

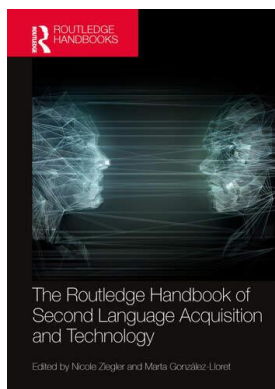
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## **The Routledge Handbook of Second Language Acquisition and Technology**

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### **Second Language Acquisition and Multiplayer Gaming**

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SECOND LANGUAGE  
ACQUISITION AND  
MULTIPLAYER GAMING*Jonathon Reinhardt & Samantha Kirby***Introduction**

Digital gaming has become mainstream. More than 2.3 billion people—nearly a third of all humans alive—play digital or videogames<sup>1</sup> every year (Wijman, 2018), and the global gaming industry has been valued at more than twice the global film industry (Malim, 2018). Considering this immense and growing popularity, educators have marveled at the power of games to engage, motivate, and serve as effective learning environments (Gee, 2007). As the fields of educational gaming, game-based learning, and games studies have grown in response (Plass et al., 2020), the small field of digital game-based second and foreign language learning (DGBLL) has as well, which is evidenced by a growing number of publications in the area (e.g., Peterson, 2013; Reinders, 2012; Reinhardt, 2019; Sykes & Reinhardt, 2012). While digital games have been an object of discussion in computer-assisted language learning (CALL) circles for some time (e.g., Baltra, 1990), a resurgence of interest occurred when online multiplayer games became commercially successful starting in the early 2000s, thanks to increasing broadband capacity and technological advances (Reinhardt, 2017). New developments allowed for the in-game, synchronous interactions among players from geographically dispersed locations to be core to gameplay, and the global growth in capacity and interest allowed for ever-larger markets to purchase and play these new games. Although multiplayer configurations had been possible before then, they had to be run with minimal graphics as with MUDs (multi-user dungeons) or on local area networks, or the multiplayer aspects had to be asynchronous or outside of the game in order to be logistically feasible. In response to these new developments, the MMORPG genre (massively multiplayer online role playing games; Lai et al., 2012; Peterson, 2016) began garnering attention from researchers interested in exploring how language learning is supported when a MMORPG title (e.g., *EverQuest*, *World of Warcraft*, or *Guild Wars*) is played by L2 users or learners, potentially dispersed geographically.

Without a doubt, single player game designs can also be associated with learning affordances (e.g., Gee, 2007); for example, narrative and multimodal representations in games can contextualize learning by integrating form, meaning, and use (Purushotma, 2005), and the ability to pause and repeat interactions may support the capacity of games to provide L2 input within the learner's zone of proximal development (Sykes & Reinhardt, 2012; Vygotsky, 1978). Some social interaction may occur in the form of community participation and affinity behavior (e.g., fandom practices) around single player games, which may also lead to learning affordances (e.g., Chik, 2014; Vazquez-Calvo, 2018). Moreover, a single player game may be played by two or more individuals, and the emergent behaviors around such gameplay might include negotiation for linguistic

meaning (e.g., Piirainen-Marsh & Tainio, 2014; see the section on “couch multiplayer” below). These configurations might also be leveraged for L2 learning purposes through supplemental activity design, as many advocated before the “broadband turn” (e.g., Meskill, 1990). However, single player games, or single player modes in multiplayer games, are not designed to require social interaction in order to be played successfully. Some multiplayer games can be played by a solo player successfully, but most multiplayer designs require, to a greater or lesser degree, interaction with other players in order to be played. For these reasons, multiplayer L2 gaming, or rather L2 gaming in multiplayer games, warrants special focus, and multiplayer interaction in, through, and around games writ large should be understood as a broader phenomenon

Interactions in multiplayer gameplay can be interpreted through a variety of SLA perspectives. From a psycholinguistic-cognitive perspective, interpersonal interactions among players through, around, and about games, especially when they involve L2 users, can involve negotiation of meaning (Long, 1996) as players discuss rules, narratives, strategies, and tactics (Dixon & Christison, 2018). From a socio-cultural theoretical perspective, these collaborative, game-mediated dialogues involve peer scaffolding and legitimate peripheral participation (Lave & Wenger, 1991 in Rama et al., 2012). From a language socialization perspective, they may support socialization into translingual gamer cultures (Thorne, 2008), and from an ecological perspective, these interaction patterns can mirror complex adaptive systems of development (Scholz, 2017).

