The Effects of Computer Anxiety and Self-Efficacy on L2 Learners' Self-Perceived Digital Competence and Satisfaction in Higher Education

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Abstract

Low computer anxiety (CA) and high computer self-efficacy (CSE) levels are important affective factors that promote students' academic success in the current digital era. In an effort to understand their role in successful and effective participation in online learning environments for language learning purposes, the study investigated their effect on 331 undergraduate L2 learners' self-reported assessments of their digital literacy skills and on the level of satisfaction they express with the online component of their English for Specific Purposes course in higher education in Greece. Data were gathered via four survey questionnaires that elicited relevant information on participants' digital literacy level, learner satisfaction, computer anxiety and self-efficacy respectively. Statistical analysis of the results revealed an overall adequate level of students' digital literacy skills and a high level of satisfaction with all aspects of the online module of the blended learning course. Females reported a lower level of CA and a higher level of CSE. CA was found to be the strongest predictor of learners' digital literacy skills assessments and CSE of learner satisfaction perceptions, resulting in overall higher IT use and positive attitudes to the course.

Keywords: Computer anxiety, Self-efficacy, Digital literacy competence, Learners satisfaction, CALL, EFL.

Contents

Contribution of this paper to the literature
This study contributes to existing literature by addressing the effects of computer anxiety and self-efficacy on L2 EFL learners' self-ratings of digital literacy skills and self-reported satisfaction with a blended language learning course within a university context.

1. Introduction

The revived interest in the underestimated affective aspects of foreign language learning triggered by the principles of Positive Psychology in the last two decades (MacIntyre, Gregersen, & Mercer, 2019)have marked a shift away from the cognitive perspective that dominated applied linguistics research for many years (Sherwood, 2017). Derived from the humanistic trends prevalent in education and psychology in the 1970s, in which learners are treated as a whole person with both intellectual and emotional needs (Arnold, 2011), affect, defined as 'aspects of emotion, feeling, mood or attitude which condition behavior' has been acknowledged by educational linguists to be an 'indispensable element for the adequate development of an individual' (Kębłowska, 2012) that can 'contribute at least as much and often more to language learning than cognitive skills' (Stern, 1983). The role of affective factors such as self-efficacy and anxiety has also been addressed in the field of computer-assisted learning (CAL) with the primary aim of determining their effect on an array of computer-related behaviors, including performance during computer training (Gist, Schwoerer, & Rosen, 1998) resistance to the use of computers (Weil & Rosen, 1995) and task performance (Heinssen, Glass, & Knight, 1987). Recent research in the area seeks to decode the inherently intrinsic mechanisms of self-efficacy and anxiety and empirically substantiate their relationship to academic achievement and enhanced learning experience in computer-assisted learning contexts (Saadé, Kira, Mak, & Nebebe, 2017) in an effort to ensure effective online instructional design and implementation.

The pedagogical expediency of this line of research is fully justified given the widespread adoption of e-learning and other technology-enhanced innovative teaching methods along the lines of Massive Open Online Courses (MOOCs) and Blended Learning (BL), predominantly in higher education, as a concomitant development of rapid advancements in the field of information and communication technologies (ICT) (Wang, Wang, Wen, Wang, & Tao, 2016). This trend has become even more prominent within the context of the recent Covid-19 pandemic that has forced a temporary disruption of traditional education and, inadvertently, led to a distinctive rise ine-learning for more than 1.2 billion children and adolescents in 186 countries globally (Dhawan, 2020). As the number of hybrid BL courses is on the increase, to the point of becoming "an integral part of university teaching and learning across faculties and subjects" (Strambi, 2004), the aim of the present study is twofold as it attempts (i) to explore L2 language learners' self-perceived digital competence and level of satisfaction as predictors for their effective participation in the online component of a BL language course and (ii) determine the effect of Computer Self-Efficacy (CSE) and Computer Anxiety (CA) on L2 language learners' digital competence self-assessments and perceptions of learner satisfaction.

2. Literature Review

2.1. Digital Literacy and Satisfaction as Predictors of Successful Blended Learning

Blended learning (BL) is a relatively recent development in higher education, emerging in parallel with the development of the 21st century technology, and generally involves the combination of face-to-face (FTF) classes with technology-enhanced learning modules (Trinder, 2009) in the quest for the most effective and efficient combination for individual learning subjects, contexts and objectives (Neumeier, 2005). In an extension of this definition to the direct application within the context of computer-assisted language learning (CALL) where the present study takes place, Sharma and Barrett (2007) describe the adoption of the BL method in a language course as one that 'involves the combination of FTF classroom component with an appropriate use of technology including use of Internet, CD-ROMs and interactive whiteboards'. Interestingly, the exponential proliferation of BL modules for language learning purposes in higher education over the last decade has largely been perceived by English language teaching (ELT) practitioners in view of the advantages the BL method proffers in terms of pedagogical richness, access to knowledge, social interaction, personal agency, cost effectiveness and ease of revision (Osguthorpe & Graham, 2003) greater flexibility (Macedo-Rouet, Ney, Charles, & Lallich-Boidin, 2009) and opportunities for more individualized learning and engagement in real communicative tasks (Stepp-Greany, 2002). Understandably, effective implementation of BL methods has emerged as a key issue in subsequent information technology (IT) research (Kintu, Zhu, & Kagambe, 2017) that has aimed to describe successful blended learning environments mainly in terms of learner characteristics, design features and learning outcomes. Due to the limited research interest they have received within the CALL area (Wichadee, 2018),this study treats self-perceived digital literacy skills and satisfaction as key determinants for L2 learners' effective participation in the online module of the BL language course and investigates these in relation to the constructs of computer anxiety and self-efficacy.

The acquisition of adequate digital literacy skills has been linked to successful participation in and completion of online learning (Tang & Chaw, 2016) and they generally represent 'the capabilities required to thrive in and beyond education in a digital age' (Littlejohn, Beetham, & McGill, 2012). Participation in emerging online communities requires the development of new skills and particular conventions and behavior norms (Godwin-Jones, 2015), such as knowledge assembly, evaluating information content, searching the Internet, and navigating hypertext (Gilsters, 1997). Yet, the number of CALL studies on learners' digital literacy skills is strikingly scarce and limited to a few descriptive studies that focus on the assessment of digital literacy skills in a variety of foreign language (FL) contexts. Son, Park, and Park(2017) surveyed and compared the level of digital literacy skills of two L2 learner groups in two different learning contexts involving 100 L2 EAP learners at a university in Australia and 70 L2 EFL learners in Japan. Their results showed higher self-ratings of computing skills for EAP Australian learners but higher scores in actual knowledge of computer use as measured by a digital literacy test for Japanese EFL learners. Most participants in both groups reported using computers for learning purposes (97%) and social networking services (91%) successfully and frequently. In terms of IT application use, concordance applications were never used while only Japanese EFL learners reported relatively frequent use of language learning software

and video conferencing. Most participants in both groups rated their skills for using virtual worlds, podcasts and web design applications as poor. A lack of digital literacy knowledge was overwhelmingly reported as the most common factor to influence the proper use of digital technologies while, overall, all participants held positive attitudes toward the use of digital technologies. Using an adapted version of Son, Robb, and Charismiadji's(2011) computer literacy questionnaire with 103 Japanese university students, Murray and Blyth (2011) reported that students seemed to self-rate their competencies lower than their actual knowledge would suggest. In a similar study conducted by Hong and Saminy (2010) in an EFL Korean context, L2 learners' higher computer literacy level was found to be correlated with positive attitudes toward CALL in a BL context indicating the importance of L2 learners' confidence in using computer technology. Finally, Winke and Goertler (2008) investigated digital literacy skills among 911 EFL college students as a determinant of students' preparedness for hybrid blended language instruction. Their level of digital literacy skills was found to vary considerably based on the purpose of computer use, with most learners lacking adequate computer skills when using specialized CALL tools compared to general computer use and the use of Internet for personal communication.

The multi-faceted concept of learner satisfaction as yet another key factor that can predict success in online and blended learning environments has been extensively addressed in recent information technology (IT) studies (e.g. (Al-Fraihat, Joy, & Sinclair, 2020; Dziuban, Moskal, & Thompson, 2015)) in an attempt to properly assess and define it. In an exploratory study focusing on the investigation of the relationship between the constructs of web-based student-centered learning and learner satisfaction in a diverse online student sample, Ke and Kwak (2013) identified five elements of student satisfaction: learner relevance, active learning, authentic learning, learner autonomy, and technology competence. Using factor analytic methods in an effort to identify the dimensionality of e-learner satisfaction, Dziuban, Moskal, Brophy, and Shea (2007) defined the six elements of an enriched learning environment that contribute to e-learner satisfaction as: well-defined rules of engagement, instructor commitment, reduced ambiguity, an engaging environment and reduced ambivalence about the value of the course. In a similar survey conducted by Selim (2005) with 538 university students, instructor characteristics (attitude towards and control of the technology, teaching style), student characteristics (computer competency, interactive collaboration, and e-learning course content and design), technology (ease of access and infrastructure), and support were identified as the 8 critical e-learning success factors. Ozkan and Koseler (2009) employed explanatory factor analysis to construct a hexagonal e-learner satisfaction model including quality factors (system quality, information quality, and service quality) and social issues (supportive factors, learner perspective, and instructor attitudes) while Content Completeness, Content Currency, Easy to Navigate, Easy to Access and Course Staff Responsiveness emerged as critical online success factors in a mixed-method study conducted by Naveh, Tubin, and Pliskin (2012) among 8425 university students in Israel.

