristic that does not seem to manifest itself in test scores (Sawaki, 2001). Even though computer familiarity is a learner's feature that does not appear to be visible in most test scores, according to Sawaki (2001), care was taken in order to avoid negative effects because of the use of the computer to apply tests. Therefore, the "simulados" (practice tests) applied to the participants of this study helped to increase participants' computer familiarity at the same time the "simulados" helped them to be acquainted with the testing environment. In other words, the "simulados" were applied in order to avoid any negative influence or effects concerning familiarity with the computers.

All things considered, participants' performance was uniform across posttests and maintained across intervals (immediate and delayed) suggesting that regardless of the medium, they learned the content taught during the ESP course. You may recall that the level of linguistic difficulty in the posttests was assumed to be the same. This care was taken in order to provide more reliable tests. According to

Chapelle (2001), reliability is one decisive factor for test value. For Chapelle (2001), reliability entails:

> Test tasks that fall at an appropriate level of difficulty, making it possible to detect the level of ability of the examinee on the construct tested. In most cases, test tasks that all examinees answer correctly and those that are too difficult for all examinees do not contribute to the reliability of the test scores (p. 158).

Given the supposition that the level of linguistic difficulty in the posttests was the same, it is possible to put forward the idea that the CPDEpost was easier because of differences other than the linguistic content of the test. Perhaps, the level of difficulty is related to motivation (to do the online test). Regarding motivation, not many studies have been done on motivation in the context of SLA, mainly, incorporating a virtual environment: the Internet (Oliveira, 2005). Therefore, results of this study corroborate somehow the results of Oliveira's (2005) study whose participants demonstrated to be motivated in taking part of the L2 classes since they involved the use of the Internet, among other factors.

After analyzing students' performance on the five conditions by means of statistical tests, it was confirmed that the participants improved their knowledge and performance within the duration of the ESP course. Therefore, it is possible to infer that there was L2 knowledge growth in general and L2 vocabulary knowledge, specifically. When the PPDEpost and the CPDEpost, which were applied for G1 and G2 (on the same day, but in different orders) to analyze testing effects, were compared, no statistically significant difference was found between the performance of each group in the PPDEpost nor in the CPDEpost. This result suggests that, regardless of the order of test performance, the results remained the same. It also suggests that the participants performed better on the CPDEpost, taking it before or after the PPDEpost. Thus, the order of presentation did not affect test results.

To summarize, the best results were obtained by the students on the CPDEpost. The results of this posttest were statistically different from the results of the two paper-and-pen posttests (PPIMpost and PPDEpost), besides being somewhat superior also to the CPIMpost. Also, there were no statistically significant differences between the two delayed posttests that were applied for G1 and G2 in different orders, i.

e., there were no testing effects. Therefore, it did not matter whether students took the printed posttest before or after the computer-based one. The results were the same: students performed a little better on the CPDEpost. In the case of this study, the just mentioned test was applied through the Moodle platform (as well as the CPIMpost). This software was programmed by me to deliver feedback automatically after each question was answered by the learners. As they were aware of this (delivering of feedback) because they had performed the "simulados" beforehand, besides the CPIMpost, they may have become increasingly motivated and engaged in the task of being evaluated and receiving instant feedback. The provision of feedback promotes interaction (Neumeier, 2005; Vetromille-Castro, 2003) and this is a peculiar and particular feature of Moodle. This feature might, somehow, explain learners' slight superior performance on the CPDEpost, implying that computers may be actually more beneficial to long-term retention than the traditional paper-and-pencil approach (Nakata, 2008, p. 17).

Thus, participants capitalized their resources in the CPDEpost, and, in fact, significant differences emerged, and when losses took place, as in the paper-and-pen conditions, they were modest**.** An important issue arises regarding CALL activities. As already presented in section 4.3.2.7, the great majority of the participants (85%), when asked about the feedback given automatically by Moodle, reported that they were (very) productive. In other words, students liked to work through the virtual environment because, among other reasons, doing activities such as tests they received immediate feedback, which could be good/positive or bad/negative. This Moodle resource motivated learners to do better or to surpass themselves every time they were tested, and increased the learners' awareness process in relation to their own mistakes. It seems that when learners embarked on a process of identifying their own mistakes and had the chance to solve them by themselves or with the help of someone (e.g., the teacher, a classmate), awareness took place, and, consequently, they tried their best not to make the same mistakes again, leading to better results. In Almeida (2004), 89% of the participants also evaluated the feedback (given by the teacher) as good or very effective.

RQ1 asked about the effects of integrating CALL in an ESP course. According to the results presented, the effects were positive and to corroborate this finding, Chapelle (2001) puts forward the idea that CALL descriptions in the past 30 years proliferate with statements regarding the positive influences of CALL activities on language classrooms (p. 90).

In addition, results of this study are corroborated by Nakata (2008) who states that "the issue of whether computers can better assist learners […] than the paper-and-pencil approach is therefore expected to offer valuable pedagogical implications for learners" (p. 09). Finally, other benefits offered by CALL may perhaps comprise improved presentation of materials due to its multimedia capabilities, a high degree of autonomy given to learners, introduction of new exercise types, or a positive impact on learners' motivation (Ellis, 1995; Nation, 2001a). However, even though researchers have repeatedly asserted the dominance of computers over the paper-and-pencil approach, "such arguments lack empirical support and remain speculative" (Nakata, 2008, p. 08).

5.3 ANSWERING RQ 2

What are the participants' reactions, perceptions, and attitudes towards the use of CALL in an ESP course?

The reactions, perceptions, and attitudes of the 24 students who took part in this study towards the use of CALL have helped me to consider some of the factors that may affect their L2 development and, therefore, help me to address my second RQ. In order to analyze the previously mentioned reactions, perceptions, and attitudes in relation to the use of CALL activities, three 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; and (3) students' self evaluations.

After the qualitative analyses of the three sources of data presented in Section 4.3, it is possible to conclude that the reactions, perceptions, and attitudes of the participants of this study were, generally speaking, positive. Also, the use of CALL in the ESP course was shown to be very well accepted by the students, besides being a motivating factor in keeping students engaged in all tasks. To be more specific, and as a matter of illustration, I will now present again some of the students' comments which I found more relevant to justify my

conclusion that students' reactions, perceptions, and attitudes were, in general, positive.

One participant - P11 - declared that he had learned much more at the computer lab. By the same token, P7 reported that the English classes were interesting because they happened in the classroom and in the computer lab. Therefore, he learned how to interpret texts and construct sentences. In addition, when asked to give their opinions about the use of the computer and the Internet in the English classes (at the end of August), nineteen students (P1, P2, P4, P6, P7, P8, P9, P10, P11, P13, P15, P16, P17, P18, P19, P20, P22, and P24) declared, in general: (1) it was very important and interesting; (2) they learned better; (3) the classes were more dynamic and pleasant; and (4) the use of the computer with the Internet facilitated learning. In fact, as Warschauer and Healey (1998) state, with the Internet there are countless opportunities to communicate, easy access to textual and multimedia information, and publishing is offered. Furthermore, the authors state that their focus of attention is steadily moving from the computer itself to the natural incorporation of computers into the process of language acquisition. After that, it will be possible to know that computer technology has taken its correct place as a significant element of language learning-teaching.

In addition, students also declared that the use of the computer with the Internet helped them to do research of unknown words, among other information, in an easier and faster way compared to other sources of information such as printed dictionaries or books. Also, P20 said that students could use the computer to watch videos, look up words in an online dictionary and, those who did not have the printed version of the booklet, could use the digital one. In line with Flowerdew (1995), another important justification for using computers derives from the fact that computers greatly appeal to Computer Science students as a learning tool because it is easy for them to make use of this medium. They quickly familiarized themselves with the computers and the software program (Moodle) because of the very nature of the courses offered in the Technical Program in which they were enrolled. Either content modules on Computing or computer skills were an integral part of the program, as in Computer Architecture, for example (see the entire program curriculum in Appendix CC).

With respect to the evaluation of the course, it is interesting to observe that, twelve participants (P3, P6, P13, P16, P18, P24, P8, P21, P19, P20, P22, and P17) evaluated the course positively. In their words, they thought that the ESP course was productive, very good or excellent.

Conversely, at the same time P3 and P6 evaluated the course positively, they also criticized the fact that the booklet was a little outdated because several technological terms in the Computing field, for example, change or become out of date very fast. Consequently, it is difficult for the teacher to keep up with the rapid changes in the aforementioned field. It is a fact, indeed, that the field of Computer Science has been in constant development and change due to the new advancements with respect to the new technologies that have been created or improved. Therefore, it is understandable, that the participants complained about the booklet being a little outdated.

Nine participants (P1, P3, P10, P12, P18, P19, P21, P23, and P24) were aware of the fact that they had really learned. Reiterating, participants in this group felt that, at the end of the course they had learned and improved their abilities in the English language. It is it also important to highlight the fact that six participants (P3, P4, P12, P19, P20, and P22) evaluated the significant number of activities proposed by the teacher throughout the ESP course positively. Therefore, the repetitive exercises and the relevant number of these activities were well accepted by the majority of students. Recaping, there are exceptions: P6, P10, and P22 complained about all the repetitions. However, they also acknowledged the fact that they were an important strategy to help retain new content (see subsection 4.3.3.2).

Next, five (05) participants (P12, P13, P18, P19, and P23) evaluated their performance positively in the course. That is to say that some students believed that their performance was very good along the English course. Also, a few comments deserve attention. One student (P16) did not like his performance. Considering that his performance was really low in all five tests (means = 57), his comment is understandable. Another student (P2) felt unmotivated and thought the course was too easy for him. Taking into account that his performance on the five tests (means = 82.8) was good, it is possible to infer that, even feeling unmotivated, P2 did a good job in the course. Perhaps the level of difficulty of the course was too low for him, i. e., it was not challenging enough. For this reason, he may have felt unmotivated. Even so, due to his extrinsic motivation to do well in the course and obtain a good grade, he also performed well in the exams.

Students liked the activities suggested by the teacher such as the visualization of videos in the English language and the performance of the “simulados”. Additionally, they declared that everything was “in the site” (i.e., available on the Moodle platform), and, this way, everything

became easier to learn and there were many activities from several places and sites. They could follow the activities at home, in case they had to be absent in some classes and the activities complemented the classes given in the classroom. The tests on Moodle contributed to the learning process. These comments reveal that the teacher constructed a learning environment that had learning materials tailored to meet the learners' needs, interests, language abilities taking into consideration individual students' background (Yang, 2001). That said, however, what one student considers advantageous, another student may find problematic. One student declared that the activities on the Moodle platform were a little confusing, because sometimes he did not know what to do first and another one recommended that there were fewer "simulados".

It is important to mention that, in the opinion of three students (P8, P10, and P11), the ESP course had to be offered in the second semester of the Technical Program and not in the first. This is, because at the beginning of the course, some students do not know or are not familiar yet with the Computing language or how a computer is installed, among other things. After one semester taking the course "Computers Architecture", to exemplify, students in the Basic Computing Technical program are, possibly, more capable and mature to learn the terms first learnt in Portuguese, in English.

As regards students' opinions about the activities on posted on the Moodle platform, all in all students thought that these activities were very good and interesting. One of the reasons which can explain that might be because doing the activities suggested was a different way to exercise what they had learned in the classroom. Also, it allowed the access to several different resources, and this is what makes Moodle different from other resources or learning environments. Furthermore, the activities helped in the understanding of the Computing language, according to one of the participants, and, finally, because students could learn more and in real time.

Regarding participants' preferences in relation to either going to the computer lab or to the classroom and doing computer-mediated activities or printed activities, 65% of the students reported preferring performing computer-mediated activities and, also, having classes in the computer lab at the beginning of the course. Later, this number increased. By the end of the course, 85% of the students reported they preferred performing CALL activities and, also, having classes in the computer lab. In the second questionnaire nobody declared preferring the classroom or the traditional activities. Perhaps, following Hong and

Samimy (2010), learners became aware of the synergistic advantages of CALL technology in BL through their experience of BL leading to their understanding of CALL technology as a useful tool for L2 teaching-learning used with FtoF-based instruction (Hong & Samimy, 2010, p.340).

The results of this study are in line with Cestari's (2006) results who aimed at investigating students' perceptions regarding the implementation of EFL activities conducted by means of the Internet. The data collected through questionnaires, observation and other sources of data showed that the Internet can be a valuable tool for education if it rests on a sound pedagogical methodology. In addition, Cestari's (2006) study indicates that the utilization of pedagogical reading activities involving hypertexts made the EFL classes, for example, more dynamic and interesting, facilitating the contact with authentic texts. The results have also demonstrated that the literacy events carried out led to the learning of new vocabulary and stimulated the independence and the self confidence of the students who participated in her study. All in all, Cestari's (2006) results point to four benefits provided by the EFL classes with the support of the Internet, according to her participants: (1) the classes are more dynamic with the use of the Internet, escaping from the routine; (2) the Internet can be a source of information and of authentic texts; (3) there is more new L2 vocabulary learning as a byproduct effect; and, finally, (4) the promotion of motivation to students' independence and self confidence. Furthermore, Cestari (2006) observed that her participants became multimodal. They worked with the Internet and hypertexts in the English classes, and these resources were appealing to this new contemporary information society, since they enabled users to link sounds and images interactively, for instance. Moreover, Cestari (2006) underscores that the Internet as a technological tool has the power to enhance the education process and can contribute to the construction of new relations with knowledge because the Internet offers a vast array of data which can be manipulated and stored easily by users. Also, the author puts forward the idea that the use of the Internet in educational contexts can maximize learners' learning opportunities, motivating them to be more independent and self confident. The results of Cestari's (2006) study suggest that the literacy events performed during her study enhanced L2 vocabulary learning, especially because of the fact that the Internet provides more contact with authentic texts. Moreover, the aforementioned events also motivated learners to be more independent

and self confident. They became more motivated to look up more information on the Internet on their own, for instance.

The above findings seem to indicate individual differences in learners' perceptions and attitudes towards the use of CALL activities in the ESP classes. Some participants apparently found the CALL activities attractive. Few of them were unmotivated due to their lack of experience or familiarity with computers, perhaps. The observed variations in learners' perceptions towards the use of CALL activities seem to underscore the significance of taking into consideration individual differences in introducing CALL into classrooms (Nakata, 2008, p. 18).

In addition, from the various and frequent comments mentioned by the participants of the present study, in general, the most relevant ones were the ones which cited the excellent relationship and interaction established by the teacher and the students, corroborating Almeida (2004). Actually, I tried to develop a warm rapport with my participants, adopting the role of a facilitator rather than that of an authoritative figure, as suggested by Dörnyei (1994, p. 282), who emphasizes that "L2 motivation is an eclectic and multifaceted construct" (p. 278). Hence, L2 teachers are advised to make use of strategies to keep learners' motivated throughout language courses. Developing a good rapport with learners and assuming the role of a facilitator, are two of several strategies the author recommends.

The participants also acknowledged the clarity of the instructions of the CALL activities and the dynamism of the course, also corroborating Almeida's (2004) results. The participants of Almeida's (2004) study declared, among other positive aspects, that the online tasks were clearly instructed and that the course was dynamic[87].

As a final point, I have to say that the present study is only a stepping stone on the way to examining learners' perceptions and attitudes toward the use of CALL activities in English classes. Much more research should be done. However, the answers, comments and suggestions of the 24 students who took part in this study regarding the use of CALL helped me to answer my second RQ, namely "What are the participants' reactions, perceptions, and attitudes towards the use of

[87] In the original: "Outros aspectos positivos mencionados pelos participantes estavam mais relacionados ao gerenciamento das atividades pelo professor. Os mais freqüentemente citados foram a excelente relação estabelecida entre o professor e os alunos, a clareza nas instruções para a realização das tarefas e o dinamismo com que o curso transcorreu" (Almeida, 2004, p. 78).

CALL activities in the ESP classes?" After describing students' evaluations regarding the ESP course, I can conclude that most participants had a positive perception in relation to the course and this conclusion is supported by Almeida (2004) where 89% of his participants also had a positive perception in relation to the use of online tasks in an ESP course for adults.

However, one caveat to be taken into account is the novelty effect. It is possible that the participants of this study evaluated computers positively just because they were new to them. As Nakata (2008) wisely puts it, "whether computers will have a positive effect on learners' motivation in the long term requires further research" (p. 17).

5.4 ANSWERING RQ 3

Was there an increase in participants' digital competence along the ESP course?

Students' ability and comfort levels concerning using computers, the Internet and some of their tools, were the instruments used to measure the level of digital competence of the 20 participants who answered the two online questionnaires proposed by me and following Almeida (2004). The aforementioned levels can be seen in Tables 32 and 33 (subsection 4.3.5).

In line with the exploratory nature of this research and with Warschauer (1999) who emphasizes that one of the jobs of a language teacher in the 21st century is to develop learners' literacy through the computer for them to work fully in the L2 in a period now when people read more on a computer screen and communicate with others also through computers, the reason I wanted to measure students' levels of DC1 and 2 was because I wanted to compare both indexes of DC to investigate whether, because of the integration of CALL in the ESP classes, students also developed their DC levels as a byproduct effect. The development of DC level was, also, a secondary goal of this study as already stated in section 3.2 (Chapter 03).

Table 2 in the method section (Chapter 03) showed that the mean percentage of the digital competence measured at the beginning of the course (DC1) was 69% and at the end of the course (DC2) it was higher: 76%, which indicated already that students' level of DC had increased along the semester. Moreover, the descriptive statistics presented in Table 35 of the last chapter (Chapter 04) showed again that the mean percentage of DC1 was 69% and DC2 was 76%. Whereas the minimum value was 31% and the maximum value was 98% at the beginning of the

course, the minimum value was 34% and the maximum was 100% in the end. The median was also higher in the end. It was also detected that there were very few low values in this variable (measured at the end of the course). It is important to take into consideration that, although the participants of this study were taking a program on Basic Computing, I did not expect a higher level of DC at the beginning of the course since the ESP course was offered in the first semester of the program. Naturally, if it were offered in the second, the results would have been different or, better yet, higher.

When comparing DC1 and DC2, results of the Pearson's r test indicated that there is a correlation between the two variables. Reiterating, it is possible to affirm that students improved their levels of DC along the ESP course. The indexes presented a significant association. In other words, there is a tendency in the increase of the index of the DC1 when the index of the DC2 increases. Thus, statistically significant correlations were observed between DC 01 and DC2, which means that at the end of the study, the participants' level of DC was significantly better. In other words, the students significantly improved their levels of digital competence along the ESP course and throughout the duration of the study. It is important to highlight that, while the CALL activities demanded a certain level of DC to be performed adequately; they offered favorable conditions for the development of the aforementioned competence, as a byproduct effect. Thus, it is natural and it was previously expected that the level of DC would increase. This increase can be justified for two reasons, namely (1) students developed specific computer skills and learned others by means of the ESP course that often employed CALL activities; and (2) through the course "Computers Architecture", which was part of the technical program as well (see the program curriculum in Appendix CC).

Therefore, I can cautiously conclude that the participants of this study had several abilities related to computers and felt comfortable performing several tasks on their computers. Their level of DC at the beginning of the course, then, was not very high, but increased throughout the duration of the study. Hence, RQ3, which asked "Was there any increase in the participants' digital competence from the beginning to the end of the ESP course?" can be answered positively, although I expected an even higher level of improvement.

The results of this study related to RQ3, do not corroborate other studies. Perhaps, this is due to the fact that the majority of the studies in the area of CALL address the issue of digital literacy instead of digital

competence as defined in this dissertation (see section 2.5 in Chapter 2). To restate, I did not find a study similar to mine with which to compare results. The only study that is similar, is Almeida (2004). However, he did not measure his participants' computer skills at the end of the course he applied. Therefore, it is not possible to know whether his participants improved their levels of digital competence. This question remains to be answered.

5.5 ANSWERING RQ 4

Was there any relationship between the level of digital competence and participants' performance on the computer-mediated tests?

I decided to contrast the level of DC2 and not the level of DC1, because, theoretically, the participants had improved their abilities and comfort levels in relation to performing specific tasks on the computer, and developed or learned others, as already stated in the methodology section. Having improved their level of DC, they would perform better in the posttests that were mediated by the computer as well, something that required a better level of DC. Thus, I expected that students with higher levels of DC would perform better in the online or computer-mediated tests too. To corroborate my supposition, Hong and Samimy (2010) claim that those learners who possess superior computer literacy abilities are more prone to have positive attitudes towards CALL. Thus, in order to analyze the association between the level of DC2 and students' performance on the computer-mediated posttests, correlational tests were applied. First, the association was made with the CPIMpost and it was not significant. The same pattern was observed with the other test: the CPDEpost. The correlation between the two variables was not significant either. Thus, there was no correlation between the two variables, that is, there was no relationship between the Index of DC2 and the computer-mediated posttests.

In view of the results of the correlations, my suspicion at the beginning of the study was not confirmed. Recapitulating, I expected that students with higher levels of DC would perform better on the computer-mediated tests as well and students with lower levels of DC would perform worse on the computer-mediated tests. Perhaps the participants were already familiar with the online testing environment, as I already stated earlier in this chapter due to the "simulados" applied to them, which helped them to increase their computer familiarity simultaneously helping them to become acquainted with the testing

environment. Thus, the participants' level of DC did not interfere in their performance on the online tests, since they were already familiar with the online testing environment. However, I did not apply a correlation test between the level of DC1 and the computer-mediated tests. Possibly, if I had done that, I would have found a relationship between these two variables, since the level of DC1 was measured at the beginning of the course, when learners were still getting familiar with the BL environment.

According to Odo (2012):

> Researchers have raised questions regarding the connection between learner familiarity with computers and performance on computerized tests virtually since interest arose in studying the applicability of computers for assessment purposes. However, despite this longstanding attention, at present, there has been a surprising lack of research that explores the connection between computer familiarity and performance on computerized tests that fall outside of the traditional multiple-choice discrete-point tests that have historically predominated in the field of testing and assessment (p. 18).

Therefore, as far as I know, there are no studies such as the present study for me to compare results. However, I found three studies which can be compared to mine, at least in some aspects. First of all, Odo (2012)'s study tries to provide research on the area of learners' familiarity with computers and performance on computerized tests. The results of his study showed "that the familiarity variables do account for a small but significant amount of the variability in the computer-based test scores" (p. 18). Odo (2012) asked "Do L2 learners who are more familiar with computers achieve higher scores on a computer-based multiple-choice cloze reading assessment than those who are less familiar with computers?" (Odo, 2012, p. 32). Generally speaking, Odo's findings corroborate others, which also revealed that computer familiarity does not have an excessive "impact on a computer-based language test performance" (ibid). Still according to Odo, for the most part, the latest studies reveal that computer familiarity does not have an effect on performance on computer-based language tests. Second of all, another study, this time carried out by Taylor, Kirsch, Eignor, and Jamieson (1999), revealed that there was no important association

between computer familiarity level and level of performance on computer-based language tasks. Thirdly, Sawaki (2001) also shows her concern with research investigating the impact of presentation method comparing information retrieved from computer-based and paper-and-pencil tests. Her study was a review of the literature on educational measurement and L1 reading research among other areas. In addition, her review of the literature demonstrates that computer familiarity does not appear to influence learners' performance on exams.

In closing, the answer to the question: "Was there any relationship between digital competence and the computer-mediated tests?" is negative. Students' levels of DC did not correlate with the online posttests. At last, it is important to bear in mind that, given the small number of participants (n = 20) in this study, these analyses must be considered exploratory and the results treated cautiously. To confirm the results, it would be necessary to replicate the study with a larger number of participants.

5.6 ANSWERING RQ 5

In which ways can CALL be integrated into ESP courses for adults?

In line with Allum (2004), this study also investigated ways on how best to integrate or blend CALL into the curriculum in order to get positive results for the same limited amount of classroom time without immense additional expense. There are studies that point toward the idea that close integration is preferred and more effective (e.g., Felix, 2001).

According to students' answers and posts, it is possible to infer that both: CALL activities and paper-and-pen activities and both environments: the computer lab and the traditional classroom **fit inside** an ESP course, because both kinds of activities and both environments, are very well accepted by the students according to their comments and answers to the end-of-the-term questionnaire, their posts in the forums, and their self-evaluations. By way of illustration, Warschauer (2000) puts forth the argument that technology itself does not establish human behavior, as the way we teach, but creates possibilities for new types of behavior and education. Moreover, Allum (2004), states that providing access to paper-and-pen activities and computer-based activities may make students experience more comfort and result in enhanced retention.

Considering that students declared they enjoyed practically all activities performed in the classroom and in the computer lab, generally

speaking, it is possible to infer that the activities elaborated, planned, selected or designed by the teacher, may possibly become part of or be adapted to any ESP course. The activities that were prepared for this course in 2011 were presented in the method section and part of them can also be seen in the sample of the booklet presented in Appendix L. In what follows, I will now provide ways that CALL can be integrated into ESP courses for adults, in a broad sense, in line with was already espoused in the review of the literature section and according to my experience as a techer-researcher after conducting the pilot study and this study.

First of all, it would be advisable if a virtual learning and teaching environment (LMS) is at students' disposal so that they can have access to the material, the news, their progress along the course, their grades, besides being able to interact on any given day with their teachers and classmates offline and online. Secondly, the virtual environment can be fed with interesting, dynamic, and motivating activities and resources, such as glossaries, questionnaires/tests, forums, online and offline activities, and videos related to the course that should be made available to students weekly. Moreover, the virtual environment can be programmed to give automated feedback and, in the cases it is not possible, it is advisable that the teacher provides manual feedback to students' activities. It is also important to provide learners with prior opportunities to be familiar with the new course format. Rodriguez and Anicete (2010) put forth the suggestion that:

> Learners who experience a hybrid course for the first time are likely to encounter problems. A reasonable acclimation period is recommended to help students get accustomed to the new format. During this time, it will be worthwhile to provide them with an intensive orientation about the technology to be used, and elaborate issues pertinent to hybrid learning such as expectations on student participation, increased responsibility for learning, and effective time management (p.796).

