

## Gaming alone or together? L2 beginner-level gaming practices

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### Abstract


Games are seen as beneficial for language learning because they facilitate rich, authentic communication, and promote collaborative practices which are effective for language learning. However, most of the studies to date investigating games for L2 learning have focused on intermediate or advanced learners, and we know very little of how games can be best utilized with beginner-level learners. This study investigates beginner-level learners of Spanish engaged in a task-based educational game in which they interacted through an avatar with game characters in a study abroad setting. Although the game is designed to be played individually, we hypothesized that playing collaboratively would bring more language negotiation, which in turn promotes language acquisition (SWAIN, 2000). Four intact first semester classes in a US university participated in the research. Two classes acted as control group and engaged in technology activities that were not the game and two classes played the game either individually or in dyads. Students' grammar, vocabulary, reading, and writing were compared after the treatment. In addition, pre- and post-treatment motivation surveys were conducted to find out students' perspectives on the game playing and whether their opinions had changed after the experience. Although students gaming in dyads outperformed the other groups in all measures, the differences were not statistically significant. However, there were clear differences in the learners' perspective towards playing in dyads versus playing individually. In addition, the qualitative analysis of the data revealed multiple instances of language related episodes which have been demonstrated beneficial for language learning.

**Keywords:** Game-based environments. Language negotiation. Foreign language learning.

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**Resumo****Jogando individualmente ou em pares? Práticas de jogo de alunos para iniciantes de L2****Palavras-chave:**

Ambientes baseados em jogos. Negociação de linguagem. Aprendizagem de línguas estrangeiras.

Jogos são benéficos para a aprendizagem de línguas, pois facilitam a comunicação rica e autêntica e promovem práticas colaborativas as quais têm efeito positivo na aprendizagem de línguas. No entanto, a maioria dos estudos envolvendo jogos para a aprendizagem de L2 conduzidos até o momento tem se concentrado em alunos de níveis intermediário ou avançado e, sabemos muito pouco sobre a maneira como esses tipos de jogos podem ser usados com alunos iniciantes. Este estudo investiga alunos iniciantes de língua espanhola jogando um jogo baseado em tarefas em que eles interagem através de um avatar com personagens do jogo em um contexto de estudo no exterior. Embora o jogo tenha sido projetado para jogar individualmente, nossa hipótese é que jogar em pares promove mais negociação de linguagem, o que incentiva a aprendizagem de uma língua (SWAIN, 2000). Quatro turmas do primeiro semestre de uma universidade dos Estados Unidos participaram desta pesquisa. Duas turmas participaram como grupo controle realizando atividades na Internet, mas não o jogo, e duas turmas jogaram o jogo, uma individualmente e a outra em pares. A gramática, o vocabulário, a leitura e a escrita dos alunos foram comparados após o tratamento. Além disso, questionários foram aplicados antes e depois da intervenção para investigar as opiniões dos alunos sobre o jogo e verificar se essas opiniões haviam mudado após o jogo. Os alunos que jogaram em pares superaram os grupos em todas as medidas, porém as diferenças não foram estatisticamente significativas. Os resultados mostram um claro contraste na perspectiva dos alunos que jogaram individualmente e em pares. Além disso, a análise qualitativa dos dados revelou múltiplos episódios de língua que, como foi demonstrado, são benéficos para a aprendizagem de línguas.

**Resumen****Jugando solo o en parejas? Prácticas de juego de alumnos principiantes de lengua****Palabras claves:**

Ambientes basados en juegos. Negociación del lenguaje. Aprendizaje de lenguas extranjeras.

Los juegos son beneficiosos para el aprendizaje de lenguas porque facilitan una comunicación rica y auténtica y promueven prácticas colaborativas que tienen un efecto positivo para el aprendizaje de lenguas. Sin embargo, la mayoría de los estudios realizados hasta ahora en juegos para el aprendizaje de lenguas se han enfocado en aprendices intermedios o avanzados, y sabemos muy poco sobre cómo se pueden usar este tipo de juegos con aprendices principiantes. Este estudio incorpora estudiantes de español principiantes jugando un juego por tareas en el que interactúan a través de un avatar con caracteres en el juego en un contexto de estudio en el extranjero. Aunque el juego se diseñó para jugar individualmente, nuestra hipótesis es que jugar en parejas promueve más negociación del lenguaje, lo cual propicia el aprendizaje de una lengua (SWAIN, 2000). Cuatro clases intactas del primer semestre en una universidad de Estados Unidos participaron en esta investigación. Dos clases participaron como control haciendo actividades de Internet pero no el juego y dos clase jugaron individualmente o en parejas. La gramática, el vocabulario, la lectura y la escritura de los estudiantes fue comparada tras el tratamiento. Además, se administraron cuestionarios antes y después de la intervención para investigar las opiniones de los estudiantes sobre el juego y ver si ésta había cambiado después del juego. Los estudiantes que jugaron en parejas superaron a los grupos en todas las medidas, sin embargo, las diferencias no fueron estadísticamente significativas. Los resultados muestran un claro contraste en la perspectiva de los estudiantes que jugaron individualmente y en parejas. Además, el análisis cualitativo de los datos mostró múltiples casos de episodios sobre el lenguaje que, como se ha demostrado, son beneficiosos para el aprendizaje de lengua.