To explore the phenomenon of SLA in social, multiplayer gaming contexts in this chapter, we will first provide some background and history of the phenomenon. After focusing on the notion of game interaction and how it can be conceptualized in relation to SLA, we then survey research that has applied the aforementioned variety of SLA frameworks to the phenomenon. Using pedagogical metaphors, we then discuss implications for practice and the design of L2 educational games. We then present and advocate for a design-informed approach and describe seven game mechanics or types—adventure, narrative, open world, role play, socialization, survival, and team cooperative—that might be examined more closely for their SLA potential when played in multiplayer modes.

### Historical Perspectives: Focus on Multiplayer Interaction

While there is considerable variation in the designs of games, both digital and analog (e.g., party, playground, board, and card games), all games share certain features like rules, narrative elements, objectives, and temporal and spatial boundaries (Caillois, 1958; Juul, 2011; Reinhardt, 2019). Most physical sports and analog games are assumed to be multiplayer with a few exceptions (e.g., the card game *solitaire*). While the first digital game, *Tennis for Two*, was multiplayer, the market potential of single-player modes in digital games was soon recognized as viable (and more profitable) when artificially intelligent agents built into a game grew sophisticated enough to function as opponents. However, multiplayer digital games still had to be played with both players physically co-present, pitted against one another or grouped together against the computer, playing at the same time or taking turns alternately. This meant that coordinated team-based play was only possible via low-bandwidth media like MUDs, restricted to one-turn-at-a-time, or played over local area networks.

Starting in the mid-1990s, as bandwidth access grew and server technology became more sophisticated, it was recognized that games could run on centralized servers accessed by hundreds (i.e., “massive” numbers) of players at the same time from their client machines remotely. A new era of design began that put multiplayer, synchronous gameplay at the center of the game, combining traditional role playing, adventure, and action mechanics with competitive and cooperative designs. Teams composed of players who were geographically dispersed could coordinate and strategize, allowing for new configurations like team against team, from small handfuls to hundreds of players on shared quests and virtual battlefields. Today many of the most popular titles are multiplayer online or have both single player and multiplayer online modes. With continued

technological advances, multiplayer designs continue to diversify and complexify, giving rise to new types and genres like battle arena strategy games (e.g., *Defense of the Ancients* or *DOTA*), open world games (e.g., *Grand Theft Auto*), survival cooperative games (e.g., *Don't Starve Together*), and battle royale games (e.g., *Fortnite*). Multiplayer mechanics (see below) are now core to many titles and some titles cannot be played solo. In short, online digital networking has brought digital games back to their origins as inherently social activities.

CALL researchers, informed by the social turn in SLA (Firth & Wagner, 1997), began focusing on MMORPGs in the mid-2000s (e.g., Thorne, 2008) because the variety of new multiplayer configurations they allowed were leading to new affordances for linguistic interaction. Sykes and Reinhardt (2012) identify interaction as one of five noteworthy parallels between game design and L2 learning, along with goal orientation, context, feedback, and motivation. They note that interaction occurs *with* games during play (i.e., between the game itself and the player), *about* games among players both during play and after it, and *through* or *in* games between players during play. From a functional perspective, interactions *with* games are primarily ideational, that is, focused on the informational content of the game, including its rules and narratives. Interactions *about* the game are primarily textual, relating gameplay to external resources and discourses, or what James Gee has termed the “big G game” (Shaughnessy et al., 2010), usually focused on gameplay strategies and narratives, but not those that occur at the time of play. Interaction *through* games among players are interpersonal, and usually take place in text or voice chat; these may involve all those playing the game at the time of play, chats among friends or teams, or one-to-one conversations between players. They are dialogic and may be topically focused on gameplay rules and strategies, game narratives, or general social topics. While interactions with games and about games are worth examining, the current focus is limited to interactions among players through or in multiplayer games at the time of play.

