

Blending classroom instruction with online homework: A study of student perceptions of computer-assisted L2 learning

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Abstract

This study investigates the impact of an online workbook on the attitudes of 245 second language (L2) Spanish learners toward this pedagogical tool over two consecutive semesters. The treatment consisted of four hours of classroom instruction and one set of online homework per week, during two consecutive semesters. Students' attitudes toward the electronic workbook were measured by means of a survey administered after eight months of exposure to the workbook. The qualitative data of the survey was compared to quantitative data from two different language assessment tests. The results of these tests indicated a significant increase in grammar scores. These results are consonant with the positive findings of student perceptions about the online workbook obtained in this and previous studies, emphasizing its benefits in terms of accessibility to the material, user-friendliness, and instant error feedback. More importantly, most students praised the usefulness of the online workbook for language learning, particularly in the areas of grammar and vocabulary acquisition. Despite participants' mostly positive attitudes, the survey also revealed some negative aspects of the use of the online workbook, such as the amount of time needed to complete the online exercises. This paper addresses these issues, and provides suggestions to overcome this type of problem.

Keywords: Blended learning, grammar/vocabulary acquisition, online workbooks

1 Introduction

In the last decade, L2 courses that combine face-to-face learning and computer assisted language learning (CALL) applications have been the subject of numerous studies in the fields of second language acquisition (SLA) and pedagogy (e.g., Bonk & Graham, 2006; Dewar & Whittington, 2004; MacDonald, 2006; Neumeier, 2005; Stracke, 2007; Zapata

& Sagarra, 2007). These courses usually require students to attend traditional face-to-face classes and to work independently with a synchronous and/or asynchronous communication tool. As existing studies have shown, this has become the most popular model of CALL use in L2 learning, particularly in large language programmes where CALL components such as online workbooks can provide face-to-face instruction with an “efficient use of human and material resources” (Salaberry, 2001:51). For example, they can relieve teaching assistants and instructors of the burden of grading a large number of exercises and, therefore, allow them to spend more time on class planning and effective teaching. In addition, they can give students the flexibility to work independently, at their own pace, with instant access to error feedback, which can promote language acquisition (Arvan & Musumeci, 2000; Felix, 2003; Collentine, 2000; Singh, 2003).

As most L2 learners now experience technology in combination with face-to-face instruction, it is important to examine their perceptions of online tools to ensure their success. Since the early 1990s, there have been a considerable number of studies that have investigated learners’ attitudes toward CALL applications. However, some of these studies have not focused on the use of technology in regular classes, but on the short-term use of synchronous and asynchronous tools developed specifically for a particular study, while other studies have yielded mixed results. Since participation in courses in which technology is part of the curriculum can shape attitudes toward CALL tools and, in turn, influence the success or failure of those courses, it is important to investigate attitudes towards technology in more depth. This study seeks to broaden the existing body of research by examining L2 Spanish learners’ attitudes towards the use of an online workbook over two consecutive semesters.

2 Previous studies

The application of CALL tools for L2 teaching and learning in the mid-1990s gave rise to a number of studies that investigated the impact of the new tools on student motivation and language acquisition, with mostly positive results. For example, in a frequently cited study, Kern (1995) reported that most of the forty second-semester L2 French learners participating in chat sessions during a semester showed a positive attitude toward the use of this learning environment. He also found that 93% of the students mentioned the novelty of the medium as one of the advantages of using chats, and 70% deemed it useful for equalizing classroom participation (see also Sproull & Kiesler, 1991; Sullivan & Pratt, 1996; Warschauer, 1996). Moreover, Kern’s results showed that chat discussions increased self-confidence when using the target language, because online environments allow students to make mistakes without being embarrassed (Liontas, 2002). In addition, the unlimited time to complete online assignments allows students to focus better on difficult topics (Adair-Hauck, Willingham-McLain & Youngs, 1999; Blake & Delforge, 2006; Murray, 1999; Torlakovic & Deugo, 2004), and promotes both negotiation of meaning (Kern, 1996) and independent learning (Stepp-Greany, 2002; Warschauer & Meskill, 2000). Similarly, Lee (2005) reported that chat discussions resulted in more student control over the learning process and better organizational skills. Beauvois (1994, 1998) also concluded that participation in a web-based writing project provided powerful motivation because

learners had more control over learning and less anxiety than in the classroom.