2.2. Computer Anxiety and Computer Self-Efficacy

Computer anxiety (CA) or 'technophobia', as it is most commonly known, is a term that bundles together the negative emotions and bodily sensations that arise when the affected person interacts with a computer (Dos Santos & Santana, 2018). Frustration, confusion, anger, anxiety and similar emotional states can affect not only the interaction itself, but also productivity, learning, social relationships, and overall well-being (Saadé et al., 2017). Relevant research in the IT area has shown that affected people often experience trouble adopting and actively using new technologies, instead preferring to use analogue or traditional solutions (Nycyk, 2020; Rivinen, 2020) while negative emotions surrounding computer use in education can affect the overall learning experience (Conrad & Munro, 2008). Beckers and Schmidt (2001) note that 'computer anxiety is a multidimensional construct' including positive and negative beliefs about computers, insecurity, nervousness, apprehension, fear, intimidation, and hesitation. Rosen and Weil (1995) reported three anxiety factors affecting undergraduate college students in the USA, i.e., interactive computer learning anxiety, consumer technology anxiety, and passive computer learning anxiety. They noted that almost 32% of students reported anxiety about a variety of computer applications, including taking online courses and computer-scored tests. Stone, Arunachalam, and Chandler (1996) conclude that CA is a complex, psychological construct that is related to, but distinct from, computer self-efficacy and can be changed and measured along multiple dimensions (Chua, Chen, & Wong, 1999).

Originally derived from Bandura's (1986)social cognitive theory, in which self-efficacy is defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997), computer self-efficacy (CSE) refers to a person's beliefs about their ability to accomplish a particular task using a computer (Shen & Eder, 2009) and, essentially acts as a measure of how confident computer users are in their ability to understand, use, and apply computer knowledge and skills (Delcourt & Kinzie, 1993). In fact, Hatlevik, Throndsen, Loi, and Gudmundsdottir (2018) argue for the existence of domain-specific self-efficacy beliefs, such as the one within the ICT domain, that determine academic achievement and enhance the learning process as they affect students' choices of activities, effort invested, persistence, interests, and achievements (Schunk & Pajares, 2009) as well as the use of self-regulatory processes (Zimmerman, 2000). Multiple studies in the domain of technology-enhanced education research have revealed a statistically significant relationship between the two constructs of CA and CSE, whereby an increase in anxiety levels inadvertently entails a decrease in CSE and vice versa (Cooper-Gaiter, 2015). Simsek (2011) reported that increased self-efficacy and moderate levels of anxiety induced positive attitudes toward e-learning, with males exhibiting higher levels of self-confidence as compared to females, whereas very high or very low levels of anxiety have been shown to be detrimental to performance in learning environments for elementary and secondary students in two private school systems in Turkey. Computer self-efficacy has also been found to be positively correlated with higher rates of internet use for educational purposes (Sam, Othman, & Nordin, 2005)and increased persistence in studying computing (Brosnan & Lee, 1998) and negatively correlated with students' willingness to learn about computer technology (Zhang & Espinoza, 1998). High levels of CA, on the other hand, have been found to negatively correlate with learning computer skills (Harrington, McElroy, & Morrow, 1990), and positively correlate with low academic performance, and avoidance of computer use for academic purposes (Mooney, 2007). Gender differences have also been reported, with males on average having both higher levels of computer self-efficacy and greater computer anxiety than females (McIlroy, Bunting, Tierney, & Gordon, 2001).

Mixed findings from a small subset of empirical studies also demonstrate the effects of computer anxiety and self-efficacy on digital literacy competence and e-learner satisfaction in diverse online learning contexts. In Mathiyalakan's (2012) study on the identification of factors that can be associated with university students' choices to enroll in a technology program in an American business school, CA was found to be negatively correlated with computer literacy. On the other hand, self-efficacy was found to positively correlate with self-perceived digital competence in Poelmans, Truyen, and Stockman's (2012) study conducted in a university setting and Hatlevik et al.'s (2018) survey study on the technological European learner profile across 15 countries, with girls reporting higher levels of computer self-efficacy in 10 countries of the study. Lee and Huang's (2014) research in Taiwan further revealed a three-way interaction among computer literacy, computer anxiety and gender, indicating that increased levels of computer literacy form positive computer self-efficacy more effectively for males than for females, while computer anxiety leads to more negative computer self-efficacy for females than males. With respect to learner satisfaction, Gunawardena, Linder-VanBerschot, LaPointe, and Rao's (2010) mixed methods study found computer self-confidence to be the strongest predictor of learner satisfaction and transfer of learning in an online educational program at a multinational corporation. Similarly, computer self-efficacy, followed by performance expectations, system functionality, content feature, interaction, and learning climate were found to be the primary determinants of student learning satisfaction in a blended e-learning system (BELS) context for 212 Taiwanese university students in Wu, Tennyson, and Hsia's (2010) survey study. By contrast, the results from a series of related studies foreground the detrimental effect of heightened levels of learners' CA on their satisfaction when participating in an online learning environment, yielding strong negative correlations between the two constructs. Learners' anxiety was found to significantly hamper the e-learner satisfaction of 645 university students enrolled in 16 different e-learning courses at two public universities in Taiwan in Sun, Tsai, Finger, Chen, and Yeh's (2008) study, suggesting the advisability of introducing fundamental computer courses as a prerequisite to better prepare students. Similar studies conducted by Bolliger and Halupa (2012) with 84 students in an online health education program and by Piccoli and Ives (2001) with 146 undergraduate business students undergoing basic IT skills training also yielded negative correlations between anxiety and student satisfaction. According to the researchers, frustration with technical issues, coupled with a lack of familiarity and developed learning strategies for the new online environment, inadvertently generated feelings of disappointment and inability to effectively use virtual learning environments.

3. Method

3.1. The Study

The present study is a non-comparison, cross-sectional survey that investigates the self-reported digital literacy level and learner satisfaction with the online component of a BL language course among university L2 language learners in Greece. Correlational measures are also used to explore the effects of computer anxiety, self-efficacy and gender on L2 language learners' self-perceived digital skill levels and e-learner satisfaction and explore which of these factors is the dominant predictor variable over L2 learners' digital competence self-assessments and satisfaction perceptions when learning in an online environment. The study focused on the following three research questions:

1. What is the level of university L2 learners' self-perceived digital competence and satisfaction with the online module of their blended language learning course?
2. Are there any gender differences in relation to university L2 learners' reported computer anxiety, self-efficacy, digital literacy competence and satisfaction with the online module of their blended language learning course?
3. Which of the three factors, gender, computer anxiety, and self-efficacy, most strongly predicts university L2 learners' self-perceived digital competence skills and self-perceived satisfaction with the online module of their blended language learning course?

3.2. The English Course

The course was a compulsory EFL for Specific Purposes (ESP) syllabus, called 'English for Agriculture and Forestry', in the Faculty of Agricultural and Forestry Sciences at Democritus University of Thrace in Northern Greece. The course is taught in both Departments of the Faculty, as a module of general interest, which is divided into four modules and delivered for 2 contact hours every week for 13 weeks each semester during undergraduate years 1 and 2. The general objective of the course is to familiarize students with the English technical terminology of their academic studies, enhance their reading, writing, speaking and listening skills to enable them to better structure and organize the language they produce in English and use it effectively and successfully to meet their educational and academic needs. The course has an eight European Credit Transfer System (ECTS) workload, corresponding to 200 hours: 110 face-to-face (FTF) and 90 independent work. All FTF sessions took place in an auditorium equipped with a blackboard and an overhead projector used for PowerPoint presentations for lecture purposes. In the hours devoted to independent work, the students are expected to use the virtual platform for homework tasks.

The course is based on an Open eClass learning management platform, which is the most common computing technology utilized for the electronic support of all tertiary education courses in Greece (Kabassi et al., 2016). Upon registration to the platform, students are provided with detailed explanations of the usage and organization of the virtual platform via an uploaded guide. When accessing the course, students are also provided with a subject syllabus, a detailed description of the weekly lesson plans with daily tasks and homework, and all the units and written materials for the course. All slide presentations, exercises for extra practice, self-tests and the electronic glossary created for the course are available on the platform throughout the semester.