## Introduction

The use of games in the foreign or second language classroom is an established area of research investigating the potential that games have for language learning. Following Sykes and Reinhardt's (2012) claim that both game-enhanced (using vernacular games) and game-based (using educational games) research are important to inform game-mediated practices, this study focuses on a quest game for foreign language learning, a "game-based environment" (REINHARDT, 2019) by McGrawHill, Inc.<sup>1</sup>, called *Practice Spanish: Study Abroad* (PSSA) (LOGUE, 2015) developed as an addition to the textbook that learners of Spanish were using at a university in the US.

## Games for L2 learning

The integration of games in language learning offers possibilities to engage students in experiential learning in ways that few other technologies can. Games are goal and task-oriented, and can provide learners with rich, authentic input, while providing opportunities for meaningful interaction (GONZÁLEZ-LLORET; ORTEGA, 2014).

Within games, there is a large variety of options. We focus here on quest games, since this was the type of game employed in the current study. Quest games are based on the completion of several tasks by the student through an avatar. These quests can be part of a gaming environment (focused on the action) or through synthetic environments utilized to expose L2 learners to a series of tasks (focused more on communication).

One of the first such environments was Croquelandia, designed to expose learners of Spanish to tasks that required apologies and refusals (SYKES, 2009, 2012). Although Sykes's pre and post-test showed small gains in the production of pragmalinguistic forms and modest gains in the learning of apologies, the results indicated a large improvement of learners' interpretation, analytical skills, and awareness of both requests and apologies. As Sykes (2014) states, in this environment the possibility to restart a quest was a critical element for the environment to be a successful teaching tool. A similar example is Collentine (2013) 3D environment in which students need to engage in two different tasks to find clues about a crime (one missing-person case and one murder mystery) interacting with other learners via CMC as well as avatars (non-player characters) and a variety of objects. This study looks at different measures of input complexity to find out which variables were actually affecting the complexity of learners' output. Collentine's research demonstrates the importance of designing tasks that include certain linguistic features in the input (input rich in information rather than complex) for learners to

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<sup>1</sup>We consider PSSA a game because that is what the editorial calls it. We understand that the graphics and type of engagement of the game may look more similar to a learning simulation or a synthetic environment.

generate complex language. More recently Taguchi, Li and Tang (2017) investigated the learning of Chinese formulaic expressions through a video-based interactive game-like activity in which students had to complete several scenarios (e.g., take a bus, talk to a vendor, have a dinner party). The results showed fast progress (after two weeks) in their comprehension of formulas, especially their sociopragmatic ability, while their production improved for some formulaic expressions but not others. The researchers also suggest the importance of including useful feedback.

Virtual spaces (both gaming environments and social synthetic/virtual environments) allow for great freedom of communication allowing also for real interaction with a variety of speakers (native and non-native). Results of research in virtual environments using tasks suggest that students find tasks in these spaces useful and highly motivating when they are well designed and collaborative in nature (CANTO; DE GRAFF; JAUREGI, 2014; GÁNEM-GUTIÉRREZ, 2014; THOMAS, 2013), and include meaningful content and meaningful interactions (SYKES 2012). Tasks in virtual environments promote negotiation of meaning, including intercultural communication routines (CANTÓ; DE GRAFF; JAUREGI, 2014), and the possibility of a “physical simulation of real-life tasks” (DEUTSCHMANN; PANICHI, 2009, p. 34). They encourage learner’s agency and confidence in L2 use (THOMAS, 2013; ZHENG *et al.*, 2009) and generate opportunities for social discourse and casual conversation (PEÑA; HANCOCK, 2006; THORNE 2008, 2010), which are essential components on the repertoire of a language learner. Although virtual environments may seem “not real”, they allow for close reproduction of face-to-face interactions. As Pojanapunya and Jaroenkitboworn (2011) demonstrated, learners bring into the virtual world conventions from the real world. Their learners often produced pre-closing sequences (e.g., informing of the need to leave, agreeing on future encounters) when leaving the space, even when they were interacting through avatars, which would not require face-saving and politeness in the same way we do in face-to-face encounters.

L2 research on gaming supports the idea that rich collaborative games include constant text and spoken input, and promote language production (BRYANT, 2006; REESE, 2007) and interaction with extensive negotiation of meaning (a key component in language learning), as well as goal-directed collaborative action (RAMA *et al.*, 2012). Games are therefore resources to maintain intersubjectivity and develop positive affective bonds, which lead to a strong motivation to learn the language, as well as a sustained engagement, considered one of the key elements for success in L2 learning through gaming (REINDERS; WATTANA, 2014; SYLVÉN; SUNDQVIST, 2012; SYKES, 2009). In this way, games become “critical contemporary arenas for task-relevant communication and relationship building” (PURUSHOTMA; THORNE; WHEATLEY, 2009, p. 32).

In spite of what it may seem, games and the spaces around them present high degree of lexical sophistication, lexical diversity, and syntactic complexity (THORNE *et al.*, 2012). And as demonstrated

by several studies, this aids with vocabulary acquisition (e.g., SUNDQVIST; SYLVÉN, 2012). Finally, recent research by Scholz and Shulze (2017) has shown that the L2 used in games does actually transfer to non-game contexts.