Thirdly, it is important to bear in mind that the majority of the participants of this study stated that both environments - the computer laboratory and the classroom – and both kinds of activities – paper-and-pen and CALL ones – played a beneficial role in their performance. Therefore, it is vital to emphasize the fact that learners should have the

opportunity to take advantage and use both environments and to perform both types of activities.

Having considered the qualitative and quantitative findings of this study, some recommendations for L2 and ESP teachers stated in Chapter 02 of this dissertation must be reviewed and recapitulated: ESP teachers should design a course and a digital or printed course book based on learners' specific needs (Celani, 2088), making sure that specific keywords are frequently presented (Nation, 2008). Also, vocabulary tests should often be applied along an ESP course in order to monitor learners' vocabulary progress or development (Nation, 2008; 2001b) and learners should be aware of that so that they can be intentionally prepared for the tests and study.

In addition, teachers are advised to create glossaries with unknown words in L2 together with their equivalents in the L1 or definitions in L2 to help students in the process of understanding texts in an L2 and also to draw their attention to specific new words. Moreover, new vocabulary should be dealt with in different ways, such as by presenting them in isolation or inside a text, or using new L2 words in vocabulary exercises after reading a text (Laufer et al., 2005). Also, teachers should activate new words by playing association games, give more attention to the most frequent and common words in the L2, and adapt texts that have less common words taking these words out or replacing them with more familiar ones (Laufer et al., 2005). Additionally, it is important to recap that Nation (2001b; 2003; 2005; 2006; 2007; and 2008) recommends a language course to be well balanced. He says that 75% of the course should be directed to meaning-focused activities and 25% dedicated to form-focused activities. Moreover, it is recommended that teachers plan oral and writing activities in a way that learners have different chances to acquire vocabulary (Laufer et al., 2005).

Furthermore, teachers should encourage learners' autonomy by having them take control and responsibility of their own learning instead of always relying on their teachers' materials (Laufer et al., 2005). In addition, according to Arnó-Macià (2012), technology has the potential to help ESP teachers to develop courses and materials that may be adapted to specific needs besides allowing "students to make choices and create alternative learning routes" (p. 96). The author continues saying that the ESP "learner is characterized by a high level of motivation" (p. 96). Following this reasoning, "technology can help provide appropriate materials and resources to carry out meaningful

activities related to specific disciplines" (p. 96). Still with respect to autonomy, Arnó-Macià (2012) adds that:

> Autonomy has become a central issue in language teaching, especially since the developments of technology have facilitated: (a) access to a wide range of authentic materials in different modalities (text, audio, image, video, etc.); (b) the possibility of interaction and exchange with partners worldwide; and (c) a greater degree of learner initiative and control over materials and activities (p. 96).

Additionally, some behaviorist techniques such as the application of dictations, association games, and repetitions, have proven to help learning and retention of new vocabulary as demonstrated in this study and they also help in "speeding up lexical acquisition, particularly in EFL settings" (Beglar & Hunt, 2005, p. 09). As some participants declared, the repetition of several terms made everything easier, and consequently, it was difficult to forget things. On the other hand, some students also complained about them. That said, however, what one student considers problematic, another student may find advantageous.

It is important to remember that the ideas recommended by the authors cited here are not always related to the use of CALL. However, they can be adapted to the digital context. In fact, the computer helps in the elaboration of specific activities or strategies such as the repetition of keywords and the monitoring of learners' performance individually. Additionally, the activities that are posted on Moodle stay there and are saved as well as the feedback that is given by the teacher or those who are generated by the system. Therefore, learners can always have access to what they have done and can keep track of their development and progress or the lack of it.

In addition, CALL materials and BL courses are going to promote successful L2 learning only if they are cautiously planned on the basis of participants' needs analysis (Neumeier, 2005). Also, CALL materials and BL courses aiming at improving, acquiring and retaining L2 knowledge in general, and L2 vocabulary specifically, will always succeed if they are well-planned, based on sound theories of SLA, and, more importantly, if the teacher keeps motivating students throughout the course, providing feedback and interactions, online, offline, or during FtoF encounters. In this study, I found resources that allowed me

to suppose that CALL activities are attractive to L2 students when, in line with Almeida (2004), they are adequate to students' interests and when they offer feedback. Finally, in the same vein as Neumeier (2005), in this study I tried as much as I could to ensure that learners would never feel isolated in their learning or hesitant in relation to their activities in the BL environment by providing constant FtoF and electronic feedback and interaction. For developing the ESP course for this study, this care proved to be very useful in achieving a good quality of BL practice. According to Leffa (2003), learners should be kept motivated during and after the activities. It is not enough to design interesting CALL activities if the teacher does not know how to motivate learners to engage with those activities. Moreover, in line with Hutchinson and Waters (1987),

> We still do not know much about learning. It is important, therefore, not to base any approach too narrowly on one theory […] it is wise to take an eclectic approach, taking what is useful from each theory and trusting also in the evidence of your own experience as a teacher. It is probable that there are cognitive, affective and behaviorist aspects to learning and each can be a resource to the ESP practitioner. For example, you may choose a behaviorist approach to the teaching of pronunciation, a cognitive approach to the teaching of grammar and use affective criteria in selecting your texts (p. 51).

What Hutchinson and Waters (1987) do not contemplate in their citation is the use of CALL in ESP courses. In the same vein as the authors, Warschauer (2011) states that we still have been learning how to educate with printed books. Also, he adds, we have been doing that for centuries. How to educate with computer technologies is another challenge for educational practitioners and we are very far from providing an answer to the question, "What is the role of information technology in schools, and what is the role of schools in an information society?" (p. 116).

In closing, RQ 5 asked: "In which ways can CALL be integrated into ESP courses for adults?". As can be seen, there are several ways of doing so. However, and most importantly, what should be kept in our minds is the idea that L2 students should be kept motivated throughout

language courses and one way of achieving this goal is by designing a blended approach to language learning-teaching considering students' necessities and respecting their individual differences.

After answering the five RQs and discussing the results of the present study, I will now move to section 5.7 to finish this chapter.

5.7 CONCLUSION OF THE CHAPTER

Chapter 05 aimed at discussing the central issue investigated in this dissertation: whether L2 vocabulary acquisition can be enhanced by the use of CALL activities, besides discussing its main goal, which was to investigate the effects of CALL on the acquisition of new vocabulary in an ESP course for adults. This general goal was broken down into four other sub-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 in participants' digital competence throughout the ESP course and the duration of the study; (3) to investigate the relationship between digital competence and the computer-mediated posttests; and (4) to suggest ways in which CALL can be integrated into ESP courses for adults. In addition, Chapter 05 aimed at answering the five RQs established for this study, and they were: 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?

Having answered the five research questions, I will now move to the last chapter of this dissertation (Chapter 06), which will provide the conclusions of this research study, the final remarks, the limitations of the study, suggestions for further research, and some specific pedagogical implications.

CHAPTER VI
CONCLUDING REMARKS

The central issue explored in this dissertation is whether L2 vocabulary acquisition can be fostered by the use of computer-mediated activities. In this line, this dissertation was guided by the primary aim of investigating the effects of CALL on the acquisition of vocabulary in an ESP course for adults. This general goal was broken down into 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 in participants' digital competence throughout the ESP course and the duration of the study; (3) to investigate the relationship between digital competence and the computer-mediated tests; and (4) to suggest ways in which CALL can be integrated into ESP courses for adults.

To reach the objectives of the present study, five research questions 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 five RQs were already answered in Chapter 05. In Chapter 06, I endeavor to espouse relevant final remarks, limitations, implications and suggestions for further research.

6.1 FINAL REMARKS

I have discovered that students in general welcome the use of computer technology to enhance L2 learning, in general, and L2 vocabulary acquisition, specifically. In general, learners saw the benefits of using CALL to practice L2 vocabulary, to interact with others, to do research concerning new lexical items, among other reasons, although the traditional approach of class instruction without any technology proved very successful as well. These findings are broadly confirmed by the reactions of the participants in the online forums for instance. Therefore, it could be identified that the effects of the application of a BL approach was positive and that it is a feasible methodology for the

teaching and learning of L2 vocabulary. Furthermore, in view of the qualitative and quantitative results, it is possible to conclude that the ESP course planned specifically for the population of this study resulted in meaningful effects on their performance along the course.

The 24 participants of this study were willing to use computer technology and by and large were very upbeat about its use. In fact, in some cases, the use of the computer was cited as a very positive aspect of the classes, making them more attractive and interesting. This supports a far and wide held scrutiny in CALL research that technology motivates students (Barr, Leakey, & Ranchoux, 2005, p. 17). That said, conversely and in line with Barr et al. (2005), improving motivation on its own does not guarantee that CALL will be a successful pedagogical tool. In the case of this study, CALL was employed, first of all, to maximize the L2 vocabulary learning chances for students.

Moreover, it can be inferred that the approach implemented - BL - was responsible for having impacted considerably on 'students' performance. Additionally, results of the pilot study, learners' needs analysis, SLA, and L2 vocabulary learning theories were taken into account while designing the ESP course. In sum, all decisions when planning the ESP course were grounded on previous studies and designed to reach the goals of an ESP course for adults in a Basic Computing technical program, taking into consideration the advantages of CALL and traditional activities (without technology), i.e., a blended/hybrid approach.

In the same line as the pilot conducted in the same year, for the 24 participants of this study, the traditional classroom (without computers) and the computer laboratory are appropriate environments for L2 learning. Results of this study point to the conclusion that the blend of FtoF interactions and/or traditional activities with new technologies provided by CALL promote motivation (Warschauer, 1996) and learners' autonomy (Blin, 2004), as already stated. Also, in line with Arnó-Macià (2012) technology per se does not assure autonomy. It can become a facilitator if suitable "conditions are met, such as providing choices, relevant materials, learner training, reflection, scaffolding, and support" (p. 96), though[88]. However, as Arnó-Macià (2012, p. 97) asks, do learners keep taking responsibility for their own learning after the end of the course? Answering this question is a thorny undertaking to pursue.

[88] I do not take into consideration here distance education which, in some cases, is offered only by means of technologies without any FtoF interactions.

All things considered, it can be concluded that the results of this study support the feasibility of implementing a hybrid L2 teaching-learning course for adults. It is hoped that the findings reported here provide some basis for further investigation into aspects of CALL and the potential effects CALL may cause on L2 vocabulary acquisition. As Warschauer (2000) wisely states, the computer and the English language should not be viewed as ends in themselves. However, they should be seen as complementary tools which learners can make use of to read, write, and rewrite the world (Warschauer, 2000).

It is expected that, in the near future, the division between the two modes - CALL and FtoF - will be indistinct due to the fact that the traditional classrooms will probably be integrated with computer labs or will be equipped with Internet-connected portable/mobile and smaller devices instead of desktop computers. This is what is expected to be the modern classrooms. Thus, what is considered BL today will, probably refer, only, to distance education which is carried out partly through attendance courses and partly through distance courses.

For the purposes of this study, a BL environment was designed taking into consideration the physical context where it was carried out and learners' and teacher-researcher's attitudes and aptitudes towards L2 teaching-learning, and, also, on the basis of the learners' and teacher's needs and capabilities and on the requirements of the curriculum, following Neumeier (2005). For that reason, in this study, a learners' image was created through the use of a questionnaire and a pretest before engaging in the ESP course plan with the aim of making "learner fit"[89] safe (Chapelle, 2001, p. 55). The BL environment was also designed taking into account that especially the CALL components demand an elevated degree of learners' autonomy and motivation (Neumeier, 2005 p. 169). BL is a coherent design approach that openly assesses and integrates the strengths of FtoF and online learning to address worthwhile educational goals. BL is fundamentally different and is not simply an add-onto the dominant approach. According to Osguthorpe and Graham (2003), BL has the potential of adapting itself to different settings, students, and content. Also, according to Reay (2001), for BL application to succeed, the different mediums' strengths, how learners engage in this type of learning process and how they make use of the information from each different medium and how they can

[89] "In CALL, learner fit refers not only to appropriate difficulty but also to appropriate instructional strategy relative to individual differences" (Chapelle, 2001, p. 158).

handle online and FtoF/traditional teaching methods in a blended form should be understood. BL offers the potential of broadening the extent and influence of CALL (Neumeier, 2005). BL used in L2 teaching is an example of a very progressive, useful and suitable methodology. However, it is important to recall that the teacher is irreplaceable (Hubackova, et al. 2011).

Hong and Samimy (2010) and Arnó-Macià (2012) show their concern with the lack of empirical research on technology in EFL contexts. For the former, there has been relatively little empirical research that examines BL implementation in highly technology-enhanced EFL contexts, while taking into account other factors found to be relevant to learners' attitudes toward CALL. This study addressed this gap by examining the central issue investigated in this dissertation, namely whether L2 vocabulary acquisition can be enhanced by the use of CALL activities. In what follows, learning outcomes were examined in this study by means of a pre-post test design to strengthen the validity of the method. This design was reinforced by delayed posttests, which have shown that learners retained what was learned at a later time. These factors altogether, strengthen method validity, as Chapelle (2001) aptly proposes. For the latter, it is crucial that a research agenda associated with the employment of technology in ESP courses to appraise the value of technology-based ESP projects is established. Research into this area also requires that ESP practitioners keep up with all the technological advances, since mobile devices are entering language classrooms, for instance. More research is necessary in respect to their utilization and efficiency (Arnó-Macià, 2012, p. 100). Finally, I finish this section using Arnó-Macià's (2012) words, when they say that:

> By creating new learning opportunities—accompanied by research into their effectiveness—LSP[90] teachers will be better equipped to support students to make the most of technology for independent, lifelong learning, a crucial skill for students and professionals who must adapt to rapidly changing environments. As a result of the enormous social and technological

[90] LSP stands for Languages for Specific Purposes, because the author refers to any language that is learned-taught for specific purposes, as the name entails. Since the present study was conducted with English learners, I decided to keep using the term ESP for English for Specific Purposes, along all the dissertation.

> changes of the past 20 years, LSP teachers are faced with the challenge of making the most of technology to help students develop the communication, literacy, critical, and technological skills that they will need to work and study in international contexts (p. 101).

6.2 LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This study aimed at investigating whether L2 vocabulary acquisition can be enhanced by the use of computer-mediated activities and was guided by the primary goal of investigating the effects of CALL on the acquisition of new vocabulary in an ESP course for adults. However, due to the small number of participants (N = 24) and the short duration of the study, the results presented here should be treated cautiously and some limitations should be accounted for. The remainder of this section will discuss the nine limitations of the present study and will provide suggestions for further research.

The first limitation of the present study is related to the sample size. The small number of 24 participants does not allow the results to be generalized. Therefore, consumers of this research should make generalizations in a cautious manner. Further research should attempt to replicate this study including a larger sample.

The second limitation is related to participants' field of knowledge. This study was conducted in a technologically-enhanced environment with participants from a Basic Computing program. Thus, their levels of digital competence may have been enhanced by the end of the semester, also because of the other courses they were taking simultaneously (e.g., Computer Architecture). Thus, it can be suggested that this study be replicated with a population from another field, such as Human Sciences, for instance.

A third limitation would refer to the levels of digital competence and motivation. The design of the ways to measure both levels may not be fully trustworthy. The calculation of the aforementioned levels was made following Almeida (2004). He himself developed the formula for the measurements of the levels of digital competence and motivation (as presented in sections 3.8 and 3.9, respectively, of the method section – Chapter 3) since he had not found similar procedures in the literature. Therefore, more objective forms, questionnaires, or formulas and a more

trustworthy measurement should be designed to better determine the indexes of motivation and digital competence, or even better, indexes or levels of digital literacy (see the distinction made regarding these two constructs in section 2.5 of the literature review section - Chapter 2). Furthermore, in line with Calvani et al. (2012), more work needs to be done for better comprehension of the articulate nature of digital competence among learners and of the internal connections between the various components that this notion might involve, as, for example, the move from simple spontaneous practices to practices with better cognitive quality.

The fourth limitation, refers to the immediate posttests. They were not applied on the same day. The opposite was done with the delayed posttests (see subsection 3.4). In order to test effects of the order of presentation similarly to the delayed posttests, the immediate posttests should have been applied on the same day as well, in inverse order of presentations. To recapitulate, G1 took the computer-mediated delayed posttest first and after that the paper-and-pen delayed posttest, while G2 took the paper-and-pen delayed posttest first and after that the computer-mediated delayed posttest. This procedure was adopted in order to control against practice order effects on the posttests.

The fifth limitation is the lack of a control group. As there was no other similar group of students taking the same course at the institution (IF-SC/Gaspar) in the second semester of 2011, I did not have a group to compare the results with. The ideal would be to have two groups, namely an experimental group that made use of CALL activities and a control group that did not make use of CALL activities. Strong evidence would be obtained if the contrasting group (the non-CALL group) had failed to make vocabulary gains (Chapelle, 2001, p. 74), for instance. Conversely, "research in CALL has shifted from investigating if CALL is superior to non-CALL to how CALL can be used effectively in language learning" (Hegelheimera & Towerb, 2004, p. 186). Hence, the lack of a control group may not be a very strong limitation of this study if we take Hegelheimera and Towerb (2004) statement into consideration. The aforementioned comments by Chapelle (2001) and Hegelheimera and Towerb (2004) deserve more reflection.

A sixth limitation would be concerning the two online questionnaires. The online questionnaires designed for the present study were considered too long by some participants. They should have been shorter and more straight-forward. In spite of that, a mid-term short questionnaire should have been applied. Therefore, the ideal would be to apply three short and straight-forward questionnaires: at the beginning

of the course, in the middle and at the end of the course. Further research should seriously take this aspect into consideration.

The seventh limitation concerns CALL activities and digital literacy. The traditional activities and the CALL activities proposed for this study attempted to enhance L2 vocabulary acquisition first and foremost. As a byproduct effect, it was expected that learners would develop their levels of digital competence, as well. A suggestion would be to design activities that could develop students' level of digital literacy. Burrel (2005) designed computer-mediated tasks, which she named CATs (Computer Activated Tasks) in order not only to promote L2 acquisition, but also, e-literacy. In Burrel's (2005) study, e-literacy is defined similarly to digital literacy presented in the Review of the Literature section of this dissertation (Section 2.5).

The eighth limitation concerns the context where this study was carried out. This study was conducted in a real, intact learning environment, which was not, obviously, altered in view of the present study. Hence, specific variables could not be controlled for, as for instance the exact lexical items or words that the learners had acquired, retained, and could recall at a later time. Also, the exact reason why participants performed better in the CPDEpost remains to be revealed. A suggestion would be, perhaps, to replicate a study similar to this in a laboratory setting, for example, following an experimental design. This way, the researcher can have better control of the aforementioned variables. Moreover, participants' prior knowledge might have posed a threat to the validity of the research and I did not apply a proficiency test, neither did I control for participants' proficiency levels. I merely pretested learners to assess their knowledge of particular lexical items and applied a diagnostic online questionnaire. As Chapelle (2001) puts, "choice of target forms and pretesting are controls available to laboratory researchers that are often not available in classrooms. Conversely, Hulstijn (1997) judiciously proposes that "without additional research in real L2 learning environments, one should be extremely cautious in drawing immediate conclusions from laboratory studies to language pedagogy" (p. 132). In view of the fact that this study was carried out in an intact classroom, its results can be generalized to L2 classrooms, regardless of the fact of having, or not, strong internal validity (Chapelle & Jamieson, 1991)[91]. Hegelheimera

[91] According to Chapelle and Jamieson (1991) internal validity refers to ''the accurate attribution of observed experimental results to the factors that were supposed to be responsible for the results'' (p. 38) and external validity refers to ''the applicability of

and Towerb (2004, p. 186) state that not many studies have looked into how CALL software designed in accordance with SLA theory is used in genuine settings. To reinforce this, Chapelle (2001, p. 133) underscores that CALL research has been inclined to be carried out in laboratories, and frequently involving artificial languages. Thus, studies carried out in such artificial environments rely, profoundly, on internal validity rather than on external validity, which can be attained without difficulty in authentic classroom employment of CALL programs (Hegelheimera & Towerb, 2004, p. 186).). Consequently, both research environments: the artificial laboratory and the real classroom are appropriate places to carry out research such as the present one, if we take into consideration factors such as internal and external validity. The limitations exposed in this paragraph remain to be investigated more deeply.

Finally, the last limitation is concerned with ICT tools and emerging areas. I should have designed and implemented a more customized and dynamic BL course, by utilizing more innovative ICT tools and strategies, such as social media, video games, virtual worlds, and videos with captions in the learning process. Also, note that CALL was seen in the context of this research study as L2 learning mediated by the computer. Taking into account the fast-paced evolution of technological applications that are attracting growing interest in the educational arena (Arnó-Macià, 2012), I, also, should have taken into consideration all emerging technologies which can, as well, be used for L2 learning such as mobile devices, namely cellular phones, I pods, tablets and others, in line with Warschauer (2000) who states that a change, in the 21st century "will be from personal computers to other computing and online devices". Another "change will be from the lab to the classroom. Computers and other online devices will be found in every classroom in developed countries, not just in computer laboratories" (Warschauer, 2000). Finally, in line with Hubbard (2009), there are areas already being developed by CALL practitioners that hold promise such as the Web 2.0. However, the language teacher's biggest challenge is to develop projects that are valuable and grounded on a sound underlying principle (Arnó-Macià, 2012, p. 100). Kennedy and Levy (2009), for example, underscore that going toward long-term CALL projects might be unsuited to the fast-paced evolution of technology. However, they propose that rather than being worried about whether implementing the latest technology or not, it is vital to develop

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research results to instructional and research contexts other than the one in which the research was carried out'' (p. 38).

projects that are technologically strong and have a sound pedagogic basis. Therefore, regardless of the fact that it is difficult to keep up with the latest technologies in the language classroom, I am sure that the design and procedures implemented in this study were grounded on sound SLA, CALL, CAVL, and ESP theories and this is why the results were significant and positive.

In this section, based on what I think and understand about learning-teaching with CALL and the issues that are still unanswered, besides presenting the limitations of this study, I have offered some recommendations and suggestions for future directions of CALL development and research, as well. In the same vein as Chun (2007, p. 245), even though technologies are continually improving, developing, and evolving, in some cases, they are somewhat stable. However, it is the pedagogy that should be the guiding force in establishing future directions. In other cases, with innovative, emerging technologies, it is not clear precisely how the technology will evolve. In order to attain our teaching-learning objectives, we must steady our teaching practices with sound underlying pedagogical uses of the technology.

After establishing the limitations found in this study and providing specific suggestions for future research, the next subsection will present some relevant pedagogical implications.

6.3 PEDAGOGICAL IMPLICATIONS

I embarked on this research endeavor with the aim of investigating the effects of Computer Assisted Language Learning on the acquisition of new vocabulary in English, since it is largely established that computers are more conducive to learning than paper-and-pen activities (Nakata, 2008). While CALL has provided positive effects on L2 vocabulary acquisition and retention, it cannot be ignored that the traditional paper-and-pen activities and FtoF classes and interactions also offered positive effects. Therefore, the combination of both methodologies, namely BL, favored and contributed to acquisition of L2 vocabulary. Drawing on this and other findings, pedagogical implications can be stated. The following paragraphs will tackle this issue.

A relevant pedagogical implication concerns the teaching of English specifically for the students to function well and fully, in the context of the Internet, since the English language is seen as a lingua franca in this context (Arnó-Macià, 2012, p. 92). Thus, besides being considered a lingua franca internationally, it is considered the same in

the virtual world. As I said earlier in section 5.4, one of the jobs of a language teacher in the 21st century is to develop learners' literacy through the computer (Warschauer, 1999). Therefore, I would emphasize that an English teacher has two essential jobs, namely (1) using e-mails and the Internet to help teach English and (2) teach English to help writing e-mails and using the Internet (Warschauer, 2000).

Another pedagogical implication suggests that the concept of technology in blended environments needs to be expanded from a focus on integrating electronic tools to configuring hybrid FtoF and online activities. In other words, a Blended Learning approach does not imply only the integration of technology, but, also, the integration of two environments, namely the traditional FtoF and the online environment. Moreover, BL is not only a descriptive category of technology use in education, but it is an interventionist approach as well, which is constantly changing and trying to blend FtoF and CALL strategies (Hinkelman & Gruba, 2012). Furthermore according to Hong and Samimy (2010, p. 341), for CALL to be promoted in L2 education adequately, school administrators should help solve technical problems and should offer workshops. As for L2 teacher's educators, they should provide support to teachers regarding CALL before they embark on the process of teaching in a multimodal instructional context. In addition, they should supply L2 teachers with opportunities to increase their comprehension and knowledge of the pedagogical benefits of CALL under a BL environment.

The most important pedagogical contribution derived from the present research results, though, is that providing learners opportunity for performing CALL activities per se is not the only question if the aim is to optimize learners' L2 vocabulary acquisition. It seems that making learners familiar with the technologically enhanced environments, with CALL activities, and with opportunities to interact are sine qua non conditions for the benefits of a BL approach to L2 vocabulary acquisition. L2 teachers should orchestrate and experiment classroom and CALL activities and systematically apply a BL approach to find ways in order to make learners take the most advantage of BL. As Arnó-Macià (2012, p. 92) wisely puts, "technology provides access to authentic texts, tools for their analysis, and online communication resources. It has also become a powerful tool to facilitate students' immersion in the discourse community". The author also puts forth the idea that by means of the technology, learners have access to helpful tools that assist them in learning more about the academic or work

situations relevant to them (Arnó-Macià, 2012, p. 92), in the context of an LSP course. In addition, "technology can also be used to challenge and modify students' views of learning" (Arnó-Macià, 2012, p. 98).