3.3. Participants

A total of 331 ESP Greek students consisting of 117 (35.3%) first and 214 (64.7%) second year undergraduate students in the Faculty of Agricultural and Forestry Sciences at Democritus University of Thrace participated in the study. All were attending English for Specific Purposes as a compulsory module in the first four semesters of

their academic studies. Of the participants, 130 (39.3%) were male and 201 (60.7%) were female, with a mean average age of 18-25 years old (96.4%), while 193 (58.3%) of the participants were Agriculture students and 138 (41.7%) were Forestry students. The majority of the participants (78.9%) reported English as the target language they wished to effectively learn and further improve.

Convenience sampling was used to invite ESP students to take part in the study, and participation in the survey was rewarded with a bonus mark added to the final grade of the course for the current semester. The target population for this study is considered to be representative of the average student attending state university in Greece, as almost all students are L1 Greek speakers (98.2%) and belong to the same social mix, i.e., middle- and working-class students, mostly from provincial areas of the country.

3.4. Instruments

Son et al.'s (2017) Digital Literacy Questionnaire – Language Learners (DLQ-LL) was used to measure participants' level of digital competence. It is a complex survey questionnaire that consists of five sections. Section 1 contains 10 background open-ended questions that focus on the demographic characteristics of the sample used in the study and questions relating to computer use, ownership, training and information on IT issues and trends. Section 2 contains 5 questions (items 11-15) eliciting participants' self-ratings of their computing and digital skills along a 5-point Likert type scale ranging from 'Very poor' to 'Very good'. Section 3 contains 4 questions (items 16-19) related to the use of digital technologies. Items 16 and 17 include 10 statements each asking participants what they usually do or can do when using a computer respectively and call for a Yes/No answer. Items 18 and 19 include 17 statements that focus on the frequency of use of various IT applications (item 18), and on participants' ability to use IT applications (item 19), respectively. Respondents use two 6-point Likert-type scales ranging from 'Very frequently' to 'Never' and from 'Very Good' to 'Do not know' for each of these items. Section 4 contains 1 item (item 20) that includes a 10-item multiple-choice digital literacy test. And, finally, section 5 contains 3 questions (items 21-23) addressing factors affecting the use of digital technologies for language learning as well as personal views on the use of digital devices in general. Items 21 and 23 were open-ended questions while participants used a 5-point Likert type scale ranging from 'Strongly Agree' to Strongly Disagree' when answering item 22. The Greek version of the questionnaire has shown internal variability achieving a high alpha coefficient of .89. The questionnaire is one of the few, if not the only one, that aims to measure L2 students' digital literacy skills and views on the use of digital technology in language learning in EAP and EFL settings.

A Greek version of Heinssen et al.'s (1987) Computer Anxiety Rating Scale (CARS) was used to assess the participants' level of computer anxiety. The CARS is a 19-item self-report inventory, approximately equally divided between anxiety-laden statements (e.g., "I feel apprehensive about using computers") and non-anxiety statements (e.g., "I am confident that I can learn computer skills"). Participants responded on a five-point Likert type scale (1-strongly disagree; 3-undecided; 5-strongly agree). The total score could range from 19, indicating a low level of computer anxiety, to 95, which would indicate a high degree of computer anxiety. The fact that the scale has been widely used for research purposes in many studies in the field of IT education, due to its high internal reliability (Cronbach alpha =.87), led us to adopt it in this study. The Greek version of the questionnaire was found to have a good internal reliability, achieving an alpha coefficient of .72.

A Greek version of Durndell and Haag's (2002) Computer Self-efficacy (CSE) scale, originally based on Torkzadeh and Koufteros's (1994) CSE Scale, was used to measure participants' level of computer self-efficacy. The questionnaire consisted of a total of 29 statements, each one preceded by the phrase "I feel confident" and participants were asked to provide their answers along a 5-point Likert scale (1-strongly disagree to 5-strongly agree). All items were positively worded statements reflecting a variety of computer related skills. Scores could range between 29 and 145. Internal reliability for the Greek version of the questionnaire reached an alpha coefficient of .94.

Finally, a 44-item Learner Satisfaction questionnaire based on Ozkan and Koseler's (2009) study was adapted to fit the context of our study by retaining and modifying items that were suitable for the assessment of our L2 learners' satisfaction with certain aspects of the online component of the BL language course they were currently attending. The final version of our questionnaire was translated into Greek and consisted of statements aimed to assess learner satisfaction in the following areas: (i) perceived learners' satisfaction with e-learning via the use of the Open eClass LMS platform (items 1-11), (ii) instructor's supportive role in the e-learning module of the BL course (12-24), (iii) system quality (items 25-38) and (iv) content quality (items 39-44). Participants were asked to provide their answers via a 5-point Likert scale (1-strongly disagree to 5-strongly agree). Cronbach's alpha coefficients for the Greek version of the questionnaire were found to be .83 for perceived learners' satisfaction, .91 for instructor quality, .87 for system quality and .88 for system quality, and .95 for overall scale.

3.5. Procedures and Data Analysis

Data were gathered in the spring semester 2019-2020 with the online administration of the four survey questionnaires via the web survey application Smart Survey. The survey ensured students' anonymity (Dornyei, 2007) thus counteracting possible distortions due to, for instance, students' biased responses to please their teacher. To avoid confusion and misunderstandings, detailed instructions were provided at the beginning of the questionnaires.

Data analysis was performed via SPSS software (version 21) using descriptive statistics, Pearson correlations, independent t-tests for gender differences, and stepwise linear regression analysis for the exploration of the effects of computer anxiety, self-efficacy and gender as independent variables on the dependent variables of self-perceived digital competence and satisfaction with the online module of their L2 BL program, thus providing estimates of both the magnitude and statistical significance of the relationships between the variables (Gall, Borg, & Gall, 2003).

4. Results

1. What is the level of university L2 learners' self-perceived digital competence and satisfaction with the online module of their blended language learning course?

A. Findings for DLQ-LL

Looking at the background information provided in the first section of the DLQ-LL questionnaire in relation to computer use, ownership, training and information on IT advances, 234 of the participants (70.7%) reported that they had generally used computers for between 5 and 10 years, in contrast to 33 participants (10%) who claimed less than 5 years' computer use, and 64 students (19.3%) whose computer experience was reported to exceed 10 years overall. Desktop computers were the most common type of computer used by 173 (52.3%) students, while 274 (82.8%) participants reported that they were owners and frequent users of smartphones. In terms of computer training, participants' responses indicated that they had learnt mainly on their own (59.8%), from their family (45%) and from an IT teacher (43.8%) and considerably less so from friends (13.9%), videos (10.6%), magazines (1.8%) and books (1.5%). Finally, participants noted social networks (51.1%), webpages (28.1%) and friends (12.4%) as the three main sources from which they obtain information related to recent developments in the area of digital technologies.

The mean average of L2 learners' responses (mean = 3.85) reveals that they tended to assess their computer skills moderately high, or else as 'Acceptable', along the 5-point Likert scale they used to provide their self-assessments. As shown in Figure 1, most participants rated their typing, computer literacy and digital literacy skills as 'Acceptable', i.e. 32.2%, 34.4% and 30.5% or 'Good' 39.6%, 41.1.% and 41.4% respectively. Web search and internet literacy skills were rated as either 'Good', i.e. 44.1% and 43.5% or 'Very good' 32.2% and 35.3% respectively.
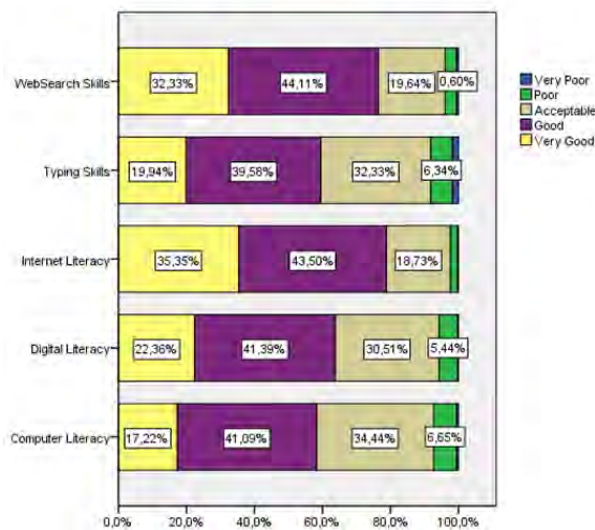
Figure-1. Self-assessment of Computer Skills (N=331).

When asked whether they used computers, the Internet and mobile technologies for specific purposes in their everyday life as well as a means to facilitate the language learning process on a regular basis, the participants in our study answered affirmatively in 74,78% of cases, with the exception of statement #2 that related to the ownership of personal homepages (Figure 2). Notably, their responses seem to be equally divided in statements #8 and #10 with 51.7% (171) of our learners reporting having online friends they have never met as opposed to 48.3% who do not, and 45.6% (151) of them attesting to using mobile applications for language learning purposes compared to 54.4% (180) who do not.