### Current Contributions and Main Research Methods

Interaction is the main focus of most studies of multiplayer L2 gaming in one way or another, and accordingly, many have used discourse analysis methods to apprehend it. For example, using dialogue act analysis (Core & Allen, 1997 in Rankin et al., 2009), Rankin et al. (2009) found that players of the MMORPG *EverQuest II* used conventional conversation openings and closings when text-chatting with other players, and that conversation focused on strategizing and persuading one another, as well as planning or committing to certain future actions. Ultimately, their ESL students showed both increased communicative performance and higher vocabulary acquisition through interaction with the gameworld. Bytheway (2015) found 15 different strategies that players reported using when they played various MMORPGs in L2 English, including looking up information in Google, observing and requesting repetition from fellow players, and guessing from context. Her findings implicate the active, agency-rich role taken by players as they interact with others and make use of various resources in a MMORPG world in order to learn the language needed to play the game. Using Interactionist frameworks to examine the use of communication strategies for negotiation of meaning (Chamot & O'Malley, 1992 in Dixon & Christison, 2018), Dixon and Christison (2018) examined how three ESL students playing 12 hours of *Guild Wars 2* communicated through in-game text chat. The study found that players communicated to pool information, give each other commands, and make suggestions to each other, among other functions. There was clear evidence that players had the opportunities to “negotiate both player-produced input and environmental input as a means to complete in-game tasks in a contextually rich social environment” (p. 246). Noting parallels between game design and the tenets of Instructed SLA, they argue that players of multiplayer games “engage in cooperative problem solving that share many characteristics with language instructional activities that are deemed beneficial for language learning” (p. 265).

Others have taken similar methodological approaches to explore “couch multiplayer,” which was the cooperative or competitive norm before the widespread shift to online multiplayer play, typified by games like *Super Mario Kart* and *007: Goldeneye*. In these configurations, players might also split control of single player games, one as driver (with controller) and the other as passenger (observation, but with no direct control), allowing players to make choices together and alternate skills when needed, overall creating a multiplayer experience. Illustrating the rich interactions around this sort of play, Piirainen-Marsh and Tainio (2014) explored how two L1 Finnish boys used L2 English while alternating control of the single-player games *Final Fantasy IX* and *Final Fantasy X*. Through conversation analysis, the researchers highlight how the two players aligned their gameplay activity through mimicry of, repetition of, and dialogue with, game character utterances, ultimately scaffolding one another into mastery of both the game and the English of the game.

A good portion of published work on multiplayer online gaming has made use of interaction-focused constructs that align with social-informed SLA frameworks, like sociocultural theory, ecological theories, and language socialization. This is most likely due not only to the emergence of new multiplayer online game designs and configurations but also to the increase in popularity of these frameworks in applied linguistics since the social turn in SLA. For example, Peterson (2012a) found that EFL learners in *Nine Rift* engaged in frequent collaborative dialogue and peer scaffolding in the L2, making use of interpersonal language and politeness markers. In a follow up study (2012b), Peterson found the same sorts of collaborative co-construction and peer assistance among L2 learners in another MMOG, *Wonderland*, providing evidence that the features common to different game titles like shared quests and avatars play a role in facilitating social learning.

In a MMOG, players can interact and team up with friends or strangers (who may then become friends) needing to do the same quest, that is, a goal-focused activity rewarded with some useful resource upon successful completion. Thorne (2008) noted that insofar as these interactions require language use, they can lead to language socialization, that is, the learning of knowledge and social practices specific to a particular community. Members of a MMOG player community may be highly diverse in regards to their first languages and home cultures, although these may be of secondary value to gameplay knowledge and skill. In multiplayer games that use avatars, whether one is a non-native speaker is not as easy to guess as in a face-to-face context, which may provide the affordances of anonymity and identity play to L2 learners. It may not matter if your English is not perfect if your dwarf priest is an excellent healer for group missions.

In massive contexts, gameplay skills in cooperative questing contexts are more highly valued. Rama et al. (2012) described how two L2 learners of Spanish had very different experiences and available L2 learning affordances when they played *World of Warcraft* in Spanish. The learner with lower L2 proficiency was welcomed by other players for their higher gaming knowledge and skills, leading to increased language proficiency. The learner with lower gameplay literacy but higher L2 proficiency was not able to use their proficiency to scaffold their gaming skills; in other words, it is difficult to learn to play a complex game in an L2 without the language-agnostic gaming skills to act as a scaffold. Cognitive research on gameful L2 learning (deHaan et al., 2010) shows that working memory is stretched when trying to learn rules and strategies in an L2. In short, for L2 socialization via community interaction to occur in MMOGs, gaming skills or other forms of gaming cultural capital might be necessary.

