Video Games and English Learning: An Exploratory Study of EFL Pre-Service Teachers' Perceptions

Claudio Díaz Larenas*
Universidad de Concepción, Chile
claudiodiaz@udec.cl

Maritza Carrasco Palma**
Universidad de Concepción, Chile
mcarrascop2016@udec.cl

José Norambuena Valdés***
Universidad de Concepción, Chile
jnorambuena2016@udec.cl

Recibido: 30 de abril del 2022 / Aceptado: 18 de diciembre del 2022
doi: https://doi.org/10.26439/contratexto2023.n39.5867

ABSTRACT. The present study explores the knowledge and perceptions that 72 Chilean EFL (English as a foreign language) pre-service teachers have regarding the effect of video games in their daily and academic routine in terms of foreign language learning. By applying a 5-point Likert scale, it was possible to gather data concerning their sociodemographic characteristics and their views in relation to five dimensions: (1) General experience with video games, (2) general preferences about video games, (3) strengths and weaknesses of video games, (4) video games as a learning experience, and (5) video games and the four language skills. Once the data were collected, the Spearman's orrelation coefficient was used with the purpose of determining the relationships among the respondents' answers. The results indicated that the four language skills, especially the receptive skills, can be practiced while playing video games. Also, digital games allowed the participants to teach and learn from other players through gameplay. This

* Doctor en Educación por la Universidad de Concepción, Chile (véase https://orcid.org/0000-0003-2394-2378).
** Licenciada en Educación por Universidad de Concepción, Chile (véase https://orcid.org/0000-0002-2654-9136).
*** Licenciado en Educación por Universidad de Concepción, Chile (véase https://orcid.org/0000-0003-3458-2953).

process was followed by a hierarchical cluster analysis that allocated the respondents into four groups based on the similarities of their responses.

KEYWORDS: English as a foreign language / second language learning / pre-service teachers / video games / language skills

VIDEOJUEGOS Y EL APRENDIZAJE DEL INGLÉS: UN ESTUDIO EXPLORATORIO SOBRE LAS PERCEPCIONES DE FUTUROS DOCENTES DE INGLÉS

RESUMEN. El presente estudio explora el conocimiento y las percepciones que setenta y dos profesores/as de inglés en formación, de nacionalidad chilena, tienen sobre el efecto de los videojuegos en su vida diaria y estudiantil, en términos del aprendizaje de un idioma extranjero. Al aplicar una escala de Likert de cinco puntos fue posible reunir información concerniente a sus características sociodemográficas y sus puntos de vista con relación a cinco dimensiones: (1) Experiencia general con videojuegos, (2) preferencias generales acerca de los videojuegos, (3) fortalezas y debilidades de los videojuegos, (4) videojuegos como una experiencia de aprendizaje y (5) videojuegos y las cuatro habilidades del idioma. Una vez que los datos fueron recopilados, se aplicó el análisis correlacional de Spearman para identificar relaciones entre las respuestas de los participantes. Se estableció que las cuatro habilidades lingüísticas, especialmente las receptivas, pueden ser practicadas mientras se juegan videojuegos. También, los juegos digitales permitieron a los/as participantes que enseñaran a otros jugadores/as en línea y aprendieran de ellos/as a través del juego. Este proceso fue seguido de un análisis de conglomerados (*cluster*) jerárquico que asignó a los/as participantes en cuatro grupos sobre la base de las similitudes de sus respuestas.

PALABRAS CLAVE: inglés como lengua extranjera / aprendizaje de un idioma extranjero/ profesores en formación/ videojuegos/ habilidades del idioma

JOGOS DE VÍDEO E APRENDIZAGEM DE INGLÊS: UM ESTUDO EXPLORATÓRIO DAS PERCEPÇÕES DOS PROFESSORES DE PRÉ-SERVIÇO DE LÍNGUA INGLESA

RESUMO. O presente estudo explora os conhecimentos e percepções que 72 professores chilenos de pré-serviço de língua inglesa têm a respeito do efeito dos jogos de vídeo em sua rotina diária e acadêmica em termos de aprendizagem de línguas estrangeiras. Aplicando uma escala de 5 pontos Likert, foi possível reunir dados relativos às suas características sociodemográficas e seus pontos de vista em relação a cinco dimensões: (1) Experiência geral com jogos de vídeo; (2) Preferências gerais sobre jogos de vídeo; (3) Pontos fortes e fracos dos jogos de vídeo; (4) Jogos de vídeo como uma experiência de aprendizagem; e (5) Os videogames e as quatro habilidades linguísticas. Uma vez

coletados os dados, foi aplicada uma análise de correlação Spearman com o objetivo de determinar as relações entre as respostas dos entrevistados. Os resultados indicaram que as quatro habilidades linguísticas, especialmente as habilidades receptivas, podem ser praticadas enquanto se joga jogos de vídeo. Além disso, os jogos digitais permitiram que os participantes ensinassem e aprendessem com outros jogadores através da jogabilidade. Este processo foi seguido por uma análise hierárquica de agrupamento que alocou os respondentes em quatro grupos com base nas semelhanças de suas respostas.

Palavras-chave: inglês como língua estrangeira / aprendizagem de idioma estrangeiro / professores de pré-serviço / jogos de vídeo / habilidades linguísticas

Apoyos

Este artículo se elabora en el marco de la beca de investigación del FONDECYT 1220307: "Estudio sobre el diseño de instrumentos de evaluación del idioma inglés: procesos y carga cognitiva, respuesta afectiva y desempeños de candidatos a profesores".

INTRODUCTION

Technology is an inseparable part of everyday life since it allows the use of different devices and programs to facilitate people's lives in a globalized world. Technology serves a myriad of purposes, such as education, work, and entertainment. An example of the use of technology for leisure are video games. These are audiovisual pieces of software electronically produced by a computer and other gadgets and displayed on a screen. In these types of games, players can interact and manipulate what happens in the game by using their controllers and monitors. There is a wide variety of game software, ranging from 2D (two-dimensional) arcade platform games, such as *Super Mario Bros* (1985) or *The Legend of Zelda* (1986), to 3D (three-dimensional) massively multiplayer online role-playing games (MMORPGs), such as *World of Warcraft* (2004) or *Destiny 2* (2017). Regarding the latter, players have a virtual world perspective and can interact with objects, other players, and non-player characters (NPCs) while doing many tasks at the same time.

Additionally, video game technology can fulfill educational purposes. In recent years, the field of video games and its evolution has been targeted by educational research. Several studies address the topic of using video games for teaching specific skills or analyzing the impact that they have on those abilities. In the context of second language acquisition (SLA) and learning English as a foreign language (EFL), findings (Bytheway, 2014; Chen et al., 2012; Li, 2019; Padaya & Chbaklo, 2022) show that language learners can acquire or learn some of the target language by playing video games, especially vocabulary and receptive skills, such as reading and listening.

It is crucial to consider that the English language is becoming an incredible source of academic and professional opportunities in a wide variety of contexts in modern society. There exist many options to acquire or learn a foreign language, either formally or informally, academically or as a hobby; therefore, the main objective of this study is to analyze EFL pre-service teachers' knowledge and perceptions of video games in their daily and student life.