Figure-2. Self-reported IT Use (N=331).

Figure-3. Self-reported Ability of IT Use (N=331).

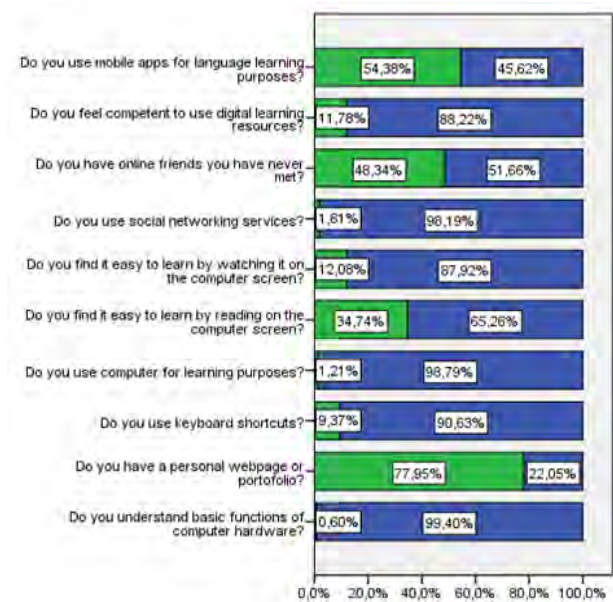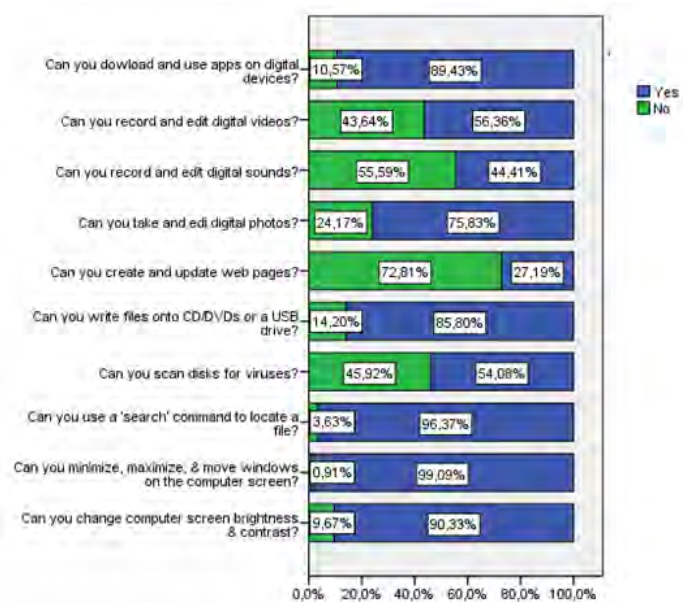Figure 3 displays participants' responses concerning the extent to which they considered themselves able to perform a variety of tasks using diverse digital devices and tools. Again, learners tended to answer positively (72.08% of cases, in contrast to 27.92% negative responses) exhibiting a high level of competence to use technology for general purposes, with the exception of statement #6 that is related to the creation and management of a personal webpage. Logically that follows from the fact that most of our participants do not own a personal webpage, let alone obtain the relevant skills to create and maintain one. Finally, in statement #8, more than half of the participants(55.6%) state that their abilities in digital sound recording and editing are limited.

With respect to the frequency of use of IT applications (Figure 4), the world wide web (96.7%), email (72.5%) and text chatting (89.1%) were among the most frequently used digital applications, as reported by our L2 learners, followed by voice chatting (62.5%), voice conferencing (49.8%), word processing programs (43.8%) and, finally by the use of computer games (41.1%). Interestingly, participants report never using digital and online language learning sources such as CALL software (72.5%), available websites (63.1%) or graphics software (66.5%).
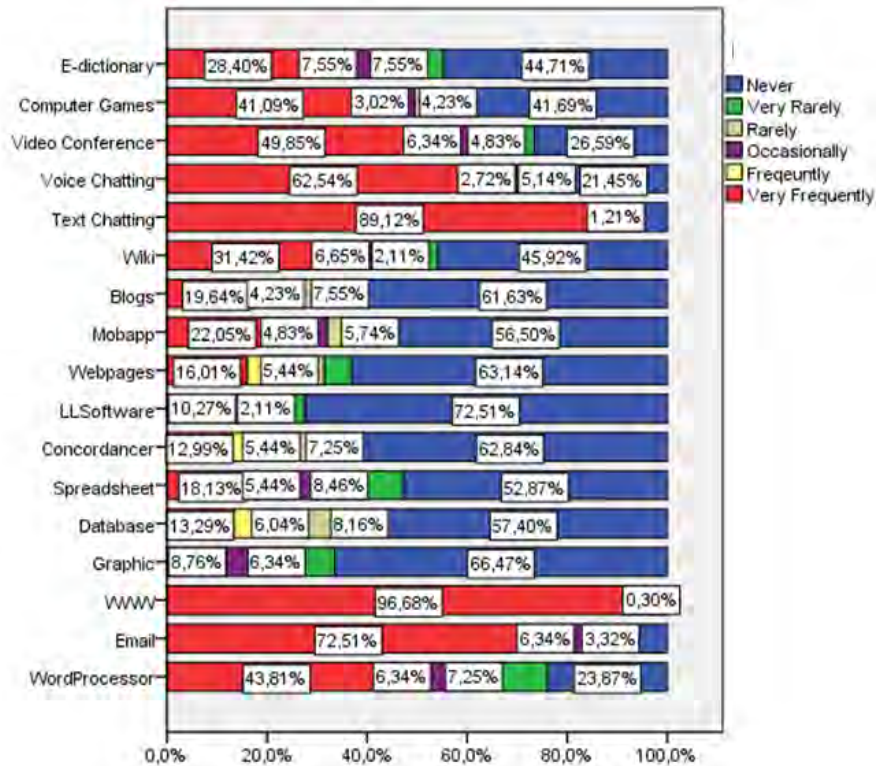
Figure-4. Frequency of Use of IT Applications (N=331).
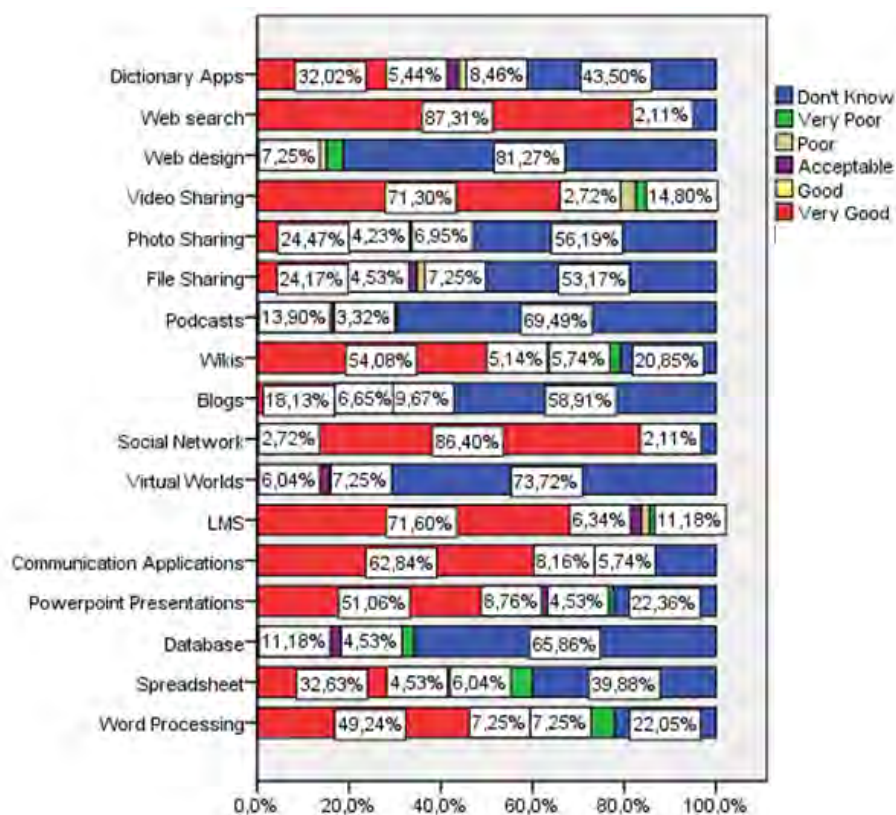
Figure-5. Self-ratings of Skills for Using Computer and IT Applications (N = 331).