For language socialization through interaction in multiplayer L2 gaming to occur, players must, of course, be motivated to socialize and interact with others. Motivation is highly intertwined with willingness to communicate, which lower proficiency or lower confidence L2 learners may not have enough of, even if they might benefit from their gaming skills and the anonymity of their avatar. Reinders and Wattana (2014) showed that L2 learners, when they knew that other players were also learners and that they were in a safe, sheltered space, were much more willing to communicate and interact. The researchers modified a MMOG and restricted entry to the class game

space, which perhaps negated some possibilities for socialization, but increased the overall sense of shelter. Implications are that informal L2 multiplayer gaming with vernacular<sup>2</sup> games in the wild might be a practice for learners with at least intermediate gaming skills they can draw on and some L2 proficiency they can build on. Otherwise, modified vernacular spaces or game-based learning environments designed specifically and only for L2 learners might be more beneficial.

Interpreting interaction as emergent and multimodal, a few researchers have found ecological, situated, and distributed models of social language learning useful for interpretation of the complex, collaborative sorts of activity in multiplayer games. Zheng et al. (2009) examined MMOG interactions between learners and native speakers and argued that negotiation for meaning was more akin to negotiation for action. Employing qualitative discourse analytic methods and an eco-dialogical model of values-realizing, Zheng, Newgarden, and colleagues (e.g., Newgarden & Zheng, 2016; Zheng et al., 2012) argue for the dynamic emergence of L2 learning affordances in collaborative spaces like games. In these spaces, players can “flexibly integrate language and actions to co-act toward game goals, discuss non-game topics during play, or demonstrate comprehension with avatar actions alone, an affordance for less verbal players” (Newgarden & Zheng, 2016, p. 274). Zheng, Newgarden, and colleagues’ work illustrates the potential of L2 gaming research to inform SLA theory development.

Scholz and Schulze (2017) utilized heuristics from chaos-complexity theory to analyze the informal L2 gameplay patterns of L2 users of German in *World of Warcraft*, arguing that second language development exhibits features of complex adaptive systems. Using retrodictive qualitative modeling and cluster comparison, they found that even though there was considerable variation among them, all user trajectories showed notable patterns reflective of dynamic systems as evidence of development. They found that overall, factors like “time-in-game, willingness to communicate in game, reflection on in-game experiences act as (potential) growth conditions for the complex adaptive systems of second language development” (p. 112). A dynamic systems framework also informed Thorne and Hellermann’s work (2017; also Thorne et al., 2015). Employing conversation analytic methods, they examined how learners co-constructed understandings and shared meanings while playing an educational place-based mobile adventure game, *EcoPod*. Their analysis highlights the importance of language use around a multiplayer game, not necessarily through or in it, for creating a mutual game space. To this end, they utilize distributed and enacted cognition, which “refer to a framework for understanding human action, such as thinking and communicating, as processes that are fundamentally supra-individual and which include, but importantly are seen to extend beyond, neuronal activity of the brain” (p. 8). As mobile multiplayer gaming becomes more widespread, frameworks like distributed cognition might become more useful for theorizing and interpretation. Similarly, frameworks like embodied cognition might be useful for conceptualizing multiplayer learning in virtual reality-based, immersive games.

### Recommendations for Practice

For adaptation to more formal pedagogical purposes, games can be understood metaphorically as tutors, tools, ecologies, and methods (Reinhardt & Thorne, 2016). As tutors, digital games can serve as the sources and directors of L2 learning content. As tools, games can serve as spaces for interaction among players, as well as resources and scaffolds for active construction of knowledge; these affordances may be enhanced through pedagogical mediation (Miller & Hegelheimer, 2006; Shintaku, 2016). As ecologies, gaming is a core social practice alongside a variety of attendant texts and practices involving multimodal expression, shifting identities, and the “big G” game. As methods, game mechanics can be used to gamify learning experiences; by embedding a mechanic like points, competition, timed activity, or narrative into a regular learning activity, it becomes more game-like. However, there is an important distinction between a gamified learning activity, which retains its primary intended purpose as a learning activity, and a learnful gaming activity,

which is at its core a game activity but may involve some didactic or academic element (Reinhardt, 2019). Learnful gaming activities require the learning of new concepts or skills whose primary purpose is for gameplay, not for the end goal of learning. While there is some debate on terminology, gamification refers to the application of game mechanics into an activity not normally considered gameful (Reinhardt & Thorne, 2016). It only partially overlaps with DGBLL, since the latter can involve incidental and even explicit learning of language for the primary purpose of playing a game.

