

# World of (English and) Warcraft: Prospects of learning English through MMORPGS

---

Jagorinec, Franko

Master's thesis / Diplomski rad

2021

*Degree Grantor / Ustanova koja je dodijelila akademski / stručni stupanj:* **University of Zagreb, Faculty of Humanities and Social Sciences / Sveučilište u Zagrebu, Filozofski fakultet**

*Permanent link / Trajna poveznica:* <https://urn.nsk.hr/urn:nbn:hr:131:544650>

*Rights / Prava:* [In copyright / Zaštićeno autorskim pravom.](#)

*Download date / Datum preuzimanja:* **2024-04-30**



*Repository / Repozitorij:*

[ODRAZ - open repository of the University of Zagreb Faculty of Humanities and Social Sciences](#)



**UNIVERSITY OF ZAGREB**  
**FACULTY OF HUMANITIES AND SOCIAL SCIENCES**  
**DEPARTMENT OF ENGLISH**

GRADUATE PROGRAMME  
TEFL SECTION

**Franko Jagorinec**

**World of (English and) Warcraft: Prospects of learning English through MMORPGS**

Diploma paper

Supervisor:

Ass. prof. Stela Letica Krevelj, Ph D.

2021

**SVEUČILIŠTE U ZAGREBU**  
**FILOZOFSKI FAKULTET**  
**ODSJEK ZA ANGLISTIKU**

**DIPLOMSKI STUDIJ ANGLISTIKE**  
**SMJER: NASTAVNIČKI**

**Franko Jagorinec**

**Mogućnosti učenja engleskog jezika putem MMORPG igrice World of Warcraft**

Diplomski rad

Mentorica:

doc. dr. sc. Stela Letica Krevelj

2021.

## Contents

<b>Abstract.....</b>	<b>4</b>
<b>1. INTRODUCTION .....</b>	<b>5</b>
<b>2. VIDEO GAMES AND LEARNING .....</b>	<b>6</b>
<b>3. VIDEO GAME GENRES AND LANGUAGE LEARNING .....</b>	<b>9</b>
<b>4. WORLD OF WARCRAFT AND LANGUAGE LEARNING .....</b>	<b>16</b>
<b>5. SLA THEORY .....</b>	<b>25</b>
<b>6. STUDY.....</b>	<b>34</b>
<b>6.1. Research Study Design.....</b>	<b>35</b>
<b>6.2. Participants .....</b>	<b>35</b>
<b>6.3. Procedure .....</b>	<b>36</b>
<b>6.5. Findings .....</b>	<b>37</b>
<b>6.5.1. Chat transcript analysis .....</b>	<b>38</b>
<b>6.5.2. Post-session informal interviews .....</b>	<b>46</b>
<b>6.5.3. Discussion .....</b>	<b>49</b>
<b>7. CONCLUSION .....</b>	<b>50</b>
<b>Sažetak .....</b>	<b>52</b>
<b>8. LITERATURE.....</b>	<b>53</b>

## **Abstract**

In the recent years, there has been a surge in research studies dedicated to prospects of learning English through video games, specifically MMORPGs. As video games grow in quality and popularity, so does their potential for learning English. Today, more than ever, MMORPGs focus on interaction between players as well as facilitating community building and cooperative gameplay via new and interesting gameplay mechanics. They provide authentic linguistic input as well as strengthen willingness to communicate between players by rewarding them for producing linguistic output, all while alleviating common affective filters found in the classroom. This study will partly replicate Mark Peterson's study (2011), investigating the use of the MMORPG *Wonderland* and its effect on language acquisition, but using a with a different game, specifically, *World of Warcraft*. The results are based on the information collected during and after six sessions in which four participants played the game. The results show that the participants engaged in forms of interaction that are hypothesized to be beneficial for SLA.

Keywords: *MMORPG, World of Warcraft, CALL, SLA*

Članovi povjerenstva:

doc. dr.sc. Marina Grubišić

Jasenska Čengić, asistentica

doc. dr.sc. Stela Letica Krevelj

## **1. INTRODUCTION**

Even though the first interactive electronic game dates all the way back to 1947, video games are largely seen as a phenomenon of the 21<sup>st</sup> century. In the last 70 years however, video games have evolved and branched into multiple genres and subgenres, and today the video gaming industry is a multi-billionaire business with countless fans across the globe eagerly awaiting new titles from their favorite video game companies.

Without a doubt, the primary reason for creating a video game is to provide entertainment. Video games are seen as a pastime, especially amongst schoolchildren, who often view video games as an escape from the learning practices they are faced with in school settings. In response, some adults often diminish the positive effects video games can have on their children as well as disregard the notion that video games can have a beneficial effect on learning.

On the other hand, many would agree that books, movies and TV series are all great mediums with potential learning benefits, yet video games often do not fall into the same category. However, in video games, players are often put into unique and new situations, where their actions can lead to their eventual success or demise. Do things right, and you can progress through the game. Do things wrong, and it is game over. In other words, players are forced to experience different aspects of the game, analyze their unsuccessful attempts, and thus learn how to do things better the next time around, which is the basis for experiential learning.

Firstly, this paper will explore the relationship between video games and learning in general, arguing that while playing video games, players do much more than simply play the game for the sake of entertainment.

Secondly, this paper will discuss the correlation between playing video games, specifically MMORPGs and learning English as a second language, all the while inquiring into how certain fields of SLA theory correlate with video game mechanics.

Lastly, this paper will present a research study investigating the second language learning prospects of the MMORPG *World of Warcraft*.

## **2. VIDEO GAMES AND LEARNING**

Kolb (2015) states that humans adapt through learning, adding how “it encompasses other, more limited adaptive concepts such as creativity, problem solving, decision making, and attitude change that focus heavily on one or another of the basic aspects of adaptation” (p. 43). Ever since primordial times, humans have learned through experience. The knowledge of fire being hot could not have been reached without someone getting burned first. To this day, the human mind is often put into unknown situations and forced to make an immediate decision without having the knowledge of what the best course of action is. In such situations, it is through experience and the analysis of the consequences that the human mind forms knowledge about certain actions being good or bad and can therefore act wiser next time.

Experiential learning or hands-on learning is not a new concept. In fact, it is ancient in the literal sense of the word. As Aristotle (1999) stated in the *Nicomachean Ethics*: “for the things we have to learn before we can do them, we learn by doing them” (p. 22). However, it was David A. Kolb who developed the modern theory of experiential learning, relying on the previous works of John Dewey, Kurt Lewin and Jean Piaget. (Dixon et al 1997, p. 41)

Kolb's Experiential Learning Model (ELM) rests on the idea of hands-on experience being a key factor towards learning. Experiencing things in real-time, as opposed to reading or listening about them, is a very beneficial part of learning. The model consists of four phases: concrete experience, reflective observation, abstract conceptualization and finally, active experimentation.

Kraft (1994) uses the example of learning how to ride a bike to best illustrate the four different phases. In the concrete experience phase, a person tries riding a bike in real time. Afterwards, the person can then reflect on the acquired experience, analyzing the positive and the negative aspects of it which is the second phase: reflective observation. Using that knowledge, the person can hypothesize on what might work better the second time around and has therefore entered the phase of abstract conceptualization. Lastly, after considering different ways to improve, the person is ready to try riding the bike again, thus completing the circle with the final phase of active experimentation (p. 36, 37).

If we were to take the same model and apply it to video games as well as traditional classroom settings, we can see that there is a difference in the amount of experiential learning. The very design and structure of most video games already follows Kolb's ELM quite closely. A player is put into the phase of concrete experience where they are forced to deal with the game mechanics with essentially little to no prior knowledge. Despite how much initial success they might have, inevitably they are faced with a setback too hard to overcome – they might be unable to complete the given mission in the allotted time or their health bar simply reaches zero, their character dies and it is game over. The reflective observation phase is made easier in certain video games, as many newer titles will include helpful hints during the loading screen or might have additional help offered to the player during consequent tries. Combining the hints provided



by the video game and their own ingenuity, the player is able to ascertain what went wrong and try again.

This shows us that video game players engage in experiential learning, even though learning itself might not be their primary reason for playing the video games. As stated before, the primary goal of playing a video game is mostly entertainment, so most of the learning that happens is subconscious and spontaneous. However, video games excel at using learned content “in action”. Just because a player learns how to swing a sword in the first couple of minutes playing a game does not mean that the same sword-swinging will not be a useful skill in the end. The learned content is always reused throughout the entire experience. Additionally, the more a player becomes fond of the game, the more invested they become in completing it in order to reach the narrative conclusion. Thus, they learn more experientially and the intrinsic motivation that keeps them playing is an important factor as well. Rudis and Poštić (2018) cite the Reinders and Wattana study conducted on a video game called *NeverwinterNights*, stating that the more experienced the players become in the game, the more likely they are to acquire the secondary skills the game offers (p. 115). These skills include language skills such as learning how to navigate different types of interaction successfully or strengthening one’s willingness to communicate.

On the other hand, if we were to apply the same model to traditional classroom settings, immediately we notice a stark difference. Things may vary from subject to subject, but in classrooms, there is little to no opportunity to use the learned content in a “hands-on” environment. Simulations and roleplaying of the concrete experience phase are often implemented in an attempt to balance out the theoretical aspect in certain subjects, but students are left with a limited number of options to practice the learned material in the outside world.

Kolb (2015) states that there are ways to make the classroom learning slightly more experiential (p. 295 - 296), and he even says that although a classroom lesson is abstract by nature, it can be a concrete experience when a learner mimics the teacher (p. 23). He also states that educational facilities attempt to provide an experiential component to traditional classrooms by offering internships, field projects, and classroom experiential learning exercises (p. 18). However, this is largely dependent on the educational institution itself, and many attempts to integrate experiential learning into classrooms are often very impractical taking into consideration the demands of the national curriculum as well as the workload most teachers have.