Still in accordance with Arnó-Macià (2012), it is also important to note that the increase of BL environments forces the LSP teachers to extend their roles beyond the traditional classrooms (Arnó-Macià, 2012, p. 97). One of the new roles of the LSP teacher involves becoming a course and materials designer who plans significant activities that ought to supply learners with assistance, a role that requires the integration of multiple skills, if we consider all the multimodal resources of an Internet-connected computer. Moreover, the growing body of open-access academic and professional content offered by the Internet, "provides input for developing tailor-made materials and engaging in project based learning, while enabling students to become familiar with the real discourse and genres" (Arnó-Macià, 2012, p. 97) of their area of study. Considering all the benefits that technology carries into the teaching-learning context, it is essential to incorporate emerging technologies, develop Information Technology (IT) based teaching projects grounded on a sound rationale, train teachers and learners, among other tasks (Arnó-Macià, 2012, p. 99).

Recapitulating, the central concern investigated in this dissertation was whether L2 vocabulary acquisition can be enhanced by the use of CALL activities. In a nutshell, overall, results of this study revealed that (1) the design adopted during the second phase of this study (see research design in Section 3.9), which lasted from August 16th to September 20th (see Section 3.10 for the detailed procedures) and which were applied in the light of suggestions and recommendations of several researchers in the area of, especially, L2 vocabulary acquisition (e.g., Beglar & Hunt, 2005; Laufer, 2010; Laufer, Meara, & Nation, 2005; Nation, 2001a; 2001b; 2008; Perez Basanta, 2010), CALL (e.g., Chapelle, 2007; Perez Basanta, 2010; Warschauer, 1996; 2000; Warschauer & Healey, 1998), and ESP (e.g., Celani, 2008; Hutchinson & Waters, 1987; Ramos, 2008), were valuable and effective; (2) the BL approach employed throughout the study demonstrated that the combination of traditional paper-and-pen activities into FtoF traditional environments such as the classroom with the computer-mediated activities and interactions in virtual environments was not only effective, as well, but also, encouraging, providing learners a motivating and inspiring atmosphere, which enabled them to be fully integrated and engaged in all activities and tests; (3) intentional or language-focused

learning is one of the most important conditions involved in psycholinguistic acquisition, retention and retrieval of new lexical items; (4) the potential of technological tools, definitely, benefit L2 learning; and (5) it is important to ensure spaced repetition of new lexical items in the input offered to the L2 learners so that these lexical items are integrated into the learners' interlanguage.

In closing, the teacher who started teaching in 1986 and had always attempted to make use of "new" technologies that were available in the vast array of schools where she had worked, finally started working in 2010 in a fully technologically enhanced environment where students have access to an individual personal desktop computer connected to the Internet and the availability of the programmable software – Moodle, during her classes. This kind of environment was novel to me and is difficult to find in regular educational contexts. Accordingly, I am very proud of working and doing research at IF-SC/Gaspar.

My challenge, then, was, first, to integrate the new computer-technologies in my English classes. Later, I had to learn how to integrate the resources available through the Internet with the traditional face-to-face lessons into the traditional classrooms. In light of this, questions arose about the effects of a blended environment on education, in general, and on the process of SLA, in particular. These questions were the initial motivation for developing a study that attempted to trace the effects of CALL on SLA. Subsequently, Almeida's (2004) study was a starting point for a change in my research project. Furthermore, Mark Warschauer's and Carol Chapelle's papers were also very enlightening for my initial research project. Many of my decisions within the duration of my research were guided by these two scholars.

Of particular importance for the present study is the growing interest in researching CALL in order to unveil its potential in SLA, in general, and in teaching-learning L2 vocabulary in particular. With this viewpoint in mind, this dissertation has aimed at examining the effects of CALL on the acquisition of L2 vocabulary of adult EFL students. Carried out in an intact classroom environment, this study showed that it is possible to put into practice theoretically driven insights within educational contexts.

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APPENDICES

APPENDIX A - The letter of consent
Carta de permissão

Srs. Pais ou responsáveis

Seu(sua) filho(a) está sendo convidado a participar de uma pesquisa de doutorado conduzida por mim, Gisele Luz Cardoso, professora de Inglês do Instituto Federal de Santa Catarina (IF-SC)/Campus Gaspar e aluna de doutorado do programa de pós-graduação da Universidade Federal de Santa Catarina (UFSC), sob orientação da professora doutora Mailce Borges Mota.

O objeto da pesquisa, em geral, é o de analisar a percepção dos alunos de inglês para fins específicos quanto ao uso de atividades mediadas pelo computador para o ensino e aprendizagem de novo vocabulário em língua inglesa.

Não haverá nenhum risco a seu(sua) filho(a) se ele(a) participar da pesquisa. Pelo contrário, este trabalho irá enriquecer mais os conhecimentos da Língua Inglesa assim como promoverá mais a socialização de seu filho (a).

Confidencialidade: Os nomes dos participantes não serão divulgados ou publicados de maneira alguma. Somente a pesquisadora terá acesso aos dados coletados nesta pesquisa.Sua decisão de permitir ou não que seu(sua) filho(a) participe dessa pesquisa, não afetará a relação dele(a) com sua escola.

O contato com a pesquisadora poderá ser feito através dos seguintes e-mails: gisele.luz@ifsc.edu.br e mailce@cce.ufsc.br.

Assinando esta carta, vocês estarão consentindo com o uso dos dados coletados para a pesquisa.

Obs.: a participação de seu(sua) filho(a) é voluntária, ou seja, ele(a) não é obrigado(a) a participar desta pesquisa.

Obrigada.

Nome do(a) aluno(a):_____

Assinatura dos pais ou responsável: _____

APPENDIX B
The beginning-of-the-term questionnaire

Questionário de sondagem para os alunos do curso Técnico em Informática

Caro aluno(a) do curso Técnico em Informática. Você está sendo convidado a responder um questionário de sondagem. Suas informações serão muito importantes para sua professora de inglês ter um perfil da turma com a qual está trabalhando.
* Required

Parte I

Qual seu nome completo? _____

Qual seu sexo?

- ○ Masculino
- ○ Feminino

Qual a sua idade?

- ○ 15-17
- ○ 18-24
- ○ 25-30
- ○ 30-45
- ○ Acima de 45
- ○ Other: _____

Você gostaria de compartilhar algumas informações suas com a sua professora e sua turma?

- ○ sim
- ○ não
- ○ Other: _____

Qual o seu estado civil?

- ☐ solteiro (a)
- ☐ casado (a)
- ☐ divorciado
- ☐ Other: ____

Você está estudando em alguma escola neste momento?

- ○ sim
- ○ não
- ○ Other: ____

Se você está estudando em alguma escola neste momento, diga em que série você está.

- ○ 1º ano do Ensino Médio
- ○ 2º ano do Ensino Médio
- ○ 3º ano do Ensino Médio
- ○ Other: ____

Se você está estudando em alguma escola neste momento, diga se você estuda em escola pública ou particular.

- ○ Pública
- ○ Particular

Se você está estudando em alguma escola neste momento, diga em que período você está estudando.

- ☐ manhã
- ☐ tarde
- ☐ Other: ____

Você trabalha? *
Se você trabalha, diga onde e o que você faz, ou qual a sua profissão.

Se você trabalha, em que período você trabalha?

- [ ] manhã
- [ ] tarde
- [ ] manhã e tarde
- [ ] Other:

Onde você mora?

- ( ) Gaspar
- ( ) Blumenau
- ( ) Other:

Onde você nasceu? (diga a cidade)

- ( ) Gaspar
- ( ) Blumenau
- ( ) Other:

Você tem computador e Internet em casa? *

Se você não tem computador em casa você costuma usar um computador em outro lugar? Onde? .

- [ ] LAN house
- [ ] casa de parente ou amigo(a)
- [ ] Other:

Part II

Você teve aulas de inglês quando estava na escola no ensino fundamental ou médio?

- sim
- não
- Sim, só no ensino fundamental (1ª a 4ª série)
- Sim, só no ensino fundamental (5ª a 8ª série)
- Sim, só no ensino médio
- Other:

Por quantos anos você teve aulas de inglês na escola?

- de 1 a 4 anos
- de 4 a 8 anos
- de 8 a 11 anos
- nunca tive aulas de inglês na escola
- other:

Você fez aulas de inglês fora da escola? Em algum curso de idiomas? Aulas particulares? *

Você está neste momento estudando inglês fora da escola? Em algum curso de idiomas? Aulas particulares?

- sim
- não

Se você já teve aulas de inglês fora da escola, diga por quanto tempo

- de 1 a 2 anos
- de 2 a 3 anos
- mais de 3 anos
- other:

Se você já teve aulas de inglês fora da escola, diga em que escola você estudou.

Part III

Como você considera a sua experiência com relação ao uso do computador?

	1	2	3	4	5	6	7	8	9	10	
Nenhuma experiência	○	○	○	○	○	○	○	○	○	○	Bastante experiência

Com que frequência você usa o computador fora do IFSC?

- todo dia
- três vezes por semana
- quase nunca
- nunca
- Other:

Com que frequência você acessa a Internet fora do IFSC?

- todo dia
- três vezes por semana
- quase nunca
- nunca
- Other:

Quantas horas por dia você fica conectado à Internet fora do IFSC?

- de uma a três horas
- de três a cinco horas
- de cinco a sete horas
- mais de sete horas

- nunca
- Other:

Quando você acessa a Internet, qual a primeira coisa que você faz?

- Acessa o MSN
- Acessa o Orkut
- Acessa o Facebook
- Checa seus e-mails
- Ouve música
- acessa o You Tube
- Other:

O que você mais gosta de fazer na Internet?

- Jogar Computer games
- Conversar com amigos através do MSN
- Conversar com amigos através do Facebook
- Conversar com amigos através do Orkut
- Fazer trabalhos escolares
- Ler notícias e textos informativos
- Enviar scraps/mensagens para amigos
- Ler e escrever e mails
- Other:

Você possui perfil em quais redes sociais? Ou: quais destas redes sociais você utiliza?

- Twitter
- Facebook
- You Tube
- Orkut
- Msn

- [ ] Google Talk
- [ ] Blog
- [ ] Wikipage
- [ ] Formspring
- [ ] Other:

Você gosta de frequentar o laboratório de informática de sua escola?

	1	2	3	4	5	
não	○	○	○	○	○	sim, muito

Você prefere ter aulas na sua sala de aula ou no laboratório de informática?

- ○ na sala de aula
- ○ no laboratório de informática
- ○ tanto faz

Você prefere fazer atividades no papel ou no computador?

- ○ no papel
- ○ no computador
- ○ tanto faz

Escolha o nível que melhor descreve a sua habilidade em trabalhar com o teclado e as funções de cada tecla (“Esc”, “Ctrl”, “Alt”, “Del”...)

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com o mouse (teclas esquerda e direita, duplo clique...)

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Processadores de texto (digitar um texto, configurar páginas, selecionar, copiar e colar...)

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com o Sistema Operacional do computador que você usa (criar pastas, copiar, mover e renomear arquivos...)

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com navegadores/browsers (salvar páginas da web, trabalhar off-line, favoritos...)

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Mecanismos/ferramentas de busca (efetuar pesquisas simples/avançadas, usando o Google ou outro programa, p. ex.)

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Correio eletrônico/e-mail (escrever e visualizar e-mails, salvar e inserir anexos, responder, encaminhar, entre outros)

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Ferramentas de chat ou bate-papo; uso de programas de bate papo como MSN (enviar mensagens online e offline, enviar emoticons...)

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Listas de discussão/forums online

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como ler textos na tela do computador

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como escrever textos diretamente no computador

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como comunicar-se com alguém por e-mail

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como conversar com alguém através de programas de bate papo/chat como o MSN

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como ouvir música no computador

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como assistir a filmes na tela do computador

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como ver, salvar e modificar fotografias na tela do computador

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como estudar com o auxílio do computador (usando CD-ROMs, lendo e fazendo slides no Power Point ou outro programa para fazer slides)

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como fazer pesquisas na Internet, ler as informações encontradas, escolher as informações adequadamente

	1	2	3	4	5	
						muito confortável
muito desconfortável	○	○	○	○	○	

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como ler jornais e revistas no computador online e/ou offline

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Quais são as suas expectativas com relação à disciplina de Inglês Técnico?

Deixe aqui o seu recado, se houver. Muito obrigada por responder a este questionário.

APPENDIX C
The paper-and-pencil pretest

ENGLISH TEST

Texto 1: COMPUTER PARTS

Glossary: **inside**: dentro **to care**: importar-se **to avoid**: evitar **deals**: negócios **even though**: ainda que, mesmo que **to understand**: entender **enough:** suficiente **but (1):** menos, exceto **but (2):** mas **often:** frequentemente **hub**: centro **to manage:** gerenciar **to store:** armazenar **to boost:** aumentar	Most people don't know exactly what goes on **inside** of their computers, and most of those people don't **care**. But understanding the basics behind computer parts is an important part of being an educated consumer. Knowing more about computer parts can help people diagnose problems with their computer and **avoid** bad **deals** at computer stores. **Even though** they may seem complicated, it's still important to **understand** the basic functions of computer parts. The most visible parts of the system may be easy to **understand.** The monitor and speakers are obvious **enough**, and the mouse and keyboard are familiar to all **but** the newest of users. **But** the things **inside** the computer itself, **often** called the "tower," are more of a mystery. The motherboard is the **hub** where all information is **managed** from various other computer parts. The central processing unit (CPU), is housed on the motherboard and **manages** all the exchange of information between parts. The hard drive is where all the information on the computer is **stored**. This is where all the pictures, music, movies and documents are kept when you aren't viewing them. The memory is different from the hard drive because it is not permanent. The memory is simply a place for the computer to **store** information temporarily while it performs certain functions. Other computer parts include CD and DVD drives which can read information off CDs and DVDs. Video and sound cards boost the video and audio quality of the things that the computer displays. (Disponível em: <http://www.compu-mart.com/computerparts.html>.Acesso em: 28 maio 2011).

1. Leia o texto 1 e responda às perguntas em português:

A) Quantas partes externas do computador o texto 1 cita? ……
B) Quais são as partes externas do computador que o texto 1 cita? Escreva-as abaixo em inglês e em português:

ENGLISH	PORTUGUESE

C) Quantas partes internas do computador o texto 1 cita? …..
D) Quais são as partes internas do computador que o texto 1 cita? Escreva-as abaixo em inglês e em português:

ENGLISH	PORTUGUESE

2. Traduza para o português as palavras que estão sublinhadas nas frases abaixo retiradas do texto 1:

a. Most people don't know exactly what goes on inside of their computers, and most of those people don't care.
b. But understanding the basics behind computer parts is an important part of being an educated consumer.
c. Knowing more about computer parts can help people diagnose problems with their computer and avoid bad deals at computer stores.
d. Even though they may seem complicated, it's still important to understand the basic functions of computer parts.
e. The most visible parts of the system may be easy to understand.
f. The motherboard is the hub where all information is managed from various other computer parts.
g. This is where all the pictures, music, movies and documents are kept when you aren't viewing them.
h. The memory is different from the hard drive because it is not permanent.
i. The memory is simply a place for the computer to store information temporarily while it performs certain functions.

Texto 2: INPUT/OUTPUT (I/O)

Glossary: **means:** meio, recurso **to exchange:** trocar **outside:** externo, de fora **world:** mundo **device:** dispositivo, mecanismo **to provide:** fornecer	Input/output **(**I/O) is the **means** by which a computer **exchanges** information with the **outside world.** **Devices** that **provide** input or output to the computer are called peripherals. On a typical personal computer, peripherals include input **devices** like the keyboard and mouse, and output **devices** such as the display and printer. Hard disk drives, floppy disk drives and optical disc drives serve as both input and output devices. (Disponível em: <http://en.wikipedia.org/wiki/Computer>. Acesso em: 06 jun. 2011. Adaptado).

3. Leia o texto 2 e responda:

a) O que significa exatamente “Input/output **(**I/O)”?

b) Como são chamados os dispositivo de entrada e saída de dados em inglês?

c) Quais são os exemplos de dispositivos de entrada e saída de dados citados neste texto?

d) Quais dispositivos podem ser ao mesmo tempo de entrada e saída de dados citados neste texto?

Texto 3: COMPUTER DATA STORAGE

Glossary: **storage**: armazenamento **time:** tempo **data**: dados, informações **usually**: geralmente **several:** vários **kinds:** tipos **each**: cada **known:** conhecido **main:** principal **required:** exigido **devices:** dispositivos, aparelhos	Computer **data storage,** often called **storage** or memory, refers to computer components and recording media that retain digital data used for computing for some interval of **time.** Computer data **storage** provides one of the core functions of the modern computer, that of information retention. It is one of the fundamental components of all modern computers, and coupled with a central processing unit (CPU), implements the basic computer model used since the 1940s. A computer system **usually** contains **several kinds** of storage, **each** with an individual purpose. Primary **storage** is **known** as the **main** memory of the computer. It is the only one directly accessible to the CPU. The CPU continuously reads instructions stored there and executes them as **required**. Any data actively operated on is also stored there in uniform manner. There are two types of primary **storage** devices: RAM (Random Access Memory) and ROM (Read Only Memory). Secondary **storage** is not directly accessible by the CPU. The computer usually uses its input/output channels to access secondary storage and transfers the desired data using intermediate area in primary storage. In modern computers, hard disk drives are usually used as secondary **storage.** Some other examples of secondary storage technologies are: CD and DVD drives, flash memory (e.g. USB flash drives), and floppy disks. (Disponível em: <http://en.wikipedia.org/wiki/Computer_data_storage>. Acesso em: 06 jun. 2011. Adaptado)

4. Leia o texto 3 e responda:

a) Qual é o assunto do texto?

b) A que se refere o termo "data storage devices" e qual a função deles em um computador?

c) Quais são os dois tipos de dispositivos de armazenamento de dados de um computador e qual é a diferença entre eles?

d) Escreva todos os sete exemplos de dispositivos de armazenamento de dados presentes no texto em inglês e em português:

5. Agora, leia os grupos nominais a seguir e traduza-os para o português:

a) Central Processing Unit_____
b) Compact Disk_____
c) Electronic Mail_____
d) Hard Disk _____
e) Laser Printer _____
f) Modern Computer _____
g) Operating System _____
h) Personal Computer _____
i) Web Page _____
j) Secondary Memory _____

6. Observe as gravuras a seguir e escreva em inglês os nomes das partes do computador que você vê:

APPENDIX D
The paper-and-pencil immediate posttest (PPIMpost)

ENGLISH TEST

Texto 1: COMPUTER PARTS

Glossary: **inside**: dentro **to care**: importar-se **to avoid**: evitar **deals**: negócios **even though**: ainda que, mesmo que **to understand**: entender **enough:** suficiente **but (1):** menos, exceto **but (2):** mas **often:** frequentemente **hub**: centro **to manage:** gerenciar **to store:** armazenar **to boost:** aumentar	Most people don't know exactly what goes on inside of their computers, and most of those people don't care. But understanding the basics behind computer parts is an important part of being an educated consumer. Knowing more about computer parts can help people diagnose problems with their computer and avoid bad deals at computer stores. Even though they may seem complicated, it's still important to understand the basic functions of computer parts. The most visible parts of the system may be easy to **understand.** The monitor and speakers are obvious **enough**, and the mouse and keyboard are familiar to all **but** the newest of users. **But** the things **inside** the computer itself, **often** called the "tower," are more of a mystery. The motherboard is the **hub** where all information is **managed** from various other computer parts. The central processing unit (CPU), is housed on the motherboard and **manages** all the exchange of information between parts. The hard drive is where all the information on the computer is **stored**. This is where all the pictures, music, movies and documents are kept when you aren't viewing them. The memory is different from the hard drive because it is not permanent. The memory is simply a place for the computer to **store** information temporarily while it performs certain functions. Other computer parts include CD and DVD drives which can read information off CDs and DVDs. Video and sound cards boost the video and audio quality of the things that the computer displays. (Disponível em: http://www.compu-mart.com/computerparts.html. Acesso em 28 maio 2011).

1. Leia o texto 1 e responda às perguntas em português:

A) Quantas partes externas do computador o texto 1 cita? …….

B) Quais são as partes externas do computador que o texto 1 cita? Escreva-as abaixo em inglês e em português:

ENGLISH	PORTUGUESE

C) Quantas partes internas do computador o texto 1 cita? …….

D) Quais são as partes internas do computador que o texto 1 cita? Escreva-as abaixo em inglês e em português:

ENGLISH	PORTUGUESE

2. **Traduza para o português as palavras que estão sublinhadas nas frases abaixo retiradas do texto 1:**

a) The memory is simply a place for the computer to store information temporarily while it performs certain functions.
b) Knowing more about computer parts can help people diagnose problems with their computer and avoid bad deals at computer stores.
c) The memory is different from the hard drive because it is not permanent.
d) This is where all the pictures, music, movies and documents are kept when you aren't viewing them.
e) The motherboard is the hub where all information is managed from various other computer parts.
f) The most visible parts of the system may be easy to understand.
g) Even though they may seem complicated, it's still important to understand the basic functions of computer parts.
h) But understanding the basics behind computer parts is an important part of being an educated consumer.
i) Most people don't know exactly what goes on inside of their computers, and most of those people don't care.

Texto 2: INPUT/OUTPUT (I/O)

Glossary: **means:** meio, recurso **to exchange:** trocar **outside:** externo, de fora **world:** mundo **device:** dispositivo, mecanismo **to provide:** fornecer	Input/output **(**I/O) is the **means** by which a computer **exchanges** information with the **outside world.** **Devices** that **provide** input or output to the computer are called peripherals. On a typical personal computer, peripherals include input **devices** like the keyboard and mouse, and output **devices** such as the display and printer. Hard disk drives, floppy disk drives and optical disc drives serve as both input and output devices. (Disponível em: <http://en.wikipedia.org/wiki/Computer>. Acesso em 06 jun 2011. Adaptado)

3. Leia o texto 2 e responda:

a) O que significa exatamente "Input/output **(**I/O)"?
b) Como são chamados os dispositivos de entrada e saída de dados em inglês?
c) Quais são os exemplos de dispositivos de entrada e saída de dados citados neste texto?
d) Quais dispositivos podem ser ao mesmo tempo de entrada e saída de dados citados neste texto?

Texto 3: COMPUTER DATA STORAGE

Glossary: **storage**: armazenamento **time:** tempo **data**: dados, informações **usually**: geralmente **several:** vários **kinds:** tipos **each**: cada **known:** conhecido **main:** principal **required:** exigido **devices:** dispositivos, aparelhos	Computer **data storage,** often called **storage** or memory, refers to computer components and recording media that retain digital data used for computing for some interval of **time.** Computer data **storage** provides one of the core functions of the modern computer, that of information retention. It is one of the fundamental components of all modern computers, and coupled with a central processing unit (CPU), implements the basic computer model used since the 1940s. A computer system **usually** contains **several kinds** of storage, **each** with an individual purpose. Primary **storage** is **known** as the **main** memory of the computer. It is the only one directly accessible to the CPU. The CPU continuously reads instructions stored there and executes them as **required**. Any data actively operated on is also stored there in uniform manner. There are two types of primary **storage** devices: RAM (Random Access Memory) and ROM (Read Only Memory). Secondary **storage** is not directly accessible by the CPU. The computer usually uses its input/output channels to access secondary storage and transfers the desired data using intermediate area in primary storage. In modern computers, hard disk drives are usually used as secondary **storage.** Some other examples of secondary storage technologies are: CD and DVD drives, flash memory (e.g. USB flash drives), and floppy disks. (Disponível em: <http://en.wikipedia.org/wiki/Computer_data_storage>. Acesso em 06 jun 2011. Adaptado).

4. Leia o texto 3 e responda:

a) Qual é o assunto do texto?
b) A que se refere o termo "data storage devices"?
c) Qual a função dos "data storage devices" em um computador?
d) Quais são os dois tipos de dispositivos de armazenamento de dados de um computador?
e) Qual é a diferença entre os dois tipos de dispositivos de armazenamento de dados de um computador?
f) Escreva todos os **sete exemplos** de dispositivos de armazenamento de dados presentes no texto em inglês e em português:

5. Agora, leia os grupos nominais a seguir e traduza-os para o português:

a) Laser Printer _____
b) Hard Drive _____
c) Electronic Mail_____
d) Compact Disk_____
e) Central Processing Unit_____
f) Web Page _____
g) Primary Memory _____
h) Personal Computer _____
i) Operating System _____
j) Modern Computer _____

6. Observe as gravuras a seguir e escreva em inglês as partes do computador apontadas:

APPENDIX E
The computer-mediated immediate posttest (CPIMpost)

Question1
Notas: --/1
Escreva em inglês a parte do computador descrita a seguir: **"It is necessary to connect to Internet".**
Resposta:

Enviar

Question2
Notas: --/1
Que parte do computador é esta? Escreva em inglês:

Resposta:

Enviar

Question3
Notas: --/1
Escreva em Inglês a parte do computador descrita a seguir:
"It is used to point things on the computer screen".
Resposta:

Enviar

Question4
Notas: --/1
There are two types of secondary storage devices: (1) ROM - Read Only Memory - and (2) RAM - Random Access Memory. There are many types of primary storage devices, for example: the USB flash drives, the CD, the DVD, the HD, etc.
Resposta:

Verdadeiro Falso

Enviar

Question5
Notas: --/1
Output devices let the users enter commands, data, or programs. Computer keyboards are the most common types of output devices. Another common output device is the mouse.

Resposta:

Verdadeiro Falso

Enviar

Question6
Notas: --/1
COMPUTER PARTS

A place in the computer where all information is kept.

You use it to connect the computer to the printer.

It is where the user types.

It is a device used to hear the computer sounds.

It is where all the information is processed.

Question7
Notas: --/1

Computer data storage, often called storage or memory, refers to computer components and recording media that retain digital data used for computing for some interval of time. Computer data storage provides one of the core functions of the modern computer, that of information retention. It is one of the fundamental components of all modern computers, and coupled with a central processing unit (CPU), implements the basic computer model used since the 1940s. A computer system usually contains several kinds of storage, each with an individual purpose.

Primary storage is known as the main memory of the computer. It is the only one directly accessible to the CPU. The CPU continuously reads instructions stored there and executes them as required. Any data actively operated on is also stored there in uniform manner. There are two types of primary storage devices: RAM (Random Access Memory) and ROM (Read Only Memory).

