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The Usefulness of Massive Multiplayer Online Role Playing Games (MMORPGs) as Tools for Promoting Second Language Acquisition

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Applications of CALL Theory in ESL and EFL Environments

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Chapter 14

The Usefulness of Massive Multiplayer Online Role Playing Games (MMORPGs) as Tools for Promoting Second Language Acquisition

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ABSTRACT

The purpose of this chapter is twofold (1) to review the benefits of online videogames for promoting second language acquisition (SLA), specifically massive multiplayer online role-playing games (MMORPGs) and (2) to present new research that seeks to explain why and how MMORPGs may be beneficial. The findings from the research indicate that MMORPGs are beneficial to SLA primarily because they provide opportunities for interaction in the target language through participation in collaborative problem solving tasks. The results of the research presented in this chapter show (1) that the requirements of input and output for successful gaming allow for a type of interaction in which the focus on language form leads to modified-output, (2) that players have opportunities to negotiate input as a means of completing in-game tasks, and (3) that in-game tasks are similar to instructional tasks that are believed to be beneficial for SLA in the context of a classroom.

INTRODUCTION

Opportunities for target-language interaction and access to rich sources of second language (L2) input have drastically increased over the past several decades as a result of technological advances—Internet bandwidth has grown, processor speeds have accelerated, and access to online technology has increased

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for both L2 teachers and learners. The development of learning management systems (LMSs), which are software applications for the administration, documentation, tracking, reporting, and delivery of content for online courses, allow teachers to effectively deliver courses completely or partially online, thereby making access to online learning an essential component for educational enterprises in the 21st century. In the past decade, the number of students studying in online courses in U.S. post-secondary contexts has steadily increased. The total number of students studying online in 2012 was 6.7 million, which is 37% of the total number of students in U.S. higher education (Allen & Seamen, 2013). This number is an increase from 25% in 2010 (Blake, 2011) and 11.7% in 2003 (Allen & Seamen, 2013; OECD, 2005).

For almost 20 years second and foreign language teachers have been incorporating online tools such as chat rooms, wiki pages, and discussion boards into course and curriculum design (Dudeny & Hockly, 2012; Rubio & Thoms, 2013). The motivation for this practice has been aimed at providing language learners with increased opportunities to communicate and interact with teachers and other learners. Sykes and Reinhardt (2013) argue for the importance of interaction in language learning. Communicating with other people is the end result of language as a social meaning-making process. These scholars state that this process is essentially enculturation with the fundamental learning that takes place is through activity. The interaction that can take place online is thought to be especially beneficial to L2 acquisition. Blake (2011) argues that online language learning “stimulates students to spend more time engaged with second language (L2) materials, which ultimately promotes greater learning” (p. 21).

Since the early 1980s, second language acquisition (SLA) researchers have recognized the importance of interaction as a key factor in SLA (Gass, 1997; Long, 1983; Pica, Lincoln-Porter, Paninos, & Linneln, 1996; Sykes, & Reinhardt, 2013). The results of interaction between language learners and highly proficient users or native speakers have obvious benefits when it comes to both the amount and type of language to which learners are exposed; however, research also shows that even without the presence of highly proficient users or native speakers, interaction between two or more L2 learners is beneficial and productive for SLA (Beauvois & Eledge, 1995; Lee, 2001; Long, 1996; Pica et al., 1996).

An often-overlooked technological resource for promoting interaction that L2 learners can employ is online games. Recent research on the use of online games as they relate to second language acquisition reports some very positive results, specifically for the genre of massive multiplayer online role-playing games (MMORPGs) (see, for example, Kongmee, Strachan, Montgomery & Pickard, 2011; Peterson, 2016; Scholz & Schulze, 2017; Sylvén & Sundqvist, 2012). MMORPGs allow hundreds of gamers to interact in evolving virtual worlds at the same time via the Internet. L2 learners can cooperate and compete with one another on a large scale and oftentimes interact meaningfully with other L2 learners from around the world. Without the use of the Internet, this type of interaction would otherwise not be available to L2 learners.

In addition to an increase in the number of opportunities to interact with other speakers in the target language, there are additional benefits to L2 learners who participate in MMORPGs. L2 learners who play MMORPGs have opportunities to engage in cooperative problem-solving tasks that share many characteristics with effective language-learning tasks (e.g., language-learning tasks that provide opportunities for the negotiation of meaning). It is important to note that participation in MMORPGs is meant to supplement, not replace, classroom language-learning activity, so learners involved in MMORPGs can also benefit from interaction that occurs in the context of the classroom. In addition, MMORPGs provide opportunities for L2 learners to produce large amounts of output as they work cooperatively to complete in-game tasks. Output produced by one player is a meaningful source of contextual input for other players, thereby eliciting connected interaction between players. Results from the study discussed in

this chapter show that participants' implicit focus on form to achieve understanding and communication leads to modified-output (Swain, 2000; Swain & Lapkin, 1995; Varonis & Gass, 1985). Furthermore, players have opportunities to negotiate both player-produced input and environmental input (input that comes from interacting with the game environment rather than another player) as a means to complete game tasks, thereby making the virtual world of MMORPGs a contextually rich social environment.

BACKGROUND

Over the past several years, researchers have begun to investigate the benefits that online gaming has for language learners. Online gaming provides opportunities for language learners to use the target language in meaningful (i.e., in ways that are important and useful for the learner) and collaborative ways while engaging in tasks in the virtual game world in the target language. Sylvén & Sundqvist (2012) argue that MMORPGs share many instructional features with Content and Language Integrated Learning (CLIL) and Content-based Instruction (CBI) by immersing players in a content-rich environment that fosters authentic language use especially in terms of “input, output, and interaction” (p. 308). Thorne (2008) also supports the claim that MMORPGs share similarities to features of an L2 classroom because the in-game tasks allow for “negotiation of meaning, repair sequences, explicit corrective feedback, and requests for assistance” (p. 322).

It is important to note that the interaction that takes place between players in MMORPGs is facilitated through written communication rather than oral. Therefore, when the researchers cited in this chapter refer to negotiation, feedback, requests, or other types of interaction in their studies, the participants are doing so by sending texts to one another that appear on the users' screens while playing an MMORPG. To date, there is a dearth of published research relative to opportunities for negotiation of meaning using written texts. An examination of L2 data in early studies on negotiation of meaning (see Pica, 1994) necessarily focused on an examination of oral language. Until advances were made in technology, such as the technology used in MMORPGs, written texts could not be examined *in situ*.