L2 courses that incorporate technology in combination with face-to-face instruction have also been found to promote L2 learning (Ayres, 2002; Felix, 2001). For example, Ayres reported that 80% of 157 L2 English and Japanese learners felt that computer-enhanced instruction was appropriate to their learning needs. In addition, 70% of the participants believed that online activities promoted learning, and 60% expressed the need for the inclusion of more web-based activities in their instruction. Furthermore, about two thirds of the respondents viewed the use of CALL as motivating (see also Beauvois, 1994, 1998; Warschauer, 1996). Ushida (2005) also found that L2 students' participation in language courses with a strong online component resulted both in positive attitudes toward the use of CALL and L2 learning and in successful language acquisition. In a similar study, Felix reported that the incorporation of technology into face-to-face instruction helped L2 learners of Italian, Japanese and English feel more comfortable with technology and the target language. In addition, two thirds of Felix's participants believed that web-based activities facilitated learning and that one of the main advantages lay in the opportunity to submit their work several times (see also Arvan & Musumeci, 2000). Finally, the students with more positive attitudes were those who had been exposed to activities with clear goals, organized tasks, and immediate feedback on errors (see also Felix, 2003; Nagata, 1996, and Torlakovic & Deugo, 2004).

Courses with a face-to-face and a CALL component have also been shown to promote student autonomy and empowerment. Student empowerment refers to the learners' feeling that the computer allows them to become actively engaged in the construction and use of their knowledge, rather than acting as passive absorbers and duplicators of information (Collentine, 2000; Sanaoui & Lapkin, 1992; Warschauer & Meskill, 2000). Learner control over learning promotes critical thinking and student motivation and achievement because greater control allows learners to choose the sequence of what they learn (Hannafin & Colamaio, 1987; Steinberg, 1989), to negotiate meaning via the computer (Kern, 1996), and to suit their personal learning style (Bull, 1997). Greater student control also implies learning in a self-paced manner and spending more time on more difficult topics (Adair-Hauck *et al.*, 1999). For example, Murray (1999) reported that a considerable number of students in an L2 French course with an online component believed that spending more time on difficult tasks helped them meet their language learning goals. These findings are consonant with those reported by Nowaczyk (1998) and his colleagues, who found that time pressure is detrimental to student attitudes towards the benefits of technology-enhanced learning.

In addition to allotting learners more control over the learning process, CALL instruction offers them immediate feedback and multiple attempts, which facilitates the creation and testing of hypotheses about the target language as well as the incorporation of feedback into subsequent responses. Felix (2001) reported that two-thirds of the students taking a face-to-face and technology L2 course felt that having multiple attempts promoted language learning, and, in another study (Felix, 2003), she found that some students liked instant feedback so much that they spent many unanticipated hours in front of the computer in pursuit of the perfect score. Immediate feedback, multiple opportunities for improvement and the extensive and overt practice that online environments provide convert procedural into declarative knowledge faster, and promote L2 learning.

Despite this ample evidence in support of L2 courses with a technology component, a

number of recent studies present a less promising outlook concerning student satisfaction, course preference, and enjoyment. For example, Green and Earnest Youngs (2001) reported that attending a face-to-face class three hours per week and completing online activities resulted in the same levels of student satisfaction as attending class four hours per week. Furthermore, Chenoweth and Murday (2003) claimed that receiving face-to-face instruction once a week, meeting with a native speaker for twenty minutes per week, and participating in technologically enhanced activities actually decreased student satisfaction when compared with a conventional course with four in-class contact hours per week. In another series of studies, Ayres (2002) and Stepp-Greany (2002) found that most students preferred conventional to technology-enhanced courses. For example, Stepp-Greany indicated that only 48% of the 358 L2 Spanish learners exposed to three hours of regular class, one hour of traditional audio-video lab, and one hour of computer lab would choose a class with a CALL component over a regular one. It is important to note that 89% of the participants deemed the presence of the instructor important for the success of CALL activities and learning (see also Ayres). In addition, only 41.3% reported enjoying Internet activities, 38% email exchanges, and 33% bulletin-board discussions. Stepp-Greany explained the overall negative perception of CALL in terms of proficiency level (participants were beginning learners) and time invested to go to the computer laboratory to complete the technology-enhanced assignments.

In a more recent study, Stracke (2007) reported on the fact that some L2 students choose to drop L2 courses with a technology component, and she investigated the reasons why this might happen. She interviewed three students who had decided to stop attending two computer-enhanced L2 Spanish and French classes, and she discovered that the main reasons behind their decision had been lack of instructor support and print material and failure to see a connection between face-to-face instruction and CALL components. As with the participants in the studies by Ayres (2002) and Stepp-Greany (2002), the three students interviewed by Stracke expressed their preference for a face-to-face class with no CALL component. Based on her results, Stracke suggested there is a need to carefully plan this type of course, providing students with comprehensive teacher and document guidance and ensuring transparent connections between the two modes of instruction (face-to-face and CALL). These suggestions are also supported by other researchers such as Barr (2004), MacDonald (2006), and Neumeier (2005) who believe that poorly planned face-to-face and CALL L2 classes can result in low student satisfaction and can influence the fate of this type of course. Consonant with these findings, Green and Earnest Youngs (2001) also reported that, in their study, students in technology-enhanced and traditional courses showed the same level of satisfaction with their progress, but those completing online activities instead of a fourth hour of class felt that some tasks were difficult and poorly organized.