Secondary storage is not directly accessible by the CPU. The computer usually uses its input/output channels to access secondary storage and transfers the desired data using intermediate area in primary storage. In modern computers, hard disk drives are usually used as secondary storage. Some other examples of secondary storage technologies are: CD and DVD drives, flash memory (e.g. USB flash drives), and floppy disks. (Disponível em: <http://en.wikipedia.org/wiki/Computer_data_storage>. Acesso em: 06 de jun. 2011. Adaptado)

Escolher uma resposta.

- a. De acordo com o texto acima, a semelhança entre os dois tipos de armazenamento de dados de um computador é que ambos são diretamente acessíveis ao CPU (Central Processing Unit).
- b. De acordo com o texto acima, são DOIS os tipos de armazenamento de dados de um computador: MEMÓRIA RAM e MEMÓRIA ROM.
- c. De acordo com o texto acima, são DOIS os tipos de armazenamento de dados de um computador: DISPOSITIVOS DE ENTRADA e DISPOSITIVOS DE SAÍDA.

d. De acordo com o texto acima, são DOIS os tipos de armazenamento de dados de um computador: HARD DRIVE e PEN DRIVE.

e. De acordo com o texto acima, são DOIS os tipos de armazenamento de dados de um computador: PRIMÁRIO e SECUNDÁRIO.

Question8
Notas: --/1

Most people don't know exactly what goes on inside of their computers, and most of those people don't care. But understanding the basics behind computer parts is an important part of being an educated consumer. Knowing more about computer parts can help people diagnose problems with their computer and avoid bad deals at computer stores. Even though they may seem complicated, it's still important to understand the basic functions of computer parts.

The most visible parts of the system may be easy to understand. The monitor and speakers are obvious enough, and the mouse and keyboard are familiar to all but the newest of users.But the things inside the computer itself, often called the "tower," are more of a mystery. The motherboard is the hub where all information is managed from various other computer parts. The central processing unit (CPU), is housed on the motherboard and manages all the exchange of information between parts. The hard drive is where all the information on the computer is stored. This is where all the pictures, music, movies and documents are kept when you aren't viewing them. The memory is different from the hard drive because it is not permanent. The memory is simply a place for the computer to store information temporarily while it performs certain functions.

Other computer parts include CD and DVD drives which can read information off CDs and DVDs. Video and sound cards boost the video and audio quality of the things that the computer displays. (Disponível em: <http://www.compu-mart.com/computerparts.html>. Acesso em 28 maio 2011).

Escolher uma resposta.

a. De acordo com o texto acima, as partes externas de um computador são três: as caixas

de som/alto-falantes, o monitor e o mouse.

b. De acordo com o texto acima, a placa-mãe, o processador, o disco rígido, a memória, os leitores de CD e DVD e as placas de som e vídeo são fáceis de entender.

c. De acordo com o texto acima, as partes mais visíveis de um computador são três: o monitor, o mouse e o teclado.

d. De acordo com o texto acima, algumas partes internas de um computador, que são um mistério, são: a placa-mãe, o processador, o disco rígido, a memória, os leitores de CD e DVD e as placas de som e vídeo.

Enviar

Question9
Notas: --/1

Traduza o texto a seguir:

A computer is an electronic device that executes the instructions in a program. A computer has four functions: (1) it accepts data; (2) it process data; (3) it produces output; (4) it stores results.

Resposta:

Enviar

Question10

Notas: --/1

Traduza o texto a seguir para o português:

"A printer is a type of peripheral that makes it possible to print text or image in different types of surface. Types of printers are: laser printer and ink-jet printer".

Resposta:

Enviar

Salvar sem enviar | Enviar página | Enviar tudo e terminar

APPENDIX F
The computer-mediated delayed posttest (CPDEpost)

Question1
Notas: --/1
Computer Assembly - basic vocabulary

replace

need

lower

open

attach

fasten

make/be sure

install

place

force

Enviar

Question2
Notas: --/1
O trecho abaixo explica como instalar uma peça interna do computador. Que parte é esta?
Qual a palavra que completa corretamente as frases?
The ..... interface is the “plug” that your processor goes into. For your processor to physically fit in the motherboard, the interface must be an exact match to your processor. Installing the ..... :
Open (lift) the ..... socket lever.
Look carefully at the pin arrangement on the ..... and the ..... socket. It is constructed so that it only fits one way. Do not force the ..... . It's a zero-force insertion socket.
Lower the ..... socket lever and press in and under to latch it.
Escolher uma resposta.

a. Hard Disk (HD)

b. CPU

c. MOTHERBOARD

d. RAMDOM ACESS MEMORY (RAM memory)

e. POWER SUPPLY

Enviar

Question3
Notas: --/1
There are two types of display:

1. a Cathode Ray Tube (CRT) screen,
2. or a Liquid Crystal Display (LCD) screen.

Both technologies have their advantages and disadvantages.
Resposta:

Verdadeiro Falso

Enviar

Question4
Notas: --/1
Como se fala em inglês esta ferramenta usada para montar um computador?

Escolher uma resposta.

a. connector

b. heatsink

c. screwdriver

d. plug

e. fan

Enviar

Question5
Notas: --/1
Escolha a única alternativa que traz a tradução mais apropriada para o texto abaixo:

"Anything outside the case that connects to your computer is considered a peripheral. The keyboard, mouse and monitor are pretty much the minimum you can go with and still be able to interact with your computer. Your choice in peripherals depends on personal preference and what you intend to do with your computer".

Escolher uma resposta.

- a. Qualquer coisa fora do gabinete e que se conecta ao seu computador é considerado um periférico. O teclado, o mouse e o monitor são praticamente o mínimo que você pode ter e ainda ser capaz de interagir com o seu computador. Sua escolha em periféricos depende da preferência pessoal e o que você pretende fazer com seu computador.
- b. Qualquer coisa fora do CPU que se conecta ao seu computador é levado em consideração para ser um periférico. O teclado, o mouse e o monitor são periféricos suficientes para você interagir com o seu computador dependendo da sua pessoal preferência e o que você entende de computador.
- c. Tudo o que esteja dentro do seu gabinete e que se conecta ao seu computador é considerado um periférico. O teclado, o mouse e o monitor são praticamente o mínimo que você pode ter e ainda ser capaz de interagir com o computador. Sua escolha em periféricos depende da sua preferência pessoal e o que você entende fazer com seu computador.
- d. Qualquer objeto fora do CPU que se conecta ao seu computador é considerado um periférico. O teclado, o mouse e o monitor são suficientes para você interagir com o seu computador. A escolha em periféricos depende da sua pessoal preferência e o que você entende fazer com seu computador.

Enviar

Question6
Notas: --/1
There are three types of mouse:

1. optical
2. mechanical
3. digital

Resposta:

Verdadeiro Falso

Enviar

Question7

Notas: --/1

Escolha a única alternativa que está ERRADA de acordo com o texto a seguir:

"The World Wide Web ("WWW" or simply the "Web") is a global information medium which users can read and write via computers connected to the Internet. The term is often mistakenly used as a synonym for the Internet itself, but the Web is a service that operates over the Internet, as e-mail does. The history of the Internet dates back significantly further than that of the World Wide Web".

Escolher uma resposta.

- a. De acordo com o texto acima, a Web é um meio global de informação em que os usuários podem ler e escrever através de computadores conectados à Internet.
- b. De acordo com o texto acima, a Web é erroneamente usada como sinônimo de Internet.
- c. De acordo com o texto acima, a Web é um serviço que opera na Internet, como e-mail faz. A história da Internet data significativamente antes da World Wide Web.
- d. De acordo com o texto acima, a "World Wide Web" ("WWW") é sinônimo de Internet.

Enviar

Question8

Notas: --/1

Traduza para o português o trecho abaixo:

"The Internet is a global network of computers. Every computer that is connected to the Internet is considered a part of that network. This means even your home computer".

Resposta:

Enviar

Question9
Notas: --/1
Escolha a única alternativa que traz a tradução mais apropriada para o trecho abaixo:
"In 2005, three ex-PayPal employees formed a video viewing website called YouTube. Only a year later, YouTube was proven the most quickly popularized website in history, and even started a new concept of user-submitted content in major events".
Escolher uma resposta.

a. "Em 2005, dois funcionários do PayPal criaram o YouTube. Somente um ano mais tarde, o YouTube se popularizou na história, e até mesmo começou um novo conceito de conteúdos enviados por usuários, em eventos maiores".

b. "Em 2005, dois funcionários do PayPal formaram um video chamado YouTube. Somente anos depois, o YouTube se popularizou, e até mesmo iniciou um novo conceito de conteúdos enviados por usuários, em eventos" maiores."

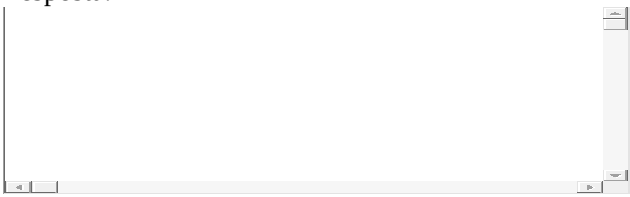
c. "Em 2005, três ex-funcionários do PayPal formaram um website chamado YouTube. Somente anos mais tarde, o YouTube se popularizou, e até mesmo começou um novo conceito de conteúdos enviados por usuários, em grandes eventos".

d. "Em 2005, três ex-funcionários do PayPal formaram um site de visualização de vídeos chamado YouTube.

Apenas um ano depois, o YouTube foi comprovado ser o site que mais rapidamente foi popularizado na história, e até mesmo começou um novo conceito de conteúdos enviados por usuários, em grandes eventos".

Enviar

Question10
Notas: --/1
Traduza para o português o trecho abaixo:
"In this new era, social networking websites, such as MySpace and Facebook, which, though unpopular at first, very rapidly gained acceptance in becoming a major part of youth culture".
Resposta:



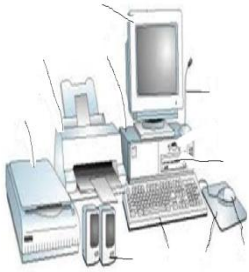
Enviar

Salvar sem enviar | Enviar página | Enviar tudo e terminar

APPENDIX G
The paper-and-pencil delayed posttest (PPDEpost)

ENGLISH TEST

1. Escreva em inglês os nomes das partes do computador apontadas nas linhas:



_____

2. Escreva os seguintes verbos em português:

a. To press: ……
b. To copy: ……
c. To move: ……
d. To paste: ……
e. To print: ……
f. To retrieve: ……
g. To select: ……
h. To send: …….
i. To store: …….
j. To type: …….

3. Escreva os nomes das partes de computador descritas a seguir em inglês:

a. It is used to print copies:

……..……...

b. It is where the user types:

……

c. It is used to point things on the computer screen:

……

d. It is similar to a TV. On its front part there is a screen: ……

e. It is where all the information is processed:

…….……

f. It is necessary to connect to the Internet:

……

g. It is a device used to hear the computer sounds:

……

h. A place in the computer where all information is kept: ……

i. Where you read the information:

……

j. You use it to connect the computer to the printer:

……

Escreva os nomes dos desenhos/partes do computador abaixo em Inglês:

a.

b.

c.

d.

e.

f.

4. **Observe as palavras/grupos nominais a seguir e escreva-os em inglês:**

a. armazenamento primário: **……**
b. armazenamento secundário: **……**
c. dispositP9s de armazenamento de dados: **……**
d. dispositP9s de entrada de dados: **……**

e. dispositP9s de saída de dados: **…….**

f. loja de computadores:**…….**

g. partes do computador: **…….**

h. placa de som: **…….**

i. placa de vídeo: **…….**

j. tela: **…….**

APPENDIX H
The end-of-the-term questionnaire

Caro aluno(a) do curso Técnico em Informática. VOCÊ está sendo convidado a responder mais um questionário. Suas informações serão muito importantes para a pesquisa a nível de doutorado de sua professora de inglês. Suas respostas serão comparadas com as respostas dadas por você no primeiro questionário. Gostaria de obter novas informações e confirmar outras. Muito obrigada!

* Required

PART I

Qual seu nome completo?

Qual a sua idade? *

Como você considera a sua experiência com relação ao uso do computador? *

	1	2	3	4	5	6	7	8	9	10	
Nenhuma experiência	○	○	○	○	○	○	○	○	○	○	Bastante experiência

Quando você acessa a Internet, qual a primeira coisa que você faz? *

O que você mais gosta de fazer na Internet? *

Qual destas redes sociais você utiliza mais? *

- ○ Twitter
- ○ Facebook
- ○ You Tube
- ○ Orkut
- ○ MSN
- ○ Other:

Neste semestre, nas aulas de Inglês você gostou mais de ter aulas na sua sala de aula ou no laboratório de informática? *

- Na Sala De Aula
- No Laboratório De Informática
- Tanto Faz

Você prefere fazer atividades no papel ou no computador? *

- No Papel
- No Computador
- Tanto Faz

PART II

Escolha o nível que melhor descreve a sua habilidade em trabalhar com o teclado e as funções de cada tecla (“Esc”, “Ctrl”, “Alt”, “Del”...) *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com o mouse (teclas esquerda e direita, duplo clique...) *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Processadores de texto (digitar um texto, configurar páginas, selecionar, copiar e colar...) *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com o Sistema Operacional do computador que você usa (criar pastas, copiar, mover e renomear arquivos...) *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com navegadores/browsers (salvar páginas da web, trabalhar off-line, favoritos...) *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Mecanismos de busca ou ferramentas de busca (efetuar pesquisas simples e avançadas, usando o Google ou outro programa, por exemplo) *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Correio eletrônico ou e-mail (escrever e visualizar e-mails, salvar e inserir anexos, responder, encaminhar...) *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com Ferramentas de chat ou bate-papo; uso de programas de bate papo como MSN (enviar mensagens online e offline, enviar emoticons...) *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

Escolha o nível que melhor descreve a sua habilidade em trabalhar com forums online no Moodle *

	1	2	3	4	5	
nula	○	○	○	○	○	ótima

PART III

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como ler textos na tela do computador *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como escrever textos diretamente no computador *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como comunicar-se com alguém por e-mail *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como conversar com alguém através de programas de bate papo/chat como o MSN *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como ouvir música no computador *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como assistir a filmes na tela do computador *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como ver, salvar e modificar fotografias na tela do computador *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como estudar com o auxílio do computador (usando CD-ROMs, lendo e fazendo slides no Power Point ou outro programa para fazer slides) *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como fazer pesquisas na Internet, ler as informações encontradas, escolher as informações adequadamente *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

Escolha o seu nível de conforto ao executar tarefas no seu dia a dia como ler jornais e revistas no computador online e/ou offline *

	1	2	3	4	5	
muito desconfortável	○	○	○	○	○	muito confortável

PART IV

Escolha o que melhor descreve seu nível de motivação em relação a usar dicionários online *

	1	2	3	4	5	
muito desmotivado	○	○	○	○	○	muito motivado

Escolha o que melhor descreve seu nível de motivação em relação à utilização do Google para tirar dúvidas quanto ao vocabulário novo. *

	1	2	3	4	5	
muito desmotivado	○	○	○	○	○	muito motivado

Escolha o que melhor descreve seu nível de motivação em relação à leitura de textos online em Inglês sobre Informática. *

	1	2	3	4	5	
muito desmotivado	○	○	○	○	○	muito motivado

Escolha o que melhor descreve seu nível de motivação em relação à resolver exercícios de Inglês online *

	1	2	3	4	5	
muito desmotivado	○	○	○	○	○	muito motivado

Escolha o que melhor descreve seu nível de motivação em relação a ler as postagens feitas pelos outros alunos nos fóruns. *

	1	2	3	4	5	
muito desmotivado	○	○	○	○	○	muito motivado

PART V

De quais atividades feitas na sala de aula você mais gostou? *
De quais atividades feitas no laboratório de informática você mais gostou? *
De quais atividades feitas na sala de aula você menos gostou? *
De quais atividades feitas no laboratório de informática você menos gostou? *
Em comparação com as atividades realizadas em sala de aula, houve maiores dificuldades para realizar as tarefas online no Moodle? Se sim, quais? *

Escolha o que melhor descreve suas percepções em relação às atividades online realizadas durante esta disciplina com relação às instruções para a execução das tarefas: *

	1	2	3	4	5	
incompreensíveis	○	○	○	○	○	muito claras

Escolha o que melhor descreve suas percepções em relação à interação com o professor: *

1	2	3	4	5

inexistente ○ ○ ○ ○ ○ excelente

Escolha o que melhor descreve suas percepções em relação à interação aluno/aluno: *

1 2 3 4 5

inexistente ○ ○ ○ ○ ○ excelente

Em relação aos feedback dados pelo professor, você os considera: *

1 2 3 4 5

ineficientes ○ ○ ○ ○ ○ muito produtivos

Em relação aos feedback dados pelo Moodle, você os considera: *

1 2 3 4 5

ineficientes ○ ○ ○ ○ ○ muito produtivos

Ao término da disciplina Inglês Técnico, como você considera o seu aprendizado nesta disciplina? *

1 2 3 4 5

ineficiente ○ ○ ○ ○ ○ muito eficiente

As suas expectativas com relação à disciplina de Inglês Técnico foram atendidas neste semestre? *

Deixe aqui o seu recado, se houver. Muito obrigada por responder a este questionário!

APPENDIX I
The semi-structured interview

1. Descreva a sua experiência este semestre com a disciplina Inglês Técnico.
2. Quais as suas maiores dificuldades com relação à Língua Inglesa ou à disciplina Inglês Técnico?
3. Como você considera as instruções das tarefas no computador? Fáceis ou difíceis?
4. Com relação às atividades no Moodle e o uso do Moodle em geral, você teve dificuldades no início do curso?
5. Você gostou das tarefas propostas no laboratório de informática?
6. Quais as vantagens de se trabalhar e realizar atividades no laboratório de informática?
7. Diga quais as vantagens de se fazer atividades no papel, estando à frente de um computador conectado à Internet.
8. O que você fazia quando encontrava alguma palavra cujo significado era desconhecido para você? Que estratégia/técnica você usava?
9. Qual site você mais usava para pesquisar significados de palavras desconhecidas?
10. Você preferia usar o site do Michaelis (dicionário online) ou o do Google Translator? Por quê?
11. Você usava o dicionário de papel na sala de aula? Por quê?
12. De quais tarefas ou de quais tipos de tarefas você mais gostou?
13. De quais tarefas ou de quais tipos de tarefas você menos gostou?
14. Você gostou mais das aulas na sala de aula ou no laboratório de informática? Você via muita diferença entre os dois ambientes?
15. Você prefere fazer atividades no papel ou no computador?
16. Qual a sua opinião quanto ao livre acesso à Internet no laboratório de Informática durante as aulas de Inglês?
17. Há alguma habilidade que você aprendeu por causa do curso Inglês Técnico?
18. Há alguma palavra que te marcou? Alguma que lhe chamou a atenção?
19. Como você considera a interação entre alunos e professores no laboratório de informática?

APPENDIX J
Forum instructions and messages

1. Translated forum messages in the order they were posted/teachers' statements in all the seven online forums.

I. In this forum students will introduce themselves saying what they do, in which school they study, where they live, where they are, what they like to do in their free time, what they expect of the course, among other information. In English! Read the posts of your classmates and participate by giving feedback. Hugs.

II. This space will be used for students to leave their opinion about the use of the computer and Internet in the English classes.

III. Dear students: In this forum you will leave your opinion concerning the English classes. What do you think of the classes and activities chosen by the teacher? Do you want to give any suggestions? Thank you, Warm regards, Teacher Gisele.

IV. Dear Student: In this forum you will leave your opinion about the activities posted on the Moodle platform for the English classes. What do you think of them? What kind of activities do you like the best? What kind of activities do you like the least? Would you like to give any suggestions? Thank you, Teacher Gisele.

V. What do you think of the discussion forums that are available for you to leave your comments, opinions and suggestions? Do you like to join them? Justify your answer. Thank you! Teacher Gisele

VI. What did you think of the online activities of this topic? Leave your message. Justify your answer. Thanks, Teacher Gisele.

VII. Evaluate your performance on all tests in the English course. Was it excellent, proficient, satisfactory or insufficient?

2. Students' posts in the forums in the order they were posted

Neste forum os alunos se apresentarão dizendo o que fazem, em que escola estudam, onde moram, de onde são, do que gostam, de fazer no tempo livre, o que esperam do curso, entre outras informações. Em inglês!! Leiam as postagens dos seus colegas e participem dando seu feedback. ABCss (03/08/11)

Hi there!!! My name is Gisele. I'm from Floripa, but I live in Blumenau. I live in Itoupava Seca. I am an English and Portuguese teacher at IFSC/Gaspar. I like to work at IFSC very much. I am single. I live alone. I don't have children or pets. I am also a doctoral student at UFSC. I like to study, te read, to go out and to travel. How about you?? Tell me about yourself! (em 07/08/11)

1. **My name is P2. I am living in Gaspar since 2003. My favorite sport is soccer y my favorite job is draw.**
2. Hi teacher, my name is P1. I'm from Uruguaiana RS, but Iive in Gaspar.I live in Sta Terezinha.
3. **Hello teacher!My name is P10. I'm from Santos, but I live in Gaspar. I live in Bela Vista. I work in Malwee. I love movies, eating out and music loud. And I want to learn English. Kiss, kiss! Bye, bye!**
4. Hello, my name is P9. I live in Gaspar. I from Blumenau. I work in the industry.
5. **Hello teacher. My name's P20. I'm from Gaspar and live in Gaspar, I live in Figueira. I don't work. I'm sexteen yaers old. I'm like soccer.**
6. Helo teacher! My name is P11. I live Gaspar from 1988. i' from Mandaguaçu PR I work to prosegur. i like classical music.
7. **My name is P15. I´m from Blumenau, i´m living in Gaspar, i live in Bela Vista. My favorite iob is programmer p.c.p (programming, control, production) y my favorite sport is soccer. I hope to learn english as soon as possible, because nowadays, in these days is essential.**
8. My name is P7. I'm from Cruz Alta RS, but I live in Gaspar. I live in Gaspar Grande.

9. **Helo teacher and friends ! My name is P24. I live Gaspar from 1997, I was born in Frederico Wstphalen, I like the player tennis, table tennis, football and between various sports, I like to use the computer in social networks and download the movies, music.**
10. Hello my name is P6, i from Blumenau , i live in bela vista in the Gaspar city, i work to graphic industry, my favorite sport is travel, i am sedentary but i work toothed, my favorite music is rock n roll and i intend to live 110 years. I don't like computers but i can not escape it. Thanks.
11. **My name is P3, and I have 16 years old. I am from Caxias do Sul - RS. I am a student, and I study in the Madre Francisca Lampel Colege. I study in the second year. I like to do Corel drawings and edit images in the Photoshop**.
12. Hello teacher! My name is P19, Im from Ilhota, But i live Gaspar, i live in centro.I work in MC Malhas. bye.
13. **Hi teacher, my mame is P13. I'm from Curitibanos, but I live in Gaspar. I live in Bela Vista and working with eletrical projects at home**.
14. Hello, my name is P21. I live in Gaspar. I from Blumenau. I work in the graphyc industry. I like to soccer and games computers.
15. **My name is P8. I´m from Blumenau but I live in Gaspar. I live in Coloninha. I work in the mail, my favorite sport is tennis.**

I.	**Este espaço será utilizado para os alunos deixarem a sua opinião sobre o uso do computador e Internet nas aulas de Inglês. ABCss. Teacher Gisele (em 03/08/11)** O que você acha deste espaço virtual para o ensino e aprendizagem de língua inglesa? Deixe aqui a sua opinião sobre o uso do computador e Internet nas aulas de Inglês. ABCss Teacher Gisele (em 21/08/11) 1. **É muito importante o uso do computador nas aulas de inglês, para o desenvolvimento do**

		nosso aprendizado, pois vamos colocar em pratica o que aprendemos no nosso dia a dia (P18, em 21/08/11) 2. É melhor o uso do computador porq podemos aprender melhor eu acho, fica mais simples o aprendizado. (P7, em 21/08/11) 3. **Eu acho muito bom ter a apredizagem em conjunto com o computador,afinal é com ele que vamos ter que interagir e fazer uso de nosso inglês técnico. (P1, em 23/08/11)** 4. Eu acho muito importante porque você consegue tirar todas suas dúvidas pela Internet. (P15 em 23/08/11) 5. **A utilizacão da informática em conjunto com o ensino de inglês é importante porque o aluno pesquisa os assuntos que lhe interessa apresentados nessa lingua. (P3, em 23/08/11)** **6. Com o computador as aulas ficam mais dinâmicas e o acesso a informacão é mais rápido, embora nossa conexão seja lenta no IFSC – Gaspar (P6,** em 24/08/11) 7. **I'm enjoying the classes. (P9, em 24/08/11)** 8. é para ter um para ter um aprendizado melhor e com qualidade. (P17, em 24/08/11) 9. **A utilisação do computador nas aulas as torna mais agradaveis, melhorando o nosso apredisado. (P22, em 24/08/11)** **10.** Eu acho importante porque assim nós podemos utilizar o computador para ver os vídeos, pesquisar no dicionário e quem não tem apostila pode acompanhar pelo computador. (P20, em 24/08/11) 11. **As aulas ficam mais dinämicas e mais interessantes. (P13, em 24/08/11)** 12. E isso ai as aula são muito boas. (P11, em 24/08/11) 13. **o uso do computador e uma boa ferramenta pelo seu uso pratico que agiliza nas pesquisas de determinado conteudo a Internet é um pouco lenta mas ta boa. (P4, em 24/08/11)**

	14. É importante a união da informática com o inglês porque auxilia o processo de globalização e consequente inclusão social. (P2, em 24/08/11) 15. **é muito importante pois ussando o computador elas serao diarias! (P24, em 24/08/11)** 16. Acho muito importante pois fica mais facil aprender, principalmente por se tratar do curso de informatica. (P19, em 24/08/11) **Que bom que você gostou dos vídeos, Daniel. Haverá mais vídeos em nossas aulas, ok?? (The teacher, em 24/08/11)** 17. The teacher and very nice, the classes are very good and entertaining. (P11, em 24/08/11) 18. **aulas bem dinamicas e exercicios bem elaborados !!!! (P16, em 24/08/11)** 19. Muito interessante, principalmente quando podemos ouvir videos, pois torna-se mais facil a gravação das palavras seguindo o texto. (P8, em 24/08/11) **Dear students: I am very happy to know that you are enjoying the classes!! Keep on with the good job! Kisses, Teacher Gisele (em 25/08/11)** 20. O uso destes recursos é de muita importancia, pois temos a alternativa de pesquisarmos e tirarmos algumas duvidas rapidamente. (P10, em 30/08/11) **P10: De quais recursos você se refere? Pesquisar e tirar dúvidas onde? Você pode ser mais específica por favor? Obrigada, Gisele (em 30/08/11)** Caros alunos: Estou percebendo que vocês acham interessante trabalhar no laboratório de informática porque vocês podem fazer pesquisas em dicionários on line e assistir a videos disponibilizados no Moodle principalmente.