Brief History of Video Games and Their Growing Relevance on Second Language Learning

Over the years, video games have evolved from simple images and mechanics to a more colorful, engaging design. In the beginning, two-dimensional (2D) video games, such as *Contra* (1987) and *Tetris* (1989), were the main focus of attention for players. Then, thanks to consoles like *Nintendo 64*, three-dimensional (3D) video games, including *Mario Kart 64* (1996) and *Super Smash Bros.* (1999), were released and people experienced video games from a new perspective. In these digital games, strategy and skill were required, and sometimes communication if the user was playing with friends. Nevertheless, said video games were closer to being "lonely trips" than a fellowship of friends on a journey

through a virtual world, especially if SLA and second language learning (SLL) are taken into consideration. Some of the video games allowed players to subconsciously learn new vocabulary in context thanks to the audiovisual features that video games contain (Ashraf et al., 2014; Rudis & Poštić, 2018; Vahdat & Rasti, 2013).

Multi-user dungeon (MUD) became famous in 1978 because it allowed players to create an online community for the first time. Although it consisted of pure text and symbols, players used its open code to create their own versions of the game and share them with the community, including multi-user shared hallucination (MUSH) and MUD, object-oriented (MOO).

The early development of video games and the Internet built the foundations for the vast field of immersive video games that nowadays are known as MMORPGs.

MMORPGs and SLA/SLL

MMORPGs are networks in which players create an avatar that represents them in a virtual world, generally based on science fiction, and can interact within it. These worlds are characterized by their immersive environment where players fulfill different objectives through their game progress (Peterson, 2012). During this journey, players would be able to play on their own, but at the same time there would be objectives that they would need to accomplish by cooperating with other players. It is common for players to join a guild when they want to complete the most difficult challenges of the game. A guild is a term for a small community of players that decide to work together, so they can achieve specific goals in the game that are normally quite difficult to accomplish on their own (Rudis & Poštić, 2018). However, massively multiplayer online game (MMOG) communities go beyond the game world since players create virtual spaces (forums, blogs, web pages, among others) outside the game where they help each other by sharing information related to those games. This information can range from how to defeat a "boss" or acquire a specific object to telling anecdotes within the simulation (Lee & Gerber, 2013; Rankin et al., 2006).

These aspects of MMOGs provide many SLL features, such as interaction, L2 input and output, vocabulary, teamwork, collaboration, autonomy, and negotiation of meaning. All of them are given in authentic contexts with a variety of stimuli through a scaffolding process in which players are engaged in different tasks that become more challenging as they progress within the game. This can improve the player's motivation and also help decrease or control anxiety, especially because of the anonymous identity the player has.

The best example of an MMORPG, especially if it is linked to SLL/SLA, is *World of Warcraft* (WoW). At its best moment, the WoW population had more than 12 million players. The game population is divided into two factions: *alliance* and *horde*. Depending on the faction, they choose a race and then a class (classes are not linked to specific

factions nowadays as they were in the first version of the game). Once they have chosen their path, players fulfill roles within the game: tanks, in charge of protecting the team; healers, who make sure the group does not die; and DPS (damage per second), who are in charge of making huge amounts of damage to win the encounter as soon as possible while the whole team works together to avoid losing the match. Finally, since WoW is an open-world game based on its own story, players can explore and interact with the environment while being exposed to different stimuli and also improving their vocabulary thanks to the richness of its texts (Bytheway, 2014; Bytheway, 2015; Chik, 2014; Jabbari & Eslami, 2019; Lee & Gerber, 2013; Lee & Pass, 2014; Newgarden & Zheng, 2016; Rama et al., 2012; Thorne, 2008).

Second Language Acquisition Theories and Their Connection to Video Games

There have been several valuable theories regarding SLA that can be linked to video games, emphasizing MMORPGs. Although from general education, Vygotsky (1980) proposed the concept of *zone of proximal development*, which can be defined as "the difference between what a child can accomplish independently and what a child can accomplish under assistance from a more capable person (adults or peers)" (Li, 2019, p. 475). This point is illustrated in guilds, in which players join and cooperate with each other to accomplish game objectives. Then, Krashen (1987) formulated the Monitor Model and its five hypotheses, which are especially relevant in SLL through the video game context. For instance, the input hypothesis, also known as i+1, where *i* is the language input that learners already possess, and *1* means new input. This concept is related to another one called *reward curiosity* (Bytheway, 2014), which is exemplified by quests in video games. Quests motivate players to complete specific tasks in order to be rewarded and unlock new areas to discover and move forward within the game and, at the same time, in their second language or foreign language learning/acquisition process. Finally, the affective filter hypothesis can be related to how players can decrease their levels of anxiety by playing anonymously and by gaining confidence in their gaming skills through the player community's support and collaboration.

Formal, Non-formal, and Informal Learning

To get a further understanding of the relation between video games and SLA/SLL, there are three types of learning contexts that need to be considered: formal, non-formal, and informal learning.

On the one hand, formal learning refers to structured learning that has clear goals and objectives and takes place in a planned setting, such as classrooms, workshops, or remote labs. On the other hand, Benson (2011) emphasized that 'non-formal education often refers to classroom or school-based programs that are taken for interest and do not involve tests or qualifications" (p. 10). Livingstone (2006) defined informal learning as

unstructured learning that occurs outside traditional, formal settings which are usually oriented towards self-directed and autodidactic learning. For example, when playing video games, self-studying, participating in forums, watching videos or movies, among others.

Informal Learning in the Field of Video Games

Reinhardt (2021) pointed out that informal learning comes from the area of language learning beyond the classroom (Benson, 2011; Chik & Ho, 2017; Godwin-Jones, 2018). Consequently, Benson (2011) proposed a four-dimensional framework that aids to describe informal learning:

Location

This is where informal learning generally occurs. Location includes physical and virtual settings that do not involve educational environments.

Formality

It is related to the degree of independence that learners develop by pursuing their interests beyond academic courses or programs.

Pedagogy

It is mostly oriented toward an autonomous practice, including self-instruction and self-assessment.

Locus of Control

It is related to the degree of control that learners possess over their learning process (learner autonomy).

To illustrate this idea, Matijevic and Topolovcan (2019) analyzed how using different video games through informal learning contexts contributed to the learners' development. It was found that critical thinking, creativity, motor skills, English language learning, multiculturalism, entrepreneurship, cooperation, and persistence were the main benefits of playing video games.

METHODOLOGY

Type of Study

The present study is a quantitative, non-experimental, cross-sectional, and descriptive research that examines EFL pre-service teachers' knowledge and perceptions of video games in their daily and student life.

Research Question

This study answers the following question: "What contribution do pre-service teachers perceive that video games make to their daily life and their second language learning?"

Research Aims

This research study seeks to provide an answer to four research aims:

Research Aim 1

To identify participants' experiences, general preferences, strengths, and weaknesses about video games.

Research Aim 2

To describe participants' viewpoints regarding the potential of video games as a learning experience and their perceptions of the four language skills improvement through video games.

Research Aim 3

To correlate participants' sociodemographic characteristics with their knowledge and perceptions of video games.

Research Aim 4

To characterize participants' profiles regarding their knowledge and perceptions of video games.