In conclusion, findings from studies on students' perceptions of CALL in L2 classes are mixed. However, the studies presented significantly vary in the length of the treatment and the time allotted between the treatment and the assessment. Because these differences could bias the results, it is imperative to explore the role of CALL and students' attitudes toward it over a prolonged period of time. In addition, some of the studies described in the previous paragraphs (e.g., Kern, 1995; Sproull & Kiesler, 1991; Sullivan & Pratt, 1996; Warschauer, 1996) were completed more than a decade ago,

when technology was still a novelty in the L2 classroom, and this might have influenced students' positive attitude towards the medium. Also, most of the research presented in this section was based on small-scale studies involving a limited number of subjects, and short-term treatments. Therefore, there is a need to extend the scope of CALL research by investigating L2 students' perceptions of technology in long-term studies involving a greater number of participants. The present study attempts to address these issues and to contribute to the body of research presented in this literature review by examining L2 students' attitudes toward the CALL component of L2 Spanish classes over two consecutive semesters, employing quantitative and qualitative measures by means of course tests and a survey on student perceptions respectively.

3 The study

The goal of the present study is to investigate the effect of using an online workbook on student perceptions of this CALL component. To this end, 245 beginning L2 learners completed a language background questionnaire and proficiency test prior to the treatment, two language assessment tests after four and eight months of treatment, and a survey of students' attitudes toward the online workbook after the treatment (see Figure 1). The instructional treatment combined four class meetings per week and 24 homework sets distributed throughout two consecutive semesters. All teachers had previous experience of teaching Spanish through the use of computers, to avoid the possibility that inexperience with instructional technology could affect teacher attitudes toward the online workbook.

4 Method

4.1 Participants

Two-hundred and forty-five L2 learners between 18 and 25 years old participated in the study in exchange for extra credit. The participants were enrolled in multiple sections of two consecutive undergraduate Spanish courses (second- and third-semester Spanish) at

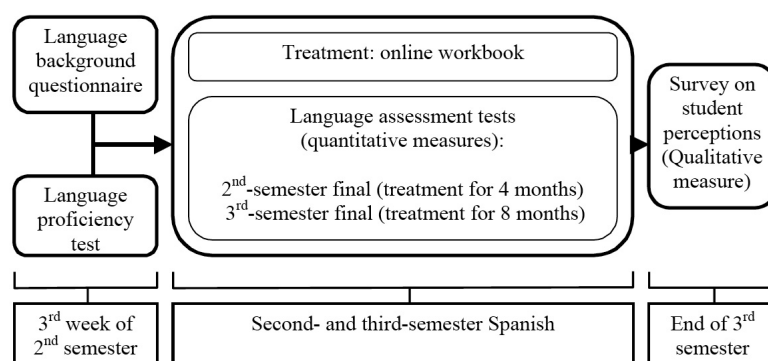


Fig. 1. Design of the study

a large public North American university. In order to be included in the study, students had to be monolingual English speakers with the equivalent of 60 hours of Spanish instruction (first-semester Spanish) and no knowledge of any other Romance language. At the end of the experiment, participants were asked whether they had been exposed to Spanish in any written, oral, or virtual mode outside of class during the semesters when the study took place, and those with such exposure were excluded from statistical analyses. Finally, participants needed to receive a minimum score of 60% on all sets of homework and to have completed all materials in the study to ensure that they had had similar exposure to the online materials.

4.2 Materials and Procedure

4.2.1 Treatment

Participants were enrolled in a 5,000-student Spanish programme, divided into three 4-credit courses with a variety of sections per course. Data collection took place while students were taking second- and third-semester Spanish in two consecutive semesters. Participants attended four class meetings and completed one set of homework online each week for a total of 24 weeks (12 per semester). Classroom instruction included communicative activities, group discussions, audio and video, and cultural readings. To standardize classroom instruction, all sections of a course followed a common syllabus, took identical tests, and used the same grading criteria. Half of the course grade depended on classroom participation (20%) and homework (30%) and the remaining half was based on learning assessment such as quizzes, oral expression task, midterm exam, and final exam. Homework included two compositions (10%), weekly writings (10%), and weekly activities from an online workbook (10%).