This comparison goes to show that there is a *certain* type of learning happening while someone plays a video game and that video games have a positive effect on the player's knowledge. However, an argument could be made that, even though classroom learning is not experiential in nature, it still ends up teaching the students *useful* things, while the knowledge learned in a video game is useful only whilst playing said video game. In the following paragraph, we will discuss how video games can be beneficial when it comes to learning a foreign language, specifically, English.

### **3. VIDEO GAME GENRES AND LANGUAGE LEARNING**

While there are plenty of examples of games that offer video and audio material in different languages, this paper will focus on the effect that video games have on the acquisition of, specifically, the English language.

In order to see what kind of an effect video games have on the acquisition of English, we have to first understand how video games have changed throughout time, as not all types of games will be equally suitable or even successful for language acquisition.

An example of a study which directly examined the correlation between video games and second language acquisition, with the focal point being interactivity, was done in 2011 by deHaan, Reed and Kuwada. Their goal was to compare the acquisition of new vocabulary in two different scenarios: playing a video game and merely observing someone else playing a video game. The game itself was musical in nature; the player's job was to press the corresponding buttons at the appropriate time in order to complete parts of a song.

Reindeers and Wattana (2011) summarize that the study yielded positive results and the authors concluded that learners acquire less vocabulary while playing the game compared to merely observing it due to having to focus on the gameplay itself, although both resulted in learning gains (p. 5). However, the authors ultimately argue that "playing digital games and interactivity are therefore not necessarily conducive to language acquisition" (Reinders, H. and Wattana 2011, p. 5).

It is important to note that the game involved in the study, although it was in English, did not have the language as the primary aspect behind game progress, meaning that the understanding of vocabulary was not crucial to progress in the game. The authors also add that the tasks given could be completed without paying any attention to the language, which means that it was possible to excel at the game even without knowing English. (Reinders, H. and Wattana 2011, p. 5) Lastly, there was no overarching plot to the game, no storyline component which the player follows from beginning to end, which severely limits the amount of vocabulary the player encounters, as well as any need for memorizing said vocabulary or even recalling it

again during additional playthroughs of the game. (Reinders, H. and Wattana 2011, p. 5) What this demonstrates is that the study raised an important question of video game genres and how different styles of video games might have different effects on language acquisition. The following paragraphs will explore which genres of video games exist and how much they relate to certain aspects of second language acquisition.

Adams (2010) defines ten different genres of video games: action games, strategy games, role-playing games, sports games, vehicle simulations, construction and management simulations, adventure games, artificial life and puzzle games as well as online gaming. (p. 390) Adams (2010) states that “a game’s gameplay determines its genre”, adding how “games can have identical settings and yet belong to different genres, so a medieval role-playing game belongs to a different genre than a medieval war game (p. 390).

Therefore, it is the way that the player interacts with the game that is the primary factor for categorizing a game into a genre, while the content of the game comes secondary. An argument that goes in favor why most, if not all, video games are beneficial to SLA is that games are generally seen as entertaining by learners and create low-anxiety environments (Reinders, H. and Wattana 2011, p. 8) Rudis and Poštić (2018) quote Doring, saying that it is easier for children to learn a language in a “low-affective atmosphere for learning (p. 114). Much like cartoons, video games grab the learner’s attention, provide new information, and facilitate thinking processes and discussion skills, all in a non-threatening atmosphere (Rudis and Poštić 2018, p. 115). This aspect of video games is not genre-dependent because all video games offer the possibility of starting over after failing a certain mission or dying, and there are no real-life repercussions while playing video games.

Another argument which is not necessarily tied to a specific video game genre, but rather the overall popularity and the commercial success of the game is the existence of the outside-of-the-game community forums. Video games have advanced significantly in the recent years, and today most of them contain hidden areas, puzzles, and other forms of secret, unlockable content. Whether it is an Easter egg put in by the developers, or simply a particularly challenging part of the video game, players have found communities online where such things are discussed. Da Silva cites Thompson's 2013 study in order to explain two concepts beneficial for SLA: transmedia and participatory culture (p. 155-169). He states that video games have become 'transmedia' because they extend beyond the limits of their own medium (p. 116). Most video game companies already offer the ability to discuss various aspects of video games on the company's official forums. This not only allows the player an additional pool of linguistic input, but it also provides them with the ability to produce linguistic output, as many players flock to these community forums in situations where they are unsure of how to progress in a particular game. These aspects of video games and their benefit for SLA will be further explored in the following paragraph.

When it comes to language acquisition specifically, Rudis and Poštić (2018) claim that video games are powerful language learning tools, especially if the player participates in a game world filled with a lot of visual and auditory stimuli (p. 117). On the other hand, a genre which excels at providing the player with a considerable amount of linguistic input, as well as visual and auditory stimuli which helps them place the linguistic input into the appropriate context is the genre of role-playing games, i.e. computerized role-playing games, or CRPGs for short. Adams (2010) defines CRPGs as games whose objective is "to experience a series of adventures

in an imaginary world, through an avatar character or a small group of characters whose skills and powers grow as time goes on” (p. 453).

The linguistic input in these games is first and foremost consistent. It revolves around the imaginary world the player is placed in, and it is also constantly reinforced as the player progresses through the game. Adams (2010) notes that CRPGs have rich narrative plotlines with detailed character designs, adding how “role-playing games, either on tabletop or on computers, allow players to immerse themselves in complex worlds with manifold gameplay options” (p. 479). So not only is there a plethora of linguistic input, but it is also situated within a firm context. In terms of progression, Adams (2010) claims that the essential parts of CRPGs are quests, i.e. the storyline of the game, as well as character development (p. 454). The linguistic input encountered is also connected to identity exploration of one’s avatar, as well as the evolution of that identity from the game’s beginning to end, typically in a *becoming a hero* narrative.

Rudis and Poštić (2018) claim that games which facilitate language acquisition tend to have “vast internal lore or a variety of systems interacting within the larger gameplay systems” (p. 113). Extensive amounts of storytelling, as well as mechanics allowing players to interact with each other can be found within CRPGs. Adams (2010) claims that the narrative plotline of a CRPG is typically longer than that of movies, short stories or novels (p. 474). This, of course, varies from game to game, but every CRPG offers an extensive main story, as well as side quests, which can propel different narratives mostly based on the lives of individual side characters.

Although CRPGs offer an extensive amount of linguistic input, one thing that the genre lacks is providing opportunities for linguistic output. Reinders and Wattana (2011) state that in

order for language acquisition to take place a learner must produce comprehensible output, as well as be exposed to comprehensible input in TL (p. 6).

One way in which players get a chance to produce output has already been mentioned and that is participating in various community forum discussions. Additionally, some CRPGs offer the ability to engage in conversation with other non-player character, commonly referred to as NPCs. This type of engagement is limited, however, as it is virtually impossible for the learner to produce *original* output and the engagement is mostly reduced to the player being able to choose from several, pre-determined conversational options. The biggest problem, therefore, is the fact that this *output* has not been created by the player. However, some of the positive sides to this type of engagement are the fact that the main story is usually altered by their choices, and the NPCs respond accordingly to the conversational option chosen by the player. This means that the player is able to experience the consequences of the output, which somewhat simulates real-life experience. It is worth mentioning that this type of player-NPC engagement has greatly evolved throughout the years. Today, many CRPGs offer additional explanations for each conversational option. For instance, in the video game *Horizon: Zero Dawn*, the player is able to further establish the identity of their character by using something the game calls *flashpoints*, which are moments of emotional choice where the main character has the option of expressing her personality.

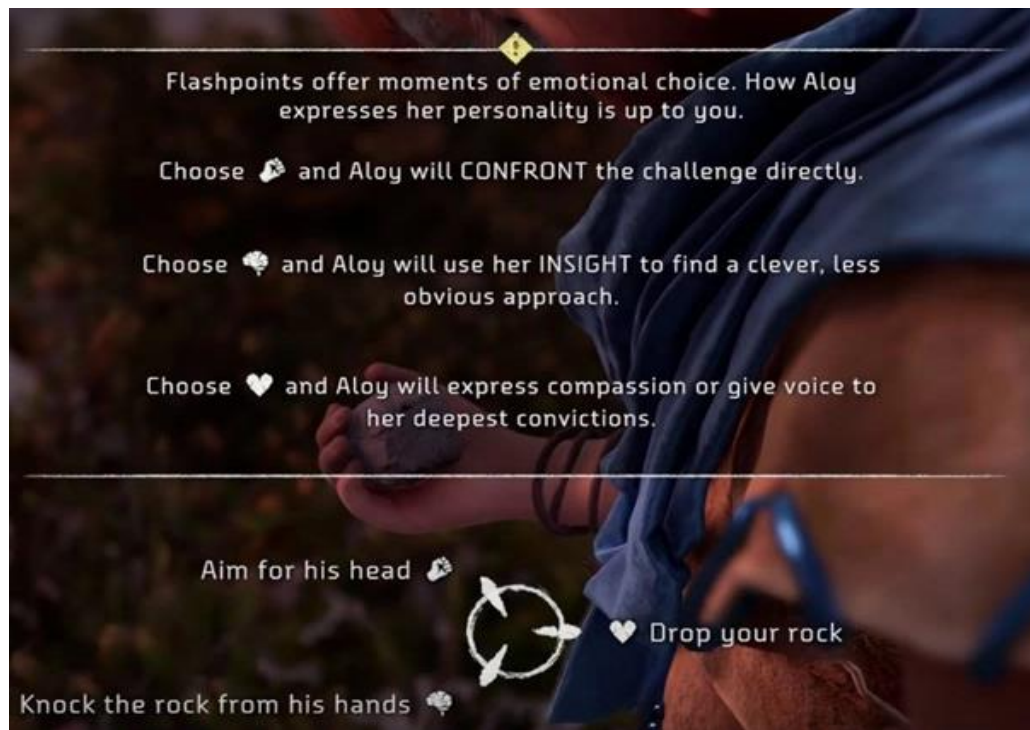


Figure 1

Choosing the conversational option marked with a very specific symbol used as communicative tools (such as a closed fist), the main character confronts the challenge directly and usually goes for the aggressive remark. Choosing the conversational option marked with a brain, the main character uses her intellectual prowess to mediate the situation and use rationale in order to resolve a conflict. Choosing the conversational option marked with a heart, the main character expresses compassion and appeals to the emotional character of the NPCs, often using politeness to resolve the issue.