Participants

The participants who took part in this study were 72 Chilean students enrolled in an English Teaching Program (which lasts approximately 10 terms) at five Chilean universities. The majority (42 %) were in their fifth year of the program, followed by 18 %, 17 %, 14 %, and 10 % who were in their first, second, fourth, and third year. A total of 51 % were females, 45 % were males, 1 % were nonbinary, and 3 % did not want to report their gender. Also, most of the respondents' age (83 %) ranged from 18 to 24 years old, only 15 % were between 25 and 30 years old, and 2 % were 31 years old and older.

Regarding if the participants had ever played video games before the intervention, 94 % answered "yes" and only 6 % answered "no". Furthermore, the ones who answered "yes" were asked for how long they had been playing video games. Only 7 % of the participants pointed out that belonged to "Group I" (0 to 4 years), while 18 % to "Group II" (5 to 9 years), 29 % to "Group III" (10 to 14 years), 28 % to "Group IV" (15 to 19 years), and

6 % to "Group V" (20 years onwards). Moreover, 6 % of the participants stated that they played video games occasionally, and 6 % declared that they used to play video games but not anymore.

In terms of how the participants would self-rate their level of English according to the Common European Framework of Reference for Languages (CEFR), most of them (49 %) claimed to be "Upper-intermediate," followed by 32 % that considered themselves as "Advanced," 15 % as "Intermediate," and finally, 4 % "Pre-intermediate".

Concerning how the participants would self-rate their English teaching skills from 1 to 4 (being "Level 4" the highest score), the majority (43) rated themselves as belonging to "Level 3," followed by 15 who categorized themselves into "Level 2," 11 into "Level 4," and lastly, 3 into "Level 1".

Instrument

A 5-point Likert scale was designed and used to collect the data (see Appendix A). The instrument was made up of two different parts: the first one included questions regarding the participants' background information, level of English, and English teaching skills, and the second part focused on their knowledge and perceptions of video games. The data gathered in the first section of the instrument consisted of the participants' university, current study year, nationality, gender, and age. Additionally, they answered whether they had played video games or not, and if they had, for how long. And the second part of the scale included the five dimensions which were composed of 26 items: dimension 1: *General experience with video games* (6 items), dimension 2: *General preferences about video games* (5 items), dimension 3: *Strengths and weaknesses of video games* (6 items), dimension 4: *Video games as a learning experience* (5 items), and dimension 5: *Video games and the four language skills* (4 items). It is worth mentioning that the respondents were informed that the data collected was going to be used for academic purposes only.

The 5-point Likert scale was validated using Cronbach's alpha, which yielded an internal consistency score of .90 considered as "excellent" according to Cronbach's interpretation.

Research Variables

Five dimensions of the Likert scale were considered in this study, which are described in Table 1 as follows:

Table 1

Brief Description of Likert Scale Dimensions

Dimension 1: *General experience with video games*	**Number of items:** 6
This dimension aimed to identify whether or not EFL pre-service teachers liked to play video games, what their preferences regarding two-dimensional (2D) and three-dimensional (3D) video games were, what their average playtime was, and if they preferred playing in English to other languages.	
Dimension 2: *General preferences about video games*	**Number of items:** 5
This dimension was related to the inclinations that EFL pre-service teachers had when playing video games. The statements covered if they preferred playing online or offline video games as well as if they would rather have some company than play alone.	
Dimension 3: *Strengths and weaknesses of video games*	**Number of items:** 6
This dimension considered the viewpoints that EFL pre-service teachers had regarding the advantages and disadvantages of video games in relation to: - Autonomy and decision-making skills - Critical thinking - Teamwork and collaboration - Distraction from responsibilities - Time-consuming activity - Addiction	
Dimension 4: *Video games as a learning experience*	**Number of items:** 5
This dimension focused on collecting data concerning to what extent EFL pre-service teachers considered that video games could help and contribute to the English learning process.	
Dimension 5: *Video games and the four language skills*	**Number of items:** 4
This dimension addressed the EFL pre-service teachers' perspectives regarding the impact of video games on the improvement of the four language skills: listening, reading, writing, and speaking.	

Procedure

The study consisted of four stages: planning, validation, data collection, and instrument analysis. To facilitate participation, the EFL pre-service teachers were provided with a 5-point Likert scale via Google Forms. The participants were requested to answer the scale according to their level of agreement with each item. Each element had five possible answers: *strongly agree* (5), *agree* (4), *neutral/no opinion* (3), *disagree* (2), and *strongly disagree* (1). Moreover, the respondents were properly informed of the merely academic uses the data collection would have in this project. They voluntarily consented to participate in the study by providing their written approval.

Type of Data Analysis

As this is a quantitative, non-experimental, cross-sectional, and descriptive study, the data were analyzed in four different stages:

Cronbach's Alpha

The first calculation made was the Cronbach's alpha to determine the scale's internal consistency and reliability.

Descriptive Statistics

The second calculation of the data included the measure of central tendency. Therefore, the mean score (*M*) for each item of the 5-point Likert scale, the average of the five dimensions, as well as the global data were calculated. At the same time, the standard deviation (*SD*) as a measure of dispersion was analyzed.

Correlational Analysis

For this analysis, the IBM Statistical Product and Service Solutions (SPSS) Statistics V21 was used to identify possible correlations between each sociodemographic variable and each dimension. First, the Kolmogorov-Smirnov test for normality was used to determine the data set distribution of the variables. Secondly, once the variables were identified as non-parametric, it was decided that the Spearman's correlation coefficient was the most suitable measure to identify the associations.

Hierarchical Cluster Analysis

The cluster analysis was carried out using IBM SPSS Statistics. Ward's method was employed to identify the optimal number of clusters. Once the four clusters were determined, a dendrogram was generated in order to establish the allocation of each of the cases (72) and their corresponding group (four clusters).

RESULTS

The findings of the present study are organized as follows. First, simple descriptive statistics are used to express the participants' mean scores and standard deviation both in general and in relation to each of the five dimensions considered in this research. Then, each of the five dimensions is analyzed in terms of the level of agreement with the items. Finally, the relationship among the five dimensions is studied, as well as the participants' profiles according to their knowledge and perceptions about video games.

Table 2 below illustrates the global data regarding the mean score and the standard deviation of the 5-point Likert scale (96,26 and 16,404, respectively).

Table 2

Mean and Standard Deviation of Global Data Regarding the Five Dimensions

	- N	- M	- SD
- Global data	- 72	- 96,26	- 16,404

Note. A scale ranging from 1—*strongly disagree* to 5—*strongly agree* was used. *M* stands for mean and *SD* for standard deviation.

Additionally, the mean score and standard deviation of each of the five dimensions were calculated, as presented in Table 3.

Table 3

Means and Standard Deviations per Dimension

Dimension	N	M	Max.	Min.	SD
1. General experience with video games	72	3,55	5	2	0,892
2. General preferences about video games	72	3,78	5	1	0,786
3. Strengths and weaknesses of video games	72	3,93	5	3	0,532
4. Video games as a learning experience	72	3,66	5	1	1,046
5. Video games and the four language skills	72	3,55	5	1	1,040

Note. A scale ranging from 1—*strongly disagree* to 5—*strongly agree* was used. *M* stands for mean and *SD* for standard deviation.