More recently, Scholz and Schulze (2017) analyzed data from students playing *World of Warcraft*, an MMORPG, and sought to understand how participants' progression in the game interacted with their second language development (SLD). The researchers argue that SLD occurred when they “detected evidence of a language learner having observed an unfamiliar linguistic construction while playing the game and then being able to produce it in a non-gaming context” (p. 106). They posit that there is ample evidence to demonstrate that these new linguistic constructions stem from gameplay; however, they also caution that these data are not definitive. Nevertheless, they are confident that the language to which participants were exposed in the game is “indeed transferable to non-gaming contexts” (p. 112).

Other research in second language acquisition (SLA) that focuses on the use of MMORPGs has found that the social nature of the games offers opportunities not only for experimenting with an L2, but also for learning new vocabulary (Rankin, McNeal, & Shute, 2008). Peterson (2010, 2011, & 2012) conducted several studies involving MMORPGs and language learning. One of these studies (Peterson, 2011) was a qualitative study conducted in Japan with ESL students, and it revealed that English learners “took the lead in managing their discourse and actively engaged in collaborative social interactions involving dialog in the target language” (Peterson, 2011, p. 56). He writes that the benefits of the in-game interaction “include access to an engaging social context, enjoyment, exposure to new vocabulary, reduced anxiety, and valuable opportunities to practice using a foreign language” (p. 56). The types of interac-

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tion and communication strategies used in the MMORPG are also features of productive and engaging English language classroom tasks.

It is important to recognize that the types of interaction and communication strategies used by the learners may not be equally accessible to all learners. Peterson (2011) points out that language proficiency and prior gaming experience are major factors influencing participants' successes and enjoyment of in-game tasks. Additionally, the games may require a rather powerful, and often expensive, computer, which can limit access to the games. Nevertheless, language learners who are new to MMORPGs and willing to put in time can learn to play the game online from more experienced players, while simultaneously learning English. Sylvén and Sundqvist (2012) point out that a context in which novice players are collaborating with experts to achieve a goal provides a perfect example of what Vygotsky (1978) calls the Zone of Proximal Development (ZPD). The ZPD is realized in MMORPGs when English learners work on tasks with players who have more highly developed language skills, thereby moving English learners more quickly from the ZPD to a higher skill level.

MMORPGs can also benefit English learners because they allow for anonymity and real-time interaction with a large native speaker population, which is not possible in traditional L2 classrooms. L2 speakers can be intimidated by interaction with native speakers. The complexity of face-to-face social relationships and interactions can hinder learners' willingness to engage in the target language in a context in which they feel comfortable (Peirce, 1995). The anonymity in online gaming may lower the affective filter (Krashen, 1982), thereby providing a more relaxed environment for language experimentation. Furthermore, players are able to complete in-game tasks in real time with well-defined rules and goals, which provide important scaffolding for learners. This scaffolding is important for learners as they construct meaning and solve problems (Blake, 2011). As problems are solved, self-confidence increases, as well as the motivation to learn the L2 (Gardner, 1985). This type of learning environment is often unavailable in traditional English language-teaching classrooms or in traditional computer language learning software applications.

MAIN FOCUS OF THE CHAPTER

Issues, Controversies, Problems

A number of studies have investigated the potential for MMORPGs as language learning tools and have found positive results (see, for example, Kongmee, Strachan, Montgomery & Pickard, 2011; Peterson, 2016; Scholz & Schulze, 2017; Sylvén & Sundqvist, 2012). Researchers laud participation in MMORPGs as a low-stress activity that L2 learners can use to engage in the target language in an input-rich and authentic language use environment. Additional research is still needed on exactly how and why MMORPGs are beneficial (or are not beneficial). Kongmee, Strachan, Montgomery, and Pickard (2011) state that a deeper analysis of participants' interactions is needed to further understand if these games foster SLA, and if so, how. To investigate how MMORPGs might foster SLA, more hours of recorded data are needed of language learners interacting in a variety of MMORPGs.

Although many researchers cite authentic language use as a major benefit for L2 learners playing MMORPGs, Scholz and Schulze (2017) point out that in most studies the participants are in the same location as, and being watched by, the researchers. They argue that this constant surveillance "potentially

detracts from the authentic and common experience of gameplay at the player's leisure and at a preferred location, while at the same time limits the amount of time a player could potentially want to play" (p. 101). This limitation is also noted by Peterson (2012). The study in this chapter seeks to address this limitation by allowing participants to play the game at their desired location, time, and duration. As part of the University's requirements for the protection of human subjects, the study was reviewed and approved by the IRB and identified as a minimal risk study with a waiver of documentation of informed consent.

The purpose of the current study was to investigate whether MMORPGs have the potential to be beneficial tools for promoting SLA. To this end, the current study sought to answer the following research questions:

1. What types of learning strategies are used by learners of English as they play *Guild Wars 2*?
2. How many different types of learning strategies are used?
3. Does *Guild Wars 2* provide opportunities for English learners to negotiate input?
4. What specific strategies do English learners employ in negotiating input?

Guild Wars 2 and MMORPGs

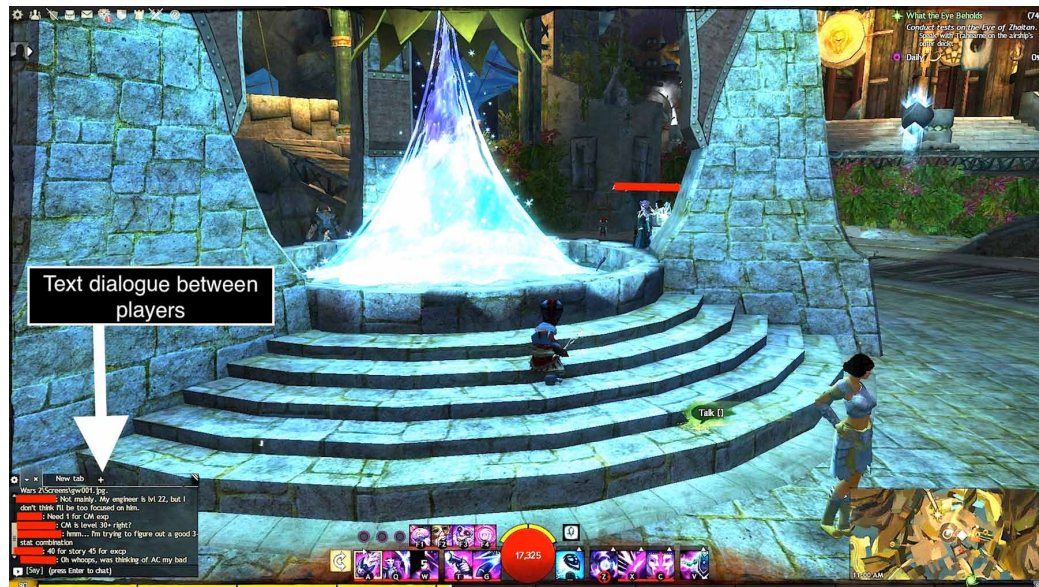
Guild Wars 2 is an online video game that falls into the genre of MMORPGs. Like most games in this genre, players create a character by choosing from many customizable options that determine its appearance, abilities, and profession, as well as many other features. These features affect how players progress through the game and the roles they will play when interacting with others in the online game world. In the game world, all players are visually represented by their created character or avatar. The player can see and interact with others who are playing the game at the same time. All interaction is done in real time rather than, for example, sending a message like an email and waiting for a response. At any given time there are literally hundreds of real players with whom one can interact and communicate. Communication is done through texting, and texts can be sent to a specific player, a group of players, or anyone in close proximity in the game world; Figure 1 shows an example of *text dialogue* between players in a game. Players often form groups and cooperate to accomplish tasks. These tasks grant rewards and *experience* that make each player's character stronger, which allows them to progress further in the game. Players are able to progress quicker by forming groups because their strength is greater together. Stronger characters can take on more difficult and rewarding tasks. Thus, there is an incentive to interact with the other players in the game world, a common feature in MMORPGs.