Metaphorical perspectives can be applied to the adaptation of vernacular, commercial games originally meant for entertainment rather than L2 learning purposes as well as to the design of L2 educational games. L2 educational games differ from vernacular games in many ways—primarily that they are designed purposefully for L2 learning, and thus, in theory, more effectively align gameplay dynamics with L2 learning affordances. Unfortunately, many game designers have little training in SLA theory or gameful learning design, and L2 learning activity designers may have little training in game design theory. As a result, much of what is marketed as “language learning games,” like online cloze activities or mobile-based digital vocabulary flashcards enhanced with points, although they may play a part in a broader gameful L2 learning experience, are arguably game-informed or gamified rather than truly game-based, and players may not see them as true games.

More effective L2 educational games have been designed by SLA experts with some understanding of game design, so that their games clearly reflect SLA or L2 pedagogical as well as game design principles. For example, *Zon* (no longer available) mimicked authentic immersion environments, so that the learner played the part of a study abroad student and had to interact with other players in response to planned events. Reflecting focus on both form and function, Berns et al.’s (2016) game combined individual grammar instruction and direct, explicit learning exercises with a collaborative murder mystery; in other words, it interwove language structure-focused elements with language use (i.e., interaction)-focused elements. Holden and Sykes’ (2011) *Mentira* had players interact with each other and the place-based gameplay environment using their mobile phones, reflecting socio-collaborative, narrative, and situated learning principles (a predecessor to the aforementioned *EcoPod* by Thorne & Hellerman, 2017). Designed with core survival and communication mechanics, *Spaceteam ESL/Astronauts FSL* requires players to interact with and direct each other in order to not crash their shared spaceship using their mobile devices. Reflecting the best of effective L2 learning task design, the game requires players to use language to do something authentic, insofar as winning the game might count as an “authentic” objective.

### Future Directions: A Design-Informed Approach

Research on L2 learning with vernacular multiplayer games and with L2 educational games has just begun to scratch the surface of what we might discover on how to enhance learning with games. To this end, we advocate a design-informed approach. When researching L2 interaction in vernacular multiplayer gameplay and when creating L2 educational games, it is important to recognize the phenomenon from the perspectives of SLA and L2 pedagogy and the perspective of the player or learner, as in traditional SLA research. With DGBLL, it is equally important to also consider the perspective of the game design itself (Reinhardt, 2017), which understands a game as a collection of rules or mechanics that is instantiated through play. To engage with the mechanics and make sense of the rules, the player experiences various aesthetic elements, narratives, and fictional constructs (Hunicke et al., 2004). Gameplay dynamics and player behavior mediate the mechanics and aesthetics of the game. L2 learning affordances emerge when those dynamics and behaviors include meaningful social interaction and language use (Reinhardt, 2020). Therefore, design-informed research and development should consider the relationships between designed mechanics (e.g., multiplayer designs) and L2 learning affordances (e.g., social interaction). The genre (e.g., MMORPG, action-adventure, etc.—see [http://en.wikipedia.org/wiki/List\\_of\\_video\\_game\\_genres](http://en.wikipedia.org/wiki/List_of_video_game_genres)) to which a particular title is considered to belong is a matter of its primary mechanic (e.g.,

survival) and/or theme (e.g., horror), but because every title is in fact a combination of dozens of differing mechanics and features, all of which interplay with one another, it is misleading to associate one genre with a particular learning affordance or outcome without qualification. It is safer to associate affordances with specific mechanics or combinations thereof, no matter what genre they are named. Some MMORPGs, for example, can be played solo and never require interaction with other players, but because they can be played as a MMORPG, they are labelled as such. It is inaccurate to claim that MMORPGs afford interaction as opposed to the group questing mechanics that are common to them. This understanding should underlie DGBLL research and development.