As we have seen, there are certain genres of video games which provide opportunities for the player to experience comprehensible linguistic input. Some games even offer the above-mentioned *output* to occur from the player. However, single player games are limited in the amount of interaction that they offer, and even though they have greatly evolved, they cannot match the linguistic output created in multiplayer games. The following chapter will explore the



beneficial aspects of online multiplayer games, specifically *World of Warcraft*, for language acquisition.

#### **4. WORLD OF WARCRAFT AND LANGUAGE LEARNING**

Although there are different types of multiplayer games, this chapter will focus on online gaming specifically. Adams (2010) states that online games “refer to multiplayer distributed games in which the player’s machines are connected by a network” (p. 591). Online gaming comes in various forms, but one subgenre of online gaming which is greatly beneficial for SLA are MMORPGs (massively multiplayer online role-playing games). By definition, MMORPGs “constitute permanent environments in which players can play, retaining the state of their avatar from one session to another” (Adams 2010, p. 605). MMORPGs are also known to have a great number of players and they are intended to last indefinitely which means that the game is not finished once the story narrative has been completed. These games provide repetitive gameplay mechanics that offer constant progress throughout the game, most often in the sense of the player’s character repeatedly increasing its strength.

Swain’s output hypothesis claims that comprehensible input is not enough for successful second language acquisition. MMORPGs, where players are able to interact with each other, foster cooperation and community-based gameplay, which means that in order to progress through the game, players are highly likely to run into other players with similar goals as well as engage in communication, thus producing comprehensible output.

This chapter will explore some of the aspects of MMORPGs which are beneficial for SLA, focusing on the example of the online video game called *World of Warcraft*, developed by *Blizzard Entertainment*. Since the research study portion of this paper replicates a study

published by Peterson in 2013 on a video game called *Wonderland*, the aim of this chapter is to illustrate why *World of Warcraft* is a more suitable video game for language learning. To do so, this chapter will draw on some general theoretical principles as well as use Zhao and Lai's recommendations on designing a MMORPG specifically for language acquisition to see how well *World of Warcraft* follows their recommendations. Because MMORPGs have originated from CRPGs, all the benefits listed in the previous chapter apply here as well and will, therefore, not be repeated.

In the chapter "Designing MMORPGs for foreign language learning", Zhao and Lai (2008) claim that the construction of game narrative and gameplay, the sociability of the game, language and culture learning opportunities, and instructional context considerations are all key factors that differentiate MMORPGs that are foreign language learning friendly from those that are not (p. 409).

Starting with the first factor mentioned, game narrative and gameplay, the authors stress immersion as a crucial concept in game design (Zhao and Lai 2008, p. 409). Koster (2005) mentions that video games and the learning opportunities they provide are based on reality (p. 52). Zhao and Lai (2008) prioritize MMORPGs set in the real world, rather than in fantasy worlds, as most MMORPGs, including *World of Warcraft* are. However, the authors note that it is not the real-world setting which is beneficial for language learning, but rather that the game needs to mimic the multitude of social interactions and communication contexts that are usually found in real life, whether it be within a fantasy world or a simulation of the real world (p. 410).

Let us first focus on social interaction, and the way that *World of Warcraft* encourages players to interact with each other, as well as how that interaction is embedded in game design itself. Interaction has always been an important factor in SLA theory because it "helps generate

comprehensible input (Krashen, 1985), encourages negotiation of meaning (Pica, 1994), facilitates noticing (Schmidt, 1990), produces negative feedback (Schmidt *ibid*), and encourages output (Swain, 1985)” (Reinders, H. and Wattana 2011, p. 6). Rudis and Poštić (2018) cite Rankin’s study done in 2008, which looked into MMORPGs and found that communication non-native and native speakers within an international community improves language acquisition by developing the personal and interactional functions of language (p. 115). This focus on interactivity between different players draws on sociocultural SLA research as well, whose researchers consider social interaction in MMORPGs as the key factor of language learning, drawing on language socialization and situated learning theory (Peterson 2013, p. 56).

Zhao and Lai (2008) also stress interaction, particularly while discussing sociability as one of the crucial factors a game needs to offer to facilitate language learning. They state that in order “to enhance the sociability of a MMORPG, the game should create interdependencies of the characters and communities, both professional and economic, the locales for interaction, the venues and situations conducive to communal activities, and robust tools and channels for interaction” (p. 412).

Using the example of *World of Warcraft*, there are several ways that the game facilitates sociability and cooperation between players. First and foremost, there are several chat options which players can choose to address one another, which in themselves do not require any prior grouping to be done. This means that any player can use the *say* option to address any other player in their vicinity. They can also use the general chat to address anyone currently in the same zone as them, the trade chat in case they want to buy or sell certain in-game items, or even the local defense chat, which is used to coordinate attack or defense strategies against players belonging to different factions. Players are also able to send individual, private messages to other

players by using the *whisper* option as well as sending personalized letters which other players can read by accessing the mailbox, or by saving a permanent copy of the letter in their inventory.

*World of Warcraft* also provides the players the ability to form groups. These groups are called *parties*, which have maximum of five members, and *raids*, which can have up to forty members. Both *parties* and *raids* have their own private chats that they can use to communicate amongst themselves, but the biggest advantage is the ability to use the in-game voice chat system, which means that the linguistic output can come in both written and spoken form.

The beginning gameplay does not require any grouping. The player can progress through the content solo, even though they are highly likely to encounter other players along the same path. However, forming a group with these players will make progressing the content significantly easier. *World of Warcraft* has made it so that the only way to pass the tutorial is to group up with four other members in order to defeat the final boss. This exemplifies how, even from the early stages, the game not only encourages other players to interact with each other, but also makes certain types of content hard, or even impossible complete alone.

As the player progresses towards the maximum level and reaches end-game content, the importance of grouping up is stressed further. Finally, all forms of the repetitive content available to maximum level players is group-based.

Players can group into *parties* to defeat difficult computer-controlled enemies in *dungeons*, or they are able to group into *raids* to defeat even harder computer-controlled enemies in *raids*. Likewise, for those who like to challenge players of the opposing faction, they can group in pairs or threes to face real-life players in *arenas* or they are able to form groups of ten players to fight the opposing faction in *battlegrounds*.

In other words, once the player reaches maximum level, the only way to progress is to communicate and coordinate with other players. Without grouping up, they lose the ability to further increase the strength of their character or unlock additional content, containing new storylines.

What is interesting is that, because of the fast-paced nature of the content, players often use the in-game voice chat system or even third-party voice chat programs such as *Discord*. Especially while challenging other gamers, players are forced to make quick decisions as well as react to what their opponents are doing in coordination with their partner(s). This makes it virtually impossible to use the chat system, because the player is already using the keyboard and the mouse to move and control their character. Stopping to type in chat would leave them vulnerable, which in turn severely decreases their chance of completing the objective or winning the match. For that reason, it is very common that *party* or *raid leaders* include using the voice-chat system as a requirement in order to join said *party* or *raid*.

This not only means that the players have to produce comprehensible output, but they also have to do it reactively and quickly. Rudis and Poštić (2018) state that speed is an important factor because the player is forced to convey as much information as possible in as short a period of time as possible, which creates an opportunity to practice using language under stress (p. 123).

The second factor Zhao and Lai (2008) mentioned are communication contexts encountered in a game which resemble real-life situations (p. 410). Although set in a fantasy world, *World of Warcraft* resembles real life. The player can choose from a variety of races (one of them being human as well) in order to enter the world of *Azeroth*. Even though *Azeroth* contains magical elements, the player can progress through all sorts of landscapes which can be encountered in real life as well as follow the narrative storylines modelled after real-life

situations from all walks of life, such as agriculture, politics, economy, technology etc. Furthermore, most of the magical elements are connected to combat. In other words, they are not the focal point of the game, just a means to an end. The player is able to pick up gathering professions such as herbalism, mining, or skinning and then use the materials to level up their crafting professions such as alchemy, blacksmithing, enchanting, engineering, leatherworking, tailoring, jewelcrafting, and inscription. The player is able to craft different things which one might use themselves or go to a nearby city and sell it via trade chat or by using the in-game Auction House. According to *Wowpedia*, there are currently approximately 24,000 quests in the game, and their content ranges from helping a small farmer fend off criminals to protect the crops to overthrowing tyrannical political parties ("Quest"). The game offers a quest description (a longer piece of text in which the NPC explains the nature of the quest), a quest summary (a shorter piece of text intended to quickly let the player know their objective), as well as a quest log (a place where the player can view all of the current quests, their difficulty, and rewards).