The online workbook consisted of input and output grammar and vocabulary activities (see Figures 2 and 3), a listening activity based on the textbook's CD-ROM (Figure 4), and a content-based reading, for example, the Peruvian ruins of Machu Picchu, or Hispanic legends (see Figure 5). Participants received immediate feedback and were able to submit their answers twice for items with four possible answers. The online workbook was available in the course management system ANGEL (A New Global Environment for Learning).

Paso 2. El mensaje continúa. Lee el resto del mensaje y escoge el verbo correcto de la lista. Luego, conjuga el verbo correctamente en el presente perfecto.
(Ojo! No repitas los verbos. Usa minúsculas.)

Modelo: Yo *he estudiado* 5 horas cada día.

Opciones:

ir	escribir	ser
decir	tener	descansar (relax)

5. Pronto viene la semana de los exámenes finales. Este semestre las clases _____, super difíciles.

6. Yo _____ que levantarme muy temprano por la mañana.

7. Yo _____ a la biblioteca a estudiar hasta tres veces a la semana, y nunca es posible acostarme hasta las dos o tres de la madrugada cada noche. ¡Estoy tan cansado!

8. Por casi un mes ya, mis amigos y yo no _____; siempre estamos trabajando.

Fig. 2. Example of a grammar activity

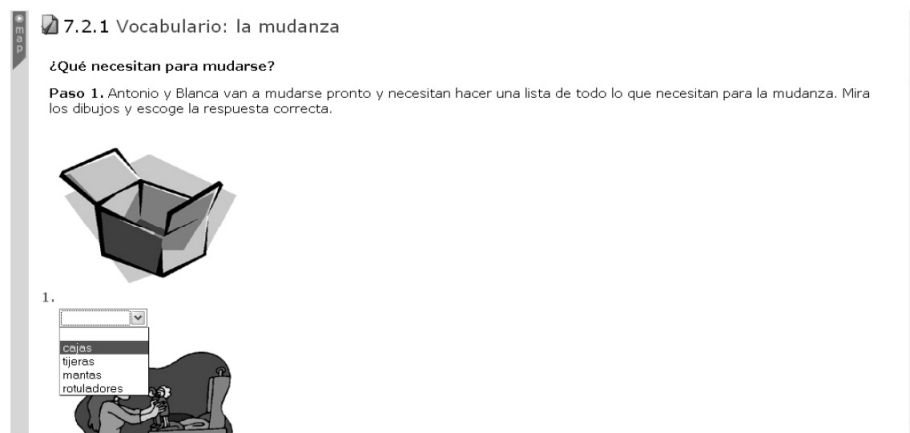


Fig. 3. Example of a vocabulary activity

4.2.2. Language background questionnaire and language proficiency test

During the third week of second-semester Spanish, participants completed two computerized tests: a language background questionnaire and a language proficiency test. The language background questionnaire was used as a screening tool to exclude students with previous or current exposure to Spanish or another Romance language outside the classroom. Students repeated this questionnaire at the end of third-semester Spanish. The goal of the language proficiency test was to rule out possible differences between the participants that could bias their perceptions about CALL. This test was divided into four sections. The grammar section included a sentence completion task that asked students to choose one of four options to fill in a blank and a grammaticality judgment task that required them to decide what sentences were grammatical and specify the error in ungrammatical sentences. The vocabulary section consisted of a word-synonym task where participants associated a Spanish word with its corresponding meaning in English, and a word-antonym task where they matched a Spanish word with its opposite meaning in English. Each of these four tasks contained 12 items and was based on Mecarty (2000). The listening and reading sections were created by Berne (1992) and Wolf (1991) respectively, and consisted of passages in Spanish about the use of video-résumés (listening) and the history and legends associated with the potato (reading). Each passage contained ten 4-item multiple-choice comprehension questions. The choice of the six tasks described above for the language proficiency test was motivated by the difficulty level of the tasks and the high reliability of the items.