Although quite a bit of research has been dedicated to games as tools for language learning (e.g., CORNILLIE; THORNE; DESMET, 2012; REINDERS, 2012), most has focused on intermediate or advanced learners, leaving beginner learners underrepresented in the field. In our context, this is the largest population of students and, therefore, it is important to investigate what happens when they engage in this type of technology.

### **Collaboration and individual play**

In the field of technology-mediated SLA, research of whether playing collaboratively or individually has an effect on language learning is still scarce. Our research is informed by studies on other areas involving negotiating and learning, with a gaming component. For example, investigating an educational mathematics video game, Plass, *et al.* (2013) examined how the mode of play impacted learning, performance, and motivation. The game was designed to increase fluency of arithmetic skills and was adapted to allow for individual, competitive, and collaborative game play. Participants (N = 58) from urban middle schools were randomly assigned to each experimental condition. Results suggested that, in comparison to individual play, competition increased in-game learning, whereas collaboration decreased performance during the experimental play session. Although out-of-game math fluency improved overall, it did not vary by condition. Furthermore, competition and collaboration elicited greater situational interest and enjoyment, and invoked a stronger mastery goal orientation. Additionally, collaboration resulted in stronger intentions to play the game again and to recommend it to others.

In work conducted with children, research has found that students who engaged in cooperative computer simulation tasks outperformed individual learners playing the same simulation and produced more task-related interactions (JOHNSON, R; JOHNSON, D.; STANNE, 1986). Also, in a comparison of children playing a historical time-line game individually and in dyads, Martin-SanJosé, Juan and Torres (2014) found that learners retained more historical knowledge when playing in dyads than individually. Although students in both conditions learned, older children (9 years old) learned more.

### **Objectives**

According to work based on Cognitive Load Theory, Kirschner, Paas and Kirschner (2009) suggested that when working collaborative (in groups of three) learners are able to carry out more complex problems, because a collective working memory (larger than the individual's limited working memory) is created. However, collaborative work also requires interaction and coordination, which taxes memory and may affect learning. As Kirschner *et al.* (2009) results showed, collaboration increases motivation, but it

does not always improve knowledge acquired at the individual level. Following this line of research, and based on previous research, this study investigates whether playing an educational video game simulation individually or in dyads have any effect on learners' L2 learning and motivation. Our research questions were:

- 1) Does PSSA help beginner learners of Spanish learn the language more than other Internet activities?
- 2) Does player configuration (dyads vs. individuals) have an impact on learners' language gains?
- 3) To what extent does learner configuration (dyads vs. individuals) affect learners' attitudes and perceptions of the game?

## Methodology

This study served as a pilot study for a larger research that included 156 beginner learners of Spanish (first semester), in their majority from the United States, enrolled at the University of Hawaii. Four first semester intact classes participated in the research. Two groups in the experimental condition (with the same teacher, Teacher 1) played the game either individually (IND) or in dyads (DYA), while the other two groups (with Teacher 2) served as control. The control groups engaged in three Internet activities (also at a computer lab) that were similar in content and vocabulary to the game (both as part of the class curriculum). They 1) created a digital narrative using Utellstory; 2) they virtually visited Frida Kahlo interactive museum; and 3) they completed a task using the Weather Channel website. The classes were selected because the teachers were willing to participate in the research. The students were representative of the first-semester students that had enrolled in this program. They had not studied the language before (or had minimal exposure) and their ages ranged between 18 and 22 years old, maintaining the ecological validity of the study. The students' participation in the game was part of their language curriculum and had a grade associated to it. The students were informed of the study and the data used came from those who consented to have their data analyzed (as per University Policy).

## The game

The game *Practice Spanish: Study Abroad* (PSSA) was adopted as a compliment to the course textbook by McGraw-Hill. The game is accessible online through McGraw-Hill Connect. The game takes the learner on a virtual study abroad program to Colombia, where they are required to complete a series of quests and solve mysteries throughout the game. In PSSA, each quest takes the learners through different places in a fictitious town where they are engaged in a virtual study abroad experience. Each quest has several subtasks and goals. The game begins by letting students choose and personalize their avatar, and they then need to find their study abroad coordinator, a classmate, explore a plaza, buy some souvenirs and food, and find out their schedule and classes (See Figure 1 for more details on the first three

tasks/quests). The quests are goal-oriented and require the player to complete a variety of smaller tasks by interacting with avatars, finding out information, or looking for places or objects (See Figure 2 for an illustration of task 1). The learners interact through their avatars with other in-game characters (native and non-native speakers of Spanish) by selecting answers from a menu, drag and dropping words to construct sentences, or typing words to complete sentences. Input as multiple choice decreases and production increases as tasks progress. At this point if the input is correct, the learner's avatar communicates the input to the other characters and the conversation continues. While engaged in the game there is a translation tool available as help.