As shown in Figure 5, when asked to indicate how skillful they thought they were when using digital software, services and applications, our participants tended to rate as 'Very Good' their skills in using web search engines (87.3%), social networking services (86.4%) and communication applications (62.8%), followed by use of wikis (54.1%), presentation applications (51.1%) and word processing applications (49.2%). In contrast, participants openly express their overt uncertainty when assessing their skills in the use of web design applications (81.3%),

virtual world applications (73.7%), podcasts (69.5%), database applications (65.9%), blogs (58.9%), photo sharing sites (56.2%), file sharing sites (53.2%) and dictionary applications (43.5%)

Despite their reluctance to assess their skills when using specific instances of technology applications, the participants' mean score on the general digital literacy test included in the questionnaire (Section 4 of the DLQ-LL) was 7.4 out of 10, with question #1 asking about the device that is necessary for a video conference being the easiest one (97.9% correct), and question #10 asking about the safest password practice being the most difficult to answer (58,6% incorrect) Table 1.

Table-1. Results of the Digital Literacy Test

Mean Score	7.4 (out of 10)
The easiest question	Q1. Which device do you need to install on your computer in order to have a video conference with your friend?
The most difficult questions	Q10. Which of the following is not considered to be safe password practice?

Moving on to the final section of the questionnaire, Figure 6 presents participants' views on what factors they believed affected the successful use of digital technologies in the area of language learning. In this respect, lack of facilities (70,3%), lack of supporting resources (63,7%), lack of budget (62.8%), lack of interest by students (55.2%) and lack of skills and training on the teachers' part are the factors most commonly cited by our participants to potentially influence the use of technology for language learning purposes. Interestingly, lack of computing skills on the part of students is not reported to affect successful use of technology in L2 classrooms (38.9%) in a meaningful way.
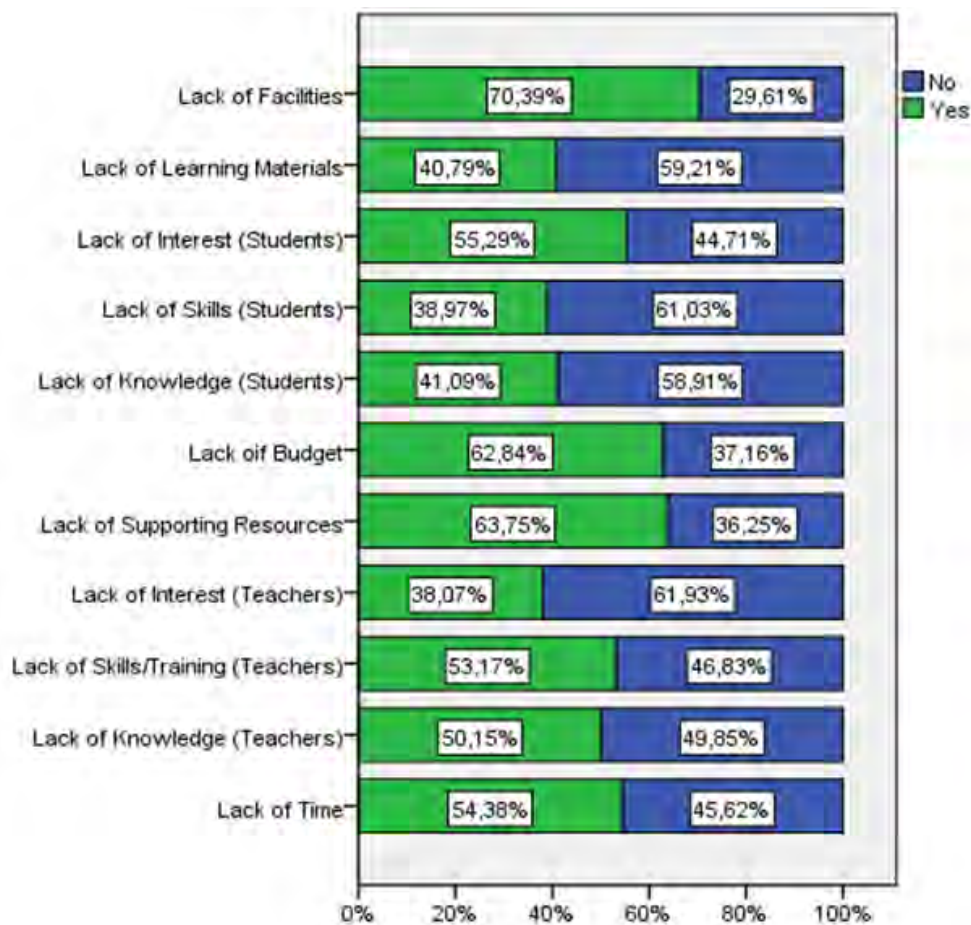
Figure-6. Factors Affecting the Use of Digital Technologies for Language Learning.

Finally, participants were also asked to provide their views and attitudes toward the contribution of digital technologies in a language learning context, as can be seen in Table 2. The mean ratings of 4.5.and 4.4. (out of 5) in the first, third and fifth statements indicate that most participants enjoy using digital devices in general, that they are aware of the variety of the digital devices available on the market, and that they are willing to learn more about digital technologies. These are followed by statement #2, a sense of comfort using digital devices (mean: 4.2).

Table-2. Views and Attitudes Toward the Use of Digital Technologies (N = 331).

1. I enjoy using digital devices.	4.5
2. I feel comfortable using digital devices.	4.2
3. I am aware of various types of digital devices.	4.4
4. I understand what digital literacy is.	2.9
5. I am willing to learn more about digital technologies.	4.4
6. I feel threatened when others talk about digital technologies.	1.5
7. I feel than I am behind my fellow students in using digital technologies.	1.8
8. I think that it is important for me to improve my digital fluency.	4.1
9. I think that my learning can be enhanced by using digital tools and resources.	4.1
10. I think that training in technology-enhanced language learning should be included in language education programs.	3.4

B. Findings of Learners' Satisfaction Questionnaire

Concerning learners' satisfaction with the online component of the blended language learning course they were attending at the university (Table 3), our participants expressed overall positive attitudes towards the implementation of e-learning in the language class and the suitability of Open eClass as the most effective learning management system to support the online part of their BL course (mean = 4.28).

Table-3. Descriptive Statistics for E-learner Satisfaction (N=331).

Variable	Mean	SD	Mdn	Mode	Min	Max	Skewness	SE1	Kurtosis	SE2
E-learner Satisfaction	4.28	1.15	4.90	4.90	1.00	5.00	−1.78	0.134	1.905	0.267

As shown in Figure 7, L2 learners approve of the selection of Open eClass forthe e-learning part of the course (51.17%). They also feel that they can successfully complete their English course using eClass (45.5%) as the supporting platform for the online module of their course, while they also indicate that the online component can meet most of their L2 language learning needs without the need to attend the weekly FTF course sessions. At the same time, they admit their limited experience with the use of other similar learning platforms in the field of education overall (17.1%).
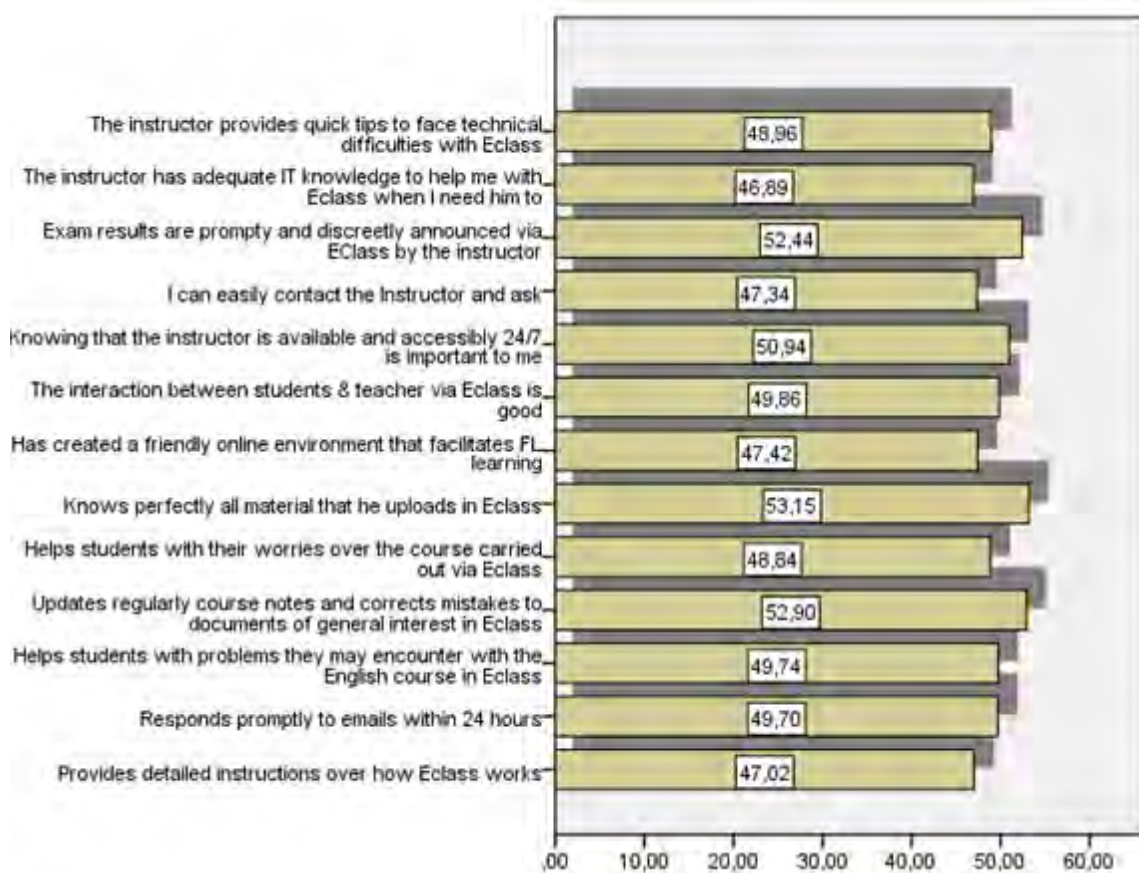
Figure-7. L2 Learners' Attitudes on their Perceived Satisfaction with eClass (N = 331).