4.2.3. Language assessment tests (quantitative measures)

The second- and third-semester final exams were taken as a measure to monitor the effect of the instructional treatment on L2 learning through the two semesters of the study. Because the exams were non-cumulative, the effect of test practice resulting from taking the same test repeatedly was eliminated. The tests were identical for all students, were similar in format and content to the activities performed in class and in the homework, and included sections on grammar, vocabulary, listening and reading. The

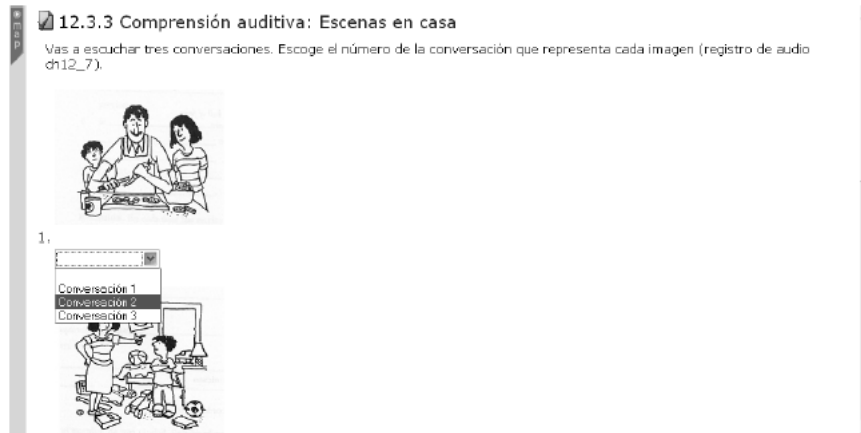


Fig. 4. Example of a listening comprehension activity

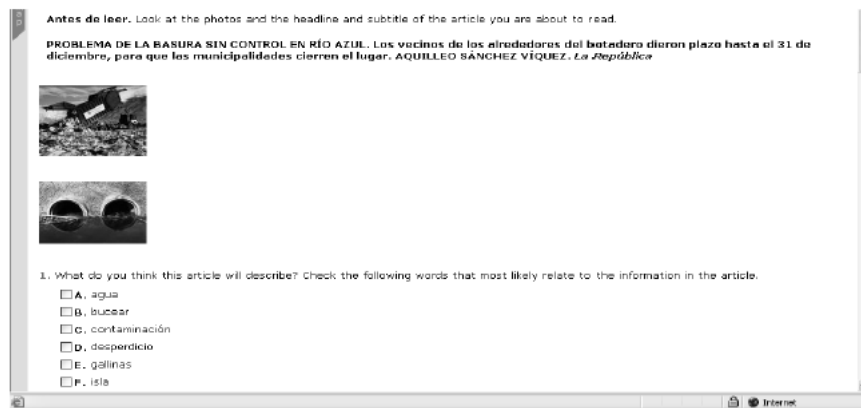


Fig. 5. Example of a reading comprehension activity

grammar and vocabulary sections contained input and output tasks and the listening and reading sections consisted of a text in Spanish followed by ten comprehension questions that required learners to choose among different options, associate columns, rank alternatives, or summarize the text. The questions were in English to ensure that difficulty in understanding the questions did not interfere with text comprehension.

4.2.4. Survey on student perceptions (qualitative measure)

At the end of the third semester, participants completed a computerized survey to determine their perceptions concerning the electronic workbook (see Appendix). To facilitate statistical analyses, we created close-ended questions with categorical and Likert scales (Dillman, 2000; Fink, 2006; Waddington, 2000). A categorical scale where each respondent must belong in a particular “category” was employed for the sections about accessibility to the online environment and student preferences. A seven-point Likert scale was utilized for the sections on accessibility to the online workbook, relationship between the online workbook, classroom content and learning, and student

interest, in order to offer respondents a vast array of options and a middle response (Fink, 2006; Patten, 2001).

5 Scoring

For the language proficiency tests and the language assessment tests, correct answers received 1 point and incorrect answers were given 0 points. With regard to the survey on student perceptions, some items were scored following a Likert scale (e.g., 1 = very easy, 7 = very difficult), and others were based on frequency of student responses per item presented in percentage scores. Responses to Likert items were treated as interval data and were averaged.

6 Results

6.1 Language background questionnaire and language proficiency test

The language background questionnaire indicated that 9.7% of the students had not decided on a major yet and that of those who had declared a major, the most popular majors were business (9.2%), finance (7%), and accounting (6.6%). The data also showed that 24.1% of the students enrolled in a basic Spanish course because they liked the language, 19.3% because they thought it would be useful for their career, 50.6% because they needed to fulfill the foreign language requirement, and the remaining students for other reasons. The fact that half of the participants took Spanish to fulfill a general education requirement explains that 63.4% of the sample pool was formed by freshmen and sophomore undergraduate students, compared to 36.1% of junior and senior undergraduate students, and only 0.2% of graduate students.

Table 1 displays the mean and standard deviations of the mean percentage scores of the grammar, vocabulary, listening, and reading sections of the language proficiency test. The means suggest that, prior to the treatment, participants' strongest area was vocabulary and the weakest was reading, and that within-subject variability was small.