**Figure 1.** First three tasks of PSSA

<p>Level 1. La plaza [The town square]</p> <p>Tasks</p> <ul style="list-style-type: none"> <li>● Find your host teacher in the SA program</li> <li>● Buy a souvenir for a friend</li> <li>● Find/Buy food</li> <li>● Listen to a street musician</li> <li>● [Social interaction/small conversation]</li> </ul> <p>Level 2. El instituto de idiomas [The language school]</p> <p>Tasks</p> <ul style="list-style-type: none"> <li>● Engage in small talk with an older person</li> <li>● Meet your classmates</li> <li>● Get oriented at the language school</li> <li>● Find out more about the legend of a ghost (Solve a 'ghost' mystery) <ul style="list-style-type: none"> <li>○ Find drawing supplies (for a friend to draw the ghost)</li> <li>○ Find a book (to read about the legend)</li> </ul> </li> <li>● Tell Paloma what you found</li> <li>● Find the swan (fountain) <ul style="list-style-type: none"> <li>○ Fix the swan <ul style="list-style-type: none"> <li>▪ Find different supplies</li> <li>▪ Fix the fountain</li> </ul> </li> </ul> </li> </ul> <p>Level 3. El almuerzo con la familia [Lunch with the family]</p> <p>Tasks</p> <ul style="list-style-type: none"> <li>● Meeting family members <ul style="list-style-type: none"> <li>○ Talk to each family members before guests arrived</li> <li>○ Look at family photos</li> </ul> </li> <li>● Greet the guests as they arrive</li> <li>● Deliver items to the right person <ul style="list-style-type: none"> <li>○ Serve tea, serve coffee</li> <li>○ Serving cake for the family</li> </ul> </li> <li>● Fulfill an avatar's request <ul style="list-style-type: none"> <li>○ Play with the kids</li> </ul> </li> <li>● Make one of the kids happy <ul style="list-style-type: none"> <li>○ Find something the kid wants</li> </ul> </li> <li>● Find out more about the mysterious woman <ul style="list-style-type: none"> <li>○ Find someone who believes the children's story</li> <li>○ Find a clue about the identity of the woman</li> <li>○ Talk to a new guest</li> </ul> </li> </ul>
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**Figure 2.** Screen capture of Task 1

### Data and analysis

To ensure students were at the same proficiency level, the control and experimental groups took the WebCAPE (Perpetual Technology Group)<sup>2</sup>, a commercially available computer-adaptive test which measures grammar and reading comprehension. The test confirmed that all students had approximately the same level, with a few outliers that were excluded from the data. During the semester, as part of their L2 curriculum, both control and experimental groups participated in three sessions in a computer lab for 50 minutes once a week for three weeks, with another two 50-minute classroom sessions per week. During the sessions, learners went to a computer lab where the game was installed and sat in pairs or individually. After the teacher and researcher started the screen and voice recorder application, the learners started playing. The sessions were held with the presence of their teacher (Teacher 1, also one of the researchers) and the other researcher, who provided technical support, reminded the learners to talk loud enough for the program to capture their voices, and took observation notes. For the control group, their Teacher (Teacher 2) and one of the researchers were present at the computer lab. The teacher explained the daily task and answered questions while the researcher provided support with the technology. After each session in both conditions, students were asked (through a 4-point Likert scale) whether they had enjoyed the experience, had been able to use their Spanish, had enjoyed working individually/in pairs, and whether the technology had been easy to use.

<sup>2</sup> WebCAPE. Perpetual Technology group. <https://perpetualworks.com/>.



At the end of the three weeks, both groups completed a post-motivation survey and the results were compared to their final exam (created and administered for all Spanish beginning sections). Since this is a large assessment, we also looked individually at their performance on the grammar part of the exam, and in particular the difference between *ser* and *estar*, since this was one of the language forms included in the curriculum. In addition, we looked at the vocabulary component, the reading comprehension part, and the writing section of the final exam. Besides their final exam, the learners took the WebCAPE standardized test again. All students whose data is reported took the final WebCAPE test. However, not all of them took the test at the beginning of the study and, therefore, this measure could not be used to report gains.

Qualitative data was also collected through computer screen capture and voice recording of each pair or individual player. The recordings were analyzed to identify speech sequences including Language Related Episodes (LREs). Following Swain (2000, p. 286-287), we defined LREs as “any part of a dialogue where students talk about the language they are producing, question their language use, or other- or self-correct their language production, [which] entail[s] discussion of meaning and form”. LREs were then transcribed and analyzed in detailed by both researchers, and categorized by the type of linguistic item that caused the LRE (e.g., grammatical, lexical).

## Results

As the two distinct groups were intact classes and the research activity was part of their class work, when students were absent (and the numbers were odd) a student played individually even when the rest of the class was playing in pairs. We included the data of a few of these cases with the dyad’s data since these learners did experience collaborative playing.

### Research Question 1

To answer our first question: ‘Does PSSA help beginner learners of Spanish learn the language more than other Internet activities?’, the results from the post-treatment tests and the WebCAPE test of both experimental and control conditions were compared. The descriptive statistics of the post-tests are shown in Table 1.

**Table 1.** Comparison of post-tests between gaming and control group

	(N)	final exam		grammar		vocabulary		writing		reading		WebCape	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
<b>Gaming</b>	33	79.9	12.4	81.2	14.4	78.8	14.3	89.2	12.27	83.3	11.1	242.57	62.11
<b>Control</b>	22	77.1	15.5	74.9	18.2	79.5	14.9	96.3	6.39	85.5	8.9	221.78	59.10

Even though more students played the game, we only included the results of those who completed all the tests. The gaming group had a higher mean in the end of semester on the WebCape ( $M = 242.57$ ) than the control group ( $M = 221.78$ ); however, the difference was not significant ( $t(51) = 1.280$ ,  $p = 0.875$ ). They also performed slightly better in the final exam ( $M = 80$ ) and in the grammar portion of the exam. However, the control group outperformed the gaming group in the reading and writing portions. The only significant difference was in the writing scores of the control ( $M = 9.63$ ,  $SD = 0.64$ ) and the gaming group ( $M = 8.92$ ,  $SD = 1.23$ ;  $t(51) = 2.01$ ,  $p = 0.007$ ).

