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Developing Pragmatic Competence in Digital Game Worlds: A Systematic Review

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Abstract

We present a systematic review of the literature on the use of multiuser virtual environments (MUVE) on the development of pragmatic competence in second language (L2) learners. Specifically, we reviewed studies examining the potential of L2 pragmatic development through synthetic immersive virtual environment (SIE) and massively multiplayer online role-playing games (MMORPGs). Although a small but growing number of research has identified MUVE as a beneficial context for L2 pragmatic development, there are only a few review studies that have critically assessed this body of work (Sykes & Dubreil, 2019; Reinhardt & Thorne, 2020). Our review of 16 studies examined the affordances that digital game worlds provide for developing pragmatic competence. Specifically, we sought to answer four research questions: 1. Which aspects of L2 pragmatic learning have been examined in game-mediated contexts? 2. Which types of research paradigms have been used? 3. Which types of research methods have been implemented and finally what are the major findings? Results indicated that previous research has identified the potential of MUVES for promoting learners' pragmatic awareness and production as well as interactional skills. This review concludes by identifying gaps in the previous literature as well as potential areas for future research.

Evolving Definitions of Pragmatic Learning in Computer-mediated Contexts

Chik (2013) suggested computer-assisted language learning (CALL) has been adopted in the field of second language acquisition (SLA) since the 1970s. Various scholars have provided different definitions of CALL (Beatty, 2010; Egbert, 2005; Levy, 1997). For example, Levy (1997, p. 1) defined CALL as “the search for and study of applications of the computer in language teaching and learning” while Egbert (2005, p. 1) defined it as “using computers to support language teaching and learning in some way”. With the advances in the field, Beatty (2010) provided a new definition of CALL as “*any process in which a learner uses a computer and, as a result, improves his or her language*” (p. 7, emphasis in original). As Beatty’s definition showed, scholars have recognized the potential of incidental or peripheral learning when learners are engaged in using computers or other digital devices for purposes other than language learning. Chik (2013) identified this reconceptualization of CALL as “*Naturalistic CALL*” (p. 835, emphasis in original) and refers it to students’ pursuit of leisure interest through a second or foreign language while immersed in digital environment for informal learning. This introduction of CALL leads us to the developing area of digital games and their affordances for second language acquisition, especially in the realm of second language (L2) pragmatics.

Pragmatics is important for interpersonal communication, especially for nonnative speakers. For example, for students in a study abroad situation, what types of apology strategies are appropriate when they break a plate while staying with a homestay family? The strategies may vary differently depending on the countries they are in (e.g., the United States or Spain). Pragmatic competence is defined as the ability to deal with different social situations using language. Taguchi (2019) mentioned the definition of pragmatic competence has evolved over the years, and it is a multi-dimensional and multi-layered construct that involves three important knowledge and skill domains: a. linguistic and sociocultural knowledge of when to use what forms in what context; b. interactional competence to use the knowledge in an adaptive and flexible manner in response to changing contexts; and c. agency to make an informed decision on whether to enact the knowledge in a given community. Scholars working in the field of L2 pragmatics have adopted CALL to deliver pragmatic instruction (Eslami et al., 2015; Sydorenko, 2015; Sydorenko et al., 2020). For example, Eslami et al. (2015) investigated different forms of digital tools (i.e., email, oral and written chats) in promoting L2 pragmatic development. 74 Iranian university students were randomly divided into explicit and implicit instruction groups and received pragmatic instruction on request giving provided by 18 native English speaking (NES) and highly proficient nonnative English speaking (NNES) students at a U.S. university. Results indicated online pragmatic tutoring, coupled with corrective feedback in L2 pragmatics, were effective for developing learners’ pragmatic competence. However, as Holden and Sykes (2013) explained, instruction on pragmatic strategies may be insufficient due to the immense variety in what can be considered as appropriate pragmatic behavior, different individual interlocutor responses and several contextual possibilities. Therefore, scholars have turned to the use of digital games because of its affordances for authentic communication where learners can experiment with different pragmatic strategies.

Game-Based and Game-Enhanced Learning

Reinhardt and Thorne (2020) distinguished game-based learning and game-enhanced learning. While game-based learning is the adaption of a computer game for learning purposes (i.e., educational games), game-enhanced learning takes the approach of utilizing the mechanism of game elements in a commercial game for the purpose of learning (Reinhardt & Thorne, 2020). Research has shown digital games provide a constellation of literacy practices (Steinkuehler, 2007) or semiotic ecology (Thorne et al., 2012). Thorne et al. (2012) investigated the linguistic complexity

of quest texts, or texts non-player characters (NPCs) created for interaction with players to move ahead in the game. Quest texts were examined for readability, lexical sophistication and lexical and syntactic complexity. Findings indicated the texts contained low-frequency vocabulary and sophisticated words with a variety of unique word types and complex syntactic structures. Therefore, contrary to general belief, digital games actually are conducive to exposing L2 learners to authentic and complex target language communication.

Commercially off-the-shelf (COTS) games are designed for entertainment rather than educational purposes. However, the advent of Web 2.0 tools and technologies has ushered in vast technological improvements and COTS have evolved into a new generation known as massively multiplayer online games (MMOGs). MMOGs comprise a variety of game types. One of the most popular subtypes of MMOG is massively multiplayer online role-playing games (MMORPGs), which are graphically rich 3D spaces with large-scale permanent virtual worlds. A large number of players who reside in different parts of the world play and interact with the game at any given time. Players obtain progress in the game through completing an increasingly challenging sequence of tasks known as quests. The context of the game requires players to collaborate and form alliances to complete quests (Jabari & Eslami, 2019). Because of the need for collaboration, players have real-time communication with other players and also need to interact with NPCs that are controlled by the game. These setups offer the potential to exert significant influence on learning patterns and experience.

Studies (Reinhardt, 2019; Yee, 2006) have indicated a large number of people around the globe have devoted their time to play massively multiplayer online role-playing games (MMORPGs). One of the popular games, World of Warcraft (WoW) has a projected number of 4.7 million global subscribers in 2021 (Statista.com, 2021). Results of some studies (e.g., Palmer, 2010; Yee, 2006) revealed the popularity of WoW across people of different genders, ages and ethnicities. For instance, Yee's (2006) survey of 30,000 MMORPG players found the games' immense attraction to people of a broad spectrum of age ranges (Mean Age, 26.57, Range: 11-68) as well as occupied a significant amount of people's time (an average of 22 hours of weekly game play). The statistics attest to the fact that MMORPGs, as an emerging generation of digital games, has taken hold of an integral part of people's lives and thus has potential to exert significant influence on learning patterns and experience.

The potential of MMORPGs for language learning in general include enhancing learners' self-efficacy (Zheng et al., 2009a; Zheng et al., 2009b), increasing their connection between language use and worldly functions (Zheng et al., 2012; Newgarden et al., 2015) as well as the acquisition of new vocabulary (Rankin et al., 2006; Rankin et al., 2009).

Another type of digital games is what Sykes (2013) referred to as synthetic immersive environments (SIEs). In contrast to MMORPGs where entertainment is the central focus while learning is the byproduct of engaging in fun activities, SIEs are virtual worlds specifically designed with an explicit educational orientation. For example, Croquelandia, which was created by Sykes (2009, 2013, 2014), is a SIE that is designed to deliver instruction on Spanish pragmatics. MMORPG and SIE together form what is called multiuser virtual environments (MUVE).

Recently, a small but growing number of studies have identified the potential of digital games as a beneficial avenue for L2 pragmatic development. SIEs are shown to promote L2 learners' pragmatic competence (e.g., Cornillie et al., 2012; Holden & Sykes, 2013; Sykes, 2009, 2013, 2014; Taguchi et al., 2017). The advantage of SIE lies in its affordance to provide individualized learning experience with personalized, just-in-time feedback (Cornillie et al., 2012; Holden & Sykes, 2013), and enabling acquisition of L2 pragmatic skills as well as performance and evaluation strategies

(Sykes, 2009, 2013, 2014). Specifically, SIEs afford learners with an opportunity to interact with a variety of characters, contexts and pragmatic systems for experimentation of different pragmatic behaviors (Sykes, 2014). These experiments then lead to the development of a repertoire of pragmalinguistic strategies in conjunction with skills for making sociopragmatic choices in different contexts.