	Além disso, vocês podem acrescentar mais vantagens? E desvantagens, há?? E a sala de aula? Quais as vantagens e desvantagens de se trabalhar lá? Agradeço a sua contribuição e colaboração para a minha pesquisa de doutorado. Abraços, Teacher Gisele (em 02/10/11) 21. **Não há desvantagens em trabalhar na sala de aula, só que nó laboratório é mais legal. (P20, em 02/10/11)** 22. I loved the class recovery Friday. English Classes: I adopt it as an aid for those trying to improve their English language. On the computer you have advantages and disadvantages;Example: Research ready to be copied without being read right before append (negative).Supports a lack of time to find some research (positive). (P5, em 08/11/11**)** **Yes, P5 There are many advantages in working in the computer lab, but students have to know how to do research on the Web, right!? I am glad you liked the class on Friday. You can come next Friday too!! Kisses, Teacher Gisele (em 11/11/11**) P4: Você acha mesmo que o computador é só uma ferramenta e só ajuda em pesquisas sobre determinados conteúdos? Você poderia se explicar melhor? Quais são as outras vantagens de se estar conectado à Internet durante as aulas de inglês?? Por favor, seja mais específico. Kisses, Teacher Gisele (em 11/11/11)
II.	**Dear students: Neste forum você vai deixar a sua opinião sobre as aulas de Inglês Técnico. O que você está achando das aulas e das atividades escolhidas pela professora? Você quer dar alguma sugestão? Obrigada, Abraços, Teacher Gisele. (em 05/09/11)** **1.** As aulas são bem interessantes e criativas, com os videos e os exercicios. Eu estou aprendendo

	muito dessa maneira. (P18, em 06/09/11) 2. **Ola tudo bem com os video fica mais facil aprender. (P9, em 06/09/11)** 3. Tudo Bem?Estou gostando muito das aulas de inglês,podemos interagir e aprender de uma forma simples sem muita pressa.Abraço (P1, em 06/09/11) 4. **Tudo muito bom, a forma de avaliação através do Moodle é fantástica muito legal, interessante mesmo.... (P13, em 06/09/11)** 5. Gostaria de comentar sobre os vários exercícios que nos ajudam a fixar o conteúdo, muitos termos acabamos vendo várias vezes e essa repetição torna tudo cada vez mais fácil, mesmo sendo um pouco massante essa repetição, vejo que depois não vou esquecer fácil. Creio que to aprendendo de verdade. (P6, em 06/09/11) **6. As aulas são muito boas.as atividades também são bem interessantes e como o P1 disse estão sendo realizadas de uma forma simples e sem muita pressa. (P20, em 06/09/11)** 7. muito legal as aulas very good! (P16, em 06/09/11) **8. muito legal as aulas !! que continuem assim!!! very good !! (P16, em 13/09/11)** 9. Estão excelentes, a explicação é ótima. Algumas vezes a aula é um pouco chata, por ser complicado.Mas concordo que tudo esta sendo ensinado de forma simples e de forma que dê para entender o que se quer passar. As atividades são boas, pq fixam o conteúdo e conseguimos gravar melhor todas as palavras. (P12, em 13/09/11) 10. **Concorde que as aluas de inglês estam sendo simples e de forma que da para entender. As atividades estão sendo muito boas. Goste muito destas aulas. (P19, em 13/09/11)** Que bom meninas!! continuem se esforçando!! Big hugs, Teacher Gisele (em 13/09/11) 11. **A meu ver, os assuntos dessa matéria estão**

	ficando bastante claros, pois está sendo repetido várias vezes. Penso que não deveria ser abordado apenas o inglês referente à informática (apesar de ser inglês-técnico), mas também algo de gramática para servir como um apoio para quem tem mais dificuldade. No mais está tudo show de bola. Dale Inter!!!!!! (P3, em 13/09/11) 12. P3, concordo com você! Vamos ter alguns exercícios de gramática também! Big hugs, Teacher Gisele, em 13/09/11) 13. **As aulas estão boas, um metodo muito bom fazendo com que as aulas sejão bem lucrativas (P24, em 13/09/11)** 14. Concordo com o P18, principalmente em relação aos videos e os exercicios. Tambem estou aprendendo desta maneira. (P19, em 13/09/11) 15. **Também penso que fica mais fácil com o vídeo. (P3 em 13/09/11)** 16. É isso, aí P20. Mais devagar só o Flamengo mesmo. (P3 em 13/09/11) **Que bom, P16!! Continue se esforçando!! Big hugs, Teacher Gisele (em 14/09/11)** P3: Esta analogia foi muito interessante! Mas que bom que estão sentindo que estão realmente aprendendo desta maneira! Mais sugestões? Obrigada pela colaboração. Big hugs! Teacher Gisele (em 14/09/11) 17. **As aula são bem criativas assim o tempo passa rápido, parabéns pela as aulas. (P11, em 20/09/11)** 18. muito bom professora (P22, em 20/09/11) **Olá, Vejo que alguns alunos ainda não se manifestaram, ou se manifestaram de forma muito breve. Há algo que vocês gostariam de acrescentar neste forum?** **O que vocês acham das repetições de atividades sobre o mesmo conteúdo? É válido? Vocês estão percebendo que estão evoluindo desta maneira? Obrigada por**

	colaborarem com a minha pesquisa!! Abraços, Teacher Gisele (em 02/10/11/11) 19. Teacher... As aulas são MARAS!!! As vezes eu fico meio estressada com as repetições, mas já percebi que se não for assim dificilmente iremos aprender. Pude observar isso nos resultados dos exercícios... ririri Mas enfim... EXCELLENT TEACHER! CONGRATULATIONS!! Olha aí, ja sei 3 palavras em inglês... hahaha Kisses kisses... (P10, em 04/10/11/11) 20. **eu acho que a repetição deu certo pois a maioria dos alunos tiraram notas legais, é meio chato mas da certo valew. (P22, em 01/11/11**) 21. eles são de uma importancia muito grande pra gente pode grava obrigado (P22, em 01/11/11) **Dear Students: Obrigada pelas suas contrinbuições neste fórum. Sua opiniões são importantes sim! É essencial a professora ter um feedback/retorno dos seus alunos para saber em que pode melhorar, se está no caminho certo, etc. Abraços a cada um de vocês! Teacher Gisele**  **(em 02/11/11)** **22.** As aulas de Inlgês para mim está sendo muito útil, principalmente porq eu nao tenho muita facilidade na matéria, mas pelo modo que estamos aprendendo, está facilitando muito minha aprendizagem, ainda tenho dificuldade, mas os exercícios no moodle, provas, trabalhos, e explicações está me trazendo um conhecimento muito melhor do q eu já tive em outras oportunidades. Espero melhorar muito mais em cada aula, obrigado Professora pela força. (P7, em 03/11/11) **P7: Que maravilha ler a sua postagem! Continue assim!! Com certeza você vai melhorar cada vez mais! Teacher Gisele (em 06/11/11)** 23. As aulas de Inglês está sendo de muita utilidade principalmente pro meu aprendizado, tem sido

		muito legal fazer os exercícios, provas, testes online, pois com isso eu aprendo muito, tenho tido muita facilidade de aprender Inglês. Eu acho que nao preciso dar nenhuma sugestão, somente parabenizar a Professora por tudo que tem nos ensinado. Obrigado (P7, em 08/11/11) **P7: Fiquei muito feliz com a sua postagem! Que bom que você está gostando das aulas e elas estão sendo úteis!! Yeacher (Gisele, em 08/11/11)**
III.		**Caro aluno: Neste forum você vai deixar a sua opinião sobre as atividades postadas no Moodle para a disciplina de Inglês Técnico. O que você acha delas? Que tipo de atividades você mais gosta? Que tipo de atividades você menos gosta? Você gostaria de dar alguma sugestão? Obrigada, Teacher Gisele (em 14/09/11)**
	1.	Sem opinião formada sobre o assunto. (P6, em 14/09/11)
	2.	**Olá theacher, gosto muito das atividades do moodle, principalmente os testes simulados, gosto de tudo, se poder faça mais testes simulados... abraço P21 (em 20/09/11)**
	3.	Eu acho bem interessante as atividades postadas no moodle. As atividades que eu mais gosto são os videos e os simulados. Está bom assim, não tenho nenhuma sugestão. (P20 em 20/09/11)
		P6: Obrigada pela sua participação neste forum. Você pode esperar ter uma opinião formada primeiro para depois publicá-la. Sem problemas! Abraços,Teacher Gisele (em 20/09/11)
	4.	Em minha opinião as atividades do Moodle estam sendo proveitosas. Dentre as atividades, prefiro a visualização de vídeos e menos as atividades de completar tabela. (P2, em 20/09/11)
	5.	**as atividades no Moodle estao sendo bem**

		aproveitadas, entre elas prefiro as atividades de visualização de video, mas acho que deveria ter menos simulados. (P24, em 20/09/11) 6. As atividades do Moodle esta sendo muito aproveitada, tem tudo no site fica muito mais fácil de aprender. Parabéns. (P11, em 20/09/11) 7. **Gosto do Moodle porque nele há exercícios de vários lugares e sites diferentes. (P3, em 20/09/11)** 8. Adoro atividades no Moodle, gosto dos simulados por que nos estimula a estudar mais, gosto dos videos tambem, mais acho que deveria ter legenda pois fica mais facil entender. Bya! Bya!.(P19, em 24/09/11) **P19: Que bom que você gosta das atividades do Moodle e dos simulados!Fico bem contente em saber disso! Eu também prefero os vídeos com legenda, mas não estou encontrando no You Tube. sorry. Bye, bye!! Teacher Gisele (em 02/10/11)** É muito bom saber que vocês gostaram das atividades no Moodle e principalmente dos testes simulados. Vocês podiam ser mais específicos e dizerem por que gostaram tanto assim dos simulados de testes online???Participando dos foruns de discussão, vocês estão me ajudando na pesquisa. Kisses, Gisele (em 02/10/11) 9. **As atividades postadas no moodle para mim facilita muito, pois é mais fácil e mais organizado, nao sou muito bom em inglês, sempre tive dificuldade, mas dessa forma estou aprendendo muito. (P7, em 04/10/11)** 10. As atividade no moodle são boas pois se por motivo de força maior vc não poder vir a aula tem como acompanhar as atividades de casa. (P8, em 04/10/11)

	11. As atividades são essenciais, pois podemos estuda-las em casa também! (P10, em 04/10/11) 12. Os tópicos das atividades são um pouco confusos, as vezes não sei oque devo fazer primeiro. (P6, em 01/11/11) **P6: Vou procurar organizar melhor as atividades e recursos de cada tópico! Obrigada pela dica! Gisele (em 02/11/11)** 13. as atividades no moodle estao sendo muito lucrativas pelos alunos (P24, 04/10/11) 14. **acho que as atividades postadas no moodle só complementa ainda mais as aulas feitas na sa de aula como escritas ! acho muito produtivas ,mai com muito pouco tempo para resolver as atividades !!! (P16, em 03/11/11)** 15. as provas dadas no moodle commtribuem sim para nosso aprendizado, pra mim ta bom!!!! (P16, em 08/11/11) 16. **As atividades postadas no moodle nos disponibiliza um aprendizado mais fácil, e com isso temos mais facilidade de resolver e praticar mais questões de inglês. Eu gosto de todas as atividades postadas, nao tenho motivo nenhum para reclamar ou dar alguma sugestão. Obrigado (P7, em 08/11/11)**
IV.	**O que você acha dos fóruns de discussão que são disponibilizados para vocês deixarem seus comentários, opiniões e sugestões? Você gosta de participar deles? Justifique a sua resposta. Thank you!!Teacher Gisele (em 04/10/11)** 1. São muitos bom para expressar nossas opiniões.(P11, em 04/10/11) **2. sao bom pra nos aconpanhar-mos a opiniao dos colegas e expresar nossa opiniao. (P24, em 04/10/11)** 3. Eu acho legal, pois podemos expor nossas

	opiniões, eu sempre participo pois acho interessante e com certeza sempre vou participar. (P19, em 04/10/11) 4. **Penso que é uma forma de falar sua opnião sobre tudo relacionado à matéria. Também é interessante saber a opinião dos outros alunos. (P3, em 04/10/11)** 5. Concordo com o P3. (P20, em 04/10/11) 6. **Com toda certeza P3, assim a professora também pode se situar e nos ensinar da maneira mais simples possivel. (P10, em 04/10/11)** 7. Democráticos. (P6, em 04/10/11) **8. Eu particulamente acho muito bom o fato de podermos expor nossas opiniões. É uma forma democrática de cada um dar seu parecer a respeito das aulas e da matéria em si. Abraço e um bom feriado (P1, em 01/11/11)** P1: Eu que agradeço!!! Bom feriado para você também! Abraços, Gisele (em 02/11/11) **9. São maneiras de procura e encrementar, as nossas opiniões. (P9, em 06/11/11)**

V.	**O que você achou das atividades online deste tópico? Deixe seu recado. Justifique a sua resposta. Thanks, Teacher Gisele. (em 01/11/11)** 1. Eu achei as atividades muito boas, porque é uma maneira diferente de nós exercitarmos o que aprendemos durante as aulas. (P20, em 01/11/11) 2. **Eu achei as atividades muito boas, porque é uma maneira diferente de nós exercitarmos o que aprendemos durante as aulas. (P13, em 01/11/11)** 3. são muito importantes, pois podemos colocar as em prática no computador o que foi passado em sala de aula. (P24, em 01/11/11) 4. **Como já disse, penso que todas essas atividades são interessantes porque permitem o acesso a várias fontes diferentes, o que é um diferncial do moodle. (P24, em 01/11/11)**

	5. muito legal !!!estou sem palavras. (P16, em 02/11/11) **Dear students: Que bom que vocês gostam das atividades que eu disponibilizo no Moodle para vocês. lembrando que elas não são colocadas no Moodle só para serem feitas ou consultadas em sala de aula. Vocês podem fazê-las em casa também, ok? Aproveitem para praticar! Big hugs from your teacher, Gisele (em 02/11/11)** 6. This helped me a lot in computer language. He opened the door to deeper understanding for me. (P5, em 02/11/11) **P5: Keep trying communicating in English! Kisses, Teacher Gisele (em 03/11/11)** 7. MUITO BOA AS AULA ONLINE APRENDEMOS MAIS O ASSUNTO NA PRATICA EM TEMPO REAL, SO TEMOS QUE SE DEDICAR MAIS. (P11, em 03/11/11) 8. **São maneiras praticar estudar a matéria. (P9, em 06/11/11)** 9. Preciso estudar,cocerntar,para me recuparar.Obrigada. (P9, 02/12/11)
VI.	**Avalie seu desempenho nas avaliações de Inglês Técnico em 2011, por favor. Foi excelente, proficiente, suficiente ou insuficiente? (Teacher Gisele, em 08/11/11)** 1. Suficiente apenas, não sou nem nunca fui bom em inglês. Minhas avaliações não foram perfeitas estudei pra quase todas menos pra ultima. Posso melhorar estudando mais e fazendo a prova mais devagar, dando respostas mais completas e depois revisando-a para encontrar erros. Estou tendo uma certa facilidade com a matéria por causa das várias atividades. (P6, em 08/11/11) **2. Meu desempenho até o momento foi excelente, para mim está muito bom estou muito satisfeito com o método de ensino e com a**

		forma de avaliação. Para mim do jeito que está está muito bom, não precisa melhorar em nada. (P13, em 08/11/11) **3.** Excelente. Eu acho que fui bem e que o conteúdo estava meio difícil mais a maioria conseguiu se dar bem. As atividades também ajudaram pois todas eram bem parecidas assim como a prova também estava.Tenho que melhorar na interpretação das palavras. (P12, em 08/11/11) **4. Excelente. Eu achei muuito bom. Poderia estudar mais. Assim está tudo muito bom. (P20, em 08/11/11)** **5.** Meu desempenho foi excelente apesar de eu não ter estudado. Senti um pouco de dificuldade para relembrar algumas palavras. Só tenho uma certeza: tirando o que eu errei, eu acertei tudo! (P2, em 08/11/11) 6. **Meu desempenho foi exelente, com isso só tenho a falar bem da sua maneira de ensinar. Apesar de ter muitos exercícios eles surtiram efeito no resultado. obrigado (P22, em 08/11/11)** 7. Até o momento estou indo bem. Acho que o assunto está sendo bastante repetido, assim fica difícil esquecer. Boa sorte a todos nessa prova. (P3, em 08/11/11) 8. **Proficiente: Eu comecei a entender melhor a matéria,e me sai bem, vou procurar melhorar. (P18, em 08/11/11**) 9. Pelos percausos que ouve nesse semestre até me surpreendi pelo que aprendi e por não ter estudado em nenhuma prova, então o que aprendi não foi uma simples decoreba de um dia mereço um proficiente. (P8, em 08/11/11) 10. **acredito que nao me sai bem nas avaliacões ,pois ainda estou emgrenando na matéria ! mas esta legal as aulas!@! (P16, em 08/11/11)** 11. Sendo sincera comecei bem mal, mais depois fui do Insuficiente para o Suficiente e agora está chegado para o Proeficiente e ainda chego lá no Excelente. Kisses and hugs

	Dear Teacher!@! (P5, em 08/11/11) 12. **as aulas de ingles estao sendo muito boas estou aprendendo muitas coisas novas, numca fou bom em ingles mas espero melhorar com essas aulas porinquanto estou com "I" mas espero alcansar um "E". (P17, em 08/11/11)** 13. Não fui bem mas chego la, vou estudar mais, minha valiação ficou suficiente. (P11, em 08/11/11) 14. **Por nunca ter muita facilidade na matéria em hipótese alguma, eu aprendi muito com as aulas da Professora, tive oportunidade de me atualizar e ter bons conhecimentos, agradeco a Professora Gisele pelo ensino. Eu me avalio como Proficiente, pois pude e consegui aprender muito com o inglês técnico!Boa noite Professora. (P7, em 08/11/11)** 15. Eu acho que pelo conhecimento que eu tinha de inglês meu desempenho foi exelente,afinal meu inglês no ensino médio foi muito fraco,e no ensino fundamental tive aulas de espanhol.Abraço!!!!!! (P1, em 08/11/11) 16. **Eu tenho dificudade escrever.Mas procuro estudar sempre que poso. (P9, em 08/11/11)** 17. Acredito que esteja o Suficiente, nunca fui muito bom em Inglês, sempre passei arrastando, posso melhorar estudando mais, só estudo no colégio fora quase não tenho tempo, conciliar estudo com trabalho e familia é muito difícil. mais vou melhorar com certeza... até mais.. (P21, em 08/11/11) 18. **Para todas que estudei eu fui bem, nas que não estudei, não fui tão bem, mas meus conhecimentos e aprendizado me valeram. Tenho muito a melhorar, e com um pouco mais de esforço e dedicação chegarei l. (P10, em 08/11/11)** 19. exelente, a maneira de ensino é muito boa com bastante execicios, ajudando a gravar melhor as

	palavras. antes de começar achei que eu iria ser pior sendo que tenho uma dificuldade com a lingua. (P24, em 08/11/11)
	20. **Acho Que fui bem, mas poderia ter me saido melhor.Confesso que não fui muito bem pois não prestei atencão em algumas perguntas.Mas prometo melhor. (P19, em 08/11/11)**
	21. Suficiente está a um pouco da correção das palavras mas estou procurando, corrigilas,posso afrimar com esperiencia do ultimo execício. (P9, em 11/12/11)
	22. A minha foi excelente, mas sei que posso melhorar muito ainda, porque sempre fica alguma coisa por fazer, e sei que é só eu me esforcar um pouco que consigo, obrigado. (P15, em 15/11/11)
	Queridos alunos: Agradeço as suas contribuições nos fóruns desta unidade curricular. Também agradeço pela sinceridade nas opiniões de vocês. Continuem postando e lendo as postagens de seus colegas. Um grande abraço, Teacher Gisele (em 18/11/11)

APPENDIX K
Students' expectations regarding the ESP course

Participant	Expectations
P1	**Ganhar mais conhecimento de inglês técnico para me auxiliar manipulação do computador** em geral, gerenciamento de softwares,instalação,formatação, etc..
P2	**Aprender a reconhecer e/ou descobrir o significado das palavras para poder desenvolver programas**.
P3	Espero ter mais facilidade em **entender termos relacionados à informática, sabendo identificar componetes do computador que normalmente são nomeados em inglês**. Acredito que preciso melhorar principalmente dicção.
P4	aprimorar meus conhecimentos na area e saber um pouco mais do ingles
P5	Tirar o máximo, possível de conhecimentos gerais que há dentro do recurso
P6	Apesar contar com uma educadora bêm graduada, **espero apenas um inglês voltado a informática e tecnologias próximas.**
P7	Primeiramente aprender bastante a falar o inglês, porque tenho muita dificuldade tanto no falar como no entender. Quero aprender muito, pois sei que hoje é muito importante no nosso dia-a-dia. Espero me dar bem.
P9	Muito pouco.
P10	**Aprender inglês para me auxiliar no uso do computador. Seja lá para trabalho ou para divertimento**.
P11	Aprender e poder aperfersoar mais na linguagem**, pois as maiorias dos sofware e são em inglês**.
P12	**Compreender palavras necessárias para essa area, que exige bastante do inglês técnico.**
P13	**Conhecer melhor os termos técnicos**.
P14	Desejo dedicar-me a aprender tudo o que eu não sei.
P15	aprender muito, o máximo que eu conseguir.
P16	aprender algo!pois não tenho o dominio da lingua inguesa , mais muita vontade de aprender.

P17	ter um maior conhecimento na linguagem inglesa, tanto na escrita quanto na pronuncia.
P18	Ampliar o meu conhecimento, e aplicar no meu dia a dia.
P19	As melhores possiveis, pretendo me dedicar o maximo.
P20	Aprender as coisas necessárias para me ajudar nas outras disciplinas, e aprender tudo que a professora puder me ensinar.
P21	A melhor possível, pretendo não sair falando inglês mais pelo menos e intendendo...
P22	muito boa espero adquirir um bom conhecimento na area **suficiente para eu poder entender pelo menos o que os programas me pedem**
P23	I hope **understand some technicals words.** :D
P24	aprender para adquirir novos conhecimentos

APPENDIX L
The booklet designed by the teacher (part of it)

UNIT 01: BASIC VOCABULARY FOR COMPUTING

Antes de começarmos a falar sobre o vocabulário básico para a informática, vamos ver de quais palavras em inglês você se lembra que estejam ligadas ou relacionadas a "computer". Para tanto, escreva em volta da palavra "computer" abaixo, as palavras que vierem a sua cabeça:
e.g.: notebook

Computer

Em caso de dúvidas com relação ao significado de alguns termos da área de informática, consulte: http://www.dicweb.com/index.htm e você verá explicação em português para termos em português e em inglês.

Já o dicionário on line http://www.techterms.com/, traz explicações em inglês para vários termos, acrônimos e siglas. Por exemplo, você sabe o que significa a sigla AGP? Confira em: http://www.techterms.com/definition/agp. E ATA? Veja clicando aqui: http://www.techterms.com/definition/ata.

Por sua vez, a Wikipedia traz uma lista de abreviações usadas na área da informática: http://en.wikipedia.org/wiki/List_of_computing_and_IT_abbreviations
Já o dicionário on line Michaelis, traz a tradução em português de vários termos muito comuns na área da informática: http://michaelis.uol.com.br. Você sabe o que significa em português a palavra "socket"? Confira em: http://michaelis.uol.com.br/moderno/ingles/index.php?lingua=ingles-portugues&palavra=socket.

I. Parts of the computer

Figura 1: Main parts of a computer.

1. Observe as figuras 01 e 02. Como você traduziria para o português as partes de computadores nelas mostradas? Estas palavras em inglês são muito parecidas com o português ou não?