## Research Question 2

To answer question number two: ‘Does player configuration (dyads versus individuals) have an impact on learners’ language gains?’, we compared the same data as above, but focusing on the two experimental groups, as well as the LREs on the screen capture and audio recordings.

**Table 2.** Comparison of post-tests between gaming and control group

	Final exam		Grammar		ser/estar		Vocabulary		Writing		Reading		WebCape	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>IND</b>	76.6	13.8	19.1	3.7	7.8	1.2	25.8	5.7	8.6	1.4	8.1	1.1	231.7	51.6
<b>DYA</b>	84.1	8.1	21.9	2.1	8.8	1.1	28.3	2.7	8.9	2.2	8.6	1.1	255.6	72.5

The group that worked in dyads outperformed the individual group in all measures, although only the final exam ( $t(31) = 2.03$ ,  $p = 0.04$ ), grammar test ( $t(30) = 2.04$ ,  $p = 0.007$ ) and test on *ser* and *estar* ( $t(37) = 20.02$ ,  $p = 0.01$ ) were statistically significant. The results of the WebCAPE were also slightly higher for the group that worked in dyads ( $M = 255.6$ ) than the group that worked individually ( $M = 231.7$ ), but the difference was not statistically significant.

According to these results, the group that played in pairs benefited mostly from the exposure to grammatical elements that happened during the game. This is understandable since the game had a large emphasis on grammatical points (including the difference between *ser* and *estar*) and most of the corrective feedback provided by the game had to do with grammar. Therefore, grammatical points were most salient to students and likely candidates for attention and noticing. In addition, our presence during the game playing allowed us to observe interactional practices during the dyads gaming that are conducive to SLA, such as negotiation of meaning, immediate corrective feedback, input enhancement, task repetition, etc. The qualitative analysis of the screen and voice recordings confirmed these observations. These task-based digital games, especially when designed for educational purposes, can target several features of the language while engaging and maintaining learner’s attention on task (PICA,

1994). Other characteristics of game design can purposely shift learner's attention from meaning to the language by triggering communication breakdowns, providing thus opportunities for noticing (SCHMIDT, 1990) and negotiation of meaning (LONG, 1996). These processes of awareness and interaction while playing a task-based digital game provide learners with opportunities for identifying the gap between the target language and their interlanguage, which benefits the development of their L2 (SCHMIDT, 1990). The engagement of participants in collaborative dialogue episodes about the language itself is a place where noticing and negotiation is made visible for research. These language negotiation sequences are known as *language related episodes (LREs)* by Swain (2000).

### Language Related Episodes

The analysis of two of the dyads' audio recordings and screen capture (chosen randomly in at least two quests) revealed that although 90% of the negotiation happened in English (the learners' L1), they were still actively engaged with the task and the language by reading, translating, repeating out loud, and engaging in metalinguistic explanation. Most of the LREs in the data focused on vocabulary and meaning (understanding content) followed by negotiation of morphological language issues and the use of verb *ser* or *estar*.

**Table 3.** Nature of LREs

Min. recorded	Pair 1 (S5 & S6) 111m/ 3 interactions	Pair 2 (S7 & S8) 81m/ 2 interactions
Lexical	24	8
Morphological	11	6
Syntactic	9	1
Spelling	3	4
Accents	8	4
Semantic	27	9
Pragmatic	1	0
<i>Ser/estar</i>	12	4
TOTAL	95	36

The analysis of the LREs also revealed that the corrective feedback provided by the game was an excellent trigger of negotiation. The negotiation was mostly related to lexical items and most of the time it took more than one feedback instance to completely correct an incorrect sentence.

### Qualitative analysis

The qualitative analysis of the interaction (computer screen and audio recording) provided a detailed picture of what happened during the game play of each pair. In this section we present examples of LREs produced by pair 1 (S5 and S6) to showcase how their negotiation unfolds throughout the game.

In the first excerpt, the students' avatar is in quest 1 completing a task in which they had to buy souvenirs at the plaza. S5 is controlling the keyboard in this interaction.