METHODOLOGY

The three participants in the current study were all undergraduate students in their first or second year of study at a university in the United States. They were all L2 speakers of English and were enrolled in academic English as a second language (ESL) classes during the term in which data were collected. They were all in their early 20s. A copy of the game *Guild Wars 2* was given to each participant at no cost. Participants were also told that they could keep the game after the study, and they could drop out of the study at any time for any reason. These steps were taken to increase the likelihood that participation in the study would be motivated solely by interest in the game.

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Figure 1. Text dialogue between players



Participants' in-game interactions during *Guild Wars 2* were analyzed and placed into categories associated with two types of strategies—learning and communication. The categories used for analyzing the learning strategies were based on Chamot and O'Malley (1992) and their framework of metacognitive, cognitive, and socio-affective learning strategies. For analyzing the communication strategies, the framework proposed by Lee (2001) was used, which included requesting information, checking information, use of the first language (L1), self-correction, and peer correction. Both types of strategies were adapted to fit a gaming context. Additionally, participants' in-game texts, which were produced in response to previous texts, were tallied so that the degree of connected interaction that took place among participants could be recorded. The quantitative data were used to understand the players' interactions and the potential influence the interactions may have on SLA.

Data Collection

The three students agreed to play *Guild Wars 2* together at the same time and record their computer screens while doing so. All three students said they had some experience playing games in the MMORPG genre, but none had ever played *Guild Wars 2*. They were told not to play the game unless all other players were able to do so, and they were required to play the game in separate real-world locations so that all communication would be done through the in-game text and communication system. Participants chose to play the game in their campus dorms or apartments. None of the participants were roommates.

Gaming sessions were scheduled in advance to ensure that all participants could commit to the schedule. There was no set time limit on how long a single gaming session could last; however, they were told that they must stop playing if any one player could no longer play. They were required to form an in-game party so that they could always see all other party members on their in-game map. Figure 2 exemplifies the *players-in-party* display. The in-game map shows where other players are located and allows players to easily use the in-game chat function to communicate with one another. The participants

Figure 2. Players in a party



were told that they should only use English, which was the L2 for all participants, while playing the game and communicating with one another. The three participants were all native speakers of Chinese. They were asked to complete the in-game tasks together as a group and stay in close proximity to one another in the game world. There was a total of five recorded gaming sessions over the course of about a month. The sessions ranged from about 1.5 to 2.5 hours, totaling about 12 hours over the five sessions. The participants themselves determined the length of each individual session.

Data from the gaming sessions were gathered using a screen-recording program. Participants recorded their screens themselves, and it was the participants' responsibility to remember to run this program before each gaming session. By recording the participants gaming sessions, each participant's chat messages could be analyzed in the context in which they were written. Audio was not recorded, only video. After each session, data were transferred to a hard-drive for analysis. A training session took place before the recorded sessions began in order to familiarize participants with the basic features of the game. Data were not collected during the training session.

There were times when some participants forgot to record their computer screens; however, at least one participant remembered to record for each of the sessions. As long as one participant remembered to record, all text messages sent to and from all participants could be seen because all texts were displayed on all players' screens. Therefore, there was no loss of data even when someone forgot to record their screen.

Data Analysis

To answer Research Questions 1 and 2 (i.e., What types of learning strategies are used while learners of English play *Guild Wars 2*? How many different types of learning strategies are used?), it was necessary to identify the specific learning strategies that participants used. Chamot and O'Malley's (1992) framework for conceptualizing learning strategies included three different types of learning strategies: metacognitive, cognitive, and socio-affective. In the current research, the focus was on socio-affective

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learning strategies because the categories that could not be observed through the recorded videos of the participants' gameplay had to be eliminated. For example, cognitive strategies were eliminated because "the learner interacts with the material to be learned by manipulating it mentally" (p. 51), and thus, is unobservable.

Strategies were also adapted to fit an online gaming context. In order to allow for more in-depth analysis of interaction and to understand better what the participants were doing in terms of language use and interaction, subcategories were created. For example, in the framework proposed by Chamot and O'Malley (1992), the category of "cooperation" is defined as "working together with peers to solve a problem, pool information, check a learning task, model a language activity, or get feedback on oral or written performance" (p. 56). Most of the interaction in *Guild Wars 2* could easily fit into this broad category of cooperation because the main purpose of the game is to work cooperatively with other players to complete tasks. To better understand the nature of the cooperation that took place in the game and the way in which the strategies that were being used might further SLA, the concept of cooperation was broken down into subcategories: pooling information, modeling, giving commands, making statements, and making suggestions. To keep data analysis consistent in the study, each individual text was placed in only a single category. For example, a single text such as "look at the map" was only counted as an instance of pooling information and not as a command. Each time one of the strategies occurred in the data, the researchers placed a tally in the appropriate category and the time code was recorded.

Pooling Information

Whenever a participant produced a text that supplied information directed toward the completion of a game task, the text was tallied as an instance of pooling information. In *Guild Wars 2*, players are incentivized to share task information because cooperation allows a group to move more quickly through tasks and thus receive the task's rewards. Unlike other popular online games, many MMORPGs focus on cooperation rather than competition.

In the interaction shown in Example 1, the three participants are trying to determine which task they should try next. This conversation occurred during the first gaming session. The bolded texts were tallied as instances of pooling information. The names are pseudonyms for the participants' in-game avatars. The texts in the examples are shown exactly as the participants themselves wrote them. For this reason there are spelling, grammar, and punctuation errors that occur in the examples.

Example 1:

Pine: Where should we go now

Thief: Let me think

Pine: **Look at the map** (Pine circles an area on the game's map.)