Learning Theories and Learning in the Context of MMORPGs

Peterson (2010) has proposed second language theories as a basis for examining the use of immersive digital games to support language learning. Among various SLA theories, interactionist paradigm focuses on learners' mental processing abilities and hypothesizes a number of optimal conditions for fostering L2 learning. According to this account, SLA may occur when learners are provided with opportunities to engage in target language interaction and modify their output through feedback received from native speakers or more competent peers (Long, 1996; Schmidt, 1992; Swain, 1985).

More specifically, Long (1996) proposed that SLA can be achieved through exposure to comprehensible target language input and the production of modified output through interaction. This process, called negotiation of meaning, revolves around the use of communication strategies such as comprehension checks and clarification requests. Chapelle (1997) claimed interaction link input, attention to L2 form and output together in a beneficial manner. Negotiation of meaning plays a crucial role in facilitating cognition involved in interlanguage development (Long, 1996).

Although interactionist theories of SLA were originally developed to account for learning based in traditional language classrooms, theorists have opined that their central constructs are applicable to computer-mediated communication contexts. Chapelle (2001) claims that real world communicative task lends itself well in computer-assisted language learning approaches due to its potential in creating interaction. In the context of game and simulation-based learning, theorists have claimed that tasks delivered through computers provide support for language learning. For example, gamers of both SIEs and MMORPGs are involved in goal-oriented interaction (Sykes, Reinhardt, & Thorne, 2010) and are immersed in a great deal of target language input. As previous studies documented, much of this input becomes comprehensible through corrective feedback given to learners by other gamers or NPCs (Cornillie et al., 2012; Holden & Sykes, 2013, Sykes, 2009, 2013). In addition to feedback, learners are frequently engaged in the real-time exchange of meaning involving target language negotiation with other gamers. Moreover, the game contexts not only afford extensive opportunities for target language use, they also offer an anxiety-reduced environment (Peterson, 2011, 2012b; Reinders & Wattana, 2012). Research indicates the low anxiety atmosphere enhances learner motivation, participation and willingness to engage in communication in the target language. Previous studies on both SIE and MMOPRG settings utilized the concept of target language interaction to promote second language pragmatic development (Holden & Sykes, 2013; Peterson, 2011, 2012a, 2012b; Rama et al., 2012; Rankin et al., 2006, 2009; Reinders & Wattana, 2012, 2015; Sykes, 2009, 2013, 2014).

Jabari and Eslami's (2019) scoping review has identified Lave and Wenger's (1991) situated learning theory as another theoretical framework in the examination of learning in game-mediated contexts. This theory suggests learning takes place through informal channels in a non-educational setting as individuals engage in performance of meaningful, goal-oriented tasks situated in real socio-cultural contexts. Lave and Wenger stressed learners' gradual approximation of a general idea of what constitutes the practice of the community, which can consist of who are the participants, what they do, how their interactions are with those outside the community and what learners need to do to become masters. Once learners have served as apprentices through peripheral participation

for an extended amount of time and are comfortable with the community of practice, they can thus begin to pass on their knowledge to new members of the community. Playing MMORPGs requires interaction with other gamers in the target language, involvement with various communal practices, sharing of knowledge and skills as well as the development of second language skills. This framework provides a useful lens for examining the guild communities of practice in the WoW as when L2 learners familiarized themselves with the cultural and linguistic practices of their guilds, they also gradually attained the role of full participants in their guilds (Palmer, 2010; Rama et al., 2012).

Moreover, community of practice theory (Lave & Wenger, 1991) suits the MMORPG setting because of the central role language plays in MMORPGs (Palmer, 2010). Although new players need to learn actions such as where to stand during combat and when to execute a key ability, they also must learn to use language for accomplishing tasks such as coordinating an attack or defense strategy with multiple players and negotiating who should receive the rewards gained from a hunting trip in the game (Chen, 2009). In other words, the definition of a master gamer not only comprises utilization of physical prowess but also employment of appropriate linguistic strategies for organization of social interactions in the game (Palmer, 2010). Wenger (1998) noted being a full participant in a community of practice involves access to the shared repertoire of linguistic and in-game strategies the community members utilize to communicate and engage in activities. Therefore, if players wish to achieve full membership in a WoW guild community, they must acquire linguistic routines and jargons that make up the shared repertoire specific to the specific communities of practice.

Despite this initial evidence, it is unclear what mechanisms provided by the games can promote L2 pragmatic competence. Therefore, a review of the empirical literature is needed to offer clear guidelines as to what has or has not been examined under this broad topic. To this end, the purpose of this paper is to provide a review of research on L2 pragmatic development through digital game play.

Research Questions

The systematic review intends to answer the following research questions:

1. Which aspects of L2 pragmatic learning have been examined?
2. What types of theoretical frameworks have been implemented?
3. What types of research methods have been used
4. What affordances might digital games provide for the development of L2 pragmatic competence?

Method

The current paper provides reviews of studies conducted on the use of MUVE aimed at the development of pragmatic competence in L2 learners. Specifically, we reviewed studies examining the potential of L2 pragmatic development through SIEs and MMORPGs. Although a small but growing number of studies have identified MUVE as a beneficial context for L2 pragmatic development, there are only a few review studies that critically assessed this body of work (Reinhardt & Thorne, 2020; Sykes & Dubreil, 2019). This systematic review served as an update on the two previous studies and provided a systematic examination of the affordances game-mediated communication contexts provide for L2 pragmatic learning. We reviewed key findings from previous studies and generalized factors that enabled L2 pragmatic development in MUVEs.

Searching Procedure

Because the area of digital games and L2 pragmatic development covers a broad spectrum of fields, the search was conducted in the field of linguistics, education, communication, and information technology. Four steps were involved in the literature search process. First, the following five electronic databases were searched: Education Resources Information Center (ERIC), Communication Source, Academic Search Complete, Linguistics and Language Behavior Abstracts (LLBA), and PsycINFO using the keywords listed below. In this step, we also conducted a manual search procedure to ensure the comprehensiveness of the searching procedure. The following lists of journals were included in the manual search procedure: Computer Assisted Language Instruction Consortium (CALICO Journal), Computer Assisted Language Learning, International Journal of Game-Based Learning, Language Learning & Technology, Journal of Computer Assisted Learning, and ReCALL. The second step involved a manual search of the reference sections of the articles identified in the first step. The third step involved using Google Scholar and Web of Science to locate the papers that cited the studies found in the first step. In the final step, we scanned all the articles through reading their abstracts to identify the articles that needed review.

Three groups of search terms (see Figure 1) were used to find relevant studies. They were concerned with (a) L2 learning/pragmatics, (b) online games and, more specifically, educational games, and (c) MMORPGs. The first group of search terms limits the search scope to include only studies which had an explicit focus on the games being played online rather than on personal computers or video game consoles as offline gaming platforms. The third group of search terms helped with identifying studies that focus on online games in MUVES. These types of games are labeled as MMOGs. It is important to note that MMORPGs are currently one of the most popular types of MMOGs. The search terms were used independently and combined to generate as many publications as possible. The search was completed on December 10, 2020 and resulted in 330 papers. All the articles were exported to and automatically coded in RefWorks for the organization of the references. Our search yielded 330 potentially relevant studies. Two researchers independently screened the titles and abstracts of these studies to exclude duplicates. As a result, 300 of the articles were identified and retrieved for further review after screening.

Selection of Relevant Studies

The following four criteria must be met for the studies to be included in this systematic review. (1) The article has to be written in the English language; (2) The study must provide empirical investigation of language learning in game-based or game-enhanced contexts; (3) The study must present evidence of pragmatic development within and beyond game-based and game-enhanced contexts; (4) The article must be published after 2000. The last criterion is included due to the appearance of the first graphical MMORPG known as *Neverwinter Nights*, which appeared on AOL for PC owners in 1991. Based on criterion 3, we only selected studies that focused on L2 pragmatic development in the context of COTS MMORPGs (e.g., *World of Warcraft*, *Ever Quest*, *Quest Atlantis*) and SIEs (e.g., *Croquelandia*, *Mentira*).

Using these criteria, the method section of each paper was reviewed for determination of inclusion or exclusion. During this step, studies' research design and participants were examined for qualification, narrowing the results to 200 studies. Studies utilizing simulation games (e.g., *The Sims*) or virtual reality games (e.g., *Second Life*) were excluded in this step. Next, a full-text review was implemented to examine whether the paper provided sufficient information to summarize the benefits of digital game-based or game-enhanced conditions for pragmatic learning, resulting in 70 potential studies for inclusion.