The results indicated that the mean was close to a general agreement on the participants' perceptions of the five dimensions related to video games and that their responses were similar to one another and close to the mean, which is reflected on the low standard deviation obtained.

Specific Objective 1: To Identify Participants' Experiences, General Preferences, Strengths, and Weaknesses About Video Games

Dimension One: General Experience With Video Games

In the first dimension, item 1 (*I like playing video games*) had the highest mean score (*M* = 4,31; *SD* = 0,898), whereas item 4 (*I play video games for more than four hours a day*)

had the lowest (*M* = 2,58; *SD* = 1,330). Based on these results, in general, it can be said that the EFL pre-service teachers have had good experiences playing video games since the majority stated that they liked playing them. Although the participants showed great appreciation for video games, they did not tend to play for several hours a day. This is supported by the fact that most of them did not consider themselves as "gamers". Apart from that, a great number of them preferred to play video games in English, which may reveal an intention to interact with the target language through informal contexts.

Dimension Two: General Preferences About Video Games

In the second dimension, item 8 (*I feel comfortable playing offline video games*) had the highest mean score (*M* = 4,26; *SD* = 1,088) while item 9 (*I prefer playing video games with people in general*) scored the lowest (*M* = 3,15; *SD* = 1,109). That is to say, in item 8, more than 59 % strongly agreed and 22 % agreed with the statement. However, in item 9,35 % of the participants were neutral about this statement. As stated in the results of dimension two, most of them preferred playing offline video games rather than online ones. At the same time, the majority of the participants were neutral when asked if they preferred playing video games with people in general. Nevertheless, when it comes to playing video games with close friends or in isolation, the levels of agreement and neutrality were balanced, being the former predominant. Thus, it can be said that the respondents are not into playing with others unless they are known to them.

Dimension Three: Strengths and Weaknesses of Video Games

As for the third dimension, item 14 (*I consider that video games develop teamwork and collaboration*) obtained the highest mean score (*M* = 4,29; *SD* = 0,846) and item 17 (*I think that video games are an addiction*) obtained the lowest (*M* = 3,46; *SD* = 1,310). To illustrate this, in item 14, more than 49 % strongly agreed and 37 % agreed with this statement. In addition, more than 50 % of the respondents agreed and 39 % strongly agreed with item 12 (*I believe that video games develop autonomy and decision-making skills*). Furthermore, 42 % of the participants agreed and 33 % strongly agreed with item 16 (*I consider video games time-consuming*). In terms of the strengths of video games, most of the participants agreed that teamwork and collaboration were the main advantages that games can develop, followed by autonomy and decision-making skills, and critical thinking. By contrast, in terms of weaknesses, the majority revealed that video games are time-consuming and a distraction from their responsibilities as well. Notwithstanding, respondents' answers were balanced in terms of neutrality and agreement when considering video games as an addiction.

Specific Objective 2: To Describe Participants' Viewpoints Regarding the Potential of Video Games as a Learning Experience and Their Perceptions of the Four Language Skills Improvement Through Video Games

Dimension Four: Video Games as a Learning Experience

In the fourth dimension, item 22 (*Video games allow me to apply my English knowledge in different contexts*) got the highest mean score (*M* = 3,93; *SD* = 1,079) and item 21 (*My willingness to communicate in English increases while playing video games*) got the lowest (*M* = 3,44; *SD* = 1,149). Item 19 (*I have learned new things in English through video games thanks to other people*) was the statement that most of the participants (45 %) strongly agreed with. At the same time, in item 18 (*I have helped others to learn new things in English through video games*), more than 44 % of the respondents agreed. According to these findings, the participants declared that video games have contributed not only to learn and practice new aspects of language but also to teach other people. Thus, they do not simply learn, but they are also capable of understanding the language and sharing that knowledge with others. Moreover, most participants stated that they had a better understanding of the language thanks to video games. Apart from that, their willingness to communicate (WTC) is neutral, which indicates that they do not play video games in English for only the sake of communication. Finally, the EFL pre-service teachers showed high levels of agreement regarding how video games allowed them to apply their English skills beyond the gaming context.

Dimension Five: Video Games and the Four Language Skills

In the fifth dimension, item 24 (*Video games have helped improve my reading skills in English*) had the highest mean score (*M* = 4,08; *SD* = 1,123), whereas item 26 (*Video games have helped improve my speaking skills in English*) had the lowest (*M* = 3,08; *SD* = 1,230). Regarding the receptive skills, 39 % of the participants strongly agreed and 26 % agreed with item 23 (*Video games have helped improve my listening skills*). Along with this, item 24 was the statement where most of the participants (49 %) strongly agreed. With regard to the productive skills, 26 % of the respondents disagreed and 21 % were neutral with item 25 (*Video games have helped improve my writing skills*). Also, 29 % of the participants were neutral and 25 % disagreed with item 26. Therefore, concerning the results of dimension five, the majority of the EFL pre-service teachers affirmed that digital games aided them to improve their receptive skills (reading and listening). Conversely, the development of their productive skills (writing and speaking) presented a balanced percentage between the agreement, neutrality, and disagreement levels. Hence, the productive skill domain was led by neutrality, closely followed by disagreement and, lastly, agreement.

Specific Objective 3: To Correlate Participants' Sociodemographic Characteristics with Their Knowledge and Perceptions of Video Games

A correlational analysis was conducted to identify and measure the possible correlations between two variables. First, in order to determine if the distribution of the data set was normal or not, the Kolmogorov-Smirnov test for normality was used since $N \geq 50$ (72). All the variables were non-parametric. That is to say, the data were not normally distributed seeing that $p < .005$. For this reason, the Spearman's correlation coefficient was selected to establish the relationships between the sociodemographic data and the five dimensions.

Relationship Between Global Scores and Participants' Sociodemographic Data

In regard to the global scores of the 5-point Likert scale and demographic data, a moderate positive correlation was found between knowledge and perceptions of video games and gender ($rs = .466$, $p = .001$). This indicates that EFL pre-service teachers who identify themselves with the same gender are likely to have similar responses when asked about video games. For example, the four participants who stated that they had not played video games were all female. Similarly, five females chose the *disagree* option when asked if they liked playing video games and six chose *neutral/no opinion*. These findings are to be considered since 37 participants out of 72 were females (51 %).

Relationship Between Gender and the Five Dimensions

Concerning the gender variable and dimension one (*General experience with video games*), a moderate positive correlation was found ($rs = .448$, $p = .001$), indicating that EFL pre-service teachers who identify themselves with the same gender are likely to have similar responses when asked about their experiences with video games. Likewise, with dimension four (*Video games as a learning experience*), there was also a moderate positive correlation ($rs = .426$, $p = .001$). Furthermore, there was a weak positive correlation with dimension two (*General preferences about video games*) ($rs = .293$, $p = .012$) and dimension 5 (*Video games and the four language skills*) ($rs = .393$, $p = .001$). Lastly, there was no correlation between gender and dimension three (*Strengths and weaknesses of video games*).