Thief: I saw ok go

Mary: **We need find the bear trop** (misspelled "troop")

Pine: **Look at the blue point**

In this interaction Pine asks where they should go and then answers his own question by telling the others to look at their maps. Players can circle areas on the map by holding down a button and using their

mouse. These actions are necessary so the circles can be seen by all other players in the party. Thus, the text “look at the map,” followed by the visual of Pine drawing on the map, was counted as an instance of pooling information. This reason for this categorization is because Pine is giving information related to completing, or in this case, starting a new task. Thief then confirms that he saw the drawing. Both Mary’s text and Pine’s texts were also counted as instances of pooling information because they were attempts to share information related to the next task.

Command

A text was counted as an instance of command when a player directly told another player to take an action. Commands were often used to tell players to go to a specific location or tell a player to wait. In the text above, “look at the map” was not counted as a command because the purpose of the text was to share information with the others by circling something on the map. Therefore, a command is telling another party member to take an action that is not clearly related to the task at hand. Example 2 provides an instance of a command.

Example 2:

Thief: Follow me

Pine: Got it

Mary: Look map (Mary circles an area on the game’s map)

Thief: Come here

Mary: Wait

Mary: We need finish the work

In the conversation above, two of the six texts were counted as instances of a command, “Come here” and “wait.” Thief is telling Mary to come to his location, to which Mary responds with another command, “wait.” Both texts are telling the players to take, or not take, some sort of action. Again, “look map” was not counted as a command because the purpose of that text was to pool information by asking other players to see the task information he had marked on the map. “Follow me” was not counted because this was counted as an instance of modeling as described below. Observing the text along with the video of the screen recording, it was clear that “come here” and “wait” were not related to the current task and, therefore, counted as a command rather than an instance of pooling information.

Statement

A text was counted as a statement when a player’s text was very general or unrelated to a specific task or even the game at all. A few examples from the study are when a player said, “This city is big,” “I am so hunger,” or “My connection is not good.” Although statements are not necessarily a form of cooperation, it was included so that texts that were not exactly game-related could be quantified.

Suggestion

When a player suggests a course of action or implies that another player do something, it was counted as a suggestion. Commands and suggestions are similar, but a suggestion is less direct and includes words such as “should,” “maybe,” or “I think we need to.”

Modeling

Texts were counted in the category of modeling when the purpose of the text appeared to tell other players to follow the text writer’s example. Often players would ask one another what they should do next by texting “follow me” or “talk to this person here.” In this sense, they were modeling or showing the other players exactly what they should do in order to progress. The other players did not always follow the example of the writer, but it was still counted as an instance of modeling. Modeling is similar to pooling information, but it had an additional “watch me do this” element to it that can be observed in the context that the text was produced. The recorded screen data provided the additional contextual information that was needed to differentiate pooling information from modeling.

Although modeling indicates that a participant is demonstrating a solution to a problem through action and not necessarily through language, it may seem questionable for it to be deemed a language learning strategy. However, the fact that modeling is initiated through language (e.g., “follow me”) makes it both strategically and linguistically interesting because language is being used as a tool for solving a problem.

To answer Research Questions 3 and 4 (i.e., Does *Guild Wars 2* provide opportunities for English learners to negotiate input? What specific strategies do English learners employ in negotiating input?), the ways in which learners negotiated meaning during gaming sessions were analyzed by tallying the number and type of communication strategies that were employed. The tally of communication strategies, similar to the learning strategies tally discussed previously, was based on the participant-produced texts and the context in which they were written.

In the context of *Guild Wars 2*, there are two types of input that can lead to negotiation. The first type is the text messages and visual cues that are received as players communicate during gameplay with one another or other players not in their party. The other source of input is the environment of the game. This type of input can be a task, a player’s inventory and abilities, non-player characters (NPCs), enemies, the map, or anything else the players interact with while playing the game. Environmental input is the game’s world, and it can be visual, aural, and textual. For the purposes of this study, the communication strategies for both environmental input and player input were analyzed, however, they are not separated in reporting the data because negotiation can only occur between and among humans, although it can originate from either human/player input or from the game environment.

The framework used for analyzing the communication strategies was adapted from Lee (2001): requesting information, checking information, using the L1, self-correction, and peer-correction. Checking information was further broken down into three subcategories, which are clarification checks, confirmation checks, and comprehension checks.

Requesting Information

Texts were placed into the communication strategy category of requesting information when a participant asked another player for information. This could be a request for information about a player, such as their location or inventory, as well as a request about the game environment, such as how to complete a task or where they should go next.

Checking Information

Checking information occurred when a player indicated that he did not fully understand a previous text from another player or a writer of a text wanted to confirm that an earlier text was understood. A player's text was counted as a clarification check when a player wrote a text and another player responded with a question asking for more information. Clarification checks were initiated by the receiver of a text and directed to the player who wrote the first message. Thus, players were negotiating meaning as they worked out what the writers of the initial messages were trying to communicate to the other players. A text was counted as a comprehension check when a player wrote two texts, the second of which was to make sure that the receiver of the text understood the initial text. Confirmation checks occurred when a player wrote a text and another player responded to that text by producing a text showing that he understood the initial message.

Using the L1

When a player typed a message in Chinese (Note: all three participants' were mother tongue speakers of Chinese) the text was categorized as using the L1. The participants were asked to only use English when playing the game, and they followed this request almost perfectly. During the five gaming sessions, only seven of 886 texts showed evidence of L1 use.

Self-Correction

If a participant typed a message that he felt contained a spelling or grammar error, and, in a subsequent message, corrected himself, this interaction was categorized as a self-correction. For example, when one of the players told the other two players that he was going to take a break and go outside and smoke a cigarette. He first typed, "I am somke." Seconds later he typed another message and wrote "smoke" to correct his earlier message and then added another correction typing, "smoking." These messages would count as two self-corrections.

Peer-Correction

If one participant typed a message correcting the grammar or spelling of another participant's earlier text this was categorized as a peer-correction.

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To better understand the use of learning and communication strategies in the interaction that took place among participants, the number of times that a text was part of a connected interaction was also calculated. In other words, each time a player responded, answered, or reacted to another player's message the interaction was recorded and categorized as an instance of connected interaction.

RESULTS AND DISCUSSION

An analysis of the language used by the three participants during the 12 hours of gaming provide support for SLA in three general areas: (1) output, input, and connected interaction, (2) form-focused feedback and modified output, and (3) negotiation of meaning.