Excerpt 1. Buying souvenirs. [Words in italics were uttered in Spanish]

	Sentence on screen: ¿_____ <i>cuestan</i> ? (_____ does it cost?)	
1	S5: <i>Cuantos</i> ? (How many?)	
2	S6: <i>Cuanto, cuantos</i> ? (How much, how many?)	
3	S5: <i>Cuantos</i> ? (How many?)	S5 types <i>cuantos</i>
4	S6: <i>Acento</i> . Is there an <i>acento</i> ? (Accent. Is there an accent?)	
5	S5: <i>No sé</i> . I don't think so? (I don't know)	They submit <i>cuantos</i> (how many) [1 <sup>st</sup> corrective feedback (CF)]
6	S5: Ah! On the u or the o	
7	S6: Or is it the a?	
8	S5: I have no idea	
9	S5: <i>Cuantos</i> ? (How many?)	They pause, they have issues when typing
10	S6: <i>Cuanto, o</i> . (How much)	S5 types <i>cuántos</i> (how many) but doesn't submit it
11	S5: That doesn't look right	
12	S6: On the u on the u	
13	S5: Ohh I don't know	
14	S6: It doesn't look right	
15	S6: Can we use the textbook?	They ask to the teacher who is walking by
16	Teacher: Oh...yeah. No no, just try your best	
17	S6: <i>Cuantos cuestan</i> . So how much are they? (How many does it cost)	
18	S6: Do you say <i>cuanto</i> or <i>cuantos</i> ? (Do you say how much or how many?)	
19	S5: I thought it was <i>cuantos</i> but let's try <i>cuanto</i> (I thought it was how many but let's try how much)	Types <i>cuanto</i> (how much) and submits [2 <sup>nd</sup> CF]
20	Teacher: Accent mark	Types <i>cuántos</i> (how many), and submits [3 <sup>rd</sup> CF]
21	S6: Is it in the u?	Types <i>cuántos</i> (how many) and submits [4 <sup>th</sup> CF]

- 22 S6: Is it on the o? They submit *cuantós* (how many), but it is wrong. After four tries, the game lets the player move on, showing the correct answer in green: *cuánto* (how much)
- 23 S5: Ah that took forever

In this excerpt, the accent mark and the differences between *cuánto* vs. *cuántos* (how much vs. how many) is the source of error and negotiation. Students do not understand how to use *cuánto* and *cuántos*, and since the verb followed is conjugated in its plural form *cuestan*, the learners think they need to use the plural as well, and keep trying and negotiating where to place the accent. Even though they did not get it right at first, the game gives the correct answer after the fourth try and lets them continue.

In the following extract, the students have to ask the vendor how much a backpack costs through a multiple-choice question.

#### Excerpt 2. Buying a backpack

Multiple choice question on the screen: ¿\_\_\_\_\_ es en dólares?

Word choices: *Cuándo* / *cómo* / *cuánto* / *qué*

( \_\_\_\_\_ is it in dollars? when / how / how much / what)

- 24 S5: Uhmmm
- 25 S6: How much is that in dollars
- 26 S5: *Cuánto cuesta* (How much does it cost) S5 selects the word *cuánto* (how much) and submits it
- 27 S6: Oh it's on the a S6 notices the accent is on the a

We can see that during this LRE, S6 translates the Spanish sentence on screen while S5 proposes a candidate possibility in Spanish. It is when S5 selects the correct answer that S6 displays a change of cognitive state marked by the 'oh' (HERITAGE, 1998). According to Heritage (1998, p. 327) oh-prefacing a sentence "uniformly conveys the sense that the prior question has occasioned a shift of attention to the matter raised by the question".

Four minutes later, the task requires that the players talk to a street musician. The learner's in-game advisor suggests that they give him a tip, around 2000 pesos. The need for the word *cuánto* triggers another LRE.

#### Excerpt 3. Tipping a musician

Sentence on the screen: "En dólares, ¿\_\_\_\_\_ es?"

(How much is it in dollars?)

- 28 S5: *Cuantós?* Right? (How many?)

- 29 S6: Oh, on the a  
S5 submits without adding the accent to a [1stCF]
- 30 S5: Oh it's on the a right?
- 31 S6: Yeah  
They type cuántos (how many) and enter [2nd CF]
- 32 S5: ¿Cuánto es?  
(How much is it?)
- 31 S6: Yeah
- 32 S6: ¿Cuánto es?  
(How much is it?)
- 33 S6: I hate cuánto(laugh)
- 34 S6: Cuánto es  
(How much is it)  
They submit cuánto (how much) [Correct answer]
- 35 S6: Oh! so is it never cuántos?  
(So is it never how many?)

In excerpt 3, S5 proposes the candidate *Cuantós* with an incorrect stress mark (on the o instead of the a). S6 realizes where the accent should be (line 29). However, S5 submits the word with an accent mark still on the wrong vowel. After feedback is provided, she realizes S6 might be right, and after seeking confirmation and receiving it from her partner, S5 submits it, but it is still wrong since she typed *cuántos* (how many). S6 suggests the correct answer and after the system accepts their correct answer, S6 comes to the realization that *cuánto es* is never plural in Spanish. The realization is prefaced by 'oh', a token of a cognitive change that allows us to say that the student actually noticed the correct language form.

From this LRE, it is clear that students have understood the difference between *cuánto es* and *cuántos/as*. Two minutes after this exchange the learners encountered another issue related to word selection in which they had to ask for a price. They did not hesitate and chose the words *cuánto es* right away. Three minutes later while buying *arepas* (a traditional Colombian food) from another street vendor, they were supposed to ask about the price again. They had to choose between multiple words provided, and again they got it right without hesitation.

Excerpt 4 illustrates an example of metalinguistic explanation in pair 1. Their avatar is beginning quest 2. They are talking to an old woman at the bus stop who asks for the time. The students need to type the missing words *son las*.