Well known design mechanics combine with multiplayer configurations to facilitate interaction in various ways, and when that interaction is linguistic in nature, to L2 learning through meaningful use. The following sections describe several major ones, with examples of current games that typify them. There is considerable opportunity for future researchers to examine the relationships of these particular multiplayer mechanics or features with L2 behaviors and SLA learning outcomes.

**Adventure or Progression** mechanics are designed with a beginning and end in place. This may take form in a long overarching plot, such as with *Divinity: Original Sin II*, or with shorter endgame pay-off, as with *Portal 2*. These games start players with easy tasks along with often explicit instruction. The more the players progress through the rhizomatic, branching storylines, the more difficult or nuanced their challenges will be, and any choice may provoke a cascade of consequences. When played together, adventure mechanics afford decision making, negotiating, and goal sharing, often of increasing, gradual complexity over time.

**Narrative** mechanics afford immersion in stories and fictional lore through highly detailed and evocative graphics, sound, and backstories. These can be deeply developed with rich histories, as with *The Elder Scrolls Online*, building on its many predecessors set in the same universe (e.g., *Morrowind*, *Oblivion*, *Skyrim*). In other games, storyline and narrative can be briefly revealed, but intensely impactful, such as the beginning plane crash and loss of the player's son in *The Forest*. By providing rich, interwoven contexts of reference, narrative game types engage and motivate players to explore these new worlds and identities within them. In multiplayer modes, the mutual experiencing and sharing of these narratives involves interaction, together during gameplay as well as afterwards.

**Open world** games allow players to seek out objectives freely, without a binding linear structure. Open world game mechanics can be in tandem with sandbox designs, such as in *Minecraft* and *Garry's Mod*, or be part of more completion-oriented games, such as the *Grand Theft Auto* series or *Stardew Valley*. These designs allow for spontaneous decisions and emergent play. They also allow for higher replay value, as players may start a new campaign or world and play it entirely differently than they had before. Affordances for multiplayer interaction in open world games tend to be highly randomized and unpredictable, more similar to virtual worlds where anything is possible and common experiences are not guaranteed through design.

**Role play** mechanics in multiplayer designs provide players unique, customizable skill sets to complement those of party or team members and with which to defeat enemies and overcome obstacles. Since *Dungeons and Dragons*, games like *World of Warcraft*, *DC Universe Online*, and *League of Legends* have offered a variety of character builds or traits that allow players to customize their character so that its strengths complement, rather than compete with, other players' characters. In the most basic form of the so-called "holy trinity" of role play, a tank (e.g., a warrior) plays defense, attracting and tolerating aggression from enemies, while the damager (e.g., a mage) plays offense and causes quick damage, while the support (e.g., a priest) restores their health from afar. Each character may also have dozens of other secondary powers that balance other players in different ways. This formula is flexible in some games (such as the *Phantasy Star Online*, the first online RPG for consoles) and more restricted in others (such as



*Overwatch* requiring a 2 tank-2 support-2 damage team composition in current standard modes). Because players may feel most comfortable playing a certain role, they may identify with their character over time; for example, players who consistently choose tank roles may feel more comfortable with directing others, while players who consistently choose healer roles may feel more fulfilled by staying out of the way while still being needed. In these dynamic, emergent situations where roles must coordinate with and balance one another to achieve a shared goal, language use has a clear social purpose, both ideational and interpersonal. While the parallels between multiplayer role play game and jigsaw learning task designs are obvious, they remain under-researched.

**Socialization** games are played to primarily socialize with other people and are built around the core mechanic of communication. Games like *VRChat*, a virtual reality chatroom, or *Comedy Night*, a game where the player can be a stand-up comedian or audience member, require players to communicate with each other, verbally or through response tokens like avatar emoting or body positioning. Technologies like *VRChat*, which require players to wear a VR headset and handset, add a paralinguistic element to linguistic interaction as a form of immediate player-to-player communication. A player who is able to connect with or read the intentions of other players is usually more successful at a socialization game than a player who cannot as well. Socialization games are most obviously useful for learning a language, since a player is forced to interact with users of the target language in order to play.