Figure-8. L2 Learners' Perceived Satisfaction with their Instructor (N = 331).

Perceived satisfaction with their instructor in the online part of their course was high overall, as indicated by the mean of participants' responses (mean = 4.45). In particular (see Table 8), our participants stated that they were satisfied with the fact that their teacher knew the subject of his course perfectly and selected interesting materials

to upload to the platform for revision or supplementary study (53.1%), constantly updated the course material on the platform and corrected mistakes in them (52.9%), announced exam results promptly and discreetly (52,4%) and responded back to students' emails quickly and with an adequate response to their requests (50.9%).

With respect to system quality, L2 learners also exhibit a high level of satisfaction (mean=4.40). As shown in Figure 9 below, they regard eClass as an effective learning management system that facilitates the online module of their English course (55.4%).They also find it easy to use, as they report no difficulties in finding whatever they need in the eClass system with respect to the material covered in the current semester of their studies (53.9%). They also report moderate satisfaction with the fact that navigation of the eClass platform is easy (51.7%), the occurrence of minimal system errors (51.5%), easy notification of current activities in the course via the 'Announcements' menu (51.4%) and the user-friendly interface available in eClass (51.2%).

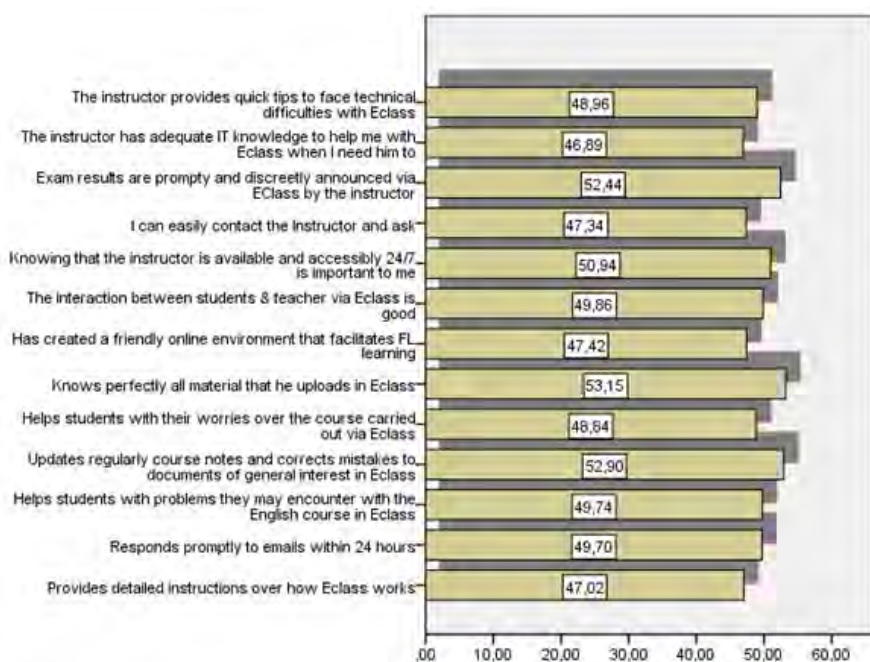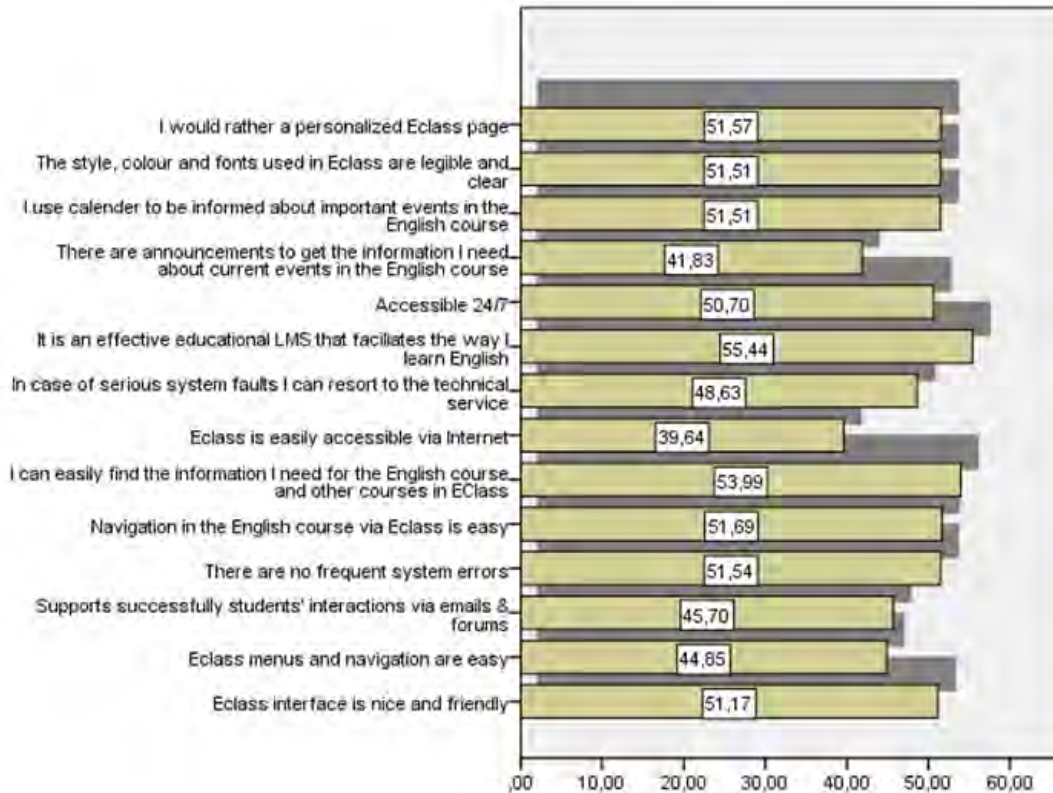**Figure-9.** L2 Learners' Perceived Satisfaction with System Quality (N = 331).
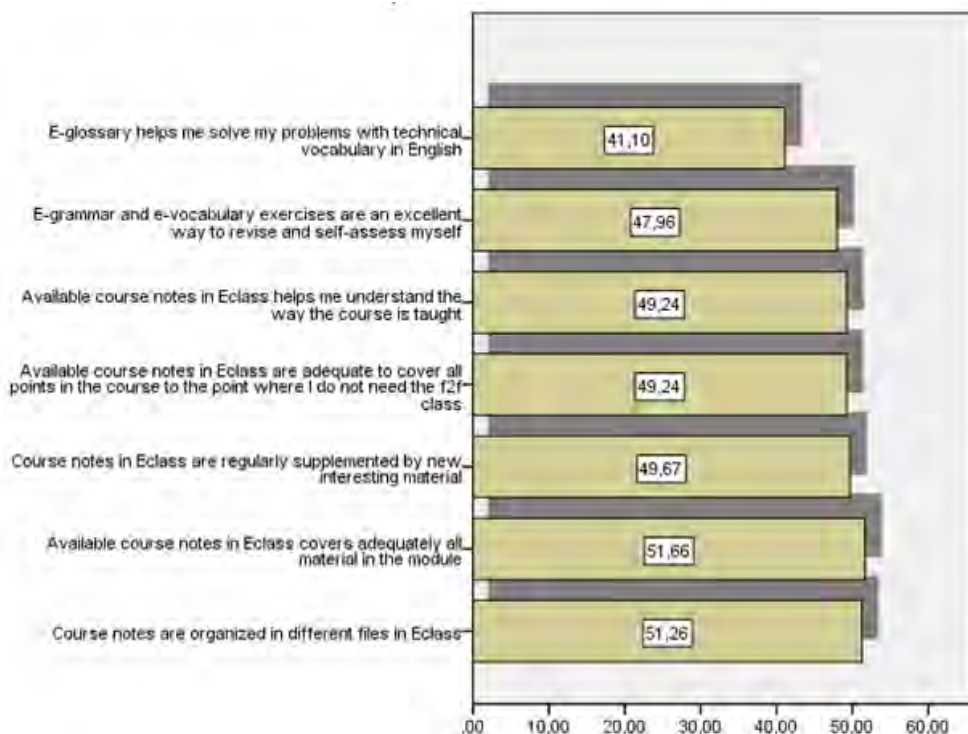
Figure-10. L2 Learners' Perceived Satisfaction with Content Quality (N = 331).