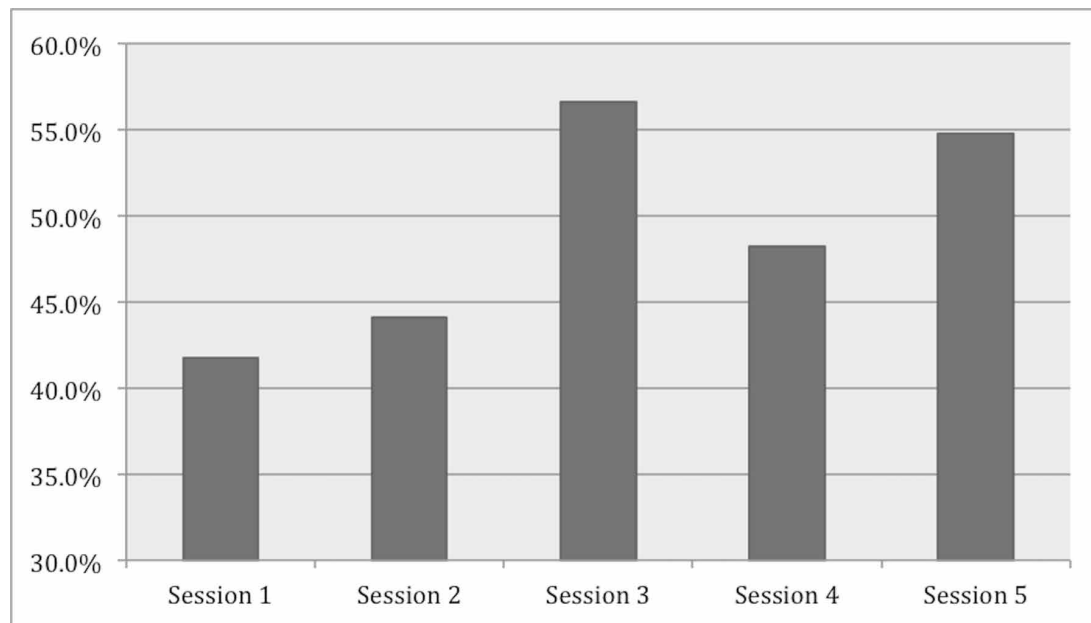
Output, Input, and Connected Interaction

As early as the 1980s, researchers argued that output is essential to the process of SLA (see Swain, 1985). If output production is central to SLA, then the massive amount of texts produced by the participants is a strong indicator that MMORPGs have great potential as effective tools for SLA. Output production in the form of text messages while playing *Guild Wars 2* was much higher than what might be typically expected in a traditional language classroom. Ninety minutes of gameplay averaged about 150 texts during the course of the study. It is difficult to imagine a 90-minute ESL class in which students would produce as much target language output. Even though all three participants shared the same native language, 879 of the 886 texts produced were in English. In an L2 classroom, students often resort to their L1 if a majority shares the same native language even when learners are asked to use the target language.

The data that were collected in this study provide evidence for the fact that the participants were not only producing large amounts of output in English, but they were also reading and reacting to one another's texts. Input from fellow participants often elicited additional output from other participants. Half of all texts written during the study were related to a previous message written by another player. Interestingly, the number of connected interactions increased over time, and Sessions 3, 4, and 5 all saw higher rates of connected interaction than the first two sessions. Figure 3 shows data concerning the connected interaction during the 5 gaming sessions of the study. Session 3 had the highest rate, and the possible reasons for this are discussed later in this chapter.

Output in the form of sharing task information, knowledge, or ideas during game sessions was categorized as the learning strategy pooling information. Pooling information had the highest percentage of total texts at 23.4%, as compared to the next highest learning strategy, giving a command, at 9%. Chamot and O'Malley (1992) argue that cooperation or pooling information has positive effects on learners' attitudes toward learning. The participants in this study were very interested in working cooperatively as they pooled information to complete a task cooperatively during the game. They likely saw their combined knowledge as an excellent way to achieve success, which simultaneously had a positive effect on their learning. Experiences with in-game tasks reinforced the idea that they could accomplish more by working together than they could alone as individuals. Not only are enemies in the game defeated more easily through a group effort, but one player may notice something key to completing a task that the others did not notice, thereby contributing to the potential the group will have for success. This cooperation required the participants to produce L2 output in order to coordinate and plan their path to successful task completion. The participants were pushed in terms of their L2 level because cooperation with other

Figure 3. Connected interaction



players required that players use language with which they did not have much experience before playing *Guild Wars 2*. In terms of language acquisition, the participants' potential for learning as a group was greater because they were exposed to language forms and vocabulary from one another's output.

An example from the data demonstrates the production of output through the pooling of information. In *Guild Wars 2*, the tasks that players complete come in several different forms. The tasks are marked on a player's map either by a heart-shaped icon or a green star icon. The heart-shaped icons indicate tasks that are specific to an area. Green star icons are particular to the story of a specific player and are based on the race of the character that they have chosen. Figure 4 provides an example of quest objective icons used in the *Guild Wars 2* game interface. The participants' avatars were all the same race and had the same green star tasks for the first two sessions of the study. This means that they could work together on their green star tasks as a group. The heart-shaped tasks could also be done as a group as long as the players were in the same general area.

The conversation in Example 3, which occurred during Session 2, provides an example of pooling information. One of the participants, Thief, had just finished one of the heart-shaped tasks and wanted to know if his fellow players had finished as well. Another player, Pine, did not know how to check to see if he had successfully completed the task. Therefore, Thief explained to Pine where he could find the information. Later, Pine told the others where they should go next and why. Bolded texts were categorized as instances of pooling information.

Example 3:

1. **Thief:** Do you guys finish that?
2. **Thief:** Finish?
3. **Pine:** May be
4. **Pine:** No sure

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Figure 4. Quest objectives



5. **Thief:** You can check heart-shaped is full?
6. **Thief:** Look map (Thief circles the heart on the map)
7. **Pine:** Yes
8. **Pine:** So let's go another palce
(Some texts omitted.)
9. **Pine:** See the green point?
10. **Pine:** That is the main task
11. **Pine:** We should complete that on
12. **Pine:** One
13. **Thief:** We should come here
14. **Thief:** Finish different work

In Lines 5 and 6, Thief explains that Pine can see if he completed a task by looking at the heart icon on the map. Thief's output is Pine's input, to which he produces additional output, suggesting that they go to a different place as seen in Line 8. Later, Pine pools information telling others what the green icon means, and suggests they go there. Thief reads his text by stating that instead of going to the green icon they should attempt a completely different task.

Form-Focused Feedback and Modified Output

There are three requirements for L2 learning that takes place through social interaction: (1) comprehensible input, (2) feedback that is focused on form, and (3) modification of output (Pica et al., 1996). For interaction to lead to acquisition, L2 learners need to receive feedback from their interlocutors (i.e., the other participants) and produce modified output. "Interactional input provides a forum for learn-

ers to readily detect a discrepancy between their learner language and the target language and that an awareness of the mismatch serves the function of triggering a modification of existing second language knowledge” (Gass & Varonis, 1994, p. 299). A qualitative analysis of the data in this study provided numerous instances of form-focused feedback, which led participants to make modifications in their output (Pica, et al., 1996). In other words, the connected interaction that took place acted as a type of form-focused feedback that could elicit modified output.