6.2 Language assessment tests (quantitative measures)

As mentioned earlier, the second- and third-semester final exams were taken as a measure of L2 learning (see Table 2 for means and standard deviations). A 4 x 2 (L2 subskill x Test) factorial ANOVA with repeated measures performed on the mean percentage scores of the two course tests showed a main effect for L2 subskill [$F(3,720) = 31.116, p < .01$], Test [$F(1,240) = 41.109, p < .01$], and a significant interaction

Table 1 *Descriptive statistics on language proficiency percentage scores*

Grammar		Vocabulary		Listening		Reading	
M	SD	M	SD	M	SD	M	SD
39.76	14.69	46.62	14.90	41.95	19.75	37.76	9.47

Table 2 Descriptive statistics on language assessment percentage scores

Test	Grammar		Vocabulary		Listening		Reading	
	M	SD	M	SD	M	SD	M	SD
2nd-semester final	82.37	13.28	80.57	16.68	86.48	15.63	85.53	8.92
3rd-semester final	91.63	17.65	81.35	11.40	76.27	14.37	84.32	12.29

between L2 subskill and Test [$F(3,720) = 59.236, p < .01$]. Post hoc pairwise contrasts revealed that grammar scores increased from the second- to the third-semester final exam, that vocabulary scores and reading scores were the same in both exams, and that listening scores decreased in the second exam, probably due to differences in the level of difficulty of the listening sections of the two exams.

6.3 Questionnaire on student perceptions (qualitative measure)

The reliability coefficients of the items of the questionnaire on student perceptions were high (alpha values ranged from .61 to .94). The data from the questionnaire on student perceptions about computer-enhanced learning with an online workbook indicated that most learners owned a computer and used Internet Explorer, and that slightly more than half completed the online homework in a dormitory. The section on accessibility to the online workbook showed that the majority of students felt that the ANGEL login (91.2%), instructions (59.7%), homework completion (69.8%) and gradebook (75.7%) were easy to very easy. This explains why over half (52.5%) of the learners never requested technical support.

The section on the relationship between the online workbook, classroom content, and L2 learning revealed that slightly more than half (51.8%) of the students agreed or strongly agreed that the in-class activities helped them complete the online homework, and over two-thirds (66.9%) strongly agreed, agreed or somewhat agreed that the online homework helped them understand class content. The majority (71.7%) of students expressed strong to moderate agreement with the statement that the online homework helped them learn Spanish, and only a small number (5.6%) strongly disagreed with this statement. However, one-third of the learners moderately agreed that their listening (30.5%), pronunciation (34.44%) and reading skills (34.5%) in Spanish had improved as a result of the online activities, and almost two-thirds of the respondents (66.1%) agreed and somewhat agreed that completing online homework promoted their L2 grammatical and lexical knowledge.

In spite of the relatively low number of students who said that CALL helped them improve their reading, pronunciation and listening skills, almost three-fourths of the students (74.2%) expressed strong to moderate agreement with the statement that the online homework made the course more interesting. Although less than half (43.4%) enjoyed completing homework online and only one-fourth (25.6%) moderately agreed that the online homework was interesting, approximately two-thirds (66.4%) reported that they would take another Spanish course with an online workbook, suggesting that

the overall experience with CALL was positive.

With regard to student preferences and suggestions, learners liked having multiple attempts because they felt they could learn from their errors (24.5%), enjoyed being able to work at their own pace (20.6%), felt that online assignments reinforced what they learned in class (15.6%), and appreciated receiving immediate feedback (10.8%). The most frequent responses to the question about what they liked the least about the online workbook were the amount of time they needed to complete the homework (20.2%) and not posting the correct answers after the second and final attempt due to ANGEL's configuration (16.3%) (this is corroborated by the fact that 30.1% reported this as the most important change they would make to the online workbook). In addition, students did not enjoy having to use the textbook to read stories (11.4%) or the audio CD to complete the listening assignments (11.3%), and they would have preferred to have links in ANGEL to have all the materials within a single learning environment. In response to the question of whether they would add more online activities, 22.8% responded that nothing additional was needed, but 31.7% requested more vocabulary activities (compared to 9% interested in more grammar activities, 3.7% in more listening exercises, 2.2% in more pronunciation assignments, and 1.3% in more reading tasks).