Two coders were involved in coding the studies that met the inclusion criteria in this systematic review. Both coders collaboratively coded 10 studies. The aim was to ensure that both coders could reach a consensus as to how each variable should be coded. Then one researcher coded the remaining 60 studies multiple times until maximum intra-coder reliability were reached. Subsequently, one third of these 60 studies were randomly assigned to the second coder for coding. We reported the percentage of agreements on all values following the reporting practice of previous systematic reviews (Peterson, 2010; Reinhardt & Thorne, 2020), and the reliability turned out to be 97%, which was high. The agreement ratio for specific variables was as follows: Types of games, 98%; learning condition, 97%; and target speech act(s), 97%. The two coders settled the minor disagreements through discussion. In the end, the first coder re-examined the coding results to ensure overall consistency. This procedure culminated in the final section of 16 articles (6 journal papers, 6 book chapters, 2 conference papers and 2 dissertations). Figure 1 below describes the selection process.

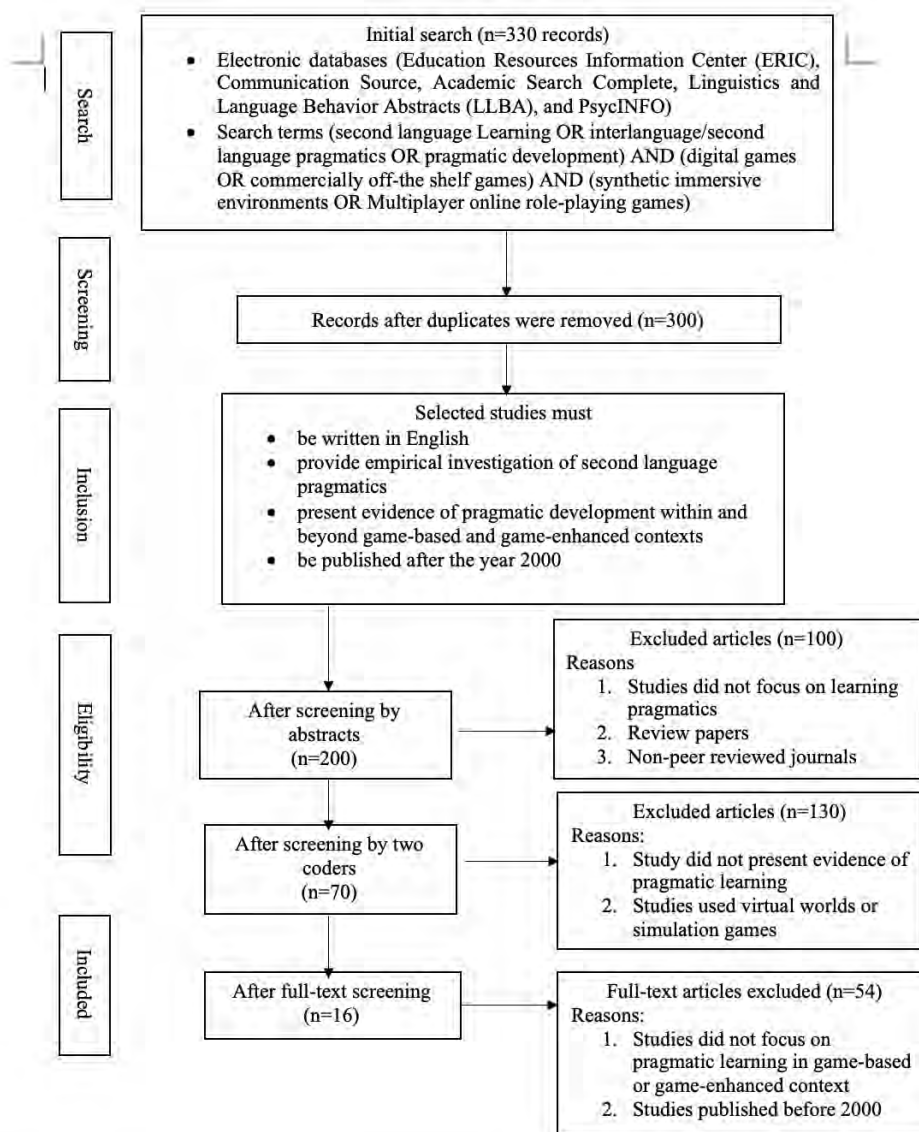


Figure 1. Steps of Selection Process.

Results

This section presents findings of the four research questions raised in the current paper. We provide the overview of the 16 article's research purposes, research paradigms, theoretical framework, and methods of data analysis to answer questions 1-3. Research question 4 is addressed by providing two factors that digital games afford for developing pragmatic competence, namely 1. Developing competence in pragmatic awareness and production as well as interactional skills (e.g., appropriate opening and closing sequences), 2. Promoting authentic target language communication. Table one below presents an overview of the 16 studies selected for review.

Table 1. An Overview of Pragmatic Learning in Game-Mediated Contexts.

Author(s)/Year	Game	Purpose	Participants	Major Findings
Cornillie et al. (2012)	Researcher-developed SIE	This study examined whether provision of different types of corrective feedback contributed to language learning in a research-designed educational game.	Participants were 83 (61 female, 22 male) first-year university students and high school learners in their final two years of high school in Belgium. Their English proficiency level was around B1 (intermediate) of the Common European Framework of Reference for Languages.	Questionnaire and interview results indicated participants preferred explicit CF and generally found explicit CF to be more useful than implicit feedback. Regression analysis indicated perception of explicit CF was significantly and positively affected by perceived competence, intrinsic goal orientation and game experience whereas these three predictors were not found to be significant for implicit CF.
Holden & Sykes (2013)	Mentira	This study examined the potential of four types of feedback (in-game, instructor, peer and environmental) on learners' development in pragmatic proficiency.	A total 68 students (comprising 3 classes) who registered for a fourth-semester, intermediate-level university Spanish language classes	In-game feedback needed to be explicit for learners' noticing. Learners utilized quest restart functions to experiment with different pragmatic strategies. Environmental feedback is crucial in promoting group work. Results of video and audio recordings indicated learners seldom gave feedback to their peers. Results also showed instructors gave little pragmatic feedback due to unfamiliarity with Spanish pragmatics.
Ko (2020)	World of Warcraft	This study examined the effects of game playing experience on developing pragmatic proficiency in a game-enhanced context.	Seven highly proficiency NNES players with varying playing experiences in WoW and two NES player.	Learners gradually developed interactional skills such as setting goals in game opening and stepwise closing strategy (pre-closing, farewell and closing).
McNeil (2020)	Various games	This study examined the affordances of student-selected, entertainment-purposed digital games for foreign language learning and teaching.	16 Korean undergraduate female students enrolled in an introductory educational technology course at a women's university in Korea. Two students are experienced online game players whereas two are casual gamers and 13 are non-players.	Participants adopted vocabulary and pragmatic behavior that they learned in the game contexts to real world language use. Some types of game with minimal requirement of player interaction limited participants' development of pragmatic awareness. Participants' unfamiliarity with sociopragmatics may have also hindered their development in pragmatic awareness.
Palmer (2010)	World of Warcraft	This study examined two learners' pragmatic learning and socialization patterns in WoW	Two beginning English learners of Spanish. One is an experienced player while the other is a novice player of WoW.	Participants learned a total of four greeting strategies with different orthographic conventions. Participants also acquired a variety of closing strategies and learned to make the tripartite closing moves (i.e., pre-closing, farewell, closing). They also learned suggestion strategy in Spanish. However, the data showed little evidence for development of pragmatic competence due to the game's emphasis on completion of quests.