Finally, self-reported L2 learners' satisfaction with the course content uploaded to eClass is also high (mean = 4.44.) (Figure 10) indicating their satisfaction with the fact they can easily access tasks, activities and notes uploaded to the eClass platform that correspond to the syllabus covered in the language learning course each semester (51.6%), the fact that all material is neatly organized in files for easy access (51.2%) as well as with the fact that new and varied activities and tasks are regularly uploaded to the platform for their use (49.6%).

2. Are there any gender differences in relation to university L2 learners' reported computer anxiety, self-efficacy, digital literacy competence and satisfaction with the online module of their blended language learning course?

Descriptive statistics were initially conducted to provide a general profile of students' CA and CSE. Table 4 displays normality of both variables, as well as the results for the parameters of mean score, standard deviation, median, mode, minimum and maximum obtained from the questionnaires. Overall, the mean scores for the two variables indicate that our participants exhibit a moderate level of computer anxiety (mean = 56.69) and a high level of computer self-confidence (mean = 113.3), with low variation among students' scores on their CA (SD = 0.62) and CSE (SD = 1.47) respectively.

Table-4. Descriptive Statistics for CA and CSE (N=331)

Variable	Mean	SD	Mdn	Mode	Min	Max	Skewness	SE1	Kurtosis	SE2
CA	57.5	22.31	59.00	19.00	19.00	95.00	-0.059	0.134	-0.840	0.267
CSE	111.8	38.63	131.00	145.00	29.00	145.00	-0.951	0.134	-0.462	0.267

Pearson's product-moment correlation coefficient was used to investigate the effect of gender on university learners' Computer Anxiety and Self-efficacy (Table 5). The results revealed strong correlations between gender and Computer Anxiety (r=0.808, p<0.01) as well as between gender and Computer Self-efficacy (r=0.870, p<0.01). Further independent t-tests revealed significant differences between males (mean = 35.2) and females (mean = 72.0) in the level of computer anxiety they reported (t = -24.863, df = 329, p = 0.02), indicating higher levels of computer anxiety for females in contrast to males. A significant gender difference was also found between males (mean = 70.1) and females (mean = 138.8) in the level of computer self-efficacy they reported (t = -31.988, df = 329, p = 0.001) again indicating higher levels of computer self-efficacy for females as compared to males.

Table-5. Pearson Correlation Results for Gender, Computer Anxiety and Computer Self-efficacy.

	Computer Anxiety	Computer Self-efficacy
Gender	0.808**	0.870**

Note: ** Correlation is significant at the 0.01 level (2-tailed)

Pearson's product-moment correlation coefficients were also used to investigate the effect of gender on university learners' self-reported digital competence skills in each of the separate sections of the questionnaire, measured along different scales (Table 6). Results revealed strong correlations between gender and their self-assessment computing skill (r= 0.824, p<0.01), their self-reported use of IT (r=-0.743, p<0.01), their self-reported ability to use IT (r=-0.751, p<0.01), the frequency with which they used various IT applications (r=0.786, p<0.01) and their ability to use various IT applications (r=0.820, p<0.01), their digital test score (r=-0.715, p<0.01), their views with respect to what factors affect IT use (r=-0.886, p<0.01) and their general attitudes to IT use (r=0.813, p<0.01). Gender was also found to significantly correlate with overall learner satisfaction (r=0.995, p<0.01).

Table-6. Pearson Correlation Results for Gender, Self-reported Digital Competence and Overall Satisfaction.

	Computer Skills	Use of IT	Ability of IT	Frequency of Use of IT Apps	Ability to use IT Apps	Digital Test Score	Factors affecting IT use	Attitudes to IT use	Overall Satisfaction
Gender	0.824**	-0.743**	-0.751**	0.786**	0.820**	-0.715**	-0.886**	0.813**	0.995**

Note: ** Correlation is significant at the 0.01 level (2-tailed).

Independent t-tests revealed significant differences between males and females in all sections of the digital competence skills and overall learner satisfaction questionnaire, as shown in Table 7.

Table-7.T-test for gender differences in ratings of digital literacy skills and satisfaction.

	Gender	N	Mean Value	SD	t	df	p
Computer Skills	Male	130	3.01	0.499	-26.345	329	0.001
	Female	201	4.39	0.439			
Use of IT	Male	130	4.82	0.199	20.153	329	0.001
	Female	201	3.44	0.761			
Ability of IT	Male	130	4.87	0.185	20.624	329	0.001
	Female	201	3.21	0.905			
Frequency of Use of IT Apps	Male	130	1.80	0.397	-23.043	329	0.001
	Female	201	4.37	1.233			
Ability to Use IT Apps	Male	130	2.01	0.671	-26.018	329	0.001
	Female	201	4.55	0.974			
Digital Test Score	Male	130	10.00	0.001	18.552	329	0.001
	Female	201	5.75	2.606			
Factors affecting IT use	Male	130	4.98	0.835	34.636	329	0.001
	Female	201	1.82	1.038			
Attitudes to IT use	Male	130	2.32	0.968	-25.356	329	0.001
	Female	201	4.30	0.426			
Overall Satisfaction	Male	130	3.27	1.306	-18.035	329	0.001
	Female	201	4.93	0.052			

3. Which of the three factors, gender, computer anxiety and self-efficacy, most strongly predicts university L2 learners' self-perceived digital competence skills and satisfaction with the online module of their blended language learning course?

To answer this question, a stepwise linear regression analysis was used to identify the strongest predictors of perceived digital competence skills as reported by our university L2 learners. The regression analysis can remove redundancy from predictor variables to see which are retained compared to the zero-order correlation. The values for the variance inflation factor (VIF) were well within the acceptable range (<10), suggesting that the possibility

of collinearity problems for this study is low (Hocking, 2003). As shown in Table 8, significant regression equation models were found for all sections of the digital competence questionnaire, indicating that all three variables combined predicted a significant amount of the variance in each one, while Computer Anxiety alone was found to be the strongest predictor of L2 learners' self-reported digital literacy competence. The values of Beta for Computer anxiety were significant and negative in the sections of self-reported IT use (-.1331), accounting for 86.5% of the variance, self-reported ability of IT Use (-1.395), accounting for 86.8% of the variance, digital test score (-.1507), accounting for 80.4% of the variance, as well as on the selection of factors influencing IT use (-0.714), accounting for 89.7% of the variance. Computer anxiety was also a significant predictor for self-assessment of computer skills, accounting for 96.9% of the variance, and in the sections of frequency of use and self-reported ability with IT applications, accounting for 96.7% and 99.4% of the variance respectively. But these sections were influenced in a positive way, suggesting that L2 learners with higher levels of CA tended to assess their computing skills more unfavorably, reported using IT applications infrequently and considered themselves incompetent to use them successfully most of the time. CSE was found to be the strongest predictor of L2 learners' attitudes (beta = 0.775) suggesting that higher levels of CSE led to more favorable attitudes towards IT use.

Table-8. Stepwise Linear Regression Results for Self-reported Digital Competence Skills.