Relationship Among the Five Dimensions

With respect to the five dimensions of the 5-point Likert scale, there was a very strong positive correlation between dimension four and dimension five ($rs = .819$, $p = .001$). This demonstrates that dimension four (*Video games as a learning experience*) and dimension five (*Video games and the four language skills*) complement each other since the four language skills can be learned or practiced by EFL pre-service teachers when playing video games. Additionally, the participants were able to swap between the roles of teacher and learner. Finally, it also proved that they could use their target language skills

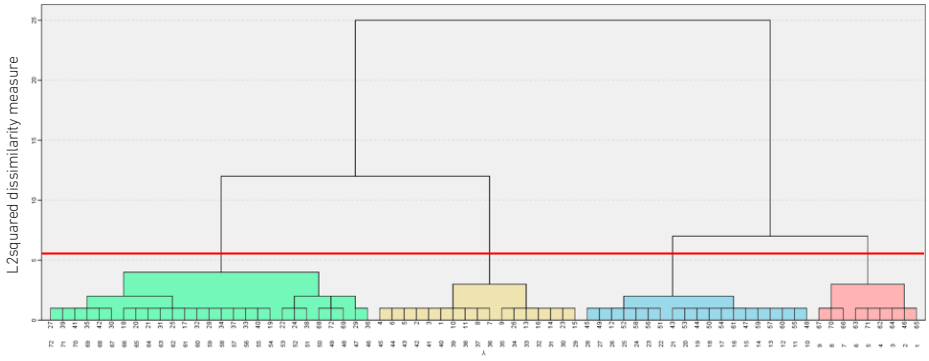
in different contexts, either formal or informal. Moreover, a strong positive relationship was found between dimension one and dimension four (*rs* = .666, *p* = .001), indicating that EFL pre-service teachers not only have experience playing video games but also, they have had the opportunity to teach or learn while playing. Moreover, a strong positive correlation was found between dimension one and dimension five (*rs* = .610, *p* = .001). This means that EFL pre-service teachers have not simply played video games, but at the same time they have shown improvement regarding receptive and productive skills to a certain degree. Between dimensions one and two, a moderate positive correlation was found (*rs* = .552, *p* = .001), meaning that EFL pre-service teachers presented similar experiences and preferences about video games. In addition, in dimension two and dimension four, a moderate positive correlation was present (*rs* = .423, *p* = .001). This reveals that regardless of EFL pre-service teachers' preferences about video games, they have been able to learn new things as well as teach other people. Furthermore, a weak positive correlation was found between dimension two and dimension five (*rs* = .405, *p* = .001), implying that despite EFL pre-service teachers' choices when playing video games, these games have helped them hone their English language skills to a certain extent. Finally, there was no correlation between dimension three and dimension four, as well as between dimension three and dimension five.

Specific Objective 4: To Characterize Participants' Profiles Regarding Their Knowledge and Perceptions of Video Games

With the purpose of identifying and analyzing specific groups with homogeneous characteristics, a hierarchical cluster analysis was conducted. In order to obtain the different clusters, Ward's method was employed where the variables were calculated with the squared Euclidean distance. As a result, a dendrogram was obtained (see Figure 1). The 72 cases were allocated into different groups based on their similarities. In this respect, it was determined that the most appropriate solution for the clusters was four. The cases were classified according to their responses in each variable: the 5-point Likert scale, their gender, their current study year, and their age. Moreover, the horizontal red line indicates the number of clusters and how many individuals each one of them contains (yellow, blue, red, and green).

Figure 1

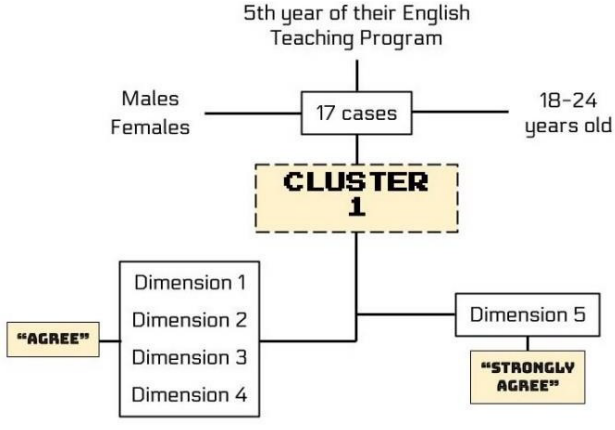
Dendrogram Representing the Four Clusters



The first cluster was composed of 17 cases where most of them were males (12), followed by four females, and one person who preferred to keep their gender anonymous. Thirteen of them were part of the 18-24 age group and four of the 25-30. Most of the participants (10) belonged to the fifth year of their English teaching program, five to the third year, and only two to the fourth. Finally, the average of their responses for each dimension of the Likert scale was 4 (which represents *agree*), except for dimension five, which was 5 (representing *strongly agree*). Figure 2 shows the most predominant characteristics of this cluster.

Figure 2

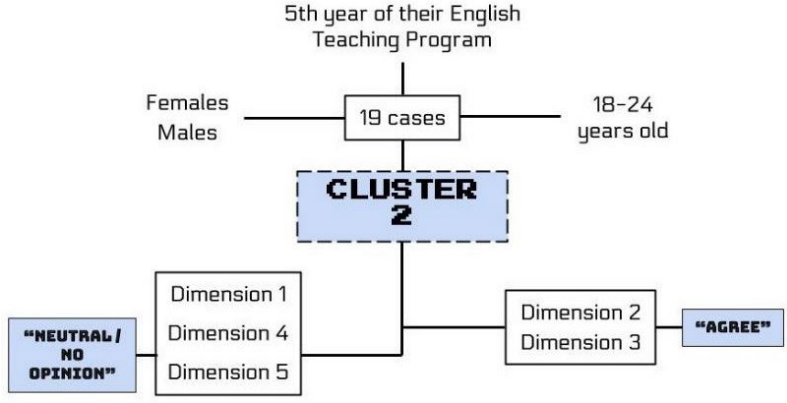
Main Characteristics of Cluster 1



The second cluster consisted of 19 cases: 12 females and seven males. Sixteen of them were part of the 18-24 age group and three of the 25-30. Most of them (14) belonged to the fifth year of their English teaching program and five to the fourth. Regarding the participants' answers in the Likert scale, in dimensions one, four, and five, the answer *neutral/no opinion* (represented by number 3) was the most frequent. Nonetheless, in dimensions two and three, the average of responses was *agree* (represented by number 4). Figure 3 displays the major characteristics of this cluster.

Figure 3

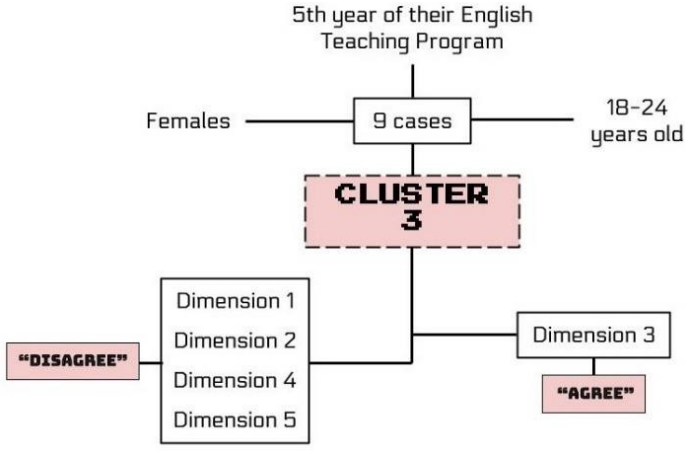
Main Characteristics of Cluster 2



The third cluster was formed by females only (9 cases). Seven of them were part of the 18-24 age group, followed by two who belonged to the 25-30 age group. Six of them were in the fifth year of their English teaching program and three in the fourth. Lastly, in dimensions one, two, four, and five, the average of responses was *disagree* (which is represented by number 2), except for dimension three which was 4 (meaning *agree*). Figure 4 illustrates the main characteristics of this cluster.