Author(s)/Year	Game	Purpose	Participants	Major Findings
Peterson (2011)	Allods Online	This study examined learner interaction patterns and learner perception of language learning potential in an MMORPG.	Seven Japanese Learners of English with intermediate to advanced English language proficiency and varying experiences with MMORPGs.	The seven learners acquired positive politeness strategies such as opening, closing, small talk as well as humor through the in-game interaction. Additionally, they initiated confirmation checks and made appropriate request strategies for in-game moves. However, both novice and experienced gamers in this group also encountered failed communication. Findings from the questionnaire revealed learners' positive attitude in having an opportunity to use the target language outside classroom in a anxiety-reduced environment.
Peterson (2012a)	NineRift	This study examined learners' development of interactional skills and learner perception of the affordances of a MMORPG for language learning.	Six intermediate level EFL students from a Japanese university. They had no prior MMORPG playing experience.	The seven learners acquired positive politeness strategies such as opening, closing, small talk as well as humor through the in-game interaction. Additionally, they initiated confirmation checks and made appropriate request strategies for in-game moves. However, participants also encountered failed communication. Findings from the questionnaire revealed learners had mixed views about difficult of the game. However, they did agree that the game provided a context conducive to L2 use.
Peterson (2012b)	Wonderland	This study examined learners' development of interactional skills in a game-enhanced context.	Four EFL students based at a university in Japan	The four learners acquired positive politeness strategies such as opening, closing, small talk as well as humor through the in-game interaction. Additionally, they initiated confirmation checks and made appropriate request strategies for in-game moves. Findings from the questionnaire revealed learners' positive attitude in having an opportunity to use the target language outside classroom in a anxiety-reduced environment.
Rama et al. (2012)	World of Warcraft	This study examined the effects of learner characteristics on language learning patterns in a game-enhanced context.	Six participants (2 females, 4 males) with varying levels of Spanish language proficiency and experience with Word of Warcraft.	Participating in WoW provided a safe language learning environment. In addition, Rama et al (2012) found that expertise in game helped the novice Spanish language learner, Emilio, smoothly navigated through the in-game interaction. Emilio also graduated socialized into the language patterns of the community. Sylvania, however, although a proficient Spanish learner, encountered trouble in navigation of the game due to her limited experience with WoW.
Rankin et al. (2006)	Ever Quest 2	This study examined the affordance Ever Quest 2 for promoting learning of L2 vocabulary.	4 ESL students with varying language proficiency levels who are novice gamers of Ever Quest 2.	All participants successfully defined 35% or more of the vocabulary that were only introduced once in conversations with NPCs. Participants also achieved 55% or higher accuracy for words appearing more than five times in NPC dialogues. Language proficiency levels influenced the amounts of language produced in chats as the advanced ESL students generated 6 times more chat messages than high-level beginner and 2.5 times more chat messages than intermediate students.

Author(s)/Year	Game	Purpose	Participants	Major Findings
Rankin (2009)	Ever Quest 2	This study examined vocabulary and pragmatic learning in a game-enhanced context.	8 NES students and 18 NNES students who received random assignment into two experimental and one group groups.	ANOVA results indicated the control group performed the best in vocabulary usage test. However, for vocabulary recognition, NES-NNES group outperformed the other groups. Results for quantity of chat messages indicated there was no group difference in the amounts of messages produced by the two gaming groups. For pragmatic strategies, NNES students utilized more requests for assistance and made four assertions. NES students, on the other hand, took leadership roles.
Sykes (2009)	Croquelandia	This study examined the effect of playing an educational game on learners' development in Spanish apology strategies and modification devices.	25 students (3 males, 22 females) enrolled in four sections of advanced Spanish conversation classes. Their language proficiency, verified by the ACTEF proficiency scale, was at or above the intermediate-mid level.	Learners' employments of request strategies, request perspective and external modifiers all improved from pretest to posttest, regardless of DCT scenarios (PDR low versus PDR high). Interview results indicated learners' increasing awareness of new knowledge on certain pragmatic skills.
Sykes (2013)	Croquelandia	This study examined the effect of playing an educational game on learners' development in Spanish request strategies and modification devices.	25 students (3 males, 22 females) enrolled in four sections of advanced Spanish conversation classes. Their language proficiency, verified by the ACTEF proficiency scale, was at or above the intermediate-med level.	Results for both low and high PDR scenarios indicated learners' movement from speaker-oriented to hear-oriented perspective and a slight improvement over different types of external modifiers, notably in the increase of the use of explanation, future action, justification and offer of repair categories. Survey results revealed learners' reported abilities in performing apologies and qualitative analysis of interview corroborated this finding.
Sykes (2014)	Croquelandia	This study examined learners' patterns of quest restarts in experimenting different speech act strategies in a variety of game scenarios.	25 students (3 males, 22 females) enrolled in four sections of advanced Spanish conversation classes. Their language proficiency, verified by the ACTEF proficiency scale, was at or above the intermediate-med level.	71 quest restarts occurred in 120 hours recorded in-game data from a total of 432 possible restarts. 32 quest restarts were related to apologies while 39 quest restarts happened in the request scenarios. 35 (49%) quest restarts occurred after failed conversation. Only 2 restarts (3%) happened after passed conversation. The remaining 34 (48%) restarts were either related to technical difficulties or interface experimentation. For request scenarios, the most restarts occurred in preparing a party situation ($n=18$, 25%), while for apologies, the most restarts happened in broken vase scenario ($n=14$, 20%).
Taguchi et al. (2017)	A Researcher-designed SIE	This study examined the affordances and effectiveness of a scenario-based interactive practice game for the provision of instruction in Chinese formulaic expressions.	30 students (13 males and 17 females with a mean age of 20.5) enrolled in the Chinese language program in a private university in the U.S.. 13 students attended advanced level courses whereas 5 students are from the elementary level courses and 12 are enrolled in intermediate-level courses.	Participants improved on their production and recognition of Chinese formulaic expressions. However, treatment effect only remained for recognition in the delayed posttest administered two weeks after treatment session ended.
Thorne (2008)	World of Warcraft	This study examined the affordances of World of Warcraft for corrective feedback and intercultural learning.	One Ukrainian player with intermediate level proficiency in English and one American player.	Thorne (2008) documented the NNES gamer's use of incorrect output (i.e., interpreter) and the modified output he received from the NES gamer. Additionally, Zomn, the Ukrainian gamer, also initiated confirmation checks and received correction.

The following section presents a synthesis of these findings in game-based and game-enhanced learning conditions.

Q1. Which Aspects of L2 Pragmatic Learning Have been Examined?

Most of these studies had more than one research purpose. Very few of them only examined one or two aspects of L2 pragmatic learning. Ten different research purposes were identified. They are put into three overarching categories and Figure 2 below graphically presents this finding. According to figure 2, the first goal deals with the examination of learning of pragmatic awareness and production (e.g., requests, apologies, conventional expressions, refusals, openings and closings) resulting from L2 learners' target language interaction with NES gamers within and beyond the game contexts. This group constitutes 56% of the whole body of the purposes identified. It is important to note that requests and apologies are the most prominent speech acts investigated. The second group of studies is concerned with the effect of target language interaction on promoting pragmatic proficiency. This group constitutes 31% of the whole body of the purposes identified. The last group of studies examined second language socialization and interactional patterns within and beyond the game contexts. This group constitutes 13% of the whole body of the purposes identified.

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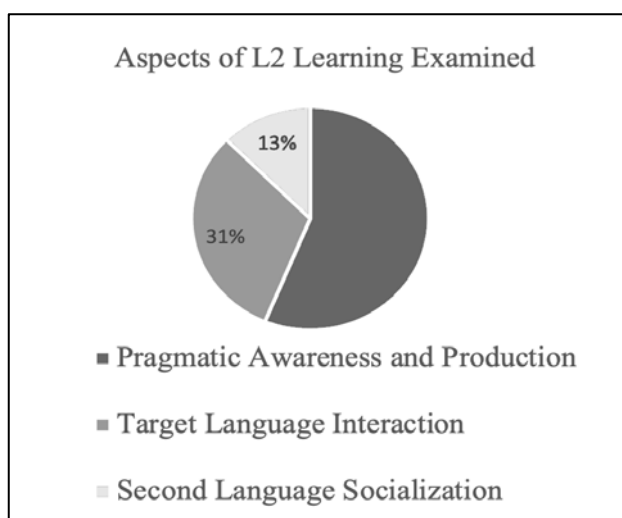


Figure 2. Aspects of Pragmatic Learning Examined.

Q2: Which types of theoretical frameworks have been used?