Social interaction that facilitates feedback and modified output does not necessarily require a native speaker (Pica et al., 1996). In the Pica et al. (1996) study, L2 learners interacted with other L2 learners, and these interactions provided opportunities for meeting the three needs mentioned above. Even without the presence of a native speaker, L2 learners produced modified output based on feedback from other L2 learners. In this study, participants gave form-focused feedback to one another, albeit often implicitly; however, the feedback led to modified output. An example of modified output from the current study is given in Example 4.

In Session 3, the green-star task of one of the participants was different than the other two participants. At first they did not realize that one of their peer’s tasks was different. By asking each other questions and pooling information, they eventually realized this fact. In Example 4, the words “main” and “mainly” are bolded to highlight the discussion of modified input and form-focused feedback.

Example 4:

1. **Mary:** We need to do the **mainly** work
2. **Mary:** Follow the green line
3. **Thief:** I don’t know how to do this
(Some texts omitted.)
4. **Mary:** Wait
5. **Mary:** What is your **mainly** task?
6. **Thief:** Did you see daily task?
7. **Pine:** The green one is the **main** task
(Some texts omitted)
8. **Mary:** U need finish the **mainly** task
(Some texts omitted.)
9. **Thief:** I found my **mainly** task.
10. **Thief:** But you guys cannot help me... maybe
(Some texts omitted.)
11. **Mary:** I think we have different **main** task
12. **Thief:** I know
(Several minutes later)
13. **Pine:** So we have to figure what to do later
14. **Thief:** finish
15. **Mary:** I think our **main** task is different
16. **Thief:** Yes
17. **Thief:** Agree
(The following text occurred at the beginning of Session 4.)
18. **Thief:** What’s the **main** task?

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Both Mary and Thief refer to the green star task as the “mainly” task as seen in Lines 1, 5, 8, and 9. Pine is the only one who uses the correct form of the word “main” in Line 7. Perhaps Pine knew that “mainly” was an incorrect use of the word and in Line 15 he writes, “The green one is the main task.” Mary must have noticed that Pine used “main” instead of “mainly.” Later, in Lines 11 and 15 he writes, “I think our main task is different.” Not only does Mary correct himself, but Thief does as well. (Mary is a pseudonym for a male player who references himself as *he* throughout the game.) In Session 4, Thief wrote, “What’s the main task?” In fact, in all the following game sessions all the participants use “main task” instead of “mainly task” when referring to the green star tasks. This is one of several instances in which participants modified output based on implicit form-focused feedback.

Based on the results of this study, it is argued that MMORPGs allow for implicit form-focused feedback leading to modified-output. An analysis of participants’ interaction while playing *Guild Wars 2* met the three needs to make interaction beneficial to language acquisition: The participants received comprehensible input, they received implicit form-focused feedback on their output, and they then modified their output according to the feedback received.

Negotiation of Meaning

The results from the data collected in this study indicate that the two most common communication strategies employed by participants were requesting information and checking information, which accounted for 17.2% and 7.1% of the total texts produced, respectively. The other communication strategies, using the L1, self-correction, and peer-correction, made up less than 2% of the total texts produced during the 12 hours of recorded data. Participants rarely used their native language (i.e., Chinese) as a strategy, and this may be attributable to the fact that they were asked to use only English while playing the game. As for self- and peer corrections, participants were simply told to play the game together and use English. They were focused on understanding and playing the game and may not have noticed errors, or likely ignored them. Although players did modify the form of their output as discussed above, the modifications were not counted as corrections because they were implicit and embedded in the communication. Texts were counted as corrections only when one of the players immediately self-corrected or explicitly corrected a peer.

Requesting information and checking information are communication strategies that the participants used in *Guild Wars 2* to negotiate both environmental input and player-produced input. Researchers have stressed the importance of negotiation of meaning and input as an important part of SLA (Long, 1996; Swain, 1985; Varonis & Gass, 1985). The L2 learners in this study were exposed to environmental input that was above their level of English proficiency. It is impossible to know from the recorded data exactly what they did and did not understand; however, what was clear was that they were putting in a very strong effort to make sense of the virtual world. At times, participants would have difficulties in understanding exactly what another player was asking or trying to tell them. Thus, players would engage in negotiation of meaning in order to reach an understanding of the intended messages. Negotiation of this sort is referred to as human input in this study. If negotiation is key to language acquisition then MMORPGs are beneficial in that they provide numerous opportunities for players to negotiate meaning.

To work out an understanding of the environmental input, participants sent texts to one another and worked out the meaning of the input as a group. They negotiated input that originated from the environment of the game, which is arguably a process that is very similar to the negotiation that takes place in a face-to-face conversation. Obviously, the players could not negotiate with the source of the environ-

Figure 5. Participants' broken equipment



mental input because it is a computer program. Instead, they tried to work out the meaning of the input by sending texts to one another.

Negotiation of environmental input most often took place via requests for information. For example, a participant indicated that he did not know what they were supposed to do and wrote, "I have no idea about this task." By writing this, the participant indicated to others that he did not understand what needed to be done to successfully complete the task at hand. Later he requested information from the other players and wrote, "How to finish this?" The players then worked out the details of tasks by requesting specific information from one another and pooling information until they eventually formed a plan and tried it out. Of course, there were times when the task was too difficult, and the players could not figure out what needed to be done; consequently, they simply gave up and moved on to a different task.

An example of negotiation of environmental input that occurred during the game is illustrated in the conversation between participants in Example 5. At this point in the game, the participants were struggling to complete tasks because they continued to get quickly defeated by enemies and could not understand why this kept happening. What they did not realize was that they needed to repair their characters' equipment. The more combat a player engages in, the more their equipment suffers, and players need to go to a town and have it repaired to be at full strength. The participants' equipment had become completely destroyed. When this happens, the broken equipment is automatically unequipped, leaving the players' characters shirtless. Figure 5) illustrates the players' broken equipment.

The interaction in Example 5 takes place as the participants negotiate what needs to be done to remedy their current situation. Bolded texts were categorized as instances of clarification checks and italicized texts were requesting information. Often checks came in the form of a request for specific information, which is why some texts are both bolded and italicized.