Zhao and Lai (2008) continue their discussion of player immersion, by claiming that culture learning is closely tied to language learning, and that learning-friendly MMORPGs should therefore facilitate culture learning (p. 410). Although rooted in fantasy, the setting of *World of Warcraft* abounds with culture. Zhao and Lai (2008) claim that "MMORPG worlds should not only encompass the multitudes of authentic interaction contexts and needs, but also embody the codes of conduct of the target culture, and even the cultural artifacts to help the players reach full understanding and appreciation of the target culture" (p. 410). According to *Wowpedia*, there are approximately 160 different factions in *World of Warcraft*, defined as a "group of allies, either racial or ideological" ("Faction"). The player encounters these factions throughout questing, as they are more or less part of the storylines the player goes through. Each

faction has an authentic and specific set of needs, which are reflected in the specific faction quests that the player is offered. Coincidentally, these quests often involve the retrieval of special artifacts important to the historical lore of each faction. Each faction quest awards the player reputation points, and by building the reputation the player can increase the standing with each faction in the following way: hated, hostile, unfriendly, neutral, friendly, honored, revered, and lastly exalted. By achieving higher levels of reputation, the player can acquire more information about each faction by completing faction-specific storylines, wear their tabards as a sign of allegiance, as well as receive discounts and additional items in faction-specific trading posts.

The next factor Zhao and Lai (2008) discuss is the overall “openness of the narrative” as well as the difference between class-bound and classless role-playing, advocating for the latter (p. 410). *World of Warcraft* exemplifies the open nature of the narrative by allowing the players to freely choose their narrative storylines after they have passed the tutorial zone. The game has had a total of eight different expansions, all vastly different in terms of storylines and lore content. Because of the sheer number of quests involved in each expansion, it is virtually impossible to complete them all on a single character. Therefore, the game allows the player to pick a desired expansion after having read a short description of the storyline in order to provide the player with a structured leveling path. Should they dislike the chosen expansion, the game offers the ability to choose another one as well.

In terms of the class-bound and classless role-playing mechanisms, *World of Warcraft* is not an example of a classless role-playing game, i.e. the player is forced to choose a single class while making a character. Zhao and Lai (2008) quote Bartle saying he advocates for classless roleplaying wince it allows the player to explore multiple identities (p. 410). They explain it by

saying that MMORPGs should offer the players the possibility of starting off as a fighter, but completely changing your class along the way (p. 410).

While this is impossible in *World of Warcraft*, there are mechanisms implemented in game to mimic this type of game design. Although the player is locked into a class the moment they create the character, meaning they stay a *mage* or a *hunter* as long as they are playing that character, each class comes with three different specializations which greatly impact the playstyle, as well as the identity of the character. For instance, a *mage* is able to choose between mastering fire, ice or arcane magic, which will entirely change the identity of the character. The player is also able to freely switch between each specialization at any time, allowing the player to potentially play up to three different classes with one character. Additionally, there are several game mechanics implemented to make leveling alternate characters, alongside the player's main character. As stated before, due to the fact that it is virtually impossible to play through all of the eight expansion with a single character, many players create additional characters and choose the zones they have not yet explored as their leveling paths.

The next point that Zhao and Lai (2008) bring up is the need to appeal to different types of players. According to Bartle, there are four types of players based on his Player Interest Graph: achievers (focus on improvement and advancement), socializers (play for entertainment and interaction), explorers (enjoy discovery and exploration), killers (prefer engaging with other players) (p. 411).

*World of Warcraft* game design supports each of the four types of players in the following way. Achievers are able to constantly improve due to the never-ending nature of the content itself. There is always a way to acquire better gear in order to boost your character even further, and because of the competitive nature of end-game content, players often go to great



lengths in order to make their characters stronger. There is also an entire section of the game focused solely on *achievements*, which *Wowpedia* defines as “self-contained game goals that offer challenges, satisfy goal-oriented players, and allow others to see your accomplishments in World of Warcraft” (“Achievement”). Achievements greatly vary in difficulty as well as the time necessary to complete them, and some of them offer cosmetic rewards as well. Socializers can use one of the many venues for sociability mentioned above to interact with other players and engage in several forms of less challenging content which is not focused on improvement. These types of content typically include looking for cosmetic upgrades or acquiring mounts which the player uses to traverse the world. Explorers can discover the four different worlds *World of Warcraft* has to offer, with a combined number of approximately 80 different zones. Explorers can also take part in completing the discovery achievements, which reward them for discovering and exploring the game with titles, cosmetic upgrades to gear, and additional mounts. Lastly, killers are able to participate in the above-mentioned player versus players gaming modes, such as *arenas* or *battlegrounds*, as player versus player combat is one of the biggest forms of end-game content available. Additionally, it is also possible to simply traverse the world and attack other players, as well as infiltrate enemy cities and attack them head-on in the so-called open world player versus player combat.

Lastly, Zhao and Lai (2008) discuss the importance of a friendly learning curve, advocating for tutorials and additional sources of help throughout the game (p. 412). As stated before, *World of Warcraft* offers a tutorial zone, which explains most of the game’s core mechanics, each loading screen comes equipped with helpful hints, there are arrows pointing the players to the quest-related locations marked on the map, all the interactive objects are

highlighted and marked to increase visibility, and non-player characters often explain the nature of the objective.

## **5. SLA THEORY**

This chapter will first explore theoretical knowledge regarding second language acquisition available from the field of gaming research. Secondly, the chapter will examine different theories concerning second language acquisition and discuss in which way the proposed beneficial conditions fit the mechanics that can be found in MMORPGs. Seeing as how there is no single conclusive theory on how we acquire language, this chapter will examine research in cognitive SLA, interactionist SLA, language socialization theory, as well as sociocultural theory in SLA to see how certain aspects of these theories relate to the mechanics that can be found in MMORPGs.

Before we delve into topics regarding research strictly focused on language acquisition, there are a couple of things worthy of mention from the field of gaming research. In the article “Simulation/gaming and the acquisition of communicative competence in another language”, authors Garcia-Carbonnel et al. (2001) start by looking at how certain aspects from gaming research might affect second language acquisition. They explain playing video games by drawing on Jones’s definition of simulation defined as “an event in which the participants have (functional) roles, duties and sufficient key information about the problem to carry out these duties without play acting or inventing key facts” (Garcia-Carbonnel et al 2001, p. 482). They emphasize the concepts of learner activity stimulated teamwork, experimentation, and enhanced motivation as highly beneficial for second language acquisition. Because of the rule-driven

nature of most video games, there is overt competition which can stimulate all types of learning, including language learning. They describe players as “active” participants who use their knowledge and skills to navigate through their gaming experience after which they feel success or loss based on the results of their performance (p. 483).

This view of focusing on the player’s experiences ties well into the rationale of cognitive approaches to language learning which focus on the individual and the cognitive processes which lead to language learning. Firstly, since cognitive SLA research is learner-centered, it examines different variables which affect the learner’s psyche and thus might make learning harder or easier. Garcia-Carbonnel et al (2001) state that these “affective variables, such as attitude, motivation, and personality factors including anxiety and self-confidence, act to facilitate or impede the psycholinguistic process by which linguistic data are stored in memory” (p. 485).

What is interesting about MMORPGs is that they create unique situations where players engage in a simulated version of the real world. This puts them in a position where they can test different hypotheses and perceive their eventual success or failure, without some of the repercussions that can be found in traditional classroom learning, such as a bad grade. Garcia-Carbonnel (2001) claim that games are designed to be low-anxiety environments that facilitate language learning atmospheres because they allow the players to try new behavioral patterns while avoiding stress (p. 486). Zhao and Lai (2008) second this notion by adding how MMORPGs provide a low-stress environment which allows players to build their confidence as well as minimize inhibition when it comes to using the new language in front of others (p. 408). On the topic of motivation, Rudis and Poštić (2018) claim that video games provide a positive and motivating atmosphere while being highly entertaining (p. 112).

Secondly, cognitive SLA research tries to examine the internal mechanisms of learning and is especially focused on the way that individuals process input. According to Krashen's (1999) Comprehensible Input Hypothesis, comprehensible target language input is essential for language learning (p. 20). Garcia-Carbonnel et al (2001) claim that foreign language learners receive a lot of comprehensible input while gaming, that is "language input that is a slight step beyond the learner's present level" (p. 485). This type of input which is above the learner's present level is most notable in the language used by non-player characters, who offer examples of standard-level English, without any sort of grammatical mistakes. Garcia-Carbonnel et al (2001) go on to claim that cognitive SLA research suggests that low-level learners benefit the most from other learners because that kind of input is more comprehensible (p. 485). This kind of input is even more present in MMORPGs, because the amount of input received from other players outweighs the amount of input received from non-players characters. Based on the diversity of interlocutors, players are thus more likely to encounter input of varying degrees of accuracy, i.e. from other players which might be below or above their own level of English proficiency.

Zhao and Lai (2008) summarize this by saying the following:

MMORPG environments integrate the two most popular and effective means of using technology to support language learning: computer-assisted language learning software and online language learning communities. On the one hand, they deliver high-quality language learning and instruction with abundant premium language input and feedback. On the other hand, learners of varying language proficiency levels and native speakers engage in social interactions and form MMORPGs and Foreign Language Education various virtual social communities, which easily satisfy the social nature of language learning that is frequently lacking or insufficient in foreign language education (p. 408).

Zhao and Lai (2008) go on to stress not only the amount of comprehensible TL input, but also its diversity, stating how demographic research on MMORPGs has shown that “MMORPGs have ‘cross-generational appeal’” and that MMORPG users are a diverse group which does not only consist of adolescents (p. 408).

Furthermore, this means that players are extremely likely to engage in authentic interaction, which involves “the negotiation of meaning that is held to promote language learning in cognitive SLA research” (Peterson 2013, p. 55). Peterson (2013) explains that the learner gains knowledge about the target language by “negotiating the exchange of meaning” in a conversation, which allows him or her to better their understanding of how that language functions in relation to their own (p. 55). Negotiation of meaning as such is highly present in MMORPGs, as players can encounter all sorts of phenomena which they might not understand at first, not only due to the complicated nature of said phenomena, but also their own lack of knowledge. By asking the speakers to paraphrase or simplify the explanations, learners experience target language interaction full of negotiation of meaning. This is better exemplified in situations where none of the interlocutors have a ready answer, and it is up to the group to work together in order to reach the solution. In such moments the group engages in activities such as conscious awareness, which are important in cognitive accounts of SLA (p. 54). An added benefit of video games in general is that they often make the process of noticing easier by highlighting the necessary items, using NPCs to guide the players towards the solution or providing tips as pop-up messages or during loading screens.