We summarized the major theoretical and conceptual frameworks in the previous studies here to address the second question. We have identified a variety of research paradigms from 16 studies. Seven different theoretical frameworks in 16 studies were found. They include: interaction hypothesis (Long, 1996), output hypothesis (Swain, 1985), noticing hypothesis (Schmidt, 1992), community of practice theory (Lave & Wenger, 1991), and sociocultural theory (Vygotsky, 1978). The five theoretical orientations are put into three major theoretical categories, including interactionist paradigm (Long, 1996; Schmidt 1993; Swain, 1985, 69%), sociocultural theory (Vygotsky, 1978, 19%) as well as community of practice theory (Lave & Wenger, 1998, 12%) Figure 3 below summarizes this trend.

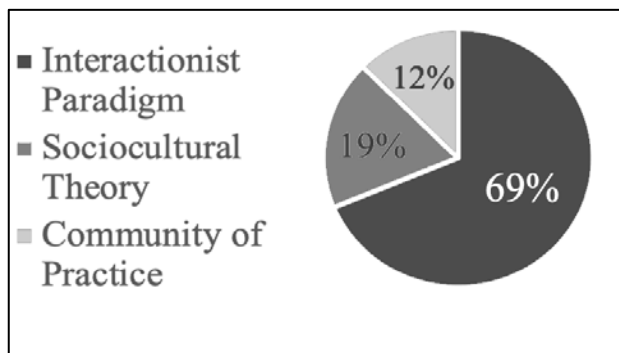


Figure 3. Major Theoretical Frameworks.

Q3: Which types of research methodologies have been implemented?

We investigated the data analysis methods adopted by researchers to examine L2 pragmatic development in the context of MMORPGs. Figure 4 below indicates only 12% of studies ($n = 2$) specifically adopted purely quantitative methods (e.g., ANOVA, multiple regression), whereas 38% of studies ($n = 6$) utilized a qualitative design (e.g., digital ethnography). However, the predominant trend (50%) for examining L2 pragmatic development in the contexts of MMORPGs adopted a mixed-method research design ($n = 8$ studies). Specifically, our review showed these mixed-method studies mainly reported frequencies of learning of speech act(s) strategies combined with participant observation and interviews.

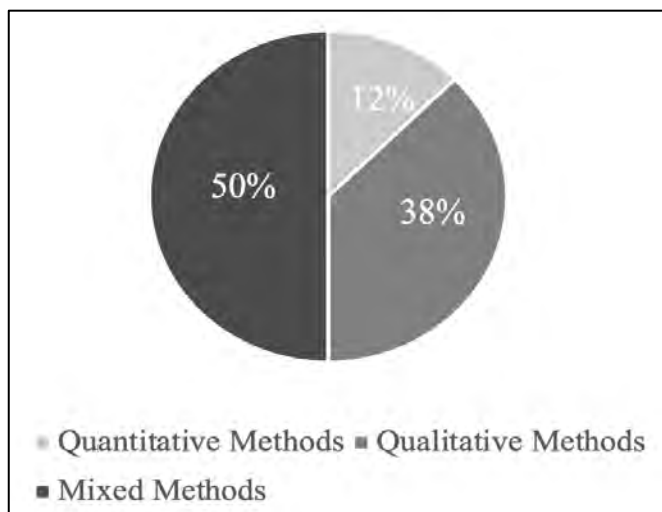


Figure 4. Major Research Methods.

Q4: What affordances might digital games provide for the development of L2 pragmatic competence?

The main purpose of this article is to systematically report the results of empirical studies which examined the affordances of SIE and MMORPG for L2 pragmatic development. This review revealed two major findings 1. Developing competence in pragmatic awareness and production as well as interactional skills (e.g., appropriate opening and closing sequences), 2. Promoting authentic target language communication. We present the major findings in the following subsection, starting from what SIE affords for the development of L2 pragmatic competence before moving to MMORPG's affordances on developing pragmatic proficiency.

Developing L2 Pragmatics in Synthetic Immersive Environment

As previously mentioned, SIE is a suitable space for developing pragmatic competence due to its affordances for learners to repeatedly try different ways of speech act realization strategies with NPCs without consequences that would otherwise occur in the real world (e.g., apologizing to the host family for a broken vase in a study abroad situation). Sykes (2009, 2013, 2014) conducted a number of studies examining the instructional effects of immersion in Croquelandia on English learners of Spanish acquisition of requests and apologies. In addition to instructional effects, Sykes (2014) also probed into learners' experimentation with different request and apology strategies through the analysis of game restarts during play. Moreover, Holden and Sykes (2013) and Cornillie et al. (2012) probed into the provision of corrective feedback in games on raising L2 learners' pragmatic competence. Finally, Taguchi et al. (2017) also developed a semi-immersive environment for learning Chinese conventional expressions.

Sykes (2009, 2013) investigated 53 advanced English learners of Spanish's speech act production of requests and apologies during immersion in Croquelandia in a semester-long intermediate Spanish course. Participants' language proficiency was verified by ACTEFL proficiency scale. They first completed a written discourse completion test (WDCT) as a pretest prior to any instruction on Spanish pragmatics. They then played Croquelandia for five weeks and completed a posttest (another WDCT) after gameplay sessions. Sykes also conducted semi-structured interviews with a subsets of the participants ($n=25$) to investigate learners' perception of their development of pragmatic competence during game play.

Sykes (2009) found learners showed minimal development in request strategies, request perspectives, and external modifiers regardless of WDCT scenarios (i.e., power distance low versus power distance high). In contrast to requests, Sykes (2013) did find some evidence for pragmatic development in apologizing. Specifically, results for both low and high-power distance (PDR) situations indicated learners' movement from speaker-oriented to hearer-oriented perspective and a slight improvement over different types of external modifiers, notably in the increase of the use of explanation, future action, justification and offer of repair categories. However, despite little quantitative evidence for pragmatic development, interview results did reveal learners' increasing awareness of new knowledge on certain pragmatic skills (e.g., using direct request strategies for interaction with friends). As Sykes (2013) suggested, different components of pragmatic competence may require different instructional techniques and outcome measures (Bardovi-Harlig, 2001). Additionally, Sykes (2013) commented that WDCT may not be a sensitive instrument in detecting minute changes in learners' pragmatic systems due to a discrepancy between awareness and production. Although Sykes (2009, 2013) did not mention in her studies, learners' advanced language proficiency level may have also influenced the results

In order to investigate whether learners utilized the quest restart function to try different types of request and apology strategies, Sykes (2014) examined a synthesis of 120 hours of in-game

behavior data and 30 hours of interview data collected from her previous studies (Sykes, 2009, 2013). Quest restart is a fundamental characteristic of digital game-based learning, allowing participants continued repetition of tasks as many times as needed for successful quest completion. In this study, quest restarts were coded for types of speech acts (i.e., requests and apologies) as well as situational variations (e.g., planning a party with friends, breaking a vase at host family's house) and whether the restarts occurred because of negative reaction from NPCs or failed communication with NPCs (i.e., using inappropriate speech act strategies and/or modification devices). In addition to recording and coding the data, Sykes also interviewed 25 participants for their experience in the SIE and their perceptions of different tasks.

Findings showed participants utilized 71 quest restarts from a total of 432 possible quest restarts in 120 hours of recorded in-game data. However, only half of the participants utilized this function and the number of quest restarts by participants varied greatly, ranging from one restart to 12 restarts ($M=2.23$, $SD=2.68$). Among these 71 restarts, 32 were related to speech act of apology while 39 occurred in request scenarios. Further breaking down quest restarts by scenarios, participants mostly utilized this function in asking a friend to prepare a party ($n=18$, 25%) whereas for apologies, the most quest restarts happened in broken vase scenario ($n=14$, 20%). An examination of reasons for quest restarts revealed 35 restarts (49%) occurred after failed conversation, while 34 (48%) restarts occurred either due to technical difficulties or interface experimentation. Only two restarts (1%) occurred after passed conversation. Finally, qualitative data indicated although participants perceived quest restarts to be a useful function, there was a misalignment between their thoughts and actions. Participants who never utilized this function mentioned they considered it to be the last option when all the other strategies failed to work in the game.

Sykes (2014) suggested that because the goal of Croquelandia is to help learners acquire Spanish pragmatics while playing, a focus on player experience is vital for game design. As Sykes and Reinhardt (2012) pointed out:

Learners do not always share the goal of the task with the task designer, the instructor, the curriculum or even other students, resulting in an outcome of the task that may not accurately reflect what the learners actually learned from it (p. 16).