Regression Equations		Fit Index			Coefficient		
Predictors	**Computer & IT Skills**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CA		0.969	0.938	1857.812	0.029	0.804	24.128**
Gender		0.971	0.943		0.065	0.078	2.950*
CSE		0.972	0.945		-0.002	-0.111	-2.784**
Predictors	**Self-reported Use of IT Technology**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CA		0.930	0.865	1038.232	-0.054	-1.331	-30.517**
CSE		0.946	0.895		0.014	0.610	11.710**
Gender		0.951	0.905		0.368	0.199	5.748**
Predictors	**Self-reported Ability to Use IT Technology**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CA		0.931	0.868	1350.908	-0.068	-1.395	-36.082**
CSE		0.953	0.909		0.021	0.734	15.890**
Gender		0.962	0.925		0.580	0.262	8.560**
Predictors	**Frequency of Use of IT Applications**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CA		0.967	0.936	2573.236	0.090	1.250	43.832*
CSE		0.975	0.951		-0.019	-0.467	-13.707**
Gender		0.979	0.959		-0.596	-0.182	-8.048**
Predictors	**Ability to Use IT Applications**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CA		0.994	0.989	10999.641	0.068	1.005	71.675**
Gender		0.995	0.990		0.121	0.078	7.031**
CSE		0.995	0.990		-0.003	-0.80	-4.768**
Predictors	**Digital Test Score**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CA		0.897	0.804	965.839	-0.196	-1.507	-33.437**
CSE		0.935	0.875		0.071	0.939	17.445**
Gender		0.948	0.899		1.868	0.315	8.811**
Predictors	**Views on Factors affecting the use of IT**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CA		0.897	0.805	879.705	-0.056	-0.714	-15.188**
Gender		0.938	0.880		2.048	0.574	15.402**
CSE		0.943	0.890		0.014	0.304	5.414**
Predictors	**Views & Attitudes on IT use**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CSE		0.980	0.961	11412.892	0.024	0.775	47.148**
CA		0.992	0.983		0.021	0.387	28.136**
Gender		0.995	0.991		0.422	0.174	15.947**

Note: Significant at p<0.001**, Significant at p<0.05*

With respect to overall L2 learner's e-satisfaction (Table 9), the results indicated that all three variables combined predicted 94.7% of the total variance in overall e-learner satisfaction. Computer Self-Efficacy (CSE) was found to be the strongest predictor in this model, accounting for 88.2% of the variance between subjects in self-reported L2 e-learner satisfaction, with a positive Beta value (1.598), followed by Gender and then by Computer Anxiety (CA) that is negatively correlated with self-reported L2 e-learner satisfaction (beta = -0.015) and accounts only for 0.7% of the variance.

Table-9. Stepwise Multiple Regression Results for Overall Self-reported Satisfaction.

Regression Equations		Fit Index			Coefficient		
Predictors	**Overall Satisfaction**	**R**	**R²**	**F**	**B**	**Beta**	**t**
CSE		0.939	0.882	1938.022	0.048	1.598	40.965**
Gender		0.966	0.934		-0.533	-0.452	-17.458**
CA		0.973	0.947		-0.015	-0.289	-8.844**

Note: Significant at p<0.001**, Significant at p<0.05*

5. Discussion and Pedagogical Implications

Descriptive results were mainly used to answer the first research question of our study, with respect to our L2 language learners' profile in terms of digital literacy competence and level of learner satisfaction within an online

learning context. Participants tended to rate their Web search and internet literacy skills as either good or very good and their computer, typing and digital literacy levels as either acceptable or good, indicating an adequate level of digital literacy skills to participate in an online learning environment. However, their actual computer knowledge, as assessed via the digital literacy test, was high, scoring on average 7.4 out of a total 10. The result is consistent with Murray and Blyth's (2011) and Son et al.'s (2017) studies and is attributed to a lack of metalanguage on the part of L2 learners to express in words the tasks they are able to perform when using a computer. Most L2 learners stated they could understand and use basic functions of the computer system on a regular basis, along with computer use for learning purposes, use of social networking services, use of keyboard shortcuts and use of online learning resources. They also stated that they were competent enough to perform various computer tasks but lacked skills related to the creation or update of a personal webpage. These findings are also consistent withSon et al.'s (2017) study. Language learning software, graphics software, language learning websites, concordancers and blogs are never used by theL2 learners in this sample. The factors most commonly cited by our participants that could possibly affect the effective use of technology for language learning purposes were a lack of facilities, followed by a lack of supporting resources and a lack of budget. Overall, our participants showed positive attitudes towards IT use, expressing their enjoyment for the use of digital devices, being aware of the variety of digital devices available and indicating their willingness to learn about new technologies.

With respect to L2 learners' level of satisfaction with the online component of their BL course, their responses reveal a highly positive attitude toward the use of e-learning in their English course and an equally high level of satisfaction with all three aspects of the online module included in our questionnaire, i.e., instructor, system and content quality. These findings echo similar results found in Kobayashi and Little's (2011) study where L2 learners' positive perceptions of the usefulness of the online component of their BL language course reflect their high level of satisfaction with the e-learning module of the course, considering it to be a useful tool to acquire English language skills. Similarly,Hirata and Hirata (2008)also found that traditional EFL learners tended to highly evaluate the independent, self-paced learning afforded by the online component of their BL language course. In our study,L2 learners' satisfaction was associated with (i) the support and guidance provided by their instructor in the online module of their BL language course, in terms of interesting and updated supplementary materials uploaded to the platform for revision and easy communication, (ii) the effectiveness of the Open eClass learning management system in terms of ease of use, occurrence of minimal system errors, and user-friendly interface, and (iii) the quality of course content uploaded to eClass, in terms of easy and flexible access to new, varied and organized language learning content via the Internet. According to Sahin-Kizil (2014) and Martín-Blas and Serrano-Fernández (2009) course materials delivered in a format which is easy to access and conducive to learning can enhance student satisfaction and learning effectiveness.

With respect to our second research question, the mean scores for the two variables of computer anxiety (CA) and Computer Self-efficacy (CSE) indicate that L2 learners in our study suffer from moderate computer anxiety and a high level of self-efficacy in computer use. Gender was found to strongly correlate with both computer anxiety and self-efficacy, with females exhibiting higher levels of both computer anxiety and self-efficacy as compared to male students. These results contradict previous studies conducted by Schlebusch (2018),Ong and Lai (2006) and Huffman, Whetten, and Huffman (2013). Significant gender differences were also found in the way L2 learners assess their digital competence skills and their level of satisfaction with the online component of their BL language course. In this sense, female learners tend to assess their computing skills more favorably, report frequent and more competent use of a variety of IT applications and express more positive attitudes toward IT use as compared to males. Males, on the other hand, state they use IT much more frequently and competently, they score significantly higher than females in the digital competency test and they tend to more firmly believe that proper IT use in language learning is mainly inhibited by lack of infrastructure and budget as contrasted to females. With respect to learner satisfaction, females appear overall to be more satisfied with all aspects of the online component of their course than males.

With respect to our third research question, our findings indicated that CA was the strongest predictor of L2 learners' self-reported digital literacy competence in all sections of the questionnaire. In this respect, lower levels of CA were associated with higher IT use, higher ability of IT use, higher scores in the digital competence test and selection of more factors by the participants when asked about the reasons that prevent IT use. Higher levels of CA were associated with more unfavorable self-assessments of their computing skills, avoidance of using IT applications on a frequent basis and an inability to use them effectively. L2 learners' positive attitudes towards IT use can be mainly attributed to a high level of CSE. Computer Self-efficacy was also found to be the strongest predictor of e-learner satisfaction, accounting for 88.2% of the variance between subjects in self-reported L2 e-learner satisfaction, suggesting that the higher our L2 learners' CSE level, the higher their satisfaction with the online module of their BL language course.

The present study has two main limitations: (i) the study adopted a purely variable-oriented, quantitative method that may prove disadvantageous as failing to clarify the role of computer anxiety and self-efficacy on L2 learners' self-perceived digital literacy competence and satisfaction with the online component of their BL language course and (ii) the sample of the study was relatively homogeneous with respect to their demographic characteristics which makes us cautious in generalizing our findings. Despite the limitations, there are two important practical implications for the CALL field. First, intensive and embedded IT training and support for L2 learners is recommended, to aid them in learning how to combine both FL skills and "e-skills" or "new literacies", to be able to work and collaborate in new contexts where the borders between the visual and the real and between the distant and the proximate are increasingly blurred (Dooly & O'Dowd, 2012). Although the L2 learners in our study report an adequate level of self-assessed and actual computer skills and a general positive attitude to IT use in all areas of their life, they nevertheless feel intimidated to frequently and effectively use IT for language learning purposes. Following Godwin-Jones'(2010), the development of critical digital literacies paves the way for learner autonomy in language learning, through skillful use of IT tools and devices, and maximizes L2 learner satisfaction within technology-enhanced learning environments. Secondly, a moderate level of CA and a high level of CSE have been found to be correlated with more favorable assessments of digital literacy skills and a higher

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level of learner satisfaction with the online module of the BL language course in our study. Therefore, it is suggested that EFL learners be encouraged to use computers and IT applications and tools for language learning purposes, working under the guidance of their teachers in order to decrease computer phobias, raise their computer self-efficacy levels and be in a position to benefit from their participation in technology-enhanced language learning environments.

6. Conclusion

The present study investigates university L2 learners' self-reported digital literacy competency and satisfaction in relation to their participation in the online component of their BL language course and offers empirical evidence that CA and CSE affect the way they assess their digital literacy competence and satisfaction. Future studies could expand this research via the use of mixed methods, longitudinal studies with samples from different demographic, academic and cultural backgrounds to decipher the extent to which anxiety and self-efficacy affect L2 learners' academic achievement in both CALL and online learning environments.

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