Another part of SLA research particularly interested in interaction, as well as negotiation of meaning, is the interactionist approach. Referring to Long’s Interaction Hypothesis theory, Fuente (2003) claims that activities which emphasize the negotiation of meaning can improve the

learning of a second language (p. 1). Fuente (2003) states that negotiation gives the learner two different types of linguistic evidence: “positive evidence (when an interlocutor corrects an utterance by providing the correct form), and negative evidence (when the learner receives feedback on their incorrect output)” (p. 2). Furthermore, the interactionist approach is heavily focused on language tasks, or the so-called task-based approach to language acquisition. To define language tasks, Garcia-Carbonnel et al (2001) refer to Bachman and Palmer, who “affirm that language tasks are activities that involve individuals in using language for the purpose of achieving a particular goal or objective in a particular situation” (p. 483). Another definition of a task comes from Nunan, who states that a task is “a piece of classroom work which involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is principally focused on meaning rather than form” (Garcia-Carbonnel et al 2001, p. 483). This focus on meaning over form means that the end goal is always the successful completion of a task rather than implicit teachings of grammatical structures. Garcia-Carbonnel et al (2001) claim that using a task-based approach in simulation and gaming environments provides the learner with opportunities that demand of the learner’s own speech to be comprehensible, since it is only such opportunities that require the learner to use their grammatical competence, meaning that such tasks require the learner to mobilize all their linguistic knowledge and push it to the limit (p. 484). As stated before, MMORPGs operate first and foremost by completion of quests, which are goals and objectives the players need to complete within a game in order to become stronger or advance the storyline. Even if they are not linguistic in nature, the player needs to understand the objective of the quest as well as coordinate with others in order to successfully complete it. Garcia-Carbonnel et al (2001) claim that simulations such as games are the perfect medium for this exchange to take place because

they simulate real-life situations which require the understanding and implementation of the acquired language, which helps the learner internalize new knowledge about the language (p. 486). Gee (2003) seconds this by saying that simulations create positive learning environment which combines pleasure and active learning by focusing on difficult and interesting goal-focused activities (p. 207 – 212).

The third field of SLA which will be discussed is the research field of language socialization. Ochs, Schieffelin and Duranti (2011) claim that language is the biggest driving power behind socialization, stating that the primary goal of language socialization research is to

analyze children's verbal interactions with others not only as a corpus of utterances to be examined for linguistic regularities but also, vitally, as socially and culturally grounded enactments of preferred and expected sentiments, aesthetics, moralities, ideas, orientations to attend to and engage people and objects, activities, roles, and paths to knowledge and maturity as broadly conceived and evaluated by families and other institutions within a community (p. 4).

Simply put, they claim that this field of research encompasses socialization through using a language and socialization into a new language (p. 4). This area of SLA examines the way learners participate in target language social interaction as well as which opportunities they are granted for target language use. In previous chapters, we have discussed how most MMORPGs have built-in mechanisms which encourage players to form groups by locking certain objectives behind higher-difficulty content. In this way, experienced players and less experienced players group together in order to progress further in the game, which would otherwise be impossible to do for a solo player. Thorne, Black and Sykes (2009) note how MMORPGs are designed in such a way that players will inevitably need assistance from other players, which leads to the creation

of casual in-game partnerships and groups created with a certain goal in mind, as well as long-term social groups (i.e. guilds) formed with the goal of participating in organized multiplayer gameplay (p. 810). They define groups of people known as guilds as places which allow new players to become better at the game by playing with more experienced players (p. 810). Participation in guilds is very common for newer players as it generally doesn't require much from them, but is in turn very rewarding for both the newer players as well as the guild itself. Thorne, Black and Sykes (2009) state how experienced players give specific instructions to new players, but they also discuss in-detail strategy with each other in in-game chat channels, which allows for firsthand learning through observation and listening (p. 810). They go on to claim how the latest research on language use in MMOs provides proof for the notion that experienced players are catalysts for language socialization (p. 810). The authors quote a research study done by Pena and Hancock from 2006, whose aim was to analyze communication in an online video game. The findings reported "significantly more socioemotional talk (e.g., turns intended to release tension, expressions of solidarity, compliments, encouragements) than purely task-associated communication, a finding that underscores the salience of interpersonal communication and relationship maintenance, even within gaming spaces ostensibly oriented toward battle and competition" (p. 810) This interesting finding goes to show that socialization through language occurs in video games which are not specifically made for socialization, but rather focus on battle and competition. Therefore, it is less about the actual content of the game and more about the relationship that the players build through solving said content. Thorne, Black and Sykes (2009) support this notion by stating how goal-oriented multiplayer gameplay creates different kinds of social activity, from simple greetings to close friendships and romantic



relationships, which commonly involve people from different parts of the world in a multilingual context (p. 811).

The field of language socialization is closely tied to the field of sociocultural SLA, as they both take into account second language learning as a process of learning a culture through participation in socially constructed conversation where more experienced members (in this case players) help the less experienced ones (Zhao and Lai 2008, p. 403). Although all theories so far have in one way or another stressed social interaction as highly conducive, Zhao and Lai (2008) claim that the sociocultural perspective adds two additional elements needed for ideal foreign language learning environments: different socially constructed interactive communities and strong means of mediation (p. 404).

The first factor concerning the multitude of socially constituted communicative communities has already been mentioned in previous chapters with the existence of both the official company-led gaming forums as well as the more numerous fan-sites specializing either in lore-based information content or guides on how to improve gameplay. All of the above-mentioned communities offer the players a space to contribute by providing their own experiences, discuss various aspects of in-game content, as well as engage in conversations not necessarily connected to the game. Apart from websites, it is important to mention that in the context of *World of Warcraft*, *Discord* communities have been especially prominent. Today, *Discord* is one of the most popular messaging platforms available, offering text as well as voice messaging, the ability to exchange media and files, but most importantly, the creation of the so-called *servers*, where communities are granted the same benefits, only exclusive to the server members. The *World of Warcraft* fan-site *Wowhead* offers a list of the official *World of Warcraft Discord Servers*, ranging from servers meant to aid new players, servers focused on specific

aspects of game such as classes, and even *off-topic* servers where *World of Warcraft* players are encouraged to engage in informal, casual conversation. Thorne, Black and Sykes (2009) refer to Lam's analysis of Chinese-American students' interaction in such online gaming community to suggest that the online culture with its widespread use of codeswitching, informal registers, and different, often hybrid language use allows those students to create a new identity through the use of language (p. 805). This goes to show how, even though the primary reason for participation might be seeking game advice, learners still engage in different types of authentic communication, they develop a sense of accomplishment as users of a new language, they connect to the new language, and they learn to develop and navigate different social networks (Thorne, Black and Sykes 2009, p. 805).

The second factor concerning the rich mediating means is best exemplified in the aforementioned notion of highly experienced players helping newer players. Thorne, Black and Sykes (2009) claim that experienced individuals who do not require assistance from others usually serve as role-models and mentors (p. 806). The authors connect the notion of mediation by other people to Vygotsky's notion of the zone of proximal development, or ZPD for short, which they define as the difference between what can be accomplished independently by an individual or a group and what that same individual or group can accomplish through cooperation (p. 806). The authors also examine the way that players interact with experienced players in order to understand the inner working of MMORPGs as well as to gradually socialize themselves into game norms, using the example of *World of Warcraft*. They claim that Vygotsky was right in predicting that learners learn more with the assistance of experienced individuals than they would on their own (p. 810).

Lastly, an important notion in SLA is the notion of motivation. Players are generally motivated to keep playing the game simply because of its entertainment aspect. However, as players progress through the game, motivation stems from reaching the narrative conclusion for players engaging in PvE (player versus environment) content, while acquiring ranks and topping the scoreboards becomes a very important part for playing engaging in PvP (player versus player) content. Additionally, Zhao and Lai (2008) claim that there are different ways to generate motivation: forming cohesive learner groups, creating a supportive environment for learning, and creating learning materials which are relevant and important to the learners. Motivation is according to them maintained with the help of stimulating learning materials and through cooperation among learners (p. 404). In conclusion, MMORPGs foster a learning environment and facilitate motivation, as we have seen that MMORPGs include all of the above mentioned methods of generating motivation.

## **6. STUDY**

Research on computer-assisted language learning, or CALL for short, has been limited and Peterson (2013) states how there is a clear need for additional theory-led studies in that field (p. 101). Due to the ever-evolving nature of technology, the video game industry has seen an exponential boom in the past decade and the genre of MMORPGs is no exception. Although most MMORPGs follow the same format of a player customizing their own character and progressing through the open-world content by completing quests and interacting with other players, each new title (or an expansion of an already existing title) provides the player with not only additional content but also quality-of-life improvements which facilitate social interaction and player immersion.

### 6.1. Aim

The paper replicates a research study done by Peterson (2013) investigating the use of the MMORPG *Wonderland* in language acquisition from the social interactionist viewpoint. The aim of the research study is to compare the MMORPG *Wonderland* with the MMORPG *World of Warcraft* by answering Peterson's original questions:

1. During game play in a commercial MMORPG, do learners engage in forms of TL interaction that are identified as beneficial in social accounts of SLA? If so, what types of interaction do they undertake?
2. What are learners' attitudes toward gameplay in a commercial MMORPG?

### 6.1. Research Study Design

This longitudinal qualitative research study, spanning ten weeks, primarily focused on discourse analysis of player in-game interaction as the primary research tool. Peterson (2013) states how discourse analysis is a powerful tool in researching CALL (p. 103). Furthermore, this case study included questionnaires, chat transcripts and semi-structured interviews, as well as researcher observation and field notes. Peterson (2013) states how this aspect of case studies identifies important themes and patterns in the collected data and allows the researcher to observe the learners from a micro and macro perspective (p. 103).