Therefore, there is a need to create different quests so that participants have a choice of alternative paths to the same learning outcomes. Also, Sykes (2014) mentioned it is important that in quest restarts, rather than having players repeat the same task, game designers should offer players the choice of different quests to complete while still targeting the same speech acts (e.g., requests, apologies). In addition to modifying task design, Sykes also mentioned the need for learners to adopt a learning to play perspective. In other words, rather than treating tasks as practice tools, learners have to recognize tasks as an authentic reason for learning to do something, and therefore, the process is as important as the outcome.

In a similar line of research, Holden and Sykes (2013) examined the effects of different types of corrective feedback (i.e., in-game, environmental, teacher, and learner) on developing pragmatic competence in Spanish in a mobile place-based game called Mentira. Learners joined one of four families with different values and expectations for behavior and insider knowledge. NPCs would provide hints on expectations of different pragmatic choices, and if these expectations were not met, learners would experience roadblocks or even game over experiences. As part of the game playing experience, learners had to visit various real-world sites in New Mexico to get clues for passing different quests. Mentira was implemented in a fourth-semester, intermediate-level university Spanish language class. A total of 68 students played the game over three semesters. In addition to

gameplay data, Holden and Sykes also conducted in-class observations, interviews and written assessments for triangulation.

Results indicated that contrary to Sykes (2014), participants utilized quest restart functions to experiment with different pragmatic strategies. However, among the four types of corrective feedbacks, only explicit in-game feedback contributed to learners' experimentation. Although environmental feedback promoted group work, it did not alter learners' in-game behaviors. For peer feedback, results of audio and video recordings indicated learners seldom provided feedbacks to their peers. In addition to rare occurrence of peer feedback, findings also showed instructors provided little pragmatic feedback due to their unfamiliarity with Spanish pragmatics. Holden and Sykes (2013) suggested although place-based mobile game offered potential in raising L2 learners' pragmatic competence, in-class activities should be closely tied with the game to create synergy in instruction.

Similar to Syke's (2009, 2013, 2014) studies, Cornillie et al. (2012) also created a SIE to investigate learners' perception of different types of corrective feedback (i.e., explicit, implicit) in an immersive game for English pragmatics. Participants consisted of 83 (61 females, 22 male) first-year university and high school students in their final school year in Belgium. Their English proficiency level was around B1 (intermediate) based on the Common European Framework of References for Languages. Participants played the game for one month and filled out questionnaires on perceived competence, game experience and perception on corrective feedback before and after the game. Additionally, Cornillie et al. (2012) also interviewed a subset of 12 students about their perception of corrective feedback and in-game corrective feedback in terms of usefulness and preferences. Findings from the questionnaire and interview indicated participants preferred explicit feedback and generally found this type of feedback to be more useful for passing quests in the game than implicit feedback. However, although implicit feedback did not contribute to progress in the game, learners suggested it improves their immersion experience. Regression analysis also revealed perceived competence, intrinsic goal orientation and game experience positively and significantly affected perception of explicit corrective feedback, whereas these three predictors were found not to exert influence on perception of implicit corrective feedback. Cornillie et al. (2012) claimed that these results suggested that explicit feedback, rather than being treated as a hindrance, actually enhanced learners' game playing experience. They suggest that a combination of explicit and implicit feedback seems to be the optimal approach for game design because explicit corrective feedback helps learners' progress in the game whereas implicit corrective feedback contributes to immersion due to the role of implicit corrective feedback in promoting learners to explore the game world by themselves.

Finally, Taguchi et al. (2017) designed a semi-immersive game with 10 scenarios based on 28 Chinese formulaic expressions. Participants consisted of 30 students who enrolled in the Chinese language program in a private university in the United States. Among the 30 students, 5 students were taking elementary level courses, whereas 12 were intermediate-level students and 13 were taking courses in the advanced level. They first viewed a video of a college student studying abroad in Shanghai. Then they completed multiple-choice questions selecting the correct routines. Points were given based on the number of attempts participants made to answer the questions, and hints were given for wrong choices. After completing the MCQ task, participants were asked to write the targeted expressions and compare and contrast their written responses with the correct response shown on the screen. Pragmatic development was measured using pre-posttest production and comprehension tests. Delayed posttests were administered two weeks after the treatment. Results indicated participants made significant gains in both recognition and production of Chinese formulaic expressions from pretest to posttest. However, although results of delayed posttest

showed the treatment effect remained intact for recognition, learners underperformed in the production part of the delayed posttest. These results indicated that it takes more time and practice for learners to internalize the rules of Chinese formulaic expressions and make accurate productions.

To summarize, although Sykes (2009, 2013) did not find a significant improvement in learners' pragmatic development of request and apology strategies, qualitative data did indicate learners' growing awareness of L2 pragmatic choices. Additionally, as Sykes (2014) suggested, to entice learners to utilize the quest restart function, game designers need to create different tasks with alternative routes but leading to the same outcomes. In addition to quest restarts, Holden and Sykes (2013) and Cornillie et al. (2012) found learners perceived explicit corrective feedback as useful tools for quest completion in the game. Furthermore, Taguchi et al. (2017) found instructional effect was durable for recognition of Chinese conventional expressions in a semi-immersive game.

However, it has to be pointed out that SIEs such as *Croquelandia* and *Mentira* were specifically designed to provide instruction on L2 pragmatics. Would results have been different had learners only been engaged in playing games? Do these games still provide opportunities for learners' pragmatic development? The next section presents empirical studies that addressed the affordances of MMORPGs on the development of L2 pragmatic competence.

Developing Pragmatic Competence in Massively Multiplayer Online Role-playing Games

Engaging in MMORPGs can provide learners with opportunity to raise their competence in pragmatic perception and production due to the input-rich environment and the need for collaboration with other players. As Palmer (2010) suggested, language is central to WoW gameplay because players in a guild need to negotiate battle tactics and share of rewards after they win a combat. Several studies have evidenced learners' development of skills in pragmatic awareness and production as well as interactional skills while immersed in MMORPG-based contexts.

A number of studies have examined the affordances of MMORPGs for providing opportunities with practicing different speech act production and awareness strategies. For example, McNeil (2020) examined whether engaging in game-enhanced pedagogy raise L2 learners' language awareness and participation in gaming discourses. Participants consisted of 16 Korean female undergraduate students enrolled in an introductory educational course. They chose different games of their choice for extramural gameplay and played them for 11 weeks. They also completed weekly gaming journals with guided prompts to detail the language function they observed in the gaming discourse and reflections they had on language use in digital game contexts. Participants also filled out a survey exploring their gameplay experience at the end of the study.

Qualitative analysis of the gaming journals revealed participants showed awareness of the linguistic practices in the particular games they chose and they transferred the vocabulary, language structure and pragmatic behaviors they learned in the game context to their everyday language use. However, results also showed the limit of game space may have influenced participants' awareness of language use as some games only required minimal interaction between players. Meanwhile, results revealed students' lack of understanding in pragmatics hindered their language awareness. For example, one student suggested that the use of formal or informal forms (e.g., Please help me vs I wonder if you can help me) was due to personal preference, which in fact may very well be due to sociopragmatic variations in contexts and interlocutors.

Concerning participation in gaming discourses, results showed shared experiences with other players and the need for progress in the games increased learners' participation. Specifically,

participants utilized online discussion boards to learn about gameplay strategies and conducted linguistic analysis on posts by other players to learn appropriate language for posting in the discussion forum. However, negative attitude about the gaming discourses, difference in game expertise and failed participation bids (i.e., posts that received no responses from fellow players) impeded learners' participation in gaming discourses.

Thorne's (2008) examination of a case of intercultural exchange between an English learner of Russian and a Ukrainian learner of English also indicated the affordance of MMOPRG for pragmatic learning. Thorne found both learners improved their linguistic competence through this intercultural communication. Specifically, although the two players' focal attention was on the game, they exchanged information about their real life (e.g., where they live and which school they go to). In addition to sharing their social life, both tried to practice their L2 through this exchange, provide corrective feedback and collaboratively finish repair sequences. As Thorne (2008) observed, these exchanges provided reciprocal alternation in expert-novice status in which both participants offered explicit corrective feedback to each other and incorporated received feedback in their interlanguage.