Figure 4

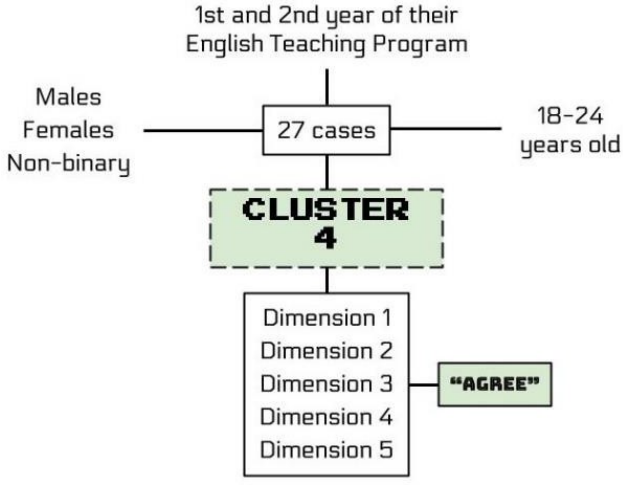
Main Characteristics of Cluster 3



The fourth cluster was composed of 27 cases: 13 males, 12 females, one non-binary, and one person who opted for maintaining their gender anonymous. Twenty-four of them belonged to the 18-24, two to the 25-30 and one to the 31 years old and older age group. Thirteen of them were in the first year of their English teaching program, twelve in the second and two in the third. Finally, based on their answers on the Likert scale, the average answer of all the five dimensions was 4 (which represents *agree*). Figure 5 exhibits the major characteristics of this cluster.

Figure 5

Main Characteristics of Cluster 4



DISCUSSION

This study has endeavored to research EFL pre-service teachers' experiences with video games and English language learning. It discovered that most of the participants have had positive experiences playing video games since they revealed that they enjoyed playing digital games. These findings agree with a previous study, which focused on collecting data regarding pre-service teachers' views on using adventure video games for learning a second language (Chen et al., 2012). The participants pointed out that they enjoyed playing them and that these games have an enormous potential that contributes to language development.

Along with this finding, the EFL pre-service teachers opted for playing video games mostly in English, which may show that one of their aims was to interact and be immersed in a second or foreign language environment through informal contexts. Likewise, in a case study conducted by Kongmee et al. in 2012, Thai ESL (English as a second language) learners were asked to play four different MMORPGs in English in order to analyze their learning performance and motivation when playing them. It was discovered that, when players were involved in these virtual worlds, they gained confidence in using English and were motivated since they found video games engaging.

Concerning EFL pre-service teachers' preferences about video games, offline digital games were prevalent and, at the same time, playing with close friends or in isolation were their main choices. Although online video games can provide language learning opportunities, offline video games can provide them as well, since players can interact with non-playable characters (NPCs) or pursue quests, thus being exposed to new vocabulary (Silva, 2014).

Moreover, teamwork, collaboration, autonomy, decision-making skills, and critical thinking were the major strengths of video games that the EFL pre-service teachers identified in this study. In that sense, Aune (2019) established that video games offer players opportunities for teamwork and cooperation seeing that, most of the time, these games require collaboration and help in order to accomplish certain tasks. Therefore, as a collaborative process takes place, "there is a chance of scaffolding happening naturally with students helping each other or the game itself functioning as the scaffold as it can give hints to help the students" (p. 14). Rudis and Poštić (2018) argued that unlike other forms of entertainment in the media context, video games can be played by multiple players at the same time and from any place.

Moreover, Chik's (2014) research is consistent with the current study; she claimed that video games enhance autonomy within virtual communities in an out-of-class L2 learning context. Apart from that, Matijevic and Topolovcan (2019) found that several video games (*Stronghold* [2001], *Command & Conquer 3: Tiberium Wars* [2007], *Crusader Kings II*

[2012], *Planetside 2* [2012], *Final Fantasy XV* [2016]) contribute not only to learn English as a foreign language but also to develop decision-making skills and critical thinking.

Nevertheless, most of the EFL pre-service teachers in this study found video games time-consuming and a distraction from their responsibilities even though they did not play regularly and did not consider themselves "gamers". Therefore, it can be implied that they have other priorities and that is why they catalog video games in this way. This aligns with Bolliger et al.'s (2015) study, which states that when students were asked about possible drawbacks of digital games used for English learning, potential distractions and loss of concentration were the main ones.

Regarding video games' potential as a learning experience, most of the EFL pre-service teachers affirmed that video games permitted them to apply their English knowledge in different contexts (games, school, among others). Comparably, Ryu (2013) conducted research whose aim was to address how non-native English-speaking (NEE) game players took part in language learning through video games and beyond-game culture. After gameplay, they were given the chance to interact with other players via the video game website. It was discovered that the learners could exchange opinions and discuss the game with peers and native speakers, which allowed them to practice advanced forms of the English language.

Besides, in the current findings, the EFL pre-service teachers stated that they had learned new vocabulary structures, honed their listening skills, and developed cultural awareness when playing video games and interacting with other players. In turn, the participants also mentioned that they had helped other players to learn a new language and cultural aspects through gameplay. These findings agree with Thorne's (2008) research, which explored the interaction between an English native speaker and a Russian native speaker in WoW. It was revealed that the participants supported and helped each other by using English in and out of the game and they were able to take the roles of learner and teacher, thus leading to cross-cultural socialization.

Macintyre et al. (1998) defined willingness to communicate (WTC) as a "readiness to enter into discourse at a particular time with a specific person or persons, using an L2" (as cited in Reinders & Wattana, 2011, p. 7). The current research stated that the EFL pre-service teachers' WTC in English while playing video games was neutral. It can be inferred that they did not precisely seek to interact but to play in English since, as previously mentioned, they opted for playing games in English to engage with the L2 in informal contexts. Finally, further research is needed to provide more data and evidence in this area.

The current findings showed that the EFL pre-service teachers declared that video games had helped them improve mostly their receptive skills (reading and listening)

rather than their productive skills (speaking and writing). This echoes several studies (Chen et al., 2012; Chen & Huang, 2010; Chen & Yang, 2013; Lee & Pass, 2014) that have demonstrated how video games contribute to, particularly, the development of receptive skills. To exemplify, Chen & Yang (2013) used the video game *Bone* to explore the effects of video games on foreign language learning. It was found that video games "can expose learners in an authentic English environment that enhances their listening and/or reading abilities" (p. 138).