### 6.2. Participants

There were four participants in this study, two of which were female and two of which were male. The number of participants chosen was based on the fact that the primary grouping method in *World of Warcraft*, i.e. parties, has a maximum of five players. The party members included the four participants as well as a passive fifth player, who was not part of the research study, but

merely there for recording purposes and access to the party chat. The participants were Croatian L1 speakers aged 14, 17, 20, and 22. The participants claimed intermediate levels of English proficiency supported by the results of an intermediate placement test provided to them by the researcher before the start of the study. None of the four participants had ever studied or lived abroad. All four participants have mentioned playing computer games before. Two of them stated that they played video games at least five hour per week, while two of them stated that they played video games more than twelve hours per week. Additionally, all four players have had experience of playing MMORPGs before, but only two have had some limited exposure to *World of Warcraft* before. None of the participants had played through the content used in the study, as it was only released in 2020.

### **6.3. Procedure**

The research study was undertaken in two stages during the spring semester of 2021. The first stage of the research study included two “training” sessions, lasting approximately an hour and a half. The aim of the first session was more oriented towards technicalities such as downloading and setting up the game, choosing a server realm, as well as creating the player characters. The first session also included a test log-in into the game world in order to see if there would be technical difficulties. Two of the players reported immediate disconnects upon entering the game world, which is apparently a common issue for starter accounts. Relogging a couple of times successfully fixed the issue, and there were no more technical difficulties during the study.

The second training session was oriented towards familiarizing the players with the community-led online forums. The players were introduced to two of such websites, the aforementioned *Wowhead* ([www.wowhead.com/](http://www.wowhead.com/)) and *Icyveins* ([www.icy-veins.com/](http://www.icy-veins.com/)). The two websites have been a staple in the *World of Warcraft* community, the former being a go-to

website for any quest-related issues while the latter offers extensive guides on each of the game's characters. This way the players were offered instructions on what to do in case they got stuck on a quest or if they wanted advice on the best way to progress as the game class they have chosen for their character.

#### **6.4. Data sources**

Multiple sources of data were collected and analyzed from the six weekly sessions which were the main phase of this study, each lasting approximately 60 minutes. The researcher used third-party software approved by *Blizzard Entertainment* in order to record both *general* and *party* chat, i.e. the chats used to communicate either with members of the same party (study participant) or with all players online in the area. Additionally, the researcher also used screen-capture software, specifically *Open Broadcaster Software (OBS)*, to monitor player movement which allowed researcher observation to be included as an additional source of data. Field notes were used by the researcher to record learner behavior in certain gameplay moments. Lastly, informal semi-structured interviews were conducted after each session. The questions pertained to topics such as the level of difficulty experienced while playing the game, the level of enjoyment, the level of understanding the linguistic input as well as other players' output. The minors provided written consent for the research study, stating they consent to the collection, reproduction, and analysis of the recorded data for research purposes.

#### **6.5. Findings**

This part of the paper will focus on the analysis of the data recorded during the six in-game sessions. The main part of the analysis will focus on in-game interaction between the participants, as well as their interactions with other players who were not the participants of the research study. Learner attitudes will be examined throughout the analysis of the informal

interviews conducted after gaming sessions. In order to provide anonymity, each learner will be identified through their in-game character names: Fushiguro, Mightyellf, Mormolykeia and Silvek. All other names mentioned are random players who were not part of the research study. The target language output produced by the participants will be presented unedited.

### **6.5.1. Chat transcript analysis**

In order to progress through World of Warcraft, the players need to understand the specific communication context used by the community. The challenges which the participants faced were mostly concerned with the specific game register used by other players, during several of the visits to the main capital city after questing. An example of this is a meeting between Mightyellf, one of the participants, and a random player named Fortch.

14:06:30 [Mightyellf-Lightbringer]: hey  
14:07:35 [Fortch-Lightbringer]: hello  
14:07:43 [Mightyellf-Lightbringer]: how do you have that pet  
14:07:44 [Fortch-Lightbringer]: the felguard?  
14:08:10 [Mightyellf-Lightbringer]: pet with the axe  
14:08:11 [Fortch-Lightbringer]: you have to be demo  
14:08:24 [Mightyellf-Lightbringer]: what is demo  
14:08:32 [Fortch-Lightbringer]: demo spec  
14:08:41 [Mightyellf-Lightbringer]: I dont understand  
14:08:58 [Fortch-Lightbringer]: you have to be demo spec  
14:09:18 [Fortch-Lightbringer]: what did you choose for your specialization?  
14:10:08 [Mightyellf-Lightbringer]: I don't know  
14:10:10 [Fortch-Lightbringer]: press n and click on demonology

As the above interaction shows, some of the game specific abbreviations such as spec for specialization and demo for demonology presented problems for the participants as they were not yet accustomed to the game mechanics, or the way higher level players referred to them. However, observation later revealed that, as the game progressed and these mechanics became more important to the participants, they soon adopted the specific *World of Warcraft* register. This was the case with similar problems where, despite certain setbacks in the beginning, participants were able to adapt, especially working together as a group, which in turn enabled further social interaction in the TL.

As mentioned in the SLA theory overview, Zhao and Lai (2008) stress social interaction in the TL as an important aspect of successful language learning (p. 412) and the analysis of the group chat provides extensive evidence of the participants coming together to solve challenges presented by quests, engaging in off-quest discussions as well as making friends with other players.

14:41:36 [Fushiguro-Lightbringer]: how's the quest going?

14:41:46 [Silvek-Lightbringer]: im done

14:42:14 [Mormolykeia-Lightbringer]: I'm done!

14:42:16 [Mightyellf-Lightbringer]: done

14:42:20 [Fushiguro-Lightbringer]: ah ok

14:42:20 [Silvek-Lightbringer]: we need to go even further north now

14:42:24 [Fushiguro-Lightbringer]: yeah let's go north

14:43:24 [Mightyellf-Lightbringer]: do we take both q

14:43:28 [Fushiguro-Lightbringer]: yes

14:44:14 [Fushiguro-Lightbringer]: do you see a star on the minimap?

14:44:24 [Silvek-Lightbringer]: yes

14:44:32 [Fushiguro-Lightbringer]: what is that?



14:45:10 [Silvek-Lightbringer]: idk  
14:44:54 [Mightyellf-Lightbringer]: geolorD?  
14:45:05 [Fushiguro-Lightbringer]: what geolord?  
14:45:15 [Silvek-Lightbringer]: no the orge overseer  
14:45:16 [Fushiguro-Lightbringer]: ohhh  
14:45:24 [Fushiguro-Lightbringer]: we have to kill geolord yes  
14:45:32 [Fushiguro-Lightbringer]: but there's also the big ogre over there  
14:45:34 [Silvek-Lightbringer]: should we try to kill the overseer  
14:45:34 [Mightyellf-Lightbringer]: oh okay hahaha  
14:45:39 [Fushiguro-Lightbringer]: yes let's all try to get him  
14:46:03 [Fushiguro-Lightbringer]: nice

The example provided is one of the many examples during the tutorial zone which shows how the participants utilized group work to complete harder objectives which otherwise could not be done individually. Another important aspect of group work included the fact that, because they were in a group together, all their individual accomplishments counted as group accomplishments. Even in moments where a participant would be slightly behind the others, the rest of the group waited for them to catch up as illustrated in the following example.

14:26:47 [Fushiguro-Lightbringer]: mighty do you need help whats going on  
14:27:31 [Mightyellf-Lightbringer]: i have an urgent meeting  
14:27:54 [Silvek-Lightbringer]: yea we did that  
14:28:30 [Mormolykeia-Lightbringer]: oh no  
14:28:34 [Mormolykeia-Lightbringer]: i clicked on the dragon  
14:28:37 [Mormolykeia-Lightbringer]: so now i'm flying XD  
14:28:56 [Silvek-Lightbringer]: so do we click on the dragon too?  
14:29:03 [Mormolykeia-Lightbringer]: it was an accident sorry  
14:29:05 [Mormolykeia-Lightbringer]: but yeah  
14:29:08 [Fushiguro-Lightbringer]: we can wait for mighty and mormo here then

The participants also engaged in a fair share of off-quest discussion. The following two examples illustrate moments of off-quest discussions while waiting for other players to log in to start the gaming session.

14:28:05 [Mightyelf-Lightbringer]: mormolykeia what should i call you for short

14:28:29 [Mormolykeia-Lightbringer]: mormo is fine

14:28:41 [Mightyelf-Lightbringer]: where is the name from?

14:29:35 [Mormolykeia-Lightbringer]: it's from greek mythology

14:29:43 [Fushiguro-Lightbringer]: oh damn

13:38:08 [Fushiguro-Lightbringer]: hello thereee

13:38:11 [Fushiguro-Lightbringer]: how are you guys

13:38:27 [Mormolykeia-Lightbringer]: I'm okayy

13:38:38 [Silvek-Lightbringer]: i played civ 5 until 4am so im tired

13:38:42 [Fushiguro-Lightbringer]: what's civ?

13:38:49 [Silvek-Lightbringer]: civilization 5

13:39:06 [Fushiguro-Lightbringer]: sounds like a strategy game

13:39:11 [Silvek-Lightbringer]: it is

13:39:18 [Silvek-Lightbringer]: i played with marin

13:39:34 [Fushiguro-Lightbringer]: it's not single player?

13:39:43 [Silvek-Lightbringer]: it can vve single and mutli

13:39:52 [Fushiguro-Lightbringer]: ohhh

Similar to this are moments where the participants engaged in off-quest discussions related to the appearance of their characters. The participants showed interest in the identity of their characters, which Zhao and Lai (2008) claim is an important aspect of facilitating motivation in MMORPGs (p. 410). The two examples below showcase the players interest in keeping up appearances with

their characters, both in terms of haircuts and body modifications offered by the barber as well as the change in armor.