In addition to affordances of collaborative gameplay and corrective feedback, previous studies have also revealed MMORPGs provide the opportunity for target language interaction that promotes interactional skills. The effects of playing different types of MMORPGs on Japanese learners of English utilization of interaction management strategies and their pragmatic development were investigated in a series of studies (Peterson, 2011, 2012a, 2012b). Peterson (2011) investigated seven Japanese EFL students' in-game interaction in Allods online. The learners possessed intermediate to advanced English proficiency (verified by TOEFL iBT), and only three of the participants had some prior experience of playing online games. Participants played two separate 60-minute gaming sessions of Allods Online. Peterson discovered participants utilized positive politeness strategies (Brown & Levinson, 1987) to indicate rapport, familiarity and signal a desire to become a member of the group. Specifically, analysis of the data indicated the use of informal greeting (e.g., hi), leave-taking (e.g., thanks! see you) and small talk to communicate with NES gamers. Through these positive politeness strategies, participants were able to successfully negotiate request for help during game play.

In another study, Peterson (2012a) examined six undergraduate intermediate level EFL students' utilization of discourse management strategies and target language interaction in Ninerift. These learners had no prior experience of playing MMORPGs. Participants engaged in two gaming sessions held in two consecutive weeks, each lasting approximately 90 minutes. They also completed pre and exit questionnaires and were interviewed for what they gained from playing the game as well as any challenges they encountered in the interactions. Consistent with his prior study Peterson found participants acquired positive politeness strategies like opening, closing, small talk as well as humor through in-game interactions. Additionally, they initiated confirmation checks and used appropriate request strategies for in-game moves. However, contrary to Peterson (2011), this study documented failed communications. For example, one advanced NES gamer ignored the learners' request for help on completing a quest because he was focused on finishing his own task. Peterson (2011) also administered surveys to explore learners' perception of language learning in game-mediated setting. Questionnaire results revealed learners' mixed views about the difficulty of the game. Despite learners' unfamiliarity with game mechanics and inability to receive sufficient help from advanced NES gamers, these participants agreed that the game provided a context conducive to L2 use. A relaxed setting in turn contributed to learners' target language interaction, creating a chance for learning pragmatic strategies such as opening and closing.

In his third study, Peterson (2012b) found the affordances for target language interaction among four EFL learners (two Japanese, one Iranian and one Chinese) participation in a MMORPG. However, contrary to Peterson (2012a), these learners had some previous experience with playing MMORPGs. The learners played *Wonderland*, a MMORPG with Japanese animation and manga themes as backgrounds, for four sessions, each lasting approximately 70 minutes. Data included chat transcripts produced in each of the sessions, questionnaire and personal interviews. Findings revealed learners acquired appropriate greeting and closing strategies as well as small talk for establishment of rapport with fellow gamers. Learners also claimed the computer-based nature of the interaction in *Wonderland*, combined with the use of pseudonyms and avatars, helped reduce anxiety and encourage experimentation and risk-taking with the target language.

In a series of two studies, Rankin et al. (2006, 2009) investigated the effects of playing Ever Quest 2 in increasing ESL students' pragmatic competence. In their pilot study, Rankin et al. (2006) recruited four ESL students with varying language proficiency levels (verified by Basic English Skill Test) who were novice gamers of Ever Quest 2. They formed pairs and were required to spend a minimum of four hours for four weeks to play the game while the researchers kept in-game observation diaries and periodically conducted semi-structured interviews to probe into learners' perception of how the game improved their learning of English. Findings revealed language proficiency level played a role in target language interaction as the advanced ESL students generated 5 times more chat messages than high-level beginners and 2.5 times more chat messages than intermediate students. More chat messages implied learners had more opportunities to experiment with the target language and acquire pragmatic strategies as pragmatics is required for interpersonal interaction. Findings also indicated language proficiency influenced in-game interactions because beginners were hardly able to understand the in-game instructions and therefore, participation in MMORPG for language learning purposes requires participants to have about intermediate level language proficiency.

In their follow-up study, Rankin et al. (2009) looked into whether the presence of NES gamers increased NNES participants' target language interaction. Eight NES and 18 NNES participants were randomly assigned into a NES-NNES playing group, a NNES-NNES playing group, or regular three-hour ESL class. Development of pragmatic competence was documented by analyzing the dialogue contents between native speaker and ESL learners for increased use of politeness (e.g., opening and closing) and speech act strategies (e.g., requests, suggestions, assertions). ANOVA tests indicated there were no statistically significant group differences in the number of chat messages produced by the two gaming groups (NNES participants: 57.14 chat messages, NES participants: 74.25 chat messages). However, a difference was found in NES and NNES participants' employment of speech act strategies. While NNES participants made more request for assistance and suggestions, NES students generally took a leadership role by demonstrating their knowledge of the mechanics of the game (i.e., making assertions about game play strategies and leading the group to advance in the game).

Utilizing a qualitative design, Rama et al. (2012) examined the interaction between language proficiency and game expertise in game-based learning context. One of the focal participants, Emilio, was a beginning Spanish learner (identified by UC Davis placement test) but an expert gamer. The other participant, Sylvania, possessed advanced Spanish language proficiency but was a novice player in WoW. They were encouraged to play WoW for an average of five hours per week and keep a short journal after each gaming session. The first author also conducted three sessions of semi-structured interviews with the learners to understand gameplay experience and game interaction with other players. Findings indicated participation in WoW provided a safe language learning environment for beginning learners. In addition to anxiety reduced condition,

Rama et al. found that expertise in game play helped Emilio, who was a beginning Spanish learner, smoothly navigate through chats with other native Spanish speaking players. Emilio also gradually socialized into the language patterns of the community. On the other hand, although Sylvania was more proficient in Spanish than Emilio, she had encountered setbacks in navigating the game and interacting with other players due to her limited playing experience with WoW.

In addition to cross-sectional studies showing learners' development in pragmatic proficiency, studies Palmer (2010) and Ko (2020) provided the developmental pattern for learners after immersion in the digital game worlds. The two studies all utilized the affordances of conversational interaction in WoW for the examination of learner development. The study by Palmer (2010) involved a detailed ethnography of two learners' socialization patterns into the Spanish community of WoW players. The two participants were the author and Hector, the author's friend. Their Spanish proficiency, based on UC Davis written Spanish placement exam, was at basic level. However, while the author herself was an experienced gamer in WoW, Hector was new to the game. The participants joined a Spanish WoW server over a period of eight months, resulting in 410 hours of participation. Data were collected through field notes, questionnaires and semi-structured interviews. Findings indicated participants learned a total of four greeting strategies with different orthographic conventions (e.g., hola, olas, wola for hello). They also acquired a variety of closing strategies and learned to make the tripartite closing moves (i.e., pre-closing, farewell and closing) for more formal leave-takings (e.g., when they were logging out of the game).

However, compared to abundant evidence for pragmatic development in greeting and leave-taking strategies, Palmer (2010) documented little evidence for development in request strategies. Although initially the participants only knew how to make a request in Spanish through a direct command form *ayudame* (literally "help me"), they only acquired two other new request strategies: a non-conventionally indirect request strategy with declarative sentence structure *me ayudas?* (literally "you help me?") and another conventionally indirect strategy *poder* (literally "to be able to") that probed into the possibility of getting help from others. Palmer suggested the focus on quickly completing a quest and moving on to other tasks may have undermined their language socialization patterns for requests. In contrast to requests, data revealed the two participants' immense progress in making suggestions through 8 months of game play. Although the participants were unfamiliar with appropriate strategies for making suggestions in Spanish before, they acquired a number of different suggestion strategies by combining different verbs with the inclusive pronoun *we* (e.g., shall we go?, shall we kill?).

Finally, Ko (2020) examined seven NNES speaking learners with intermediate to advanced language proficiency (Mean TOEFL iBT score: 90.4) development in speech act strategies and interactional skills through a three-month immersion in WoW. The participants played on the U.S. WoW sever and gained a total of 58 hours of game play. Data were collected through a demographic questionnaire, pre-posttest DCTs as well as semi-structured interviews. Results of DCT indicated learners' development in pragmatic proficiency as their score showed a higher median mean than their counterpart in the control group ($Mdn_{(C)}=50$, $Mdn_{(E)}=55$) and narrower range of score distribution ($Range_{(C)}=33-58$, $Range_{(E)}=38-58$). Additionally, learners also developed interactional skills as demonstrated in their appropriate use of first idea proffer for opening and stepwise closing sequences. For example, in the beginning, learners would often just start playing without greeting their teammates. Additionally, some of them left the game world abruptly without any leave-taking when they completed their compulsory game-playing time (i.e., two hours per week). However, gradually they learned to organize the gameplay session through appropriate opening (e.g., Hello, everyone) and first ideal proffer (e.g., What should we do today?) and perform a stepwise closing

sequence by first providing information on their game levels (I am 60 now), issuing a pre-closing (That's it for today) and closing (Ok, see you guys).