7 Discussion

In this study, we examine student perceptions about learning a foreign language in an instructional environment that combines face-to-face meetings with weekly online homework. The results of the survey on student perceptions indicated that most students had easy access to the online environment and workbook and believed that using ANGEL tools was simple. Participants also acknowledged a mutual relationship between class content and online materials and stated that the electronic workbook helped them learn the target language. These findings are in agreement with other studies reporting a positive impact of web tasks on L2 learning (e.g., Ayres, 2002; Beauvois, 1994, 1998; Blake & Delforge, 2006; Conolelos & Oliva, 1993; Lund, 1990; Felix, 2001; Lee, 2005), and they are also important because they have been shown to be the most cited reasons why L2 face-to-face courses with a technology component can fail (e.g., Barr, 2004; Neumeier, 2005; Stracke, 2007). In addition, two-thirds of the participants praised the online materials as essential in advancing their L2 grammatical and lexical knowledge, and one-third considered them important to improve their listening and reading skills. These findings conform with the higher means obtained in the grammar and vocabulary sections of the exams compared to those found in the listening and reading sections.

This positive attitude toward the accessibility and effectiveness of the online workbook led two-thirds of the students to conclude that they would take another computer-enhanced course to learn Spanish. These findings are consonant with data from other questionnaires on student perceptions of web materials (e.g., Blake & Delforge, 2006; Felix, 2001; Lee, 2005; Ushida, 2005), but they contrast with studies reporting that some students preferred instruction without technology after having taken a course with a CALL component (e.g., Ayres, 2002; Stepp-Greany, 2002; Stracke, 2007). One of the reasons why students completing the online workbook would enroll in

another computer-enhanced course is because online materials made learning more interesting (see also Kern, 1995). Surprisingly, less than half of the respondents enjoyed working with online activities (see Stepp-Greany, 2002, for similar findings). The amount of time involved in completing the online homework (e.g., ANGEL training, going to a computer laboratory, typing accents) can explain this paradoxical finding. In fact, "time-consuming" was the most frequent answer to the question of what students liked the least about the online workbook. Furthermore, other labor intensive tasks such as using the textbook and a CD instead of links, and typing accents, made it to the top of the list of aspects that learners did not enjoy about completing activities online. Based on these findings, teachers and developers of pedagogical materials should try to minimize the time necessary to complete online exercises.

When asked what they liked the most about the online workbook, participants responded that they enjoyed having multiple attempts, receiving individualized immediate feedback, being able to work at their own pace, and consolidating class content. These findings are in line not only with Felix's (2001) findings that "multiple opportunities for improvement" was perceived as the determining factor of the effectiveness of online materials on language learning, but also with Felix's (2003) results that instant feedback motivated students to spend extra time trying to find out each error in pursuit of the highest possible score. This is confirmed by the fact that one of the aspects that students disliked was not having access to the correct answers after the final attempt. Self-paced learning is also important because it allows students to focus on difficult topics (see also Blake & Delforge, 2006; Murray, 1999). The data from student preferences suggest that learners do not enjoy using different learning media like the textbook and a CD-ROM when working with online materials, but rather prefer to use web links to access the information (see also Stracke, 2007). However, they appreciate working with a variety of formats, activities and visual and aural aids.

Lastly, it is important to compare the qualitative data of the survey with the quantitative data of the language assessment tests. The overall positive attitude that students showed toward the electronic workbook is in accordance with a significant increase in the grammar scores from the second- to the third-semester final exam. The benefits of computer-enhanced learning on L2 grammar accuracy have been found in a number of studies (e.g., Arvan & Musumeci, 2000; Nagata, 1996, 1998a, 1998b, 2002; Torlakovic & Deugo, 2004). While the lack of significant differences between the two exams in vocabulary and reading scores mirrors the findings of previous studies (e.g., Chenoweth & Murday, 2003; De la Fuente, 2003; Green & Earnest Youngs, 2001), the number of studies showing a superiority of technology-enhanced learning over face-to-face instruction on the learning of vocabulary (e.g., Groot, 2000; Tozcu & Cody, 2004; Zapata & Sagarra, 2007) and comprehension skills (e.g., Arvan & Musumeci, 2000; Sagarra, 2006) indicates that the results of the present study could be due to differences in the difficulty level of the exams. This would also explain why the listening scores decreased from the second- to the third-semester final exam.

8 Conclusion

The findings of this study advance our understanding of student perceptions about online materials for foreign language learning and provide suggestions to teachers,

developers, and publishers to improve the way web-based activities are created and delivered to students. Firstly, when present, students acknowledge a mutual relationship between class content and online materials. Secondly, students like having multiple attempts, receiving immediate feedback, working at their own pace, and having access to the correct answers after submitting their answers. Thirdly, learners enjoy activities that use a myriad of formats, that are accompanied by images, and that allow them to work within the online learning environment (versus combining web-based materials with other external sources like books and CDs). Finally, students do not appreciate spending time typing codes for special characters and would prefer a faster way to insert accents and diacritics. These aspects should be taken into account by designers and teachers when creating and implementing CALL material in L2 classes to ensure the success of this type of instruction.