**Survival** is a relatively new game type that uses time pressure mechanics to force decision-making and action under the threat of failure or death. Games like *Rust* and *7 Days to Die* combine time pressure with narrative and role play mechanics to motivate players—the fear of a home raid and stolen gear or of a zombie attack, respectively. Examples may include games with capture the flag or team deathmatch instances, or battle royales (e.g., *Fortnite*, *Playerunknown's Battlegrounds*), where the goal of the game is to be the last survivor (either alone or as a team). The teamplay features of these time-controlled game types support player-to-player communication, strategizing, and planning, much like role play, but under the pressure of survival, affording intense moments of complex language use and a real impetus for pushed output.

**Team cooperation** is a central mechanic in many online multiplayer games, often combined with several of the above. In games like *Overcooked*, player characters have the same skill sets and controls, but need to divide and delegate tasks to achieve their objective. In games like *Keep Talking and Nobody Explodes* or *We Were Here*, the players have access to different information and must disclose that information in order to complete objectives, sometimes under time pressure. In multiplayer online battle arena (MOBA) games like *DOTA 2* or hero shooter games like *Overwatch*, players can choose different roles and skill sets every time they play, unlike role play configurations where the player has a single character they develop and replay over time.

While future research should continue to focus on how interaction emerges and affords L2 use and learning in multiplayer gaming environments, we advocate moving beyond trying to show *that* L2 learning can happen through gaming towards *how* it happens in gaming contexts. Research is needed that examines how the aforementioned mechanics interact with one another in the context of play and relate to player behavior and the dynamics of L2 use and learning vis-à-vis interaction (Reinhardt, 2021). Implications for Instructed SLA are that interaction can be far more complex than the basic jigsaw design of information gap activities may lead us to believe. In games, interaction isn't simply facilitated because A wants what B knows and vice-versa in perfectly balanced reciprocity, but rather through designs where, for example, A and C want what B knows, but B doesn't care about what A knows, although they might negotiate with C if they spy on D, who actually does want what A knows. These algorithms are pre-determined by the designers to an extent, but it is understood that gameplay is an emergent and often chaotic phenomenon influenced by many contextual, player, and design factors, and since a game is different every time it is played, new interactional affordances may emerge one time that do not another. We advocate that the intentional

design of gameful or non-gameful environments that afford, encourage, or facilitate L2 learning should be informed by analysis of these interactions and designs.

At the same time, opportunities for L2 learning and interaction are all around the “big G” game as well. Although it barely registers in SLA circles (Chik, 2014; Vasquez-Calvo, 2018; Reinhardt & Han, 2021), informal L2 gaming is practiced by thousands around the globe and many credit it for helping them learn other languages (especially English) outside of—in spite of—institutions that consider game-based learning a fringe practice. Unfortunately, this may deny L2 learners’ access to an increasingly valued global form of cultural capital—gaming literacy (Blume, 2019). While many of these games are not multiplayer, the activities around them may still be highly social. For example, the phenomenon of watching others play games through Twitch involves language use, as the watcher listens to the player verbalize their actions and respond to viewers, who can comment and interact via chat. One can watch Twitchstreams in other languages as well, but no studies to our knowledge have examined this potential. Other types of gaming like tabletop gaming (i.e., board, dice, and card games) also remain underexplored with regards to their L2 learning potentials. We encourage anyone who might be interested in exploring them to start by playing these games (perhaps in their own L2) and engaging in the range of gameful practices with an SLA-informed eye towards mechanics, dynamics, and interaction.

### Notes

- 1 The term ‘games’ will be used hereafter to refer to digital/videogames for the sake of brevity
- 2 Sykes & Reinhardt (2012) use ‘vernacular’ to refer to games not designed primarily for serious or educational uses instead of the term ‘commercial off-the-shelf’ (COTS), because many serious or educational games are in fact commercial and pre-packaged (i.e., off-the-shelf).

### Further Reading

Peterson, M., Yamazaki, K., & Thomas, M. (2021). *Digital games and language learning: Theory, development, and implementation*. Bloomsbury.

This edited volume is a collection of the most recent developments in the field of DGBLL, offering examples of the application of SLA theory to practice and research, including case studies that analyze in-game interaction, attitudes and participation in both institutional and out-of-classroom settings.