## Excerpt 4

- Sentence on the screen: \_\_\_\_\_ *ocho y cuarto de la mañana*  
( \_\_\_\_\_ eight fifteen in the morning)
- 36 S6: *Son las?* No.  
(it is the (pl)?)
- 37 S5: I think so
- 38 S6: *Es las?* S5 types *son las*  
(it is the(pl)?)
- 39 S6: Maybe what time is it.
- 40 S6: Or is it...right?
- 41 S5: Is it *es* for this one?  
(Is it "it is" for this one?)
- 42 S6: Is it *es las?*  
(Is it "it is the(pl)"?)
- 43 S5: *Es la, es la ocho*  
(It is the(sing), it is the(sing) eight)
- 44 S6: I don't know, I don't remember
- 45 S5: I don't either
- 46 S5: *Es la* Oh wait, is it the only one that's  
singular?  
It is the(sing)Oh
- 47 S6: *Un*  
(one)
- 48 S5: *Un*  
(one)
- 49 S5: So now it's *es las ocho*  
(it is the (pl) eight)
- 50 S6: *Las. Es las ocho* They submit *es las*; the word *es* turns red [CF; *las* (which is  
(the(pl), it is the(pl) eight) correct) turns green]
- 51 S6: Oh no. *son*, it's *son*. Eee sorry  
(Are, it is are)
- 52 S5: No it's ok S5 laughs

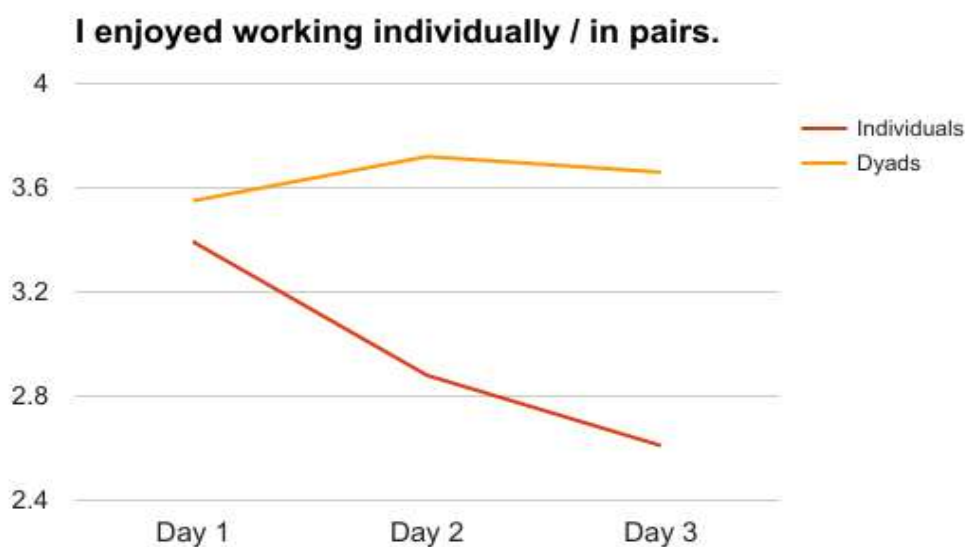
In this excerpt, S6 suggests the correct answer but, then, she self-corrects. S5 had already typed and submitted it. Then they try different expressions used to tell the time. They recognize they cannot remember the answer, and S5 explains how it cannot be *la*, because *la* is singular and it only happens with one o'clock (line 46). They both agree on a candidate answer *es las ocho* and S5 submits it to the system. When they receive corrective feedback, S6 displays noticing of the mistake through the change of cognitive state token 'oh' (HERITAGE, 1998) (line 51) and apologizes for proposing a wrong answer. S5 accepts the apology and shows affiliation through laughter (line 52).

### Research Question 3

Finally, in order to answer research question three: ‘To what extent does learner configuration (dyads vs. individuals) affect learners' attitudes and perceptions of the game?’, data from both the post-gaming surveys and the post-motivational survey was analyzed.

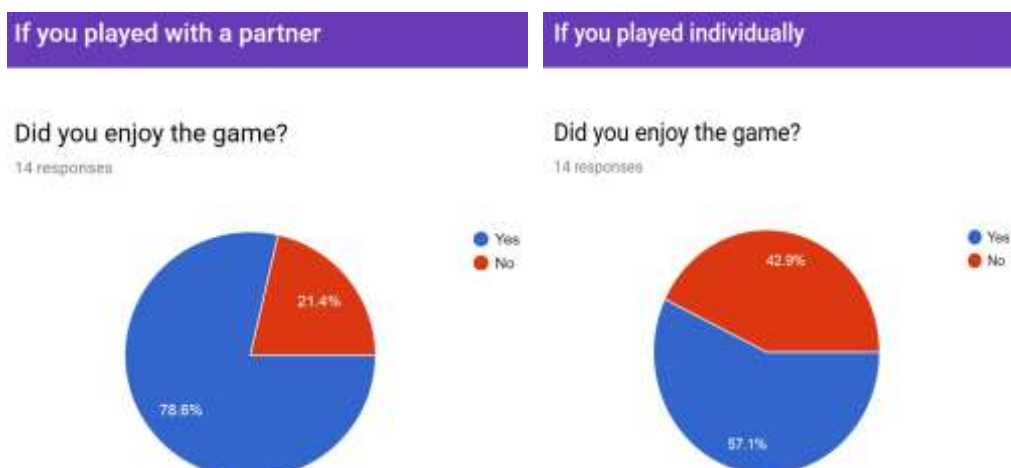
The data from the surveys conducted after each gaming session showed a large difference between the learners that played in dyads and those that played individually. All groups seemed to start with the same perception of the game. However, while the learners that played in dyads changed very little their opinion of the game, those learners that played individually really disliked the experience (Figure 3).