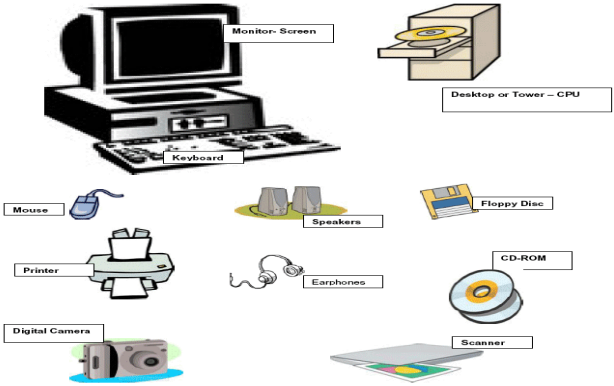


Figura 2: Parts of the computer and other equipments

2. Agora, encontre nas figuras o equivalente em Inglês para as seguintes palavras:

1. teclado
2. placa de vídeo
3. monitor
4. tela
5. alto-falante
6. impressora
7. escâner
8. fones de ouvido
9. câmera digital
10. unidade de processamento de dados
11. mouse
12. disquete
13. microfone

3. Leia o texto "COMPUTER PARTS" e sublinhe as partes do computador que o texto menciona:

Glossary: **inside**: dentro **to care**: importar-se **to avoid**: evitar **deals**: negócios **even though**: ainda que, mesmo que **to understand**: entender **enough:** suficiente **but (1):** menos, exceto **but (2):** mas **often:** frequentemente **hub**: centro **to manage:** gerenciar **to store:** armazenar **to boost:**	Most people don't know exactly what goes on **inside** of their computers, and most of those people don't **care**. But understanding the basics behind computer parts is an important part of being an educated consumer. Knowing more about computer parts can help people diagnose problems with their computer and **avoid** bad **deals** at computer stores. **Even though** they may seem complicated, it's still important to **understand** the basic functions of computer parts. The most visible parts of the system may be easy to **understand.** The monitor and speakers are obvious **enough**, and the mouse and keyboard are familiar to all **but** the newest of users. **But** the things **inside** the computer itself, **often** called the "tower," are more of a mystery. The motherboard is the **hub** where all information is **managed** from various other computer parts. The central processing unit (CPU), is housed on the motherboard and **manages** all the exchange of information between parts. The hard drive is where all the information on the computer is **stored**. This is where all the pictures, music, movies and documents are kept when you aren't viewing them. The memory is different from the hard drive because it is not permanent. The

aumentar	memory is simply a place for the computer to **store** information temporarily while it performs certain functions. Other computer parts include CD and DVD drives which can read information off CDs and DVDs. Video and sound cards boost the video and audio quality of the things that the computer displays. (Disponível em: < http://www.compu-mart.com/computerparts.html>. Acesso em 28 de maio de 2011).

Quantas partes do computador o texto cita?

Quais são elas?

Observe as palavras destacadas no texto e seus significados em português no glossário ao lado. Fazendo isso, você entenderá melhor o texto e saberá o significado das palavras desconhecidas. Procure no dicionário as outras palavras que são novas para você.

II. Types of Computers

Há vários tipos de computadores: grandes e pequenos, mais modernos, mais antigos, mais rápidos, mais lentos, etc. Veja a seguir, alguns tipos de computadores e suas representações gráficas. Escreva o nome de cada computador ao lado das figuras:

III. Input, output & storage devices

Nos computadores há o que denominamos de dispositivos de entrada e saída de dados - input/output (I/O) devices – e dispositivos de armazenamento de dados – storage devices. De quais dispositivos você consegue se lembrar? Escreva seus nomes em inglês na tabela a seguir:

input devices	output devices	storage devices

Os dispositivos de entrada e saída de dados - input, output devices - são periféricos usados para a interação homem-computador. Os input devices são dispositivos de entrada de dados como o teclado - keyboard. Os output devices são dispositivos de saída de dados como a impressora - printer, por exemplo. Os dispositivos de armazenamento de

dados – storage devices - são divididos em duas categorias: os de memória primária e secundária. Como o próprio nome diz, são equipamentos usados para armazenamento de dados. Um exemplo é o flash drive.

Veja mais sobre input, output and storage devices em http://pt.scribd.com/doc/6455958/Module-5-Input-Output-Storage-Devices e em http://en.wikipedia.org/wiki/Computer

UNIT 02: THE MOTHERBOARD

1. Leia o texto que segue " THE MOTHERBOARD", circule as palavras cognatas e escreva-as a seguir:

Glossary:	THE MOTHERBOARD
many: muitos **to hold:** manter, armazenar **board:** placa **to provide:** fornecer **sometimes**: às vezes **known:** conhecida **as:** como **to shorten:** ficar mais curto, encurtar	In personal computers, a motherboard is the central printed circuit board (PCB) in **many** modern computers and **holds many** of the crucial components of the system, **providing** connectors for other peripherals. The motherboard is **sometimes** alternatively **known as** the mainboard, system board, or, on Apple computers, the logic board. It is also sometimes casually **shortened** to mobo. (Disponível em: <http://en.wikipedia.org/wiki/Motherboard>. Acesso em 28 de maio de 2011).

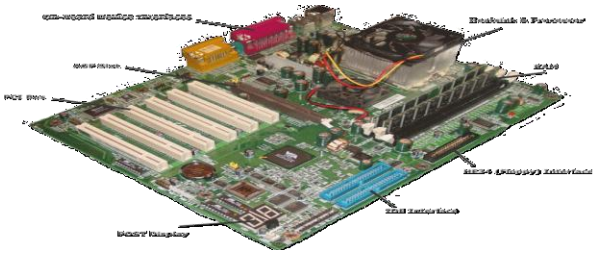


Figura 3: A Motherboard

2. Após ler o texto "Motherboard", descubra outros nomes pelos quais a placa-mãe é também conhecida:

APPENDIX M
Students' excuses for abandoning the course.

- Pensou que era menos vezes por semana. É taxista e o período no curso diminuiria a sua renda.
- Mudou de trabalho
- Recebeu proposta de emprego no mesmo horário e tambem se mudou.
- Mora em balneário diz que vai trancar a matricula e volta ano que vem vai trancar porque é longe.
- Não era o que imaginava no momento da inscrição,
- Incompatibilidade com horário de trabalho.
- Achava que era manutenção.
- Diz que não desistiu, apenas faltou algumas aulas para decidir o que quer da vida.
- O trabalho estava indo até mais tarde, estava chegando sempre atrasado. Seria melhor se o curso começasse às 19:00
- Esse curso não me interessa no momento.
- Achou que era algo diferente.
- Começou a trabalhar no horário do curso. Se tivesse curso de manhã seria bom.
- Decepção com a greve.
- Achou que era manutenção e o horário é muito apertado.

APPENDIX N

Questions of the beginning-of-the-term questionnaire regarding "Digital competence" (translated from Portuguese to English)

Part I:

Choose the level that best describes your ability to work with the keyboard and the functions of each key ("Esc" "Ctrl" "Alt", "Del "...); 2. Choose the level that best describes your ability to work with the mouse (left and right keys, double-click ...); 3. Choose the level that best describes your ability to work with a word processor (typing text, page setup, select, copy, and paste ...); 4. Choose the level that best describes your ability to work with the computer operating system you use (create folders, copy, move, and rename files ...); 5. Choose the level that best describes your ability to work with printers (print, set page range, properties...); 6. Choose the level that best describes your ability to work with browsers (save web pages, work offline, bookmarks ...); 7. Choose the level that best describes your ability to work with search engines (make simple and advanced searches using Google or another site, for example); 8. Choose the level that best describes your ability to work with e-mails (writing and viewing e-mails, insert and save attachments, reply, forward,...); 9. Choose the level that best describes your ability to work with chat tools and to use chat programs such as MSN (send messages online and offline, send emoticons ...); 10. Choose the level that best describes your ability to work with mailing lists or online forums.

Part II: 1.Choose your level of comfort while performing tasks in your daily life such as reading a text on the computer screen; 2. Choose your level of comfort while performing tasks in your daily life such as writing a text directly on the computer; 3. Choose your level of comfort while performing tasks in your daily life such as communicating with someone by e-mail; 4. Choose your level of comfort while performing tasks in your daily life such as talking to someone through chat programs like MSN, for instance; 5. Choose your level of comfort while performing tasks in your daily life like listening to music on your computer; 6. Choose your level of comfort while performing tasks in your daily life like watching movies on the computer screen; 7. Choose your level of comfort while performing tasks in your daily life such as viewing, saving, and editing photos on the computer screen; 8. Choose your level of comfort while performing tasks in your daily life such as studying with the assistance

of the computer (using CD-ROMs, reading and making slides in PowerPoint or another program to make slides); 9. Choose your level of comfort while performing tasks in your daily life such as using an Internet search site, reading information, choosing the information appropriately; 10. Choose your level of comfort while performing tasks in your daily life such as reading online/offline newspapers and magazines on your computer.

APPENDIX O
Were your expectations in relation to the ESP course met?

P.	As suas expectativas com relação à disciplina de Inglês Técnico foram atendidas neste semestre?
P1	sim, mas poderiamos ter estudado mais palavras voltadas a programação.
P2	Sim, mas acho que faltou alguma coisa que eu não sei o que é.
P3	Não havia criado muitas expectativas. Esperava entedender um pouco mais sobre o inglês relacionado à informática, e isso aconteceu realmente.
P5	Sim. Foi muito apreciável e construtivo para mim, usufrui para certas fronteiras de um computador como o estudo de alguns elementos; periféricos, partes externos e internos e descodificar nomes em abreviatura que só encontra na língua estrangeira.
P6	Esperava mais dessa matéria. Não que eu tenha achado a matérias fácil. Apenas achei defasada e insuficiente.
P7	Sim , e muito, aprendi muito com as aulas.
P8	Sim, dentro do que foi aprendido no contesto do curso até agora.
P9	Sim, nunca foi muito bem Inglês mas com passar dos anos vejo que é necessario por isso estou aqui.
P10	Não. Pois eu acreditava que iria aprender o ingles para as linguagens de programação. Apesar de que, toda forma de aprendizagem é valida.
P11	Sim, so faltou algumas palavra em ingles que nos vamos usar nos comandos dos copilador de java, como Eclipse indigo, Eclipse IDE for Java Developers, ai vai uma boa dica para os proximos Alunos, e tambem poderia colocar essa diciplina de inglês técnico no segundo semestre, os demais esta otimo.
P12	Foram, aprendi bastante, e todas as atividades e provas ajudaram a compreender tudo o que foi passado.
P13	Sim
P15	satisfatória, gostaria que essa disciplina continuasse no segundo semestre.
P16	Sim foram atendidas.
P17	estou bem satisfeito com as aulas de ingles, nao tem o que melhorar.
P18	Sim. Eu me dediquei muito, e a matéria foi bem aplicada.

P19	Minhas expectativas, foram além do que eu esperava, pois pra mim sai deste curso aprendendo muito. Sempre que perguntei algo tive resposta imediata, nossa professora foi maravilhosa, pois tratou todos iguais, ela soube passar o conteudo de uma maneira bem clara e objetiva. Parabens pela sua maneira de ensinar.
P20	Eu não tinha muitas expectativas mas o curso é muito bom eu aprendi batante coisa e foi muito legal.
P21	Foram ótimas, melhorei muito no meu ingles técnico...
P23	Sim, gostei muito das aulas e aprendi bastante tambem.

APPENDIX P
Responses from the end-of-the-term questionnaire

1.De quais atividades feitas na sala de aula você mais gostou?

1. Sobre as placas-mães
2. Ditado
3. Não lembro
4. Exercícios repetitivos
5. todas
6. Slides
7. Leitura
8. Jogo de perguntas e respostas
9. Atividades online
10. Atividades da apostila
11. Ditados
12. Isar figuras para descobrir seus nomes em inglês
13. Todas
14. Todas
15. Ditados
16. Atividades naa postila
17. Foram todas legais
18. Testes
19. A do bis
20. Não lembro

2.De quais atividades feitas na sala de aula você menos gostou?

1. a escrita de inglês para português
2. caça palavras
3. Escrever na apostila
4. gostei de todas as atividades
5. Leitura
6. Leitura de textos
7. não tem
8. Não teve nemhuma de que eu não gostasse.
9. nenhuma
10. nenhuma
11. nenhuma
12. Nenhuma
13. nenhuma traduzir texto de informática(informática antiga)
14. pesquisar palavras desconhecidas com o dicionário.
15. Sem comentários
16. sem opinião formada sobre o assunto

17. Todas q eu não saberia q seria feito na sala de aula
18. Todas que tinham muita repetição. Por ex falar varias vezes a mesma palavra.
19. traduzir os textos
20. traduzir textos

3.De quais atividades feitas no laboratório de informática você mais gostou?

1. Acrônimos
2. Das provas
3. Das provas, pela praticidade
4. etividades em foruns
5. Eu adorei todas.
6. Exercicios
7. exercicios no moodle
8. exercicios online
9. exercicios repetitivos
10. Partes do computador e dispositivo de entrada e saída
11. pesquisar palavras desconhecidas é muito mais rápido.
12. procurar palavras que não conhecia
13. prova online
14. provas
15. questionários on line
16. Todas
17. Todas
18. Todas
19. todas foram boas me ajudaram bastante.
20. Visualização de vídeos

4.De quais atividades feitas no laboratório de informática você menos gostou?

1. Nada
2. Não lembro
3. Nenhuma
4. Nenhuma
5. sem opinião formada sobre o assunto
6. não tem
7. gostei de todas

8. Nenhuma
9. Nenhuma
10. Leitura de textos
11. nenhuma
12. nenhuma
13. nenhuma
14. gostei de todas atividades.
15. responder questionários enormes.
16. caça palavras
17. nenhuma
18. nenhuma
19. nenhuma
20. Não lembro

5.Em comparação com as atividades realizadas em sala de aula, houve maiores dificuldades para realizar as tarefas online no Moodle? Se sim, quais?

1. Não. O meu problema é só organizar os afazeres em dia.
2. Não
3. nâo so na parte da escrita.
4. Nenhuma
5. Não
6. Não
7. Todas sem difilculdade
8. Não
9. Não
10. Não
11. Naõ
12. Não
13. Não.
14. Não, não houve muitas dificuldades.
15. Não houve diferença.
16. Não.
17. Estou ainda um pouco lento, mas vou ser rapido.
18. Eu sou suspeita para falar, pois eu adorei todas Acredito que no começo por não saber nada, tive dificuldades, mas depois foi maravilhoso, aprendi muito.
19. Não
20. Não

APPENDIX Q
Students' self evaluations

Participant	Students' self evaluations
P1	Eu acho que a minha percepção melhorou bastante em relação a leitura como tambem na pronuncia.Tenho mais facilidade para interpretar textos em inglês. Eu acho que eu fui bem participativo e valeu muito a pena,pelo que eu sabia de inglês,pra mim foi exelente.
P2	Eu achei que as aulas de inglês técnico cumpriram seu papel, porém eu não consegui me concentrar muito bem, por isso acredito que a minha percepção não foi muito boa. Quanto a minha participação, ela não foi muito frequente, mas sempre perguntei sobre as palavras cujo significado eu não sabia. Reconheço que não fiz todas as tarefas, mas participei dos fóruns do Moodle quando solicitado. Pouco além disso. Levando em conta todos estes aspectos, digo merecer um S. Isto por alguns motivos: (a) não consegui me concentrar muito bem durante as aulas; (b) entrei em redes sociais quando possível não escondendo isso em nenhum momento; (c) não estudei o quanto julgava necessário para a realização da última prova. Professora, eu penso que preciso de alguma coisa para me motivar no aprendizado do inglês. Quero um dia falar fluentemente a língua e a minha maior dificuldade é reconhecer uma palavra quando é falada.
P3	**O curso de Inglês Técnico** presente no primeiro semestre do curso de Programação do IF-SC de Gaspar foi bastante produtivo. Melhorou inglês que eu trouxe da escola e aumentou a minha visão acerca das partes do computador, não somente conhecendo a tradução de Palavras, mas também as peças do computador em si. Não foi difícil compreender as aulas, pois na área da Informática ocorrem muitas palavras cognatas entre o inglês e o português. Percebi como um ponto positivo a chance que nós alunos tivemos de acompanhar o nosso crescimento dentro da matéria atraves das avaliações iniciais e finais. O ponto negativo está na desatualização do material de estudo. Reconheço que a tecnologia evolui rapidamente, mas ainda

	penso que a apostila pode melhorar nesse quesito. A minha participação durante as aulas não foi muito ativa, mas prestei atenção quase sempre. Sempre fiz as atividades. Penso que tive bastante facilidade, talvez até pelo conhecimento anterior que possuia do inglês, o qual procurei passar para os colegas algumas vezes. Acredito que mereço uma nota E, pelo que descrevi no parágrafo acima. Foi ótimo conviver com a professora nesse período, e reconheço seu esforço em trazer informações novas, como Web 2.0 e a idéia da "grande nuvem".

P4	Bom pra mim o curso técnico teve um grande avanço com a aula de inglês ajudando no conhecimentos e desenvolvimento das aulas pois tem tarefas interessantes que só ver e incrementar no nossos conhecimentos. Eu acho que mereço um PROFICIENTE porque e difícil ser excelente entrego os trabalhos em dia faço as tarefas essa foi a avaliação que eu acho que mereço.

P5	O curso de inglês técnico mais os seus conteúdos exemplificam todos os meios de parâmetros. A participação nas aulas e no moodle exponha interesses que identificam muito os conceitos para á parte profissional. No princípio a notificação é o suficiente, pois preciso melhorar muito e treinar mais a língua estrangeira, com aulas técnicas de inglês aprendi o vocabulário de informática. Um pouco difícil e complicado mas deu para o início.

P6	Muito proveitosas as aulas oque me chamou a atenção foi o alto nível da professora, a didática das aulas, e o tempo com que elas ocorreram, foi como se a professora cronometrasse tudo, vejo que não foi desperdiçado tempo e o exercícios puderam ser feitos com calma tudo seguia um padrão. Minha crítica vai para o fato de o inglês na informática se tornar obsoleto rápido já que muitos componentes e linguagens também se tornam antiquados rápido, vejo que a professora interage bem com os professores de informática creio que aos poucos essa situação vai ser aperfeiçoada. Quanto a minha nota depende da minha personalidade, se eu for uma pessoa modesta vou preferir um **S** se eu for ambicioso vou exigir um **E.** Vou escolher um **P** pelo meu esforço.

P8	Sobre o curso em sí dentro do que ele se limito ficou muito bom, acreditaria que para próximas turmas deveria ser feito no segundo semestre quando iremos aprender funções e expressões em inglês, teriamos ai sim mais perguntas a fazer e explorar melhor o curso a professora com grande esforço passou o maximo do que ela sabia e muitas das vezes tinha aluno que ficava vagando pois ainda não tinha chegado na matéria do curso que explicava o que ela tava ensinando.

P10	As aulas de inglês apesar de terem sido ministradas no primeiro semestre, quando deveriam ser ministradas no segundo, são válidas. Desde que as usemos como um ponta pé inicial para nos aprofundarmos na aprendizagem da língua, e com isso aprender não só o inglês técnico. Agora, avaliando o meu desempenho, gostaria de frisar que aprendi e assimilei praticamente todo o conteúdo que me foi dado, pois, comparando as notas nas primeiras avaliações e as notas nas avaliações atuais, a minha média aumentou muito. Mas isso não é só mérito meu, afinal a didática da professora é excelente. Quanto a minha participação nas aulas, creio que desempenhei um excelente papel, afinal, tive poucas faltas, fiz todas as atividades propostas, e me esforcei ao máximo para obter sempre os melhores resultados. Porém, não me sinto no direito de me dar um conceito, tendo em vista que este cabe a professora.

P11	Minha opinião sobre o curso de Inglês Técnico e muito positiva, as aulas são bem criativas e se aprende mais usando os laboratório de informática. Sobre minha opiniões deveria começar essa matéria no segundo semestre e usar algumas palavras de inglês nos sistema de java para praticar. Minha participação nas aulas de Inglês Técnico foi bem positiva nas frequências não faltei na aula tive varias participação só não consigo escrever certo as palavras em inglês mas entento parcialmente trabalho com computador nas manutenção por isso levando tudo isso em conta, eu acho que mereço P – proficiente.

P12	Participei pouco nas aulas, mas meu desempenho foi muito bom. Aprendi bastante com todas as atividades, provas e exercícios passados em aula.Tive várias oportunidades de nota, foram feitas bastante provas do mesmo assunto, que facilitou no entendimento.Minhas notas foram boas e foi muito bom o assunto.Procurei nao faltar nas aulas, sai mais cedo em algumas aulas por causa do onibus, mas tive bastante presença nas aulas. A disciplina de inglês técnico supriu o que eu pensava que era, foi ensinado todas as partes do computador, tanto no funcionamento e instalação de algumas,em inglês. A professora soube ensinar e levar os alunos a aprender e entender essa disciplina e tudo que tinha de ser ensinado.O curso ta sendo bem proveitoso, todas as disciplinas tem professores bons e que entendem e tem dominio do assunto.
P13	Minha percepção quanto ao inglês melhorou muito, consigo entender melhor as palavras e alguns comandos de Internet e computadores. O curso foi muito proveitoso me considero mais apto para exercer as funções propostas pelo curso. Minha participação é muito boa, gostei muito de meu desempenho.
P16	Acho que mereço um S, pois o meu desempenho não foi satisfatório ao meu ponto de vista ,mas considero que as aulas foram muito produtivas e alguma coisa eu aprendi. A professora é muito atenciosa e tira todas as nossas duvidas ,mas depende muito do aluno se empenhar para alcançar bons resultados.
P17	As aulas de inglês técnico são interessantes pelo fato de nos termos aulas em sala e em laboratório tendo assim um melhor aprendizado, aprendendo a interpretar textos perguntas, e elaborando algumas frases mas tenho muito que melhorar e aprender. A minha participação em inglês técnico estão razoáveis posso melhorar porem tenho que melhorar o vocabulário para ter certeza das respostas que vou dar. Poriso creio que meu conceito poderia ser de “S” para “P” agradecendo sua paciência.

P18	O Curso foi muito interesante, com vídeos e exercícios, foi muito proveitoso. Eu aprendi e revi matérias, e me dediquei bastante, não faltei nas aulas e meu desempenho foi bom. Com tudo eu merece o conceito de (P) Proficiente.
P19	Eu achei que este curso foi muito bom pois pude aprender mais sobre computadores e seus periférico. Achei que o curso poderia ter uma duração maior. Como professora achei que você fez um excelente trabalho, sempre que eu tive uma dúvida você conseguiu solução, só tenho que agradecer. Quanto ao meu desempenho eu melhorei muito pois não sábia nada vezes nada e hoje posso falar que sei muito.Sempre assisti todas as aulas, minha frequência foi 100%, sempre que tive oportunidade respondi seus questionarios e seus forum. Sobre nota acho que mereço um proficiênte, pois me esforcie e muito. Apesar das dificuldades sempre me dediquei.
P20	Eu achei muito boas as aulas de Inglês Técnico, eu aproveitei bastante as aulas, conheci algumas coisas diferentes do que eu já sabia, os conteúdos serviram também para uma outra matéria como Arquitetura de Computadores. O conteúdo foi bastante explicado com várias atividades na apostila, nas folhas que a professora trazia e no moodle. Eu não participei muito nas aulas quando estávamos traduzindo os textos da apostila, mas todas tarefas as tarefas que a professora pedia eu fazia, a minha frequência é muito boa. Eu acho que mereço P, fiz todas as tarefas ganhei boas notas mas por causa da falta de interesse eu poderia ter aprendido mas e ter aproveitado mas as aulas quando a professora estava explicando.
P21	Olá Theacher Gisele, é muito difícil fazer uma auto avaliação, mais vou tentar, apesar te ter algumas faltas (hihi muitas), o curso é excelente, muito bem elaborado e com muitos exercícios, acho que estou melhorando muito meu inglês, mas é só o primeiro semestre. Mesmo com faltas acho que meu conceito seria P, mas não sou eu que avalio e sim você, espero que seja exatamente igual no segundo semestre, até lá. Abraços.

P22	Professora eu me auto avalia proeficiente devido a minha participação e minhas notas. Logico que isso se deve a sua boa participação nas aulas e tambem aos "BIS" que me insentivaram muito kkkkkkkkk. Outra coisa que valeu muito foi a pratica de varios exercicios a repetição que fiseram com que eu aprendeçe algumas palavras. E isso professora foi bem legal as suas aulas abraço.
P23	Bom vamos falar sobre mim, aqui estamos e eu não gosto de falar sobre mim posso chamar o universitários? Tá!Ta! Sem mais enrolações no decorrer das aulas de inglês, eu acabei levando as aulas um pouco na brincadeira, mas também pude aprender palavras que eu ainda não conhecia mais ligada a informática mesmo. Muitas vezes eu faltei e preciso sair mais cedo todos os dias pra pegar meu ônibus, ooo It's no easy, eu gosto de inglês por isto faço curso fora do IFSC não sou um especialista mas acho que me saio bem, então a respeito da minha nota e tudo que eu fiz se contarmos só as notas de provas tenho alguns E hihi, mas precisamos colocar em cheque a minha participação, que as muitas vezes e razoável. Well vou dar uma de humilde e me dar um P ou eu estou sendo muito vamos dizer orgulhoso e me dando uma nota muito boa a não sei me contento com um P mesmo. By: seu aluno mais chato
P24	A minha nota é P, pois as aulas de inglês tecnico foram muito proveitosa, conheci nova palavras. O conteúdo seriram tambem para outras materia de dentro do Instituto e fora. A matéria foi muito bem explicada com muitas atividades em sala e com bastante participação da turma. A minha participação foi muito cotidiana na sala e no moodle pois quando em todos os forum eu dei minha participação.