14:18:53 [Fushiguro-Lightbringer]: I have a quest to meet the warchief

14:18:57 [Fushiguro-Lightbringer]: but I'll go visist the barber

14:18:59 [Fushiguro-Lightbringer]: to get a new haircut

14:22:05 [Mightyellf-Lightbringer]: I wanna go too

14:22:10 [Silvek-Lightbringer]: me too

14:22:42 [Fushiguro-Lightbringer]: follow me

14:22:45 [Fushiguro-Lightbringer]: black hair looks better for warlock

14:22:47 [Mightyellf-Lightbringer]: yes

14:23:06 [Mormolykeia-Lightbringer]: I have a wound on my head

14:23:08 [Silvek-Lightbringer]: I wanna change clothes

14:23:13 [Mormolykeia-Lightbringer]: i'll google

14:23:22 [Mormolykeia-Lightbringer]: we need transmogrifier

14:23:51 [Fushiguro-Lightbringer]: guard says its in valley of honor

The same example also shows the participants taking an active role in researching the answers for themselves by navigating TL output.

The participants often initiated social interaction and used phrases intended to keep the discussion going, such as asking for help, clarifying certain objectives or providing additional information. However, the participants did not engage in that much social interaction with other players who were not a part of the research study. The conversation between participants and other players was mostly oriented towards the participants asking the other players for

information or the other players asking the participants for help. Apart from a polite exchange at the end, these interactions did not continue further.

14:36:41 [Aggnicia-Lightbringer]: can you help me kill the elite  
14:36:49 [Fushiguro-Lightbringer]: which elite  
14:37:14 [Aggnicia-Lightbringer]: Daggerjaw  
14:38:01 [Mightyellf-Lightbringer]: we already killed him  
14:38:10 [Aggnicia-Lightbringer]: can you help me, I cant kill him alone  
14:38:26 [Fushiguro-Lightbringer]: ok  
14:38:27 [Mormolykeia-Lightbringer]: ok  
14:39:03 [Fushiguro-Lightbringer]: where is he  
14:39:06 [Aggnicia-Lightbringer]: he will spawn here  
14:40:20 [Aggnicia-Lightbringer]: thank you  
14:40:25 [Fushiguro-Lightbringer] you're welcome

However, despite the fact that social interaction was mostly showcased within the participant group, the assistance provided by higher level players still played an important role in understanding the content. As discussed in the theory section of this paper, sociocultural SLA states that learners are able to accomplish more with the assistance of more experienced individuals. In this case, higher level players were able to provide information on where to obtain certain items, how to complete certain quests as well as provide assistance during particularly challenging combat encounters. An interesting finding is that certain participants took on a more of a leadership role in the group, notably those who have reported having more gaming experience in general. Silvek and Fushiguro were often the first to use the internet resources mentioned during the pre-gaming sessions to look up the necessary information, which reduced the need to message higher level players. This finding illustrated the importance of transmedia

and participatory culture mentioned in the theoretical overview, as players were able to use the massive amounts of information available online to their benefit (Rudis & Poštić 2018, p. 116).

14:49:46 [Mightyellf-Lightbringer]: why cant i put soul shards on my amm spell display?  
hgahahah

14:50:03 [Silvek-Lightbringer]: they are a passive ability

14:50:06 [Silvek-Lightbringer]: you don't use them

14:50:18 [Mightyellf-Lightbringer]: i just have them?

14:50:27 [Fushiguro-Lightbringer]: for now, yes

14:26:14 [Mormolykeia-Lightbringer]: how can i move my spells on the bar

14:26:41 [Silvek-Lightbringer]: from the spellbook?

14:26:46 [Silvek-Lightbringer]: click and drag on them

14:26:59 [Fushiguro-Lightbringer]: shift+click

14:27:00 [Mormolykeia-Lightbringer]: thanks

14:06:37 Fushiguro waves.

14:06:39 [Mormolykeia -Lightbringer]: how

14:06:49 [Fushiguro-Lightbringer]: how what?

14:07:00 [Mormolykeia -Lightbringer]: do u wave hahahah

14:07:11 [Fushiguro-Lightbringer]: you have to click on me and then you type /wave in the chat

14:07:26 Mormolykeia waves.

These three examples showcase moments in which one of the participants made a direct request for assistance while the other participants utilized the internet resources to look up the information and help them. With the assistance of other players as well as group effort, the

participants were able to complete all of the quests presented. The only exception to this is a single quest during the last session which included a challenging part where the player transformed into a raptor and the objective was to navigate the streets without getting caught by the guards.

15:02:02 [Mightyellf-Lightbringer]: i dont know what to do

15:02:03 [Fushiguro-Lightbringer]: warlocks are strong

15:02:08 [Fushiguro-Lightbringer]: you have to bit one guy in the ass

15:02:09 [Fushiguro-Lightbringer]: as a dinosaur

15:02:14 [Fushiguro-Lightbringer]: but you can't get caught by the guards

15:02:21 [Fushiguro-Lightbringer]: so use your sprint ability to run away

15:02:30 [Fushiguro-Lightbringer]: and then right click on the dude you have to bite

15:02:34 [Fushiguro-Lightbringer]: it say sso on wowhead

15:03:27 [Silvek-Lightbringer]: the movement is key

15:03:31 [Mightyellf-Lightbringer]: ]dgvdsds:xnfyucgalfmgn cuylif]lsdmc

15:03:36 [Mightyellf-Lightbringer]: i cant do ittt

15:03:57 [Fushiguro-Lightbringer]: it is tricky

-after three minutes of trying

15:06:08 [Mightyellf-Lightbringer]: can i quit this quest its hard hahaha and i cant do it

15:06:14 [Fushiguro-Lightbringer]: yeah you don't have to do it

15:06:54 [Mightyellf-Lightbringer]: yeah but idk how to stop beeing nokano

15:09:10 [Silvek-Lightbringer]: i'm reading online now it say everyone is failing that quest a lot

15:09:23 [Fushiguro-Lightbringer]: ohhh

The above example illustrates a moment of frustration upon the failure to complete the quest where the participant gets fed up and decides to abandon the quest.

### **6.5.2. Post-session informal interviews**

After each gaming session, a short informal interview was conducted between the researcher and the individual participants in order to obtain feedback on learner attitudes. Firstly, the questions concerned technical difficulties as well as any instance where the game caused problems due to any reasons. Secondly, the questions concerned the understanding of English employed by non-player character, other players as well as the level of English used in quest logs. Lastly, the questions concerned the participants' overall enjoyment of the game, levels of anxiety while playing as well as motivation to continue playing the game. The participants gave the answers in Croatian, while the researcher translated them into English for the purpose of this paper.

Out of the four participants, only one participant experienced technical difficulties in the very first session, namely, a couple of connection issues upon entering the game world. However, the matter was resolved within minutes and there were no technical difficulties for the remainder of the research study. Concerning the difficulty of the quests, all participants reported that the quests were easy to follow and complete with the exception of a single quest during the last session. Three out of the four participants were able to complete the quest, while one participant abandoned the quest. The participant in question later explained that they were unable to complete the quest after several tries and felt too frustrated to continue. Upon further inquiry, the participant stated that it was not the level of English or the lack of understanding that was the problem, but rather the mechanical complexity of the quest, namely, the inability to navigate the character successfully enough to complete it.

*I knew I needed to avoid the guards, but every time they would catch me. I didn't want everyone to have to wait for me, and the quest wasn't important so I abandoned it.*  
(Fushiguro)

On the other hand, all of the participants reported that the game was not difficult to play and that they had no major problems in completing the quests or progressing through the game in general. All of the participants also noted that the main reason for this was the fact that they were able to utilize internet resources mentioned in the pre-gaming session, namely *Wowhead*.

*Every time I didn't know what to do with the quest, I would go to Wowhead and check the comment section. I was always able to find the answer I needed, as most of the players commenting had encountered the same problem.* (Mormolykeia)

In terms of the level of English encountered while playing the game, all of the participants stated that they encountered many unfamiliar words. They stated that they could understand the level of English used by the other participants as well as the other players encountered along the way, but sometimes struggled with the level of English found in quest logs or used by non-player characters. Upon further inquiry, the participants stated that this generally did not prevent them from being unable to complete the quest, because they utilized the help offered by the game.

*When the quest said activate the lantern, I didn't know what I had to do, but when I got to the designated area on the map, I saw a big floating lamp highlighted with white and my cursor changed to a hand so I could click on it.* (Mighyellf)

*We had to kill an "Executioner" but I didn't know what that was, so I just followed the other players and saw more players standing at the same spot.* (Mormolykeia)

All of the participants claimed that they had learned new vocabulary during the game. Two participants claimed that they had looked up several words which were unknown to them, while



two of the participants stated that they had not looked up the words even if they were unfamiliar, but instead had tried to deduce the meaning from the context.

*I understood everything during the tutorial zone, but when we reached Zuldazar <sup>1</sup>I didn't understand a lot of words about politics. (Silvek)*

*I learned many words about politics, I didn't know what a "coup" was before. (Fushiguro)*

*I learned a lot of words from quest titles such as "council", "ethical dilemma." I also think of Zul<sup>2</sup> every time someone mentions "prophecy" now. (Mightyelf)*

Three of the participants expressed how they improved their reading because they found the quest logs interesting to read. One of the participants mentioned how they had not spent time reading the entire quest log, only the summary found in the quest objective part of the log. All of the participants claimed how they had improved their writing in a low-anxiety environment.