To summarize, rather than promoting an inert reception of information, research has indicated MMORPGs provide different literacy activities (Steinkuehler, 2007) and complex language ecology (Thorne et al., 2012) that promote authentic target language interaction and enable L2 learners to develop a variety of speech act realization and modification strategies. Findings from Peterson's (2011, 2012a, 2012b), Palmer (2010), Ko (2020) and Rankin et al. (2006, 2009) revealed L2 learners acquired speech act strategies for managing in-game interaction in different quest situations. As shown in the studies presented above, MMORPGs provide suitable platform for learners to interact and negotiate for meaning which is considered as one of the key elements in language and pragmatic development (Long, 1996; Schmidt, 1992; Swain, 1985).

Discussion

Summary of Findings

This systematic review sought to ascertain digital games' affordances for developing second language pragmatic proficiency. The systematic coding of 16 studies revealed that these studies examined two aspects of learning that are conducive to developing pragmatic competence in game-mediated contexts: Developing competence in pragmatic awareness and production as well as interactional skills (e.g., appropriate opening and closing sequences), 2. Promoting authentic target language communication. Interactionist paradigm, sociocultural theory, and community of practice theory guide these studies and the majority of previous studies utilized mixed methods research design for data collection and data analysis purposes.

Interpretations

The current review indicates that in contrast to the claim that SIEs and MMORPGs provide little evidence for second language acquisition due to no manipulation of input (Leow & Cerezo, 2016), results of empirical studies have suggested that these settings afford opportunities for language learning. In general, all tasks and activities within and beyond the contexts of SIEs and MMORPGs provide goal-oriented and meaningful interaction opportunities. Therefore, L2 learners playing the game are constantly involved in the use of the target language that is situated in a rich semiotic context (Thorne et al., 2012). L2 learners also use the target language to perform a wide range of meaningful tasks within and beyond game settings. The interaction in games also affords opportunities for developing interactional skills. As Peterson (2011, 2012a, 2012b) and Ko (2020) have shown, learners developed appropriate opening and closing sequences by utilizing idea proffering and stepwise closing sequence.

The current review has also demonstrated L2 learners' linguistic and social interaction patterns in the game context. Specifically, it has revealed that the MUVE environments provide target language input that is rich in meaning and complex in form. However, despite their heavy information load, L2 learners who enthusiastically embraced playing MMORPGs can successfully comprehend the texts. Learners are able to do this because the meaning of these texts is closely connected to the actions performed in the game (Reinhardt, 2019). Therefore, in order to complete quests and level up their characters, learners are willing to engage in using the target language to explore and connect with other gamers. This phenomenon is in accordance with Gee's (2004) learning principles: "text principle" and "situated meaning principle", which are defined respectively as texts are understood in terms of embodied experience (i.e., what learners have experienced), and the meanings of signs (e.g., symbols, artifacts, texts) arise from the embodied experience.

Our review has also revealed the social and interactive ecology of SIEs and MMORPGs contribute to the potential for these types of games for L2 learning. These contributions also align with the principles of task-based language teaching, which is an approach that seeks to engage learners in interactive authentic language use through performing a series of tasks. (Gonzalez-Lloret & Ortega, 2014). In addition, these contributions also can be linked to the situated learning theory (Lave & Wenger, 1991). The prominent interaction among novice and expert gamers (e.g., Palmer, 2010), access to target language native speaker (e.g., Peterson, 2011, 2012a, 2012b), multiple routes of experimentation (Sykes, 2014), and the connection between verbal utterance and avatar-embodied action (Reinhardt 2019) provide affordances for L2 learning to take place.

Limitations and Suggestions for Future Research

Sykes and Reinhardt (2012), in discussing the affordances of game-based and game-enhanced learning, suggested that there remains an urgent need for large scale studies that include “psychometric instruments, pre-post measures of learning outcomes, systematic observation and analysis of real-time gameplay, and perceptive measures such as interviews, focus groups, and surveys (p. 113).” Such a large-scale mixed methods studies would allow researchers to more critically assess L2 language use and learning in game-based and game-enhanced contexts from multiple perspective, to assess and compare participants’ developmental patterns within and across game genres and to measure the effects of particular forms of gameplay on language learning. Such research could also inform language instructors’ selection of digital games for L2 pragmatic learning and the design of SIEs for pragmatic learning purposes and could potentially provide contribution to amplify game-based and game-enhanced outcomes through pedagogical intervention and activities.

Much of the current empirical examination on game-based and game-enhanced studies on L2 pragmatic learning do not recruit large enough participants to generate findings that have enough statistical power against Type II error (Plonsky, 2015). Future research will benefit from a larger sample of participants with varying levels of language proficiency levels and game-playing experiences. Additionally, there is a potential for collaboration among L2 instructors, researchers and game developers to develop educational games with multiple routes of completion that can promote learners’ experimentation with different pragmatic strategies. The collaboration among these parties can also potentially modify existing MMOPRGs for language learning purpose (cf. Reinders & Watanna, 2012).

Pedagogical Implications

We provide three pedagogical activities based on the affordances SIEs and MMORPGs provide for develop pragmatic competence, namely 1. Whole class project in the classroom 2. Independent project.

1. **Whole class project in the classroom.** Instructors can choose a MMORPG (e.g., World of Warcraft) and have students play it for a 20 minute session at the end of each class for three weeks. In the preparation phase of each session, the instructors reviews the learning outcomes in the previous session, provide previews of vocabulary, narratives or other in-game activities that are going to occur during gameplay. During the gameplay phase, one student works as the group leader while others serve other roles such as event recorder. Finally, in the post-play phase, the instructor reviews the gameplay sessions and might assign a follow-up task.
2. **Independent project.** Instructors can also design extramural gameplay sessions that students can work on outside of class. Students select a game or games of their choice and

keep a gaming journal which includes language learned, resources utilized and a summary of each gameplay session. The instructor determines the number and length of each session ahead of time (e.g., 4 sessions, 2 hours each). The instructor provides constructive feedback for each journal entry of each individual gameplay session. The final product for learning may include a comparison of two games a student selected, a proposal for an educational game based on the one played or development of game narratives based on the existing stories of the game played.

Conclusion

The studies reviewed here generally confirmed SIEs and MMORPGs are conducive to L2 pragmatic development. For SIE, the benefits included experimentation with pragmatic choices (Sykes, 2009, 2013, 2014), timely feedback (Cornillie et al., 2012; Holden & Sykes, 2013) as well as immersion in virtual worlds (Cornillie et al., 2012, Sykes, 2009, 2013, 2014). Concerning the potential of MMORPGs for the development of L2 pragmatic competence, playing MMORPGs afford language learners' the opportunity to engage in target language communication with native speakers (Rankin et al., 2006, 2009), raise their awareness of pragmatic norms (McNeil, 2020) as well as interactional skills (Ko, 2020; Peterson, 2012a, 2012b).

However, not all findings are positive as what one might hope for in terms of learning outcomes. The ability mismatch between expert and novice players and the game design elements moderated individual game's affordance for pragmatic learning. Specifically, Peterson (2012b) found sometimes learners' experienced communication breakdown due to other gamers' focal attention on completing their own tasks rather than interacting with the L2 learners. Also, McNeil (2020) found learners might have less opportunity for authentic target language interaction due to the game design's emphasis on individual gameplay. Yet, as Sykes(2013) suggested, understanding both what worked and what did not as researchers' have expected is crucial. For SIEs, the most important areas for future research include effective task design for language learning, an analysis of which pragmatic features are best suited for SIEs and an investigation of different types of feedback mechanisms for enhancing learner's experience and utilization for experimentation in SIEs. On the other hand, for MMORPGs the areas needed for further examination include the influence of the combination of learner expertise in games and learners' language proficiency levels in promoting L2 pragmatic development.

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