APPENDIX R

Messages left by the students in the end-of-the-course questionnaire

1.	P1	Em 1º lugar muito obrigado pela atenção dada aos alunos. Foi de grande valor o conhecimento que recebi.Um abraço,bom Natal e um feliz ano novo.
2.	P2	Professora, seria legal se você passasse alguns vídeos legendados, não propriamente relacionados com a informática quando o conteúdo principal se tornar cançativo. Exercícios de memória também são interessantes, na minha opinião.
3.	P3	Foi ótimo estar aprendendo um assunto novo e passar esse período com a professora. Obrigado. Abraço e Feliz Natal.
4.	P5	Eu só posso agradecer muito a Profª. Que aturou nós todos. Merry Christmas! Happy New Year! I see you later. Hugs! That God Bless!
5.	P7	Obrigado Professora por todo o ensino e dedicação para conosco, pude aprender muito com tudo que vimos em sala de aula, laboratório, enfim, sou muito grato. Grande abraço.
6.	P8	Ao término de cada aula deveria ser programado se a próxima será em laboratório ou em sala de aula, para os alunos prepararem-se com dicionário pois em laboratório dar pra acessar mais em sala vc fica muito restrito e se já vem preparado pra uma aula em sala vc se prepara melhor.
7.	P9	Muito obrigado sim por conhecer novas pessoas e fazer novas amizades durante este semestre.
8.	P10	Embora responder esses questionários enormes seja chato, continuo gostando da sua didatica professora gisele. Espero te-la como professora novamente muito em breve. Obrigada pelos ensinamentos e boas festas!!
9.	P11	meu aprendizado nesta disciplina foi bom, so não consegui expresar as palavras no papel mas ao olhar a palavra em inglês consigo parcialmente entender.
10	P12	Eu gostei muito das aulas, e todos os alunos se ajudaram e teve bastante interação entre a professora e todos nós. Adorei a professora e espero que essa aula nunca termina

11	P15	gostaria muito que essa disciplina continuasse no segundo semestre, pois considero de suma importância.
12	P17	as aulas estao sendo bem legais, estou melhorando meu vocabulario e conseguindo intender textos em inglescom mais facilidade
13	P18	Estou muito agradecido pelo aprendizado. Abraços.
14	P19	Aprendi muito, adorei demais o curso. Eu só tenho a agradecer pela sua paciência e dedicação. MUITO, MUITO OBRIGADA POR TUDO. Gostaria que o curso tivesse uma duração maior, para mim seria MARAVILHOSO. Beijos, Beijos e muito sucesso e realizações.
15	P20	Esse questionário é muito bom, mas é muito grande
16	P21	Theacher você é 10.
17	P23	Escolha o que melhor descreve suas percepções em relação à interação com o professor: R:Fala o que né, me ama s2 :D nhac KKK. Que sua pesquisa de certo hihi muito bom ter sido seu aluno, gostei bastante ;D

APPENDIX S
Descriptives

			Statistic	Std. Error
PRETEST	Mean		41,6500	3,27693
	95% Confidence Interval for Mean	Lower Bound	34,7913	
		Upper Bound	48,5087	
	5% Trimmed Mean		41,2778	
	Median		41,5000	
	Variance		214,766	
	Std. Deviation		14,65489	
	Minimum		17,00	
	Maximum		73,00	
	Range		56,00	
	Interquartile Range		26,25	
	Skewness		,061	,512
	Kurtosis		-,444	,992
PPIMpost	Mean		76,1500	3,53202
	95% Confidence Interval for Mean	Lower Bound	68,7574	
		Upper Bound	83,5426	
	5% Trimmed Mean		77,5000	
	Median		80,5000	
	Variance		249,503	
	Std. Deviation		15,79565	
	Minimum		32,00	
	Maximum		96,00	
	Range		64,00	
	Interquartile Range		23,25	
	Skewness		-1,297	,512
	Kurtosis		1,841	,992
CPIMpost	Mean		78,5000	4,27015

	95% Confidence Interval for Mean	Lower Bound	69,5625	
		Upper Bound	87,4375	
	5% Trimmed Mean		80,4444	
	Median		83,5000	
	Variance		364,684	
	Std. Deviation		19,09671	
	Minimum		23,00	
	Maximum		99,00	
	Range		76,00	
	Interquartile Range		16,25	
	Skewness		-1,750	,512
	Kurtosis		3,395	,992
PPDEpost	Mean		75,0500	4,42807
	95% Confidence Interval for Mean	Lower Bound	65,7820	
		Upper Bound	84,3180	
	5% Trimmed Mean		77,0000	
	Median		78,0000	
	Variance		392,155	
	Std. Deviation		19,80291	
	Minimum		15,00	
	Maximum		100,00	
	Range		85,00	
	Interquartile Range		26,50	
	Skewness		-1,509	,512
	Kurtosis		3,285	,992
CPDEpost	Mean		83,6000	5,25227
	95% Confidence Interval for Mean	Lower Bound	72,6069	
		Upper Bound	94,5931	
	5% Trimmed Mean		85,9444	
	Median		97,0000	
	Variance		551,726	

	Std. Deviation	23,48886	
	Minimum	25,00	
	Maximum	100,00	
	Range	75,00	
	Interquartile Range	24,50	
	Skewness	-1,486	,512
	Kurtosis	1,081	,992

	Shapiro-Wilk		
	Statistic	df	Sig.
Preteste	,963	20	,611
PPIMpost	,889	20	,026
CPIMpost	,823	20	,002
PPDEpost	,884	20	,021
CPDEpost	,739	20	,000

Descriptives

	Group			Statistic	Std. Error
PpDEpost	Group 1	Mean		74,4545	7,13425
		95% Confidence Interval for Mean	Lower Bound	58,5584	
			Upper Bound	90,3506	
		5% Trimmed Mean		76,3384	
		Median		81,0000	
		Variance		559,873	

		Std. Deviation	23,66163	
		Minimum	15,00	
		Maximum	100,00	
		Range	85,00	
		Interquartile Range	27,00	
		Skewness	-1,773	,661
		Kurtosis	3,634	1,279
	Group 2	Mean	75,7778	5,06013
		95% Confidence Interval for Mean — Lower Bound	64,1091	
		95% Confidence Interval for Mean — Upper Bound	87,4465	
		5% Trimmed Mean	76,0864	
		Median	76,0000	
		Variance	230,444	
		Std. Deviation	15,18040	
		Minimum	51,00	
		Maximum	95,00	
		Range	44,00	
		Interquartile Range	28,00	
		Skewness	-,099	,717
		Kurtosis	-,939	1,400
CPDEpost	Group 1	Mean	77,2727	8,89544
		95% Confidence Interval for Mean — Lower Bound	57,4524	
		95% Confidence Interval for Mean — Upper Bound	97,0930	
		5% Trimmed Mean	78,9141	
		Median	97,0000	
		Variance	870,418	
		Std. Deviation	29,50285	
		Minimum	25,00	
		Maximum	100,00	
		Range	75,00	

	Interquartile Range		53,00	
	Skewness		-,852	,661
	Kurtosis		-1,135	1,279
Group 2	Mean		91,3333	3,33333
	95% Confidence Interval for Mean	Lower Bound	83,6467	
		Upper Bound	99,0200	
	5% Trimmed Mean		91,8148	
	Median		97,0000	
	Variance		100,000	
	Std. Deviation		10,00000	
	Minimum		74,00	
	Maximum		100,00	
	Range		26,00	
	Interquartile Range		18,00	
	Skewness		-,781	,717
	Kurtosis		-1,067	1,400

		Shapiro-Wilk		
	Group	Statistic	df	Sig.
PPDEpost	Group 1	,834	11	,027
	Group 2	,942	9	,601
CPDEpost	Group1	,766	11	,003
	Group 2	,833	9	,048

APPENDIX T
Friedman Test

Ranks

	Mean Rank
Pretest	1,15
PPIMpost	3,20
CPIMpost	3,43
PPDEpost	2,95
CPDEpost	4,28

Test Statistics[a]

N	20
Chi-Square	42,704
df	4
Asymp. Sig.	,000

a. Friedman Test

APPENDIX U
Wilcoxon Signed Ranks Test
Ranks

		N	Mean Rank	Sum of Ranks
PPDDEpost - CPDEpost	Negative Ranks	15[a]	9,70	145,50
	Positive Ranks	4[b]	11,13	44,50
	Ties	1[c]		
	Total	20		
CPIMpost - CPDEpost	Negative Ranks	14[d]	9,29	130,00
	Positive Ranks	4[e]	10,25	41,00
	Ties	2[f]		
	Total	20		
PPIMpost - CPDEpost	Negative Ranks	15[g]	10,60	159,00
	Positive Ranks	5[h]	10,20	51,00
	Ties	0[i]		
	Total	20		
Pretest - CPDEpost	Negative Ranks	20[j]	10,50	210,00
	Positive Ranks	0[k]	,00	,00
	Ties	0[l]		
	Total	20		
CPIMpost - PPDEpost	Negative Ranks	7[m]	10,79	75,50
	Positive Ranks	13[n]	10,35	134,50
	Ties	0[o]		
	Total	20		
PPIMpost - PPDEpost	Negative Ranks	9[p]	9,61	86,50
	Positive Ranks	10[q]	10,35	103,50
	Ties	1[r]		
	Total	20		
Pretest - PPDEpost	Negative Ranks	18[s]	11,50	207,00
	Positive Ranks	2[t]	1,50	3,00
	Ties	0[u]		
	Total	20		
PPIMpost – CPIMpost	Negative Ranks	10[v]	12,00	120,00
	Positive Ranks	9[w]	7,78	70,00
	Ties	1[x]		
	Total	20		
Pretest – CPIMpost	Negative Ranks	20[y]	10,50	210,00
	Positive Ranks	0[z]	,00	,00

	Ties	0[aa]		
	Total	20		
Pretest – PPIMpost	Negative Ranks	19[ab]	10,95	208,00
	Positive Ranks	1[ac]	2,00	2,00
	Ties	0[ad]		
	Total	20		

a. PPDEpost < CPDEpost
b. PPDEpost> CPDEpost
c. PPDEpost = CPDEpost
d. CPIMpost< CPDEpost
e. CPIMpost> CPDEpost
f. CPIMpost = CPDEpost
g. PPIMpost< CPDEpost
h. PPIMpost> CPDEpost
i. PPIMpost= CPDEpost
j. Pretest < CPDEpost
k. Pretest > CPDEpost
l. Pretest = CPDEpost
m. CPIMpost < PPDEpost
n. CPIMpost > PPDEpost
o. CPIMpost = PPDEpost
p. PPIMpost < PPDEpost
q. PPIMpost > PPDEpost
r. PPIMpost = PPDEpost
s. Pretest < PPDEpost
t. Pretest > PPDEpost
u. Pretest = PPDEpost
v. PPIMpost < CPIMpost
w. PPIMpost > CPIMpost
x. PPIMpost = CPIMpost
y. Pretest < CPIMpost
z. Pretest > CPIMpost
aa. Pretest = CPIMpost
ab. Pretest < PPIMpost
ac. Pretest > PPIMpost
ad. Pretest = PPIMpost

APPENDIX V
Mann-Whitney Test
Test Statistics[c]

	PPDE Post - CPDE post	CPIMpost-CPDEpost	PPIM post – CPDE post	Pre test - CPDE post	CPIMpost-CPDE post	PPIM post – PPDE post	Pre test – PPDE post	PPIM post – CPIM post	Pre test – CPIM post	Pre test - PPIM post
Z	-2,033[a]	-1,939[a]	-2,016[a]	-3,921[a]	-1,102[b]	-,343[b]	-3,810[a]	-1,007[a]	-3,921[a]	-3,848[a]
Asymp. Sig. (2-tailed)	,042	,052	,044	,000	,270	,732	,000	,314	,000	,000

a. Based on positive ranks.
b. Based on negative ranks.
c. Wilcoxon Signed Ranks Test

Mann-Whitney Test

Ranks

	Group	N	Mean Rank	Sum of Ranks
PPDEpost	Group 1	11	10,91	120,00
	Group 2	9	10,00	90,00
	Total	20		
CPDEpost	Group 1	11	10,05	110,50
	Group 2	9	11,06	99,50
	Total	20		

Test Statistics[b]

	PPDEpost	CPDEpost
Mann-Whitney U	45,000	44,500
Wilcoxon W	90,000	110,500
Z	-,343	-,385
Asymp. Sig. (2-tailed)	,732	,700
Exact Sig. [2*(1-tailed Sig.)]	,766[a]	,710[a]

a. Not corrected for ties.
b. Grouping Variable: Grupo

APPENDIX W
Descriptives – Correlations
Descriptives

			Statistic	Std. Error
DC 1	Mean		,6875	,04434
	95% Confidence Interval for Mean	Lower Bound	,5947	
		Upper Bound	,7803	
	5% Trimmed Mean		,6922	
	Median		,6650	
	Variance		,039	
	Std. Deviation		,19831	
	Minimum		,31	
	Maximum		,98	
	Range		,67	
	Interquartile Range		,32	
	Skewness		-,108	,512
	Kurtosis		-1,056	,992
DC 2	Mean		,7610	,03691
	95% Confidence Interval for Mean	Lower Bound	,6838	
		Upper Bound	,8382	
	5% Trimmed Mean		,7711	
	Median		,7550	
	Variance		,027	
	Std. Deviation		,16505	
	Minimum		,34	
	Maximum		1,00	
	Range		,66	
	Interquartile Range		,23	
	Skewness		-,682	,512
	Kurtosis		,742	,992
Motivation	Mean		,6875	,04366

	95% Confidence Interval for Mean	Lower Bound	,5961	
		Upper Bound	,7789	
	5% Trimmed Mean		,7028	
	Median		,7250	
	Variance		,038	
	Std. Deviation		,19526	
	Minimum		,10	
	Maximum		1,00	
	Range		,90	
	Interquartile Range		,20	
	Skewness		-1,364	,512
	Kurtosis		3,299	,992

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DC1	,132	20	,200*	,948	20	,344
D C2	,120	20	,200*	,944	20	,289
Motivation	,176	20	,107	,906	20	,052

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Correlations

			DC 2	CP IM post	CP DE post
Spearman's rho	DC 2	Correlation Coefficient	1,000	,012	-,084
		Sig. (2-tailed)	.	,960	,723
		N	20	20	20
	CPIMpost	Correlation Coefficient	,012	1,000	,629**
		Sig. (2-tailed)	,960	.	,003
		N	20	20	20
	CPDEpost	Correlation Coefficient	-,084	,629**	1,000
		Sig. (2-tailed)	,723	,003	.
		N	20	20	20

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			Motivation	PPIMpost	CPIMpost	PPDEpost	CPDEpost
Spearman's rho	Motivation	Correlation Coefficient	1,000	-,208	-,124	,082	-,191
		Sig. (2-tailed)	.	,378	,604	,730	,419
		N	20	20	20	20	20
	PPIMpost	Correlation Coefficient	-,208	1,000	,322	,285	,468*
		Sig. (2-tailed)	,378	.	,167	,223	,037
		N	20	20	20	20	20
	CPIMpost	Correlation Coefficient	-,124	,322	1,000	,498*	,629**
		Sig. (2-tailed)	,604	,167	.	,026	,003
		N	20	20	20	20	20
	PPDEpost	Correlation Coefficient	,082	,285	,498*	1,000	,464*
		Sig. (2-tailed)	,730	,223	,026	.	,039
		N	20	20	20	20	20
	CPDEpost	Correlation Coefficient	-,191	,468*	,629**	,464*	1,000
		Sig. (2-tailed)	,419	,037	,003	,039	.
		N	20	20	20	20	20

Correlations

			DC 2	CP IM post	CP DE post
Spearman's rho	DC 2	Correlation Coefficient	1,000	,012	-,084
		Sig. (2-tailed)	.	,960	,723
		N	20	20	20
	CPIMpost	Correlation Coefficient	,012	1,000	,629**
		Sig. (2-tailed)	,960	.	,003
		N	20	20	20
	CPDEpost	Correlation Coefficient	-,084	,629**	1,000
		Sig. (2-tailed)	,723	,003	.
		N	20	20	20

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Paired Samples Statistics

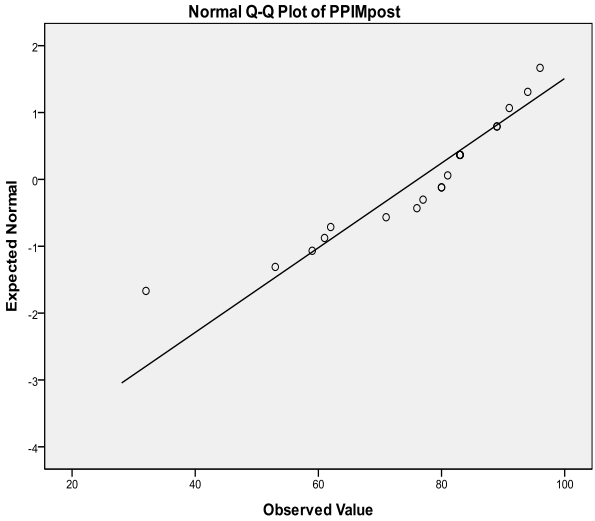
		Mean	Std. Deviation	Std. Error Mean
Pair 1	Digital Competence 1	,6875	,19831	,04434
	Digital Competence 2	,7610	,16505	,03691

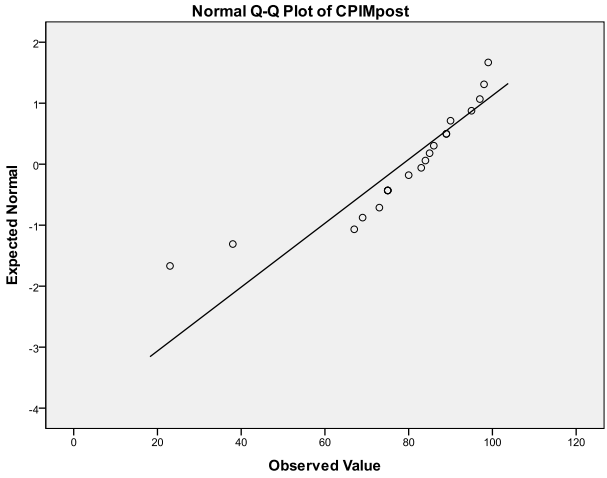
Paired Samples Correlations

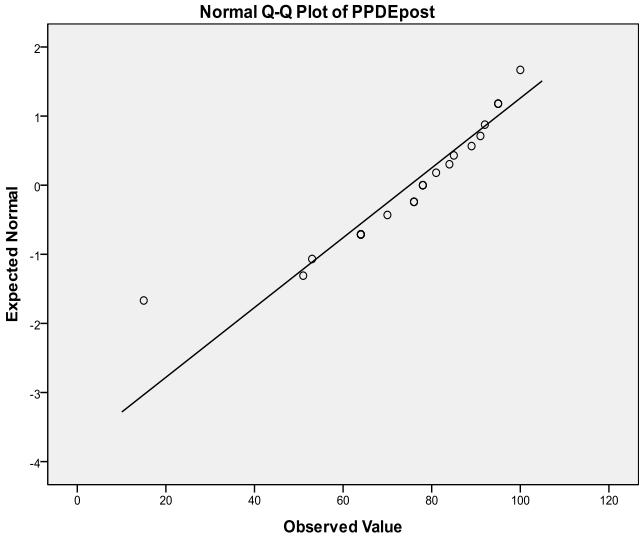
		N	Correlation	Sig.
Pair 1	Digital Competence 1 & Digital Competence 2	20	,779	,000

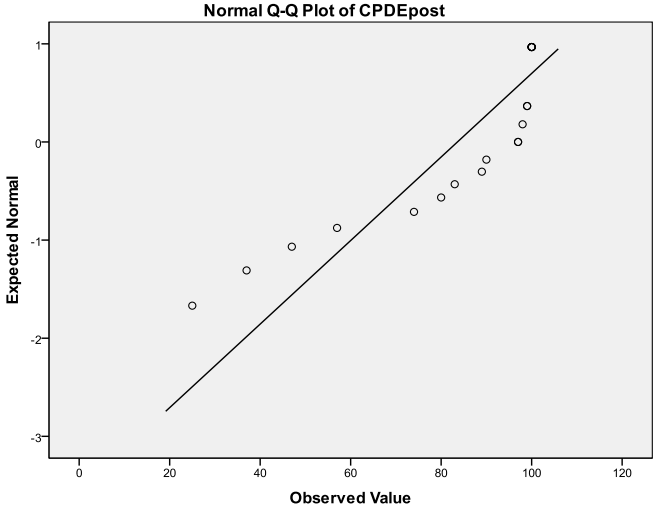
APPENDIX X

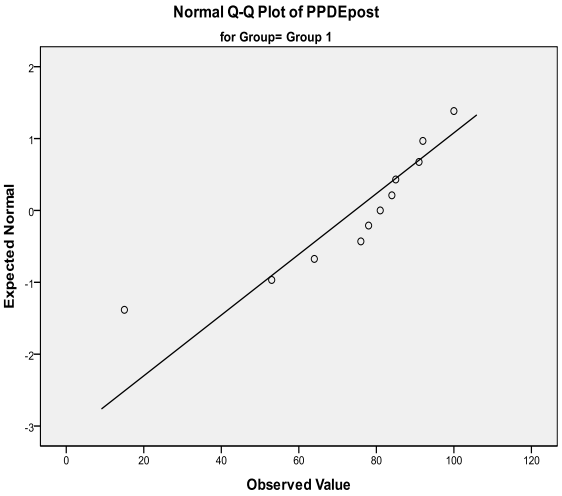
Q Q Plots

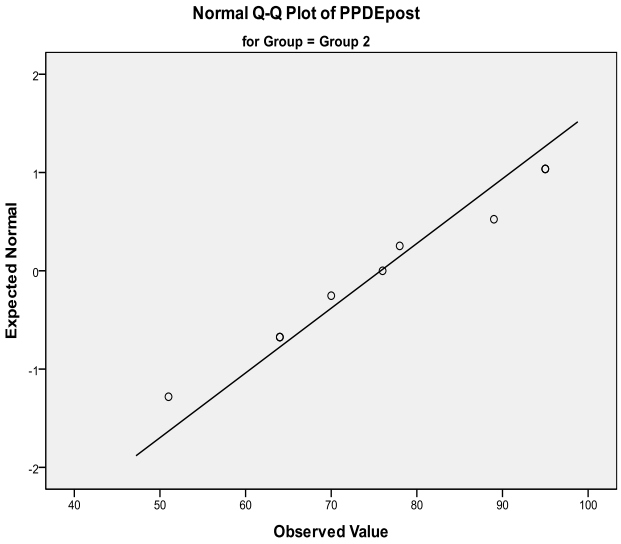


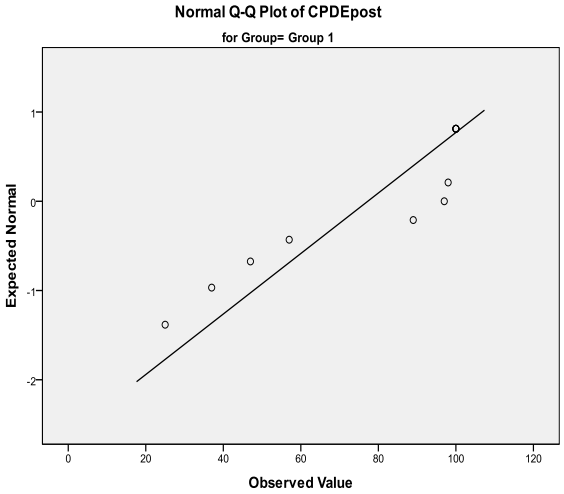


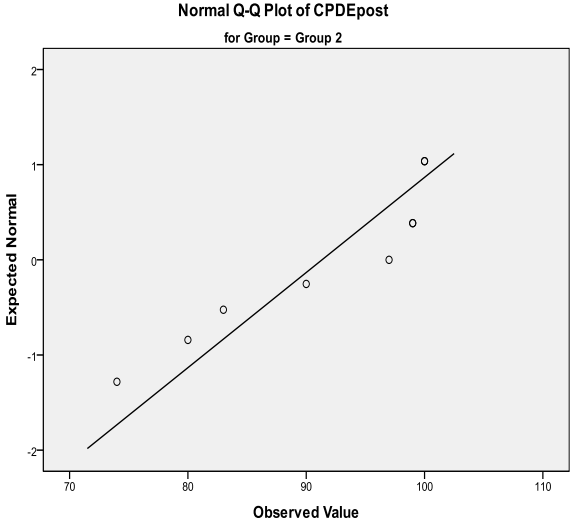

Normal Q-Q Plot of PPDEpost
Expected Normal
Observed Value
2
1
0
-1
-2
-3
-4
0
20
40
60
80
100
120

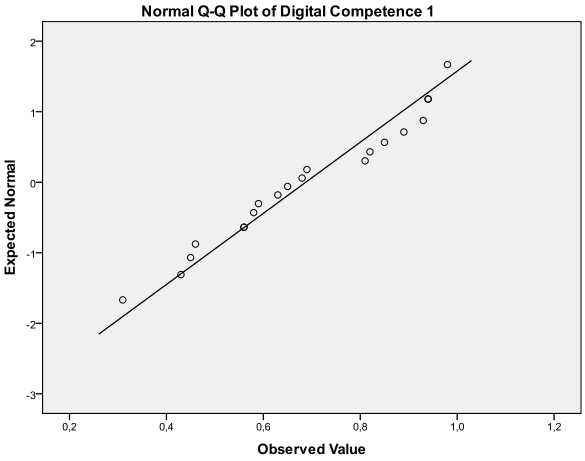

Normal Q-Q Plot of CPDEpost
Expected Normal
Observed Value
1
0
-1
-2
-3
0
20
40
60
80
100
120

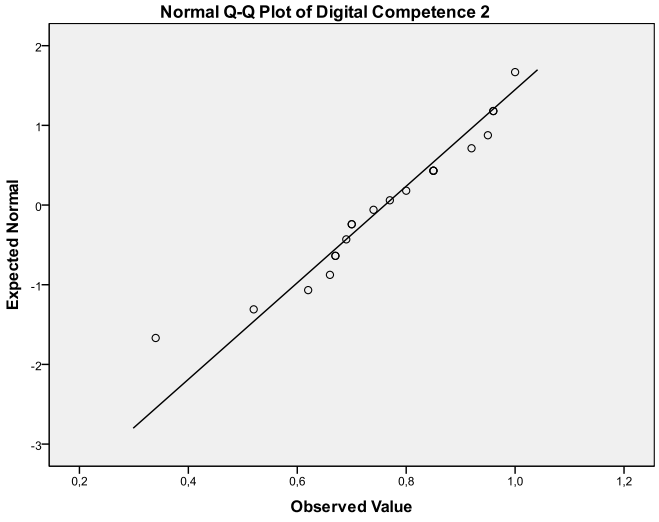

Normal Q-Q Plot of PPDEpost
for Group= Group 1
Expected Normal
Observed Value
2
1
0
-1
-2
-3
0
20
40
60
80
100
120