Also, the findings showed the influence of gender on the EFL pre-service teachers' responses when it came to their knowledge and viewpoints of video games (five dimensions of the scale). The ones who identified themselves with the same gender were prone to have related responses. In this regard, Bolliger et al.'s (2015) findings of Japanese students' perceptions of video games for English language learning are similar. They found that, in the subscale of experience with digital games, the mean scores were different: men had higher mean scores (M = 2,70) than women (M = 2,25). Similarly, Vahdat and Rasti (2013) found a very strong positive correlation (r = .969) between the influence of gender on vocabulary learning through video games. Notwithstanding, further research is needed in order to relate video games skills and SLA/SLL to gender since there are very few studies in this area, and those that do exist were limited to very small samples of the population.Therefore, it is not feasible to identify a gender gap.

Although there are research of cluster analysis when it comes to the exploration of video games in the context of education, they were not linked to SLA or SLL. Having said that, Manero et al. (2016) analyzed the characteristics of gamers depending on the participants' preferences and habits. They built a 10-item Game Preferences Questionnaire (GPQ) as an instrument. Through cluster analysis, they identified four groups: 1. *Casual gamers*, who moderately play musical, social, and thinking video games (N = 235); 2. *Non-gamers*, who hardly ever play digital games (N = 53); 3. *Hardcore gamers*, who mainly play first-person shooters and sports games (N = 98); and 4. *Well-rounded* (WR) gamers, who frequently play different kinds of video games (N = 193).

Finally, this study can be considered as empirical evidence that contributes to the English teaching and learning field. Although it is mainly focused on informal learning, the current research highlighted the benefits that video games provide, in terms of language opportunities such as interaction, input, authentic context, scaffolding, anxiety, or vocabulary, which can be included in formal learning settings (Cheng et al., 2015). Video games, especially the MMOG genre, offer great opportunities for language acquisition and learning. These opportunities address a rich and meaningful variety of SLA/SLL elements, such as interaction, anxiety, L2 input and output, authentic context, vocabulary, teamwork, collaboration, autonomy, motivation, stimuli, identity, negotiation of meaning, communication and cognition, feedback, and scaffolding. Therefore, it is paramount to encourage researchers to dive into this field and share their findings in order to support

and complement what has already been discovered. Thus, language users could further exploit the potential of video games and use technology to practice foreign languages in a much more innovative, authentic, and compelling manner.

REFERENCES

Ashraf, H., Motlagh, F. G., & Salami, M. (2014). The impact of online games on learning English vocabulary by Iranian (low-intermediate) EFL learners. *Procedia - Social and Behavioral Sciences, 98*, 286-291. https://doi.org/10.1016/j.sbspro.2014.03.418

Aune, M. (2019). *Pre-service teachers' views on the use of computer games in the EFL classroom.* [Bachelor's thesis, Norwegian University of Science and Technology]. NTNU Open. http://hdl.handle.net/11250/2610411

Benson, P. (2011). *Language learning and teaching beyond the classroom: An introduction to the field*. In P. Benson & H. Reinders (Eds.), *Beyond the language classroom* (pp. 7-16). Palgrave Macmillan. https://doi.org/10.1057/9780230306790_2

Bolliger, D. U., Mills, D., White, J., & Kohyama, M. (2015). Japanese students' perceptions of digital game use for English-language learning in higher education. *Journal of Educational Computing Research, 53*(3), 384-408. https://doi.org/10.1177/0735633115600806

Bytheway, J. (2014). In-game culture affects learners' use of vocabulary learning strategies in massively multiplayer online role-playing games. *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT), 4*(4), 1-13. https://doi.org/10.4018/ijcallt.2014100101

Bytheway, J. (2015). A taxonomy of vocabulary learning strategies used in massively multiplayer online role-playing games. *CALICO Journal, 32*(3), 508-527. https://doi.org/10.1558/cj.v32i3.26787

Chen, H. H. J., Chen, M. P., Chen, N. S., & Yang, C. (2012). Pre-service teachers' views on using adventure video games for language learning. In P. Felicita (Ed.), *Proceedings of the 6th European Conference on Games Based Learning* (pp. 125-130). Academic Publishing International Limited Reading. https://www.researchgate.net/publication/286658088_Pre-service_teachers'_views_on_using_adventure_video_games_for_language_learning

Chen, H. H.-J., & Huang W. Y.-C. (2010). Examining the potentials of computer games for English learning. *Third IEEE International Conference on Digital Game and Intelligent Toy Enhanced Learning* (pp. 134-138). IEEE. https://doi.org/10.1109/digitel.2010.35

Cheng, M.-T., Lin, Y.-W., & She, H.-C. (2015). Learning through playing virtual age: exploring the interactions among student concept learning, gaming performance, in-game behaviors, and the use of in-game characters. *Computers & Education, 86* (1), 18-29. https://doi.org/10.1016/j.compedu.2015.03.007

Chen, H. J. H., & Yang, T. Y. C. (2013). The impact of adventure video games on foreign language learning and the perceptions of learners. *Interactive Learning Environments*, *21*(2), 129-141.

Chik, A. (2014). Digital gaming and language learning: autonomy and community. *Language, Learning and Technology, 18*(2), 85-100. http://dx.doi.org/10125/44371

Chik, A., & Ho, J. (2017). Learn a language for free: recreational learning among adults. *System, 69*, 162-171. https://doi.org/10.1016/j.system.2017.07.017

Godwin-Jones, R. (2018). Chasing the butterfly effect: informal language learning online as a complex system. *Language Learning & Technology, 22*(2), 8-27. https://doi.org/10125/44643

Jabbari, N., & Eslami, Z. R. (2019). Second language learning in the context of massively multiplayer online games: a scoping review. *ReCALL, 31*(1), 92-113. https://doi.org/10.1017/s0958344018000058

Kongmee, I., Strachan, R., Pickard, A., & Montgomery, C. (2012). A case study of using online communities and virtual environment in massively multiplayer role playing games (MMORPGs) as a learning and teaching tool for second language learners. *International Journal of Virtual and Personal Learning Environments (IJVPLE), 3*(4), 1-15. http://doi.org/10.4018/jvple.2012100101

Krashen, S. D. (1987). *Principles and practice in second language acquisition.* Prentice-Hall International.

Lee, J. Y., & Pass, C. (2014). Massively multiplayer online gaming and English language learning. In H. R. Gerber & S. S. Abrams (Eds.), *Bridging Literacies with Videogames*. SensePublishers (pp. 91-101). https://doi.org/10.1007/978-94-6209-668-4_6

Lee, Y. J., & Gerber, H. R. (2013). It's a WoW world: second language acquisition and massively multiplayer online gaming. *Multimedia-Assisted Language Learning, 16*(2), 53-70. https://doi.org/10.15702/mall.2013.16.2.53

Li, J. (2019). A systematic review of video games for second language acquisition. In P.M. Sullivan, J. L. Lantz & B. A. Sullivan (Eds.), *Handbook of Research on Integrating Digital Technology With Literacy Pedagogies* (pp. 472-499). IGI Global. https://doi.org/10.4018/978-1-7998-0246-4.ch021

Livingstone, D. W. (2006). Informal learning: conceptual distinctions and preliminary findings. In Z. Bekerman, N. C. Burbules & D. Silberman-Keller (Eds.), *Learning in*

Places: The Informal Education Reader (pp. 203-227). Peter Lang AG. https://www.jstor.org/stable/42979596