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Example 5:

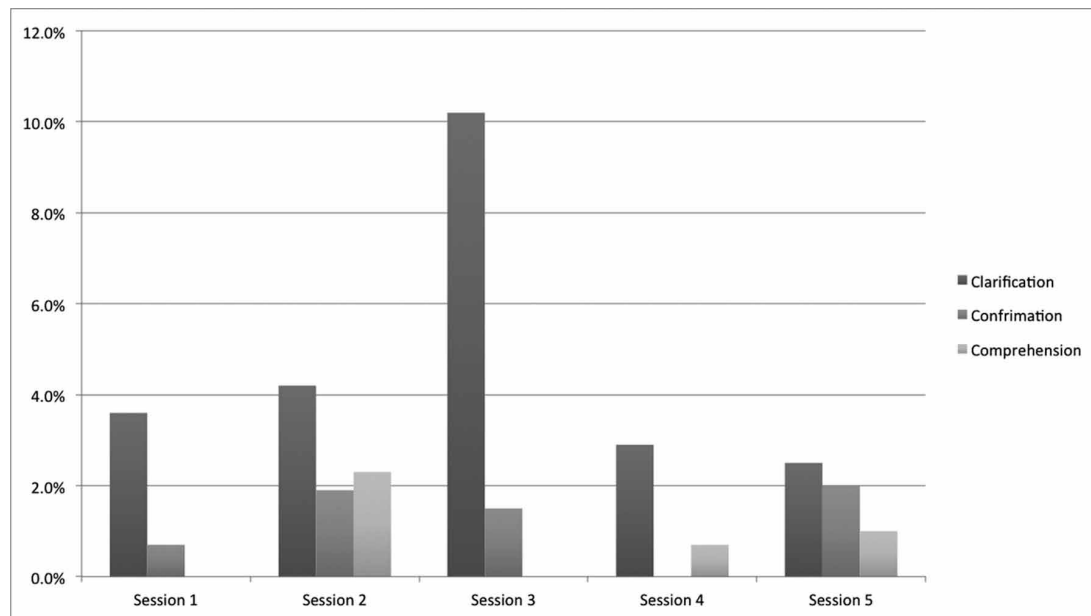
1. **Pine:** *What's wrong about our clothes?*
(Some texts omitted)
2. **Thief:** We should fix our equipment
3. **Mary:** We need find somewhere
4. **Mary:** To fix
(Some texts omitted.)
5. **Thief:** Find me
(Some texts omitted.)
6. **Thief:** You should go somewhere to fix your equipment
7. **Pine:** *How to fix equipment?*
8. **Pine:** How
9. **Thief:** Just talking with NPC
10. **Pine:** *Where?*
11. **Mary:** See map
12. **Thief:** Look map
13. **Pine:** Ok
14. **Thief:** Follow me

Pine did not understand why his character suddenly appeared shirtless. He indicated his misunderstanding by requesting information from the other two participants as seen in Line 1 above. The other two responded to Pine by telling him that they needed to fix their equipment and that they needed to go “somewhere” to do that, as seen in Lines 2 and 3. Pine still did not understand how to do this and asked for clarification as seen in Line 7. Thief clarified by telling Pine that he needed to speak with an NPC. Pine then asked for further clarification by asking where he would find an NPC. Eventually, they found where they needed to go and successfully fixed their equipment. In Example 5, the input that triggered the negotiation of meaning was environmental (i.e., the loss of clothing to their characters). From that point on in the game, the players knew that they needed to check their equipment and have it repaired. In essence, they modified their future actions based on what they had learned from negotiating environmental input.

The number of times participants’ negotiated input was quantified by placing texts into communication strategy categories. During Session 3 checking information accounted for more of the total texts produced than in the other four sessions. Checking information accounted for 11.7% of the total texts produced in Session 3, most of which came in the form of clarification checks. Clarification checks made up 10.2% of the texts, more than double that of any other session (see Figure 6). It is also worth noting that the rate of connected interaction reached 54% in Session 3, the highest rate of the five sessions. Session 2 had a connected interaction rate of 44% and the rate in Session 4 was 48%. This means that 54% of the texts produced in Session 3 were in response to texts produced by other participants, indicating that the participants paid more attention to one another’s texts in Session 3 than in the other sessions.

Since negotiation of input is beneficial for SLA, understanding more about the interaction in Session 3 can lead to a better understanding of the language benefits of MMORPGs. The higher rate of interaction and negotiation in Session 3 can be attributed to the main tasks each individual player needed to accomplish. Until Session 3, the three participants had been given the same main tasks. Through a series

Figure 6. Checking information percentages per game session



of clarification checks and requests for information, the participants discovered that they had different main tasks in Session 3, as shown in Example 6. Bolded texts were categorized as instances of clarification checks and italicized texts were requesting information.

Example 6:

1. **Pine:** *Do you get the task?*
2. **Thief:** **Which?**
3. **Pine:** Twilight of the wolf
4. **Mary:** Follow the green line
5. **Thief:** No
6. (Some texts omitted.)
7. **Thief:** *Can we just finish daily task?*
8. **Mary:** *What do u need to do?*
9. (Some texts omitted.)
10. **Thief:** I found my mainly task.
11. **Thief:** But you guys cannot help me...maybe
12. **Pine:** What is that?
13. **Thief:** A Pup's illness
14. **Pine:** *Where is that?*

Thief decides that he will do his task alone. When he tries to accomplish the task by himself, he fails because the task is too difficult to do alone. He then requests help from the other two players, and they come to help him. However, because the other two players do not have the same task, they cannot see the information related to the quest. This situation elicits a series of requests and checks in order to

share task related information so that everyone knows what is required to complete Thief's task. Once Thief's task is finished, the group engages in another conversation and discovers that Thief's next main task is still different from Pine and Mary's current main task. They decide that, as a group, they will try to complete Mary's and Pine's task first and, then, later go back and try to complete Thief's task. This process requires another series of requests and checks. Thief cannot see the details of the other members' task just like the other two could not see Thief's task. When in-game tasks were not identical for the entire group, there were more instances of requesting and checking information. These in-game tasks are similar to information gap activities used in instructional settings because they require that players request information from others in order to successfully complete tasks.

To summarize, the results and discussion above aim to provide insight into the ways in which MMORPGs support SLA. The three general areas discussed were (1) output, input, and connected interaction, (2) form-focused feedback and modified output, and (3) negotiation of meaning. These three areas of SLA are prominent throughout the 12 hours of gameplay analyzed in this study. The analysis quantified the type and number of learning and communication strategies used by the participants in order to better understand the interaction that took place in these three areas of SLA. The findings add to previous research that indicates MMORPGs may have a positive impact on SLA and provide insight into the reasons.