*I was surprised by how much time I spent typing. (Silvek)*

*I wasn't afraid to make mistakes because the other players also made mistakes, and nobody said anything. (Mormolykeia)*

*I was a little hesitant to talk to the other participants at first, but it got easier as we had more sessions. (Fushiguro)*

*I wasn't afraid of talking to the participants, but I didn't want to engage in conversation with higher level players. (Mormolykeia)*

In terms of their enjoyment, all of the participants reported that the game had been interesting to play as well as that they had felt motivated to play further. Three of the four participants claimed that they would be interested in continuing to play the game.

---

<sup>1</sup> The name of the zone which comes after the tutorial zone.

<sup>2</sup> One of the main characters during the questline; a prophet turned traitor.

*I enjoyed leveling because it unlocked more of my abilities and my character became stronger. (Mightyellf)*

*The game was very interesting for me, I want to try Mormo's character because they can be invisible. (Mightyellf)*

*I enjoyed this type of learning because it combined learning with having fun. (Silvek)*

### **6.5.3. Discussion**

Although the research study confirmed most of the positive findings claimed by Peterson in his original study as well as demonstrated that players engage in forms of interaction that are hypothesized to be beneficial for SLA in the theoretical overview of the paper, there were certain limitations to the study itself.

Although the quantity of TL output was abundant, most of the negative findings relate to the quality of TL output. During the gaming sessions, there were no recorded instances of self-correction and participants expressed that they were not overtly concerned with the grammaticality of their utterances. There was a single instance of frustration recorded which led to an abandonment of a certain quest. Although there were no instances of participants getting ignored by higher level players, certain participants have expressed that they were unwilling to engage in interaction with other players.

The main limitation of the study was the number of participants involved. Although the choice to include four participants was based on the number of players able to join a party, i.e. four participants and a passive fifth observer, the number of participants is still too small in order to generalize the findings. The research study also presupposed that the participants have access to a personal computer and a working internet connection in order to play the game. Despite the limitations, the research study provided several findings related to the research study questions.

## 7. CONCLUSION

In conclusion, the research study and the data analysis set to answer the research questions suggested that participants have engaged in various forms of interactions which have been hypothesized as beneficial to SLA, by prior theoretical overviews. The second research study question referred to the attitudes that the participants displayed during gameplay, which were overwhelmingly positive. The participants were able to socialize with each other during the six gaming sessions and they were exposed to a lot of comprehensible TL input. Within the *party chat* they were able to engage in forms of authentic interaction with other participants who displayed a slightly higher level of linguistic competence, all while finding themselves in a relaxed, judgement-free environment where their mistakes wouldn't be penalized. During the completion of quests, i.e. in-game tasks, they negotiated meaning between each other and progressed through the game in coordinated group efforts. Although the players successfully socialized with each other, an observed drawback was the lack of interaction with other, more experienced players from different cultural backgrounds. Comparing these findings to Peterson's study on *Wonderland* shows that while playing *World of Warcraft*, participants did not experience any technical difficulties which would inhibit interaction, such as the problem of missing chat lines due to the rapid pace of conversation between the players or instances of players being ignored by others. Regarding the learners' perceptions and impressions that they've made during the research study, the participants reported that they entered the research study with an open mind and that their motivation levels have remained throughout the study. They all gave positive feedback in terms of the emotions they'd experienced during the study as

well, both in terms of the gameplay and its learning benefits. An additional benefit is the wide array of internet resources available to *World of Warcraft* players which mitigated a lot of the problems newer learners face in regards to the specific game register utilized by higher level players, or the overall complexity of game mechanics. Furthermore, there were less instances of frustration recorded in the research study, possibly due to the nature of the quests being optional, meaning players could abandon them without any repercussions to the gameplay. As mentioned in the beginning, the video game industry is a rapidly evolving business. Most of the computer-assisted language learning research states how additional research is required to fully explore the potential video games have for SLA. This paper explores the prospects MMORPGs have for language learning, but with new titles being released every year, the need for additional research work is greater than ever. In the future, some of the research studies that might provide more insight into the efficiency of MMORPGs include longitudinal research studies to explore the long-term benefits that playing MMORPGs has on language acquisition. Additionally, research studies should include more participants in order to generalize the findings as well as look into different ways of collecting data such as recording audio in voice chats or Discord servers during gameplay. Lastly, additional research is needed regarding other video games genres because, as we've mentioned earlier, all video games have the potential for experiential learning and their true potential for language acquisition is yet to be fully unlocked.

## Sažetak

Sve je više istraživanja posvećenih učenju engleskog jezika putem videoigara, posebice onih iz kategorije MMORPG igara. Kako videoigre postaju kvalitetnije i popularnije, tako se povećava njihov potencijal za učenjem engleskog. Danas se, više no ikad prije, MMORPG-ovi fokusiraju na interakciju između igrača, kao i na građenje zajednice i suradničko igranje putem novih i zanimljivih mehanizama. MMORPG igre pružaju autentičan jezični input i nagrađuju igrače koji proizvode jezični output, jer potiču daljnju komunikaciju. Osim toga, takve videoigre oslabljuju afektivne filtere, koje često pronalazimo u tradicionalnoj učionici. U ovom će se radu djelomično replicirati istraživanje Marka Petersona iz 2013. o učincima MMORPG videoigre *Wonderland* na usvajanje jezika, ali će fokus biti na videoigri *World of Warcraft*. Rezultati istraživanja temelje se na podacima prikupljenim tijekom i nakon šest sesija u kojima su četiri ispitanika igrala igru. Rezultati su pokazali da su ispitanici sudjelovali u vrstama interakcije koje se smatraju korisnima pri usvajanju stranog jezika.

Ključne riječi: MMORPG, World of Warcraft, računalno potpomognuto učenje jezika, usvajanje stranog jezika

## 8. LITERATURE

Achievement. (2021). In *Wowpedia*. <https://wowpedia.fandom.com/wiki/Achievement>

Adams, E. (2010). *Fundamentals of strategy game design* (2nd ed.). Pearson Education.

Aristotle (1999). *Nicomachean Ethics* ( 1st ed.). Batoche Books.

Aydin, S. (2013). Second Life as a foreign language learning environment: A review of research. *Turkish Online Journal of Distance Education*, 13 (1), pp. 53 – 63.

deHaan, J., Reed, M. and Kuwada, K. (2021). The effect of interactivity with a music video game on second language vocabulary recall. *Language Learning & Technology*, 14(2), pp. 74-94.

Dixon, Nancy M.; Adams, Doris E.; Cullins, Richard (1997). Learning Style. In L. J. Bassi and D. Russ-Eft (Eds.), *What works: Assessment, development and measurement* (pp. 37 – 65). American Society for Training and Development.

Faction. (2021) In *Wowpedia*. <https://wowpedia.fandom.com/wiki/Faction>

Fuente, M. (2003). Is SLA Interactionist Theory Relevant to CALL? A Study on the Effects of Computer-Mediated Interaction in L2 Vocabulary Acquisition. *Computer Assisted Language Learning*, 16(1), pp.47-81.

García-Carbonnel, A., Rising, B., Montero, B. and Watts, F. (2001). Simulation/Gaming and the Acquisition of Communicative Competence in Another Language. *Simulation & Gaming*, 32(4), pp. 481-491.

- Gee, J. (2003). *What Video Games Have to Teach Us about Learning and Literacy*. Palgrave Macmillan.
- Kolb, D. (2015). *Experiential learning* (2nd ed.). Pearson Education.
- Koster, R. (2005). *A theory of fun for game design*. Paraglyph Press.
- Kraft, R. G. (1994). Bike riding and the art of learning. In L. B. Barnes, C. R. Christensen and A. J. Hansen (Eds.), *Teaching and the case method* (pp. 120 – 125). Harvard Business School Press.
- Krashen, S. (1999). *Principles And Practice In Second Language Acquisition*. ELT.
- Marsh, A. and Tainio, L.. (2009). Other-Repetition as a Resource for Participation in the Activity of Playing a Video Game. *The Modern Language Journal*, 93(2), pp.153-169.
- Ochs, E., Schieffelin, B. and Duranti, A. (2011). *The Handbook of Language Socialization* (1st ed.). Wiley-Blackwell.
- Peterson, M. (2013). *Computer games and language learning* (1st ed.). Palgrave Macmillan.
- Quest. (2021). In *Wowpedia*. <https://wowpedia.fandom.com/wiki/Quest>.
- Reinders, H. (2012). *Digital Games in Language Learning and Teaching* (1st ed.). Palgrave Macmillan.
- Reinders, H. and 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 (DCE)*, 3 (1), pp. 3 – 29.
- Rudis, D. and Poštić, S. (2018). Influence of video games on the acquisition of the English language. *Verbum*, 8(8), pp. 112 – 128.

- Silva, R. (2014). Video games as opportunity for informal English language learning: Theoretical considerations. *the ESpecialist*, 35(2), pp.155-169.
- Steinkuehler, C. (2006). Massively Multiplayer Online Video Gaming as Participation in a Discourse. *Mind, Culture, and Activity*, 13(1), pp. 38 - 52.
- Steinkuehler, C. (2007). Massively Multiplayer Online Gaming as a Constellation of Literacy Practices. *E-Learning and Digital Media*, 4(3), pp. 297 - 318.
- Thorne, S., Black, R., and Sykes, J. (2009). Second Language Use, Socialization, and Learning in Internet Interest Communities and Online Gaming. *The Modern Language Journal*, 93 (s1), pp. 802 - 821.
- Zhao, Y. & Lai, C. (2008). Massively Multi-Player Online Role Playing Games (MMORPGS) And Foreign Language Education. In Ferdig, R. (Ed.) *Handbook of Research on Effective Electronic Gaming in Education* (pp. 402 – 420). IDEA Group.
- Zheng, D., Young, M., Brewer, R. and Wagner, M. (2009). Attitude and Self-Efficacy Change: English Language Learning in Virtual Worlds. *CALICO Journal*, 27(1), pp. 205 - 231.