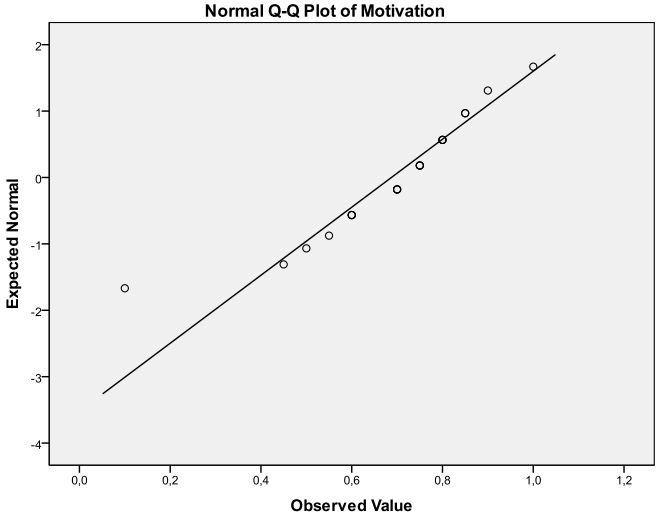

Normal Q-Q Plot of PPDEpost
for Group = Group 2
Expected Normal
Observed Value
2
1
0
-1
-2
40
50
60
70
80
90
100


Normal Q-Q Plot of CPDEpost
for Group= Group 1
Expected Normal
Observed Value
1
0
-1
-2
0
20
40
60
80
100
120

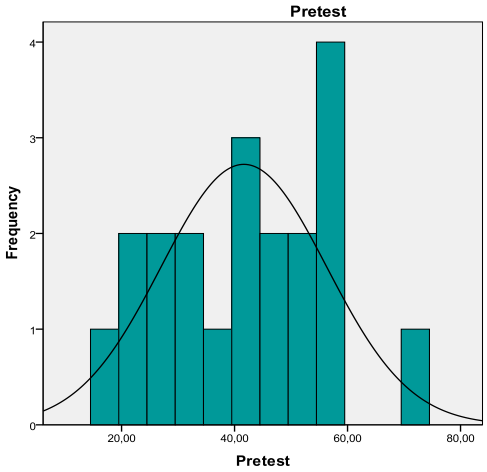

Normal Q-Q Plot of CPDEpost
for Group = Group 2
Expected Normal
Observed Value
2
1
0
-1
-2
70
80
90
100
110

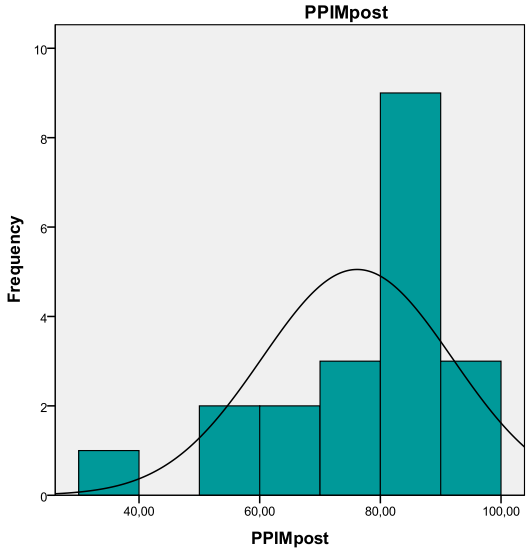

Normal Q-Q Plot of Digital Competence 1
Expected Normal
Observed Value
2
1
0
-1
-2
-3
0,2
0,4
0,6
0,8
1,0
1,2

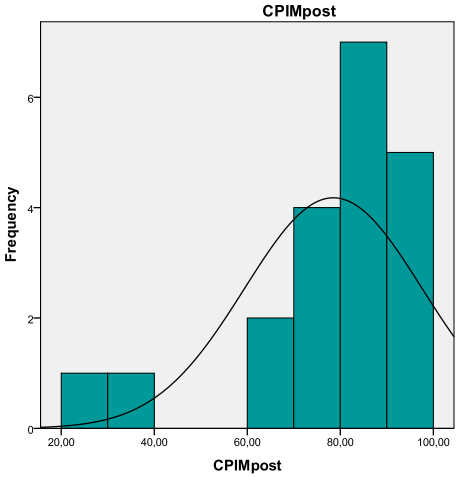

Normal Q-Q Plot of Digital Competence 2
Expected Normal
Observed Value
2
1
0
-1
-2
-3
0,2
0,4
0,6
0,8
1,0
1,2

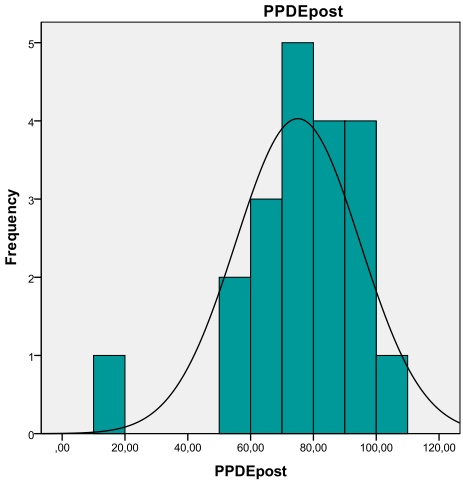

Normal Q-Q Plot of Motivation
Expected Normal
Observed Value
2
1
0
-1
-2
-3
-4
0,0
0,2
0,4
0,6
0,8
1,0
1,2

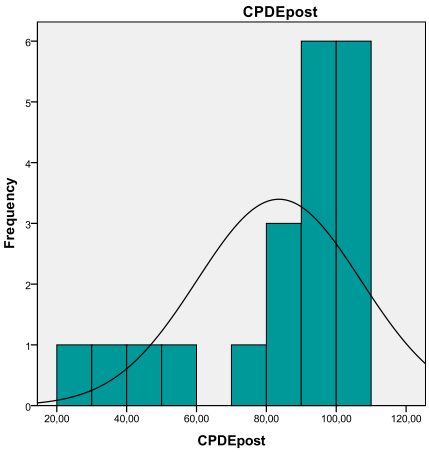
APPENDIX Y
HISTOGRAMS

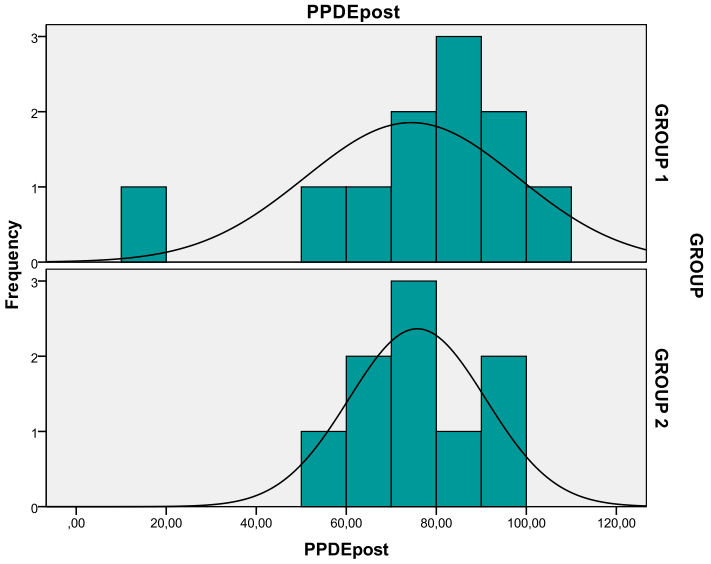


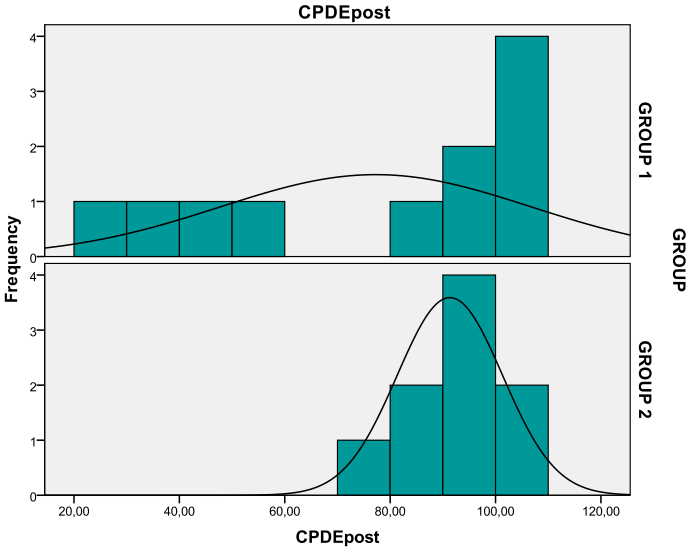



CPIMpost
Frequency
0
2
4
6
20,00
40,00
60,00
80,00
100,00
CPIMpost

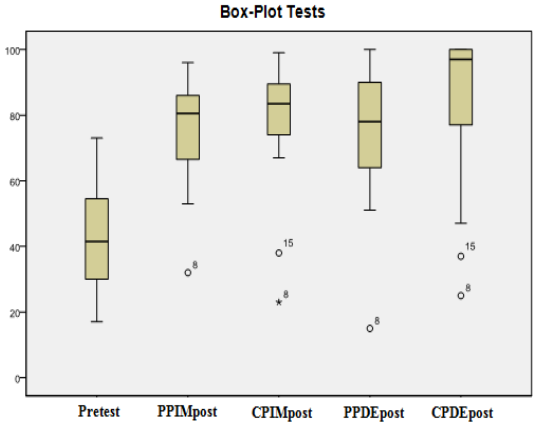

PPDEpost
Frequency
0
1
2
3
4
5
,00
20,00
40,00
60,00
80,00
100,00
120,00
PPDEpost


CPDEpost
Frequency
0
1
2
3
4
5
6
20,00
40,00
60,00
80,00
100,00
120,00
CPDEpost

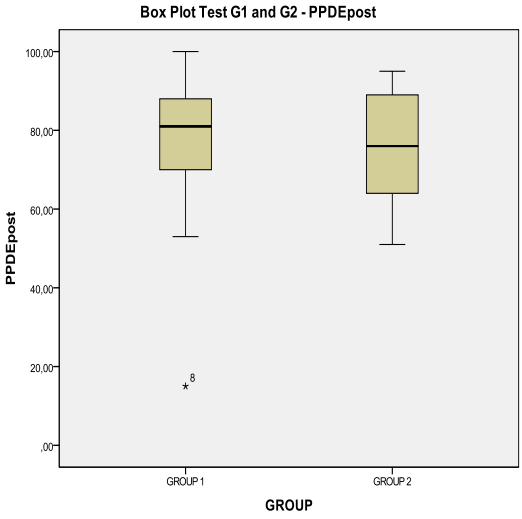

PPDEpost
Frequency
GROUP 1
GROUP 2
GROUP
0
1
2
3
,00
20,00
40,00
60,00
80,00
100,00
120,00
PPDEpost

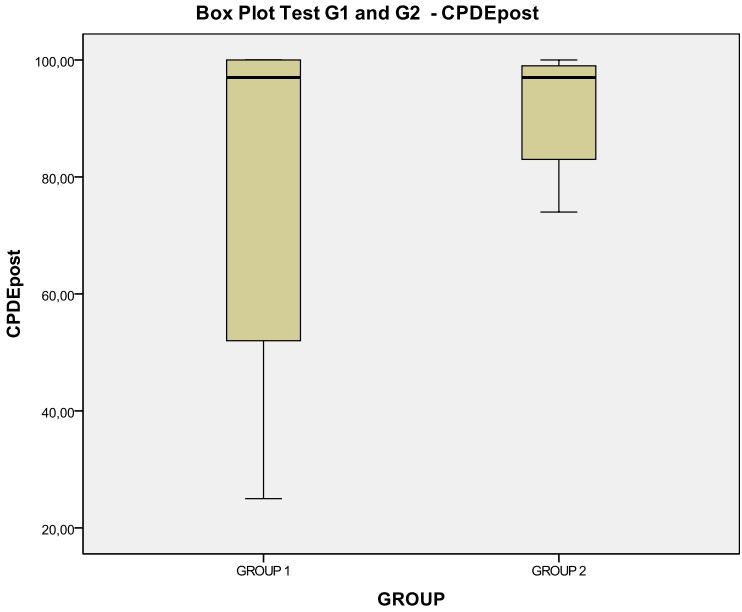

CPDEpost
Frequency
GROUP 1
GROUP 2
GROUP
0
1
2
3
4
20,00
40,00
60,00
80,00
100,00
120,00
CPDEpost

APPENDIX Z
BOX-PLOT

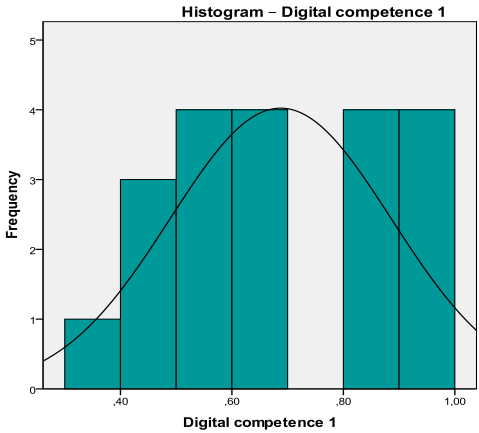


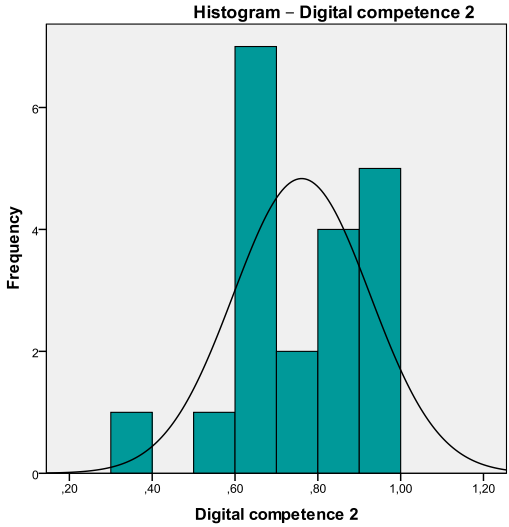
TESTS

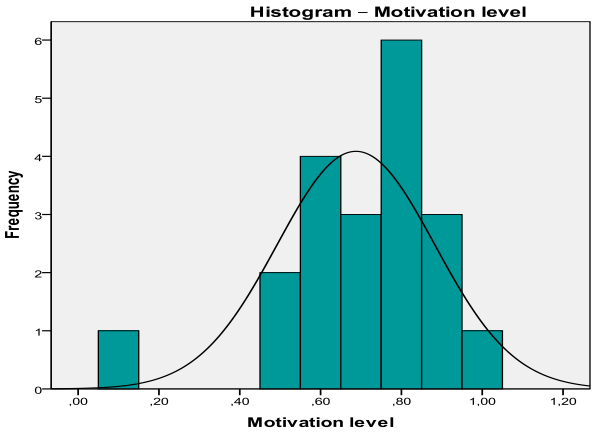



Box Plot Test G1 and G2 - CPDEpost
CPDEpost
100,00
80,00
60,00
40,00
20,00
GROUP 1
GROUP 2
GROUP

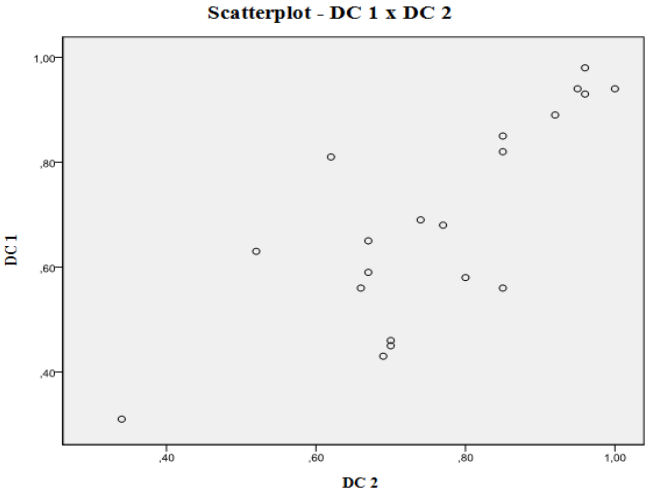
APPENDIX AA
HISTOGRAMS – DC & Motivation

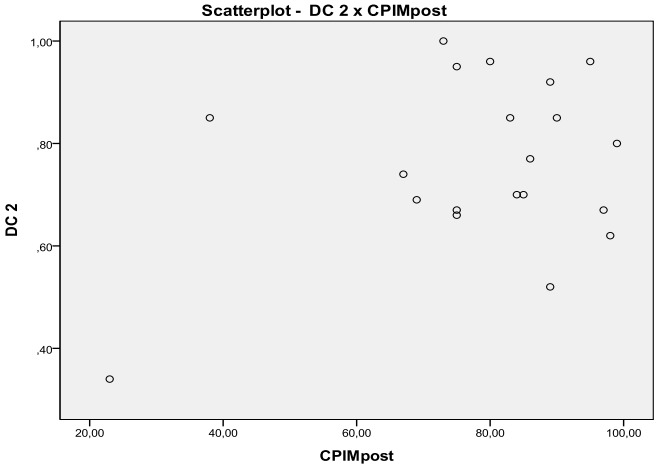




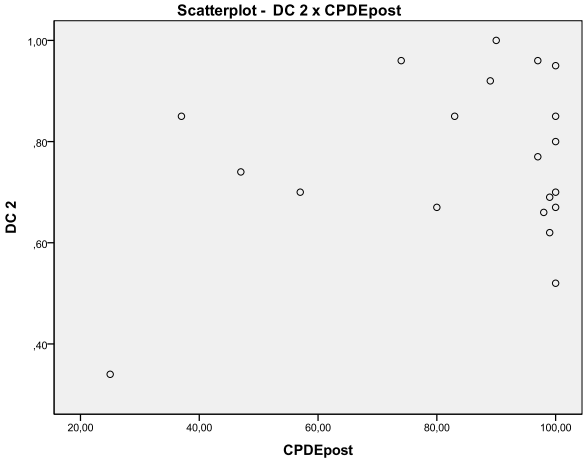

Histogram – Motivation level
Frequency
0
1
2
3
4
5
6
,00
,20
,40
,60
,80
1,00
1,20
Motivation level

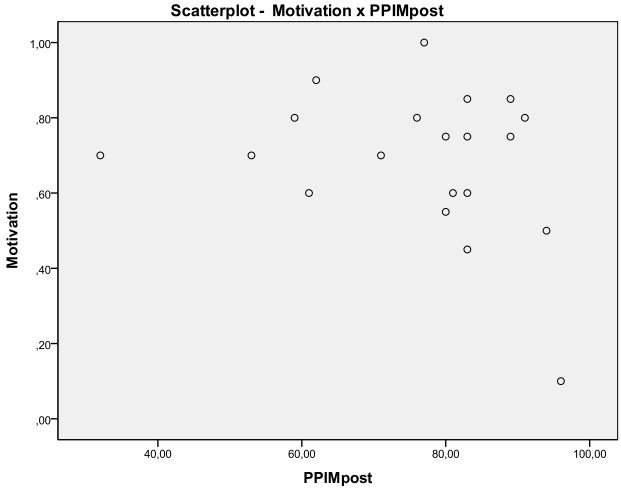
APPENDIX BB
Scatterplots

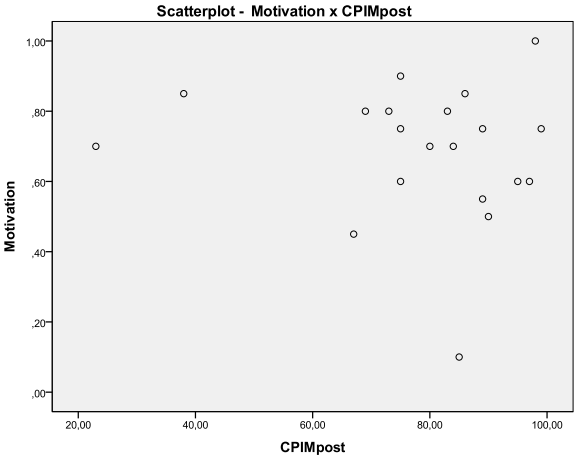


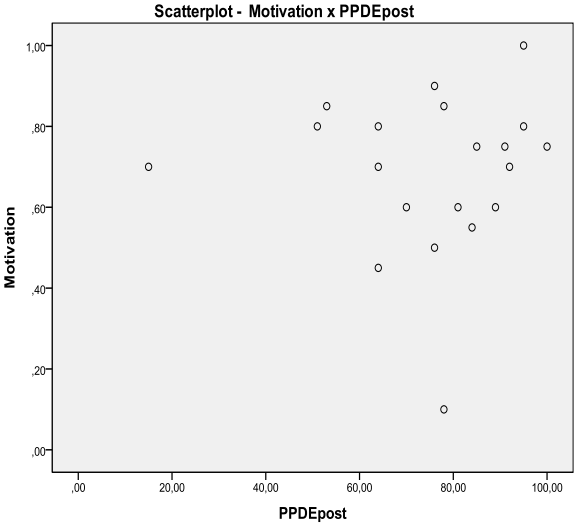


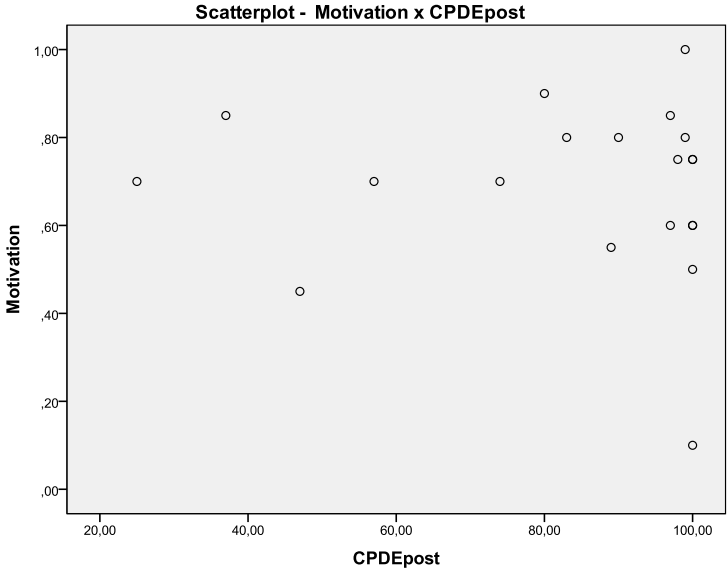
2


Scatterplot - DC 2 x CPDEpost
DC 2
1,00
,80
,60
,40
20,00
40,00
60,00
80,00
100,00
CPDEpost

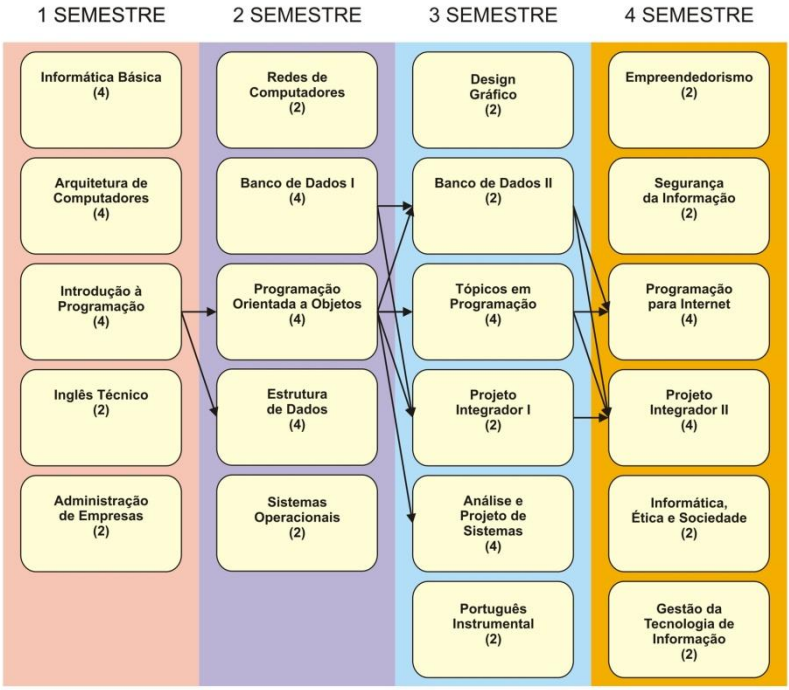

Scatterplot - Motivation x PPIMpost
Motivation
1,00
,80
,60
,40
,20
,00
40,00
60,00
80,00
100,00
PPIMpost


Scatterplot - Motivation x CPIMpost
Motivation
1,00
,80
,60
,40
,20
,00
20,00
40,00
60,00
80,00
100,00
CPIMpost


Scatterplot - Motivation x PPDEpost
Motivation
1,00
,80
,60
,40
,20
,00
,00
20,00
40,00
60,00
80,00
100,00
PPDEpost


Scatterplot - Motivation x CPDEpost
Motivation
1,00
,80
,60
,40
,20
,00
20,00
40,00
60,00
80,00
100,00
CPDEpost

APPENDIX CC - Basic Computing two-year Program (complete)



Note: 1st semester; 2nd semester; 3rd semester;and 4th semester

APPENDIX DD

Participants' performance in all five conditions

	Pre test August, 02nd	PPIM post September 27th	CPIM post October, 4th	PPDE post November, 8th	CPDE post November, 8th	Mean
P1	47	83	97	70	100	79
P2	55	96	80	78	100	81
P3	42	94	90	76	100	80
P4	24	72	80	77	95	69
P5	40	61	75	71	100	69
P6	56	77	98	95	99	85
P7	23	59	83	51	83	59
P8	33	76	69	64	99	68
P9	20	32	23	15	24	22
P10	17	80	89	84	89	71
P11	38	62	75	76	76	65
P12	48	81	95	81	97	80
P13	55	89	86	78	97	81
P14	10	48	28	58	61	41
P15	54	89	84	85	100	82
P16	25	83	00	64	47	43
P17	34	83	38	53	37	49
P18	27	80	75	91	98	74
P19	50	71	74	92	57	68
P20	41	83	99	100	100	84
P21	73	53	80	64	74	68
P22	44	90	95	81	87	79
P23	55	91	68	00	00	43
P24	15	62	78	74	77	61
M	**33**	**74**	**75**	**73**	**82**	**69**