FUTURE RESEARCH DIRECTIONS

While it seems clear based on the data presented in this study that MMORPGs provide opportunities for L2 learners to interact and negotiate meaning in the target language, there are still gaps in the research and avenues for future inquiry on MMORPGs that have not been specifically addressed to date. Although the data from the current study show that *Guild Wars 2* provides opportunities for interaction and negotiation of input among English learners, it is important to remember that there were only three participants; consequently, it is not possible to generalize findings from the current study to other contexts. Studies with larger numbers of participants are needed. At the same time, it is important to remember that analyzing data for only three participants was a time-consuming and labor-intensive process, requiring hundreds of hours of data analysis. To engage in similar research with a larger N-size would require a level of support that is likely beyond the capabilities of a researcher-funded study.

The way that the current study was configured did not ask participants to engage with native speakers of English. In other words, the participants were not asked to communicate with players outside of their group. There were always native speakers of English playing the game around them, so it would be possible to create a research design in which data could be collected from interactions that involved native speakers and non-native speakers. It is unknown whether or not the participants in this study paid attention to anyone else's conversations because they did not have a strong need to talk to anyone outside of their group. As a group of three players, they were strong enough to complete many of the lower level tasks without much difficulty. A research study designed around a nonnative speaker of English in a group of native speakers of English playing an MMORPG could produce interesting results in terms of opportunities for negotiation of meaning.

In the current study, all three participants shared the same native language. If participants from different native language backgrounds could be found, it could be determined whether the types of strategies employed by the participants were culturally motivated or not. The culturally insular characteristic of the group in the current study likely contributed to the lack of attention they paid to conversations

and interactions outside of the participant group. However, it is important to note that even though the participants shared a common L1, 99.2% of all the texts they produced were done so in English. A study that included participants who do not share an L1 would give greater insight into the role of form-focused feedback and modified output. It seems that modified output was produced from implicit form-focused feedback. Learners would be more likely to notice one another's grammar mistakes if they did not share an L1. The inclusion of learners from different L1s might lead to opportunities for more explicit feedback and perhaps more modified output. The limitation of a shared L1 among participants is common among studies involving MMORPGs and SLA, and Peterson (2016) points out that future research "would be of particular value if it involved diverse learner groups of varying L1 backgrounds and proficiency levels" (p. 1192).

Another avenue for future research would be a qualitative examination of the participants' perceptions of MMORPGs as a vehicle for English use (if not explicit learning). In addition to the qualitative data that were collected as part of the text analysis during game play in the current study, qualitative data were also collected using an initial written survey and follow-up face-to-face interviews. A reporting on the results of these data is beyond the scope of this chapter; however, three general observations from the qualitative perceptual data from the current study can be noted. First, it is very clear from a summary of the qualitative data that the participants enjoyed playing the game. Although this fact may not seem surprising because they all indicated they liked video games before the study began, what is interesting about this perception is that even though they were required to communicate in their L2 during game playing, this requirement did not seem to frustrate them. All of the participants perceived the game to be fun and looked forward to their game time together. Second, all three of the participants indicated that their favorite part of playing the game was working as a team to complete tasks. The social and collaborative nature of MMORPGs is one reason why they enjoyed the game as much as they did and why it was perceived as being fun, even though it was being played in the L2. Third, the participants indicated how much they enjoyed the process of leveling up their characters, acquiring new abilities and skills, and then testing out the new skills during the game. These data support the idea that learners enjoy participating in problem-solving tasks, and tasks that require the use of higher-order thinking skills, such as analyzing, synthesizing, and evaluating.

Finally, researchers interested in MMORPGs might investigate are studies that focus on oral rather than written communication. The research cited in this chapter had participants communicating via texts. Some recently released MMORPGs, especially those released on consoles, such as the PlayStation 4 and Xbox One, use voice chat to communicate with other players. The option for oral communication is needed because consoles use a controller rather than a keyboard, and without a keyboard it is impossible to type a message. Using a console MMORPG, such as *The Elder Scrolls Online*, could allow the collection of data relative to the potential benefits MMORPGs have for the development of L2 oral skills. This research is noticeably missing from the current literature.

CONCLUSION

In this study, the texts that participants used while playing the MMORPG *Guild Wars 2* were categorized based on the use of learning and communication strategies. An analysis of the data found that the most common type of learning strategy employed was pooling information, which outnumbered the other learning strategies of commands, statements, suggestions, and modeling. Furthermore, the study found

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that MMORPGs do support opportunities for language learners to negotiate meaning in the form of player-produced input and environmental input. The most common types of communication strategies used while negotiating meaning were requesting information and checking information.

The quantitative data from categorized texts was used to analyze participant interaction in terms SLA. This study provides evidence for the fact that MMORPGs are beneficial to SLA because they provide opportunities for L2 learners to receive large amounts of input and produce large amounts of output as players are required to pool information by responding to one another's requests for information and working cooperatively to complete tasks. Output produced by one player is a meaningful source of contextual input for other players, which creates connected interaction between players. Participants' implicit focus on form can also lead to modified-output. Furthermore, players have the opportunity to negotiate both player-produced input and environmental input as a means to complete in-game tasks in a contextually rich social environment. Finally, players engage in cooperative problem solving that share many characteristics with language instructional activities that deemed beneficial for language learning.

The benefits that video games, and specifically MMORPGs, have for language learners show great potential. Learners can acquire both vocabulary and language forms through interaction with other players and through completing the in-game tasks. Anonymity can promote positive affect and lower the affective filter, thereby providing learners with a language-learning environment that is conducive to language experimentation. Interaction is especially advantageous for language learners who do not have access to face-to-face interactions with native speakers because of the social nature built into MMORPGS.

Video games that are designed specifically to improve SLA have been around for some time, as have MMORPGs that aim to create massive social communities. It is unknown what the future will bring in terms of advances in technology, particularly as these advances relate to L2 learning online technologies. In the future applied linguists and game developers might collaborate to create Massive Multi-learner Online Language Spaces (MMOLSs) that are just as engaging as MMORPGs but are designed specifically for SLA. What is known is that the development and uses of online technologies will continue to expand, making the language classroom of tomorrow and the opportunities for language learning quite different from what they are today. Educators need to be open to the possibilities that online technologies affords us, especially in terms of creating optional learning environments for L2 learners.

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KEY TERMS AND DEFINITIONS

Cooperative Learning: A successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject.

Interaction: The act of talking or doing things with other people.

L2 Interaction: The manner in which information is exchanged in a second language during an interaction between parties.

L2 Learning: The process by which people learn a second language.

Learning Strategies: Students' self-generated thoughts, feelings, and actions, which are systematically oriented toward attainment of their goals.

Negotiation of Meaning: A process that language users go through to reach a clear understanding of each other.

Online Gaming: Playing of computer games over the Internet especially, games that enable two or more players to participate simultaneously from different locations.

Online Language Learning: The process and practice of acquiring a second or foreign language online.

Video Games: Games played by electronically manipulating images produced by a computer program on a television screen or other display screen.