**Figure 3.** After gaming opinion survey data



In the post-gaming survey, which was carried out after the three weeks of gaming, this difference was also clear. While 78.6% of learners that played the game in dyads enjoyed it, only 57% of those that played individually liked it (Figure 4)

**Figure 4.** Post-gaming survey





Similarly, only 45.5% of learners who played individually thought the game had helped them learn Spanish, in contrast to 78.6% of those that played in dyads.

**Table 4.** Learner perception of game usefulness

	Yes	No	Maybe
DYA	78.6%	7.1%	14.3%
IND	45.5%	18.2%	36.4%

The qualitative data from the surveys suggested that what learners liked most about the game (both groups) was the opportunity to use the structures that they were using in class in a more contextualized and realistic setting as the following comments illustrate:

- “It was useful having to say full sentences each time we had to respond instead of just clicking the right word” (S1-dyad)
- “I enjoyed having a more realistic application of the language that forced me to use problem solving skills in the language” (S7-dyad)
- “I learned how to put things in context” (S11-indiv)
- “It helped me with learning when i need to use ser or estar” (S13-indiv)
- [I learned] “How to make sentences flow better in actual day-to-day conversation” (S14-indiv)
- “The game simulated real life situations” (S17-dyad)

In addition, students perceived the game as a low-risk environment where language could be practiced without fear of making mistakes and with the advantage of immediate feedback, which is essential for language learning (EDUCATIONAL TESTING SERVICE, 2012; OPITZ; FERDINAND; MECKLINGER, 2011). Some illustrative comments were:

- “It gave us the chance to test our knowledge and if we were wrong, to try to make corrections multiple times before giving us the correct answer(s)” (S4-dyad)
- “It was a low risk assignment where making mistakes were not public” (S2-dyad)
- “Working together to find the answer helps to reinforce the material” (S3-dyad)

## Discussion and conclusion

Since this research is embedded in a full language curriculum, we cannot claim any causality as whether the learning that students experienced was the result of playing the game or the multiple other activities they had done in class. In fact, the data showed that there was not much difference between those learners engaged in the game and those that did other Internet activities, and this seems to suggest

that the game was not particularly effective in the way it was implemented; although a longer treatment would be necessary to determine whether this is true.

The most interesting finding of this study is the clear difference in learner's self-reported enjoyment and perception of the usefulness of the game between those that played the game in dyads and those that played individually. Those learners that played individually increasingly disliked playing and did not find it useful, while those that played in dyads enjoyed it more and found it useful. This was also supported by the students' comments that mentioned the game as being a good environment to practice what they were learning in class in a more authentic and engaging way.

The interactional data of learners that played in dyads revealed that the majority of the identified LREs happened in English, the learners' L1. Although we thought that the students would engage in the L2 much more, this result was not unexpected, given that they were language beginners with only a few weeks of language knowledge. In addition, it was clear from the observation data that learners immersed themselves in the task at hand, and since tasks are goal-oriented, learners wanted to complete the task rather than spending time thinking about the language. It was also clear from the audio recordings that students did not see the interaction as a learning tool. There were several instances in the data in which it was clear that learners got impatient and frustrated with the game if the interaction required more than three or four times to accomplish a task. Some of the learners' comments illustrate this idea: "Oh! Más?" [*oh! More?*]; "Can we leave?"; "Do we need to talk to him?"; "Just give me food", "Ohggg! we don't have time for this!" "I don't want to talk to this lady". Even though learners were more focused on task completion, the interactional data also showed examples that are believed to be beneficial for language learning. The qualitative analysis of the LREs illustrate how the dyads collaborated and negotiated to complete the tasks and to choose the correct answer. Instances of noticing and uptake were also observed in the dyads' dialogues.

We believe that this research, in spite of its limitation, has important pedagogical implications. Although the game was developed to be played individually, the results of this research suggest that the game is more effective when played in pairs since it provides opportunities for negotiation of meaning and language use that do not happen when the game is played individually. In addition, learners seem to be more motivated to play with another player, as clearly stated by those players that tried both conditions. Pedagogically speaking, this would mean to play the game in dyads in a computer lab. It was also clear, during this investigation, the importance of giving time for the students to familiarize themselves with the game and learn the game mechanics. It is also essential that learners receive technical support during game play to minimize frustration and allow them to focus on the language as much as possible. Finally, it was also clear that not all students enjoy gaming, and it may be necessary to provide alternatives for those who do not enjoy game play.

As for game development, we would recommend that game developers should be aware of long tasks, since they may decrease students' interest and motivation to continue the game and also affect their engagement with the language. We would also suggest a reconversion of the game to a multiplayer platform with two students and their avatars navigating the environment together, or any other technology that would facilitate synchronous communication between two or more students remotely to work together with one avatar.

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