Manero, B., Torrente, J., Freire, M., & Fernández-Manjón, B. (2016). An instrument to build a gamer clustering framework according to gaming preferences and habits. *Computers in Human Behavior, 62*, 353-363. https://doi.org/10.1016/j.chb.2016.03.085

Matijević, M., & Topolovčan, T. (2019). Informal learning among teenagers through video games: a qualitative analysis of experiences, game modes and didactic benefits. *Journal of Elementary Education, 12*(1), 1-25. https://journals.um.si/index.php/education/article/view/180

Newgarden, K., & Zheng, D. (2016). Recurrent languaging activities in World of Warcraft: skilled linguistic action meets the Common European Framework of Reference . *ReCALL, 28*(3), 274-304. https://doi.org/10.1017/S0958344016000112

Padaya, A., & Chbaklo, H. (2022, December). *Innovation & integration of video games in education* [Conferencia]. Innovation & Integration of Video Games in Education, Bournemouth University, United Kingdom. https://www.researchgate.net/publication/366310631_Innovation_Integration_of_Video_Games_in_Education

Peterson, M. (2012). Language learner interaction in a massively multiplayer online role-playing game. In H, Reinders (Ed.), *Digital Games in Language Learning and Teaching*. *New Language Learning and Teaching Environments.* Palgrave Macmillan. https://doi.org/10.1057/9781137005267_5

Rama, P., Black, R., Van Es, E., & Warschauer, M. (2012). Affordances for second language learning in *World of Warcraft*. *RECall, 24*(3), 322-338. https://doi.org/10.1017/S0958344012000171

Rankin, Y. A., Gold, R., & Gooch. B. (2006). 3D role-playing games as language learning tools. *Eurographics (Education Papers), 25*(3), 33-38. https://doi.org/10.2312/eged.20061005

Reinders, H., & Wattana, S. (2011). Learn English or die: the effects of digital games on interaction and willingness to communicate in a foreign language. *Digital Culture & Education, 3*(1), 4-28. https://doaj.org/article/26da2588091545c4a505cb6aaa2dca80

Reinhardt, J. (2021). Not all MMOGs are created equal: a design-informed approach to the study of L2 learning in multiplayer online games. In M. Peterson, K. Yamazaki & M. Thomas (Eds.), *Digital Games and Language Learning: Theory, Development and Implementation* (pp. 69-88). Bloomsbury Academic. https://doi.org/10.5040/9781350133037.ch-004

Rudis, D., & Poštić, S. (2018). Influence of video games on the acquisition of the English language. *Verbum, 8*, 112-128. https://doi.org/10.15388/Verb.2017.8.11354

Ryu, D. (2013). Play to learn, learn to play: language learning through gaming culture. *ReCALL, 25*(2), 286-301. https://doi.org/10.1017/S0958344013000050

Silva, R. L. (2014). Video games as opportunity for informal English language learning: Theoretical considerations. *The ESPecialist, 35*(2), 155-169. https://www.semanticscholar.org/paper/Video-Games-as-opportunity-for-informal-English-Silva/39af412128fb0c4120caa5dd8dd7dfbab8f931d3

Thorne, S. L. (2008). Transcultural communication in open internet environments and massively multiplayer online games. In S. Magnan (Ed.), *Mediating Discourse Online* (pp. 305-327). John Benjamins Publishing Company. https://doi.org/10.1075/aals.3.17tho

Vahdat, S., & Rasti, A. (2013). The effect of video games on Iranian EFL learners' vocabulary learning. *The Reading Matrix, 13*(1), 61-71. http://www.readingmatrix.com/articles/april_2013/vahdat_behbahani.pdf

Vygotsky, L. S. (1980). *Mind in Society: The development of higher psychological processes.* Harvard University Press.

APPENDIX A

SCALE OF PRE-SERVICE TEACHERS' KNOWLEDGE AND PERCEPTIONS OF VIDEO GAMES IN THEIR DAILY AND STUDENT LIFE
The purpose of this research is to identify EFL pre-service teachers' knowledge and viewpoints of video games in their daily and student life. The people considered to do this survey belong to the Teaching English Program (EFL). Your participation in this research study is voluntary. If you do not feel comfortable, you can always withdraw at any time. The results of this scale will only be used for academic purposes. Your collaboration is greatly appreciated!

I. CONSENT					
University					
What year are you in?	First year	Second year	Third year	Fourth year	Fifth year
Institutional email					
I agree to participate in this research, and I am aware that all the information provided will be handled confidentially and anonymously.			Yes	No	

II. PERSONAL INFORMATION					
Nationality					
Gender	Female	Male	Non-binary	I do not want to say it	Other
Age					
Have you ever played video games?			Yes	No	
If your answer is Yes, how long have you been playing video games?					
How would you rate your level of English?	Pre- intermediate		Intermediate	Upper- intermediate	Advanced
How would you rate your English teaching skills?	1 (Not skilled)		2	3	4 (Skilled)

III. DIMENSION 1 – GENERAL EXPERIENCE WITH VIDEO GAMES					
According to the following statements, answer if you agree or disagree.					
1. I like playing video games.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
2. I like playing two-dimensional (2D) video games (e.g., Ninja Arashi, Super Mario Bros. (1985), Limbo).	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
3. I like playing three-dimensional (3D) video games (e.g., World of Warcraft, Destiny 2, Overwatch).	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
4. I play video games for more than four hours a day.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
5. I consider myself a "gamer". (A person who regularly plays computer or video games).	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
6. I play video games in English most of the time.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree

IV. DIMENSION 2 – GENERAL PREFERENCES ABOUT VIDEO GAMES					
According to the following statements, answer if you agree or disagree.					
7. I feel comfortable playing online video games.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
8. I feel comfortable playing offline video games.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
9. I prefer playing video games with people in general.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
10. I prefer playing video games with only close friends.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
11. I prefer playing video games on my own.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree

V. DIMENSION 3 – STRENGTHS AND WEAKNESSES OF VIDEO GAMES					
According to the following statements, answer if you agree or disagree.					
12. I believe that video games develop autonomy and decision-making skills.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
13. I think that video games develop critical thinking.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
14. I consider that video games develop teamwork and collaboration.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
15. I believe that video games are a distraction from my responsibilities.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
16. I consider video games time- consuming.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
17. I think that video games are an addiction.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree

VI. DIMENSION 4 – VIDEO GAMES AS A LEARNING EXPERIENCE					
According to the following statements, answer if you agree or disagree.					
18. I have helped others to learn new things in English through video games.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
19. I have learned new things in English through video games thanks to other people.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
20. I have a better understanding of English thanks to video games.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
21. My willingness to communicate in English increases while playing video games.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
22. Video games allow me to apply my English knowledge in different contexts (games, school, etc.).	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree

VII. DIMENSION 5 – VIDEO GAMES AND THE FOUR LANGUAGE SKILLS					
According to the following statements, answer if you agree or disagree.					
23. Video games have helped improve my listening skills in English.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
24. Video games have helped improve my reading skills in English.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
25. Video games have helped improve my writing skills in English.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree
26. Video games have helped improve my speaking skills in English.	Strongly agree	Agree	Neutral / No opinion	Disagree	Strongly disagree