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Appendix

Perceptions on Accessibility to the Online Environment

Which is your preferred operating system?

Windows	Macintosh	Linux	Unix	Other
95.6%	4.1%	0.3%	0%	0%

Which is your preferred browser?

Explorer	Netscape	Mozilla	No preference	Other
91.1%	3.1%	1.2%	1.5%	3.1%

What type of connection do you usually use to do the online homework?

Computer Lab	Dorm room	Apt. High speed	Apt. Dial-up	Internet Café
4.4%	52.3%	39.1%	4%	0.2%

Do you own a computer?

Yes	No
96.5%	3.5%

Perceptions on Accessibility to the Online Workbook

	Very easy	Easy	Somewhat easy	Not easy or difficult	Somewhat difficult	Difficult	Very difficult
ANGEL login	78.3%	13.1%	5%	2.8%	0.7%	0.1%	0.09%
Instructions to homework	16.4%	43.3%	29.4%	3.2%	5.9%	1.2%	0.6%
Completing homework	45.7%	24.1%	18.2%	7.6%	3.2%	0.9%	0.3%
Checking grades	56.2%	19.3%	13.3%	6.2%	2.6%	1.2%	1.2%
Typing accents	9.4%	12.6%	21%	19.4%	15.6%	9.7%	12.3%
Accessing audio CD	17.3%	21.8%	24.1%	16.9%	10.7%	5.2%	4%
Getting technical support ^a	8.4%	9.2%	11.8%	9.1%	5.1%	2.6%	1.6%

a An additional 52.2% said they never needed technical support.

Perceptions on the Relationship between the Online Workbook, Classroom Content and L2 Learning

	Strongly agree	Agree	Agree somewhat	Disagree somewhat	Disagree	Disagree strongly	No opinion
The earlier in-class activities helped me complete the online homework	13.2%	38.6%	28.4%	2.1%	6%	2.7%	9%
The online homework helped me understand class content	6.2%	25.8%	34.9%	2.5%	12.9%	4.8%	12.9%
The online homework helped me improve my Spanish grammar and vocabulary	9.6%	30.2%	35.9%	7.1%	4.5%	3.7%	9%
The online homework helped me improve my Spanish listening skills	5.7%	15.7%	30.5%	6.5%	17.7%	9.2%	14.7%
The online homework helped me improve my Spanish pronunciation	4.9%	23.1%	34.4%	12.4%	12.8%	3.2%	9.2%
The online homework helped me improve my Spanish reading skills	6.3%	23.6%	34.3%	13.1%	6.4%	3.9%	12.4%
The online homework helped me learn Spanish	6.4%	27.8%	37.5%	4.9%	7%	5.6%	10.8%

Perceptions on Student Interest

Strongly agree	Agree	Agree somewhat	Disagree somewhat	Disagree	Disagree strongly	No opinion
<i>The online homework was interesting</i>						
2.8%	11.6%	25.6%	17%	13.2%	7.7%	22.1%
<i>The online homework made the course more interesting</i>						
5.3%	25.6%	38%	9.2%	8.1%	2.8%	11%
<i>I enjoyed completing homework online</i>						
3.2%	17.8%	25.6%	14%	8.3%	8.3%	22.8%
<i>I would take another Spanish course with an online workbook</i>						
9.6%	30.5%	35.9%	7.1%	4.5%	3.7%	8.7%

Perceptions on Student Preferences and Suggestions for Improvement

Multiple attempts	Work at my own pace	Reinforced class learning	Quick feedback	Prepared me for course tests	Easy to do	Other
<i>What did you like the most about the online workbook?</i>						
24.5%	20.6%	15.6%	10.8%	10%	9%	9.5%

Time consuming	Key not posted	Reading stories	Having to use the CD	Adding Accents	Directions in Spanish	Other^a
<i>What did you like the least about the online workbook?</i>						
20.2%	16.3%	11.4%	11.3%	9.8%	4.2%	26.8%

Are there any exercises you would like to see more of?

Nothing needed	Vocabulary practice	Multiple choice	Those with pictures	Grammar practice	Audio practice	Other
<i>Are there any exercises you would like to see more of?</i>						
22.8%	31.7%	14.2%	13.7%	9%	3.7%	4.9%

^a 4.8% of this 26.8% corresponded to students who answered "I liked the online workbook."