Quandt, T., & Kröger, S. (2014). *Multiplayer: The social aspects of digital gaming*. Routledge.

Because there is relatively little in applied linguistics or SLA published yet about gaming, interested researchers need to turn to robust and growing research traditions in other fields for theoretical and methodological information and inspiration. This edited collection brings together research from media studies, communications, and other social sciences traditions on gameplay, focused on social behavior in and around multiplayer games.

Reinhardt, J. (2019). *Gameful second and foreign language teaching and learning: Theory, research, and practice*. Palgrave-Macmillan.

This book offers a comprehensive examination of the theory, research, and practice of DGBLL, situated in language pedagogy and SLA theory and research. It outlines and presents frameworks for game-enhanced (using vernacular games in the language classroom), game-based (designing games for language learning), and game-informed (gameful or gamified teaching) practice and research.

### References

- Balra, A. (1990). Language learning through computer adventure games. *Simulation & Gaming*, 21(4), 445–452. <http://dx.doi.org/10.1177/104687819002100408>
- Berns, A., Isla-Montes, J. L., Palomo-Duarte, M., & Doderó, J. M. (2016). Motivation, students’ needs and learning outcomes: A hybrid game-based app for enhanced language learning. *SpringerPlus*, 5(1), 1305. <http://dx.doi.org/10.1186/s40064-016-2971-1>

- Blume, C. (2019). Playing by their rules: Why issues of capital (should) influence digital game-based language learning in schools. *CALICO Journal*, 36(1), 19–38. <http://dx.doi.org/10.1558/cj.35099>
- Bytheway, J. (2015). A taxonomy of vocabulary learning strategies used in massively multiplayer online role-playing games. *CALICO Journal*, 32(3), 508–527. <http://dx.doi.org/10.1558/cj.v32i3.26787>
- Cailliois, R. (1958). *Man, play, and games*. University of Illinois Press.
- Chamot, A. U., & O'Malley, M. (1992). The cognitive academic language learning approach: A bridge to the mainstream. In P. A. Richard-Amato & M. A. Snow (Eds.), *The multicultural classroom* (pp. 39–57). Addison Wesley. <https://doi.org/10.2307/3586733>
- Chik, A. (2014). Digital gaming and language learning: Autonomy and community. *Language Learning & Technology*, 18(2), 85–100.
- Core, M. G., & Allen, J. F. 1997. Coding dialogues with DAMSL annotation scheme. In D. Traum (Ed.), *Working Notes: AAAI Fall Symposium on Communicative Action in Humans and Machines* (pp. 28–35). American Association for Artificial Intelligence.
- deHaan, J., Reed, W., & Kuwada, K. (2010). The effect of interactivity with a music video game on second language vocabulary recall. *Language Learning & Technology*, 14(2), 74–94.
- Dixon, D. H., & Christison, M. (2018). The usefulness of massive multiplayer online role playing games (MMORPGs) as tools for promoting second language acquisition. In J. Perren, K. Kelch, J. Byun, S. Cervantes, & S. Safavi (Eds.), *Applications of CALL theory in ESL and EFL environments* (pp. 244–268). IGI Global.
- Firth, A., & Wagner, J. (1997). On discourse, communication, and (some) fundamental concepts in SLA research. *The Modern Language Journal*, 81(3), 285–300. <http://dx.doi.org/10.1111/j.1540-4781.1997.tb05480.x>
- Gee, J. P. (2007). *Good video games + good learning: Collected essays on video games, learning, and literacy*. Peter Lang.
- Holden, C. L., & Sykes, J. M. (2011). Leveraging mobile games for place-based language learning. *International Journal of Game-Based Learning (IJGBL)*, 1(2), 1–18. <http://dx.doi.org/10.4018/ijgb.2011040101>
- Hunicke, R., LeBlanc, M., & Zubek, R. (2004, July). MDA: A formal approach to game design and game research. In *Proceedings of the AAAI Workshop on Challenges in Game AI* (Vol. 4, No. 1, p. 1722).
- Juul, J. (2011). *Half-real: Video games between real rules and fictional worlds*. MIT Press.
- Lai, C., Ni, R., & Zhao, Y. (2012). Digital games and language learning. In M. Thomas, H. Reinders, & M. Warschauer (Eds.), *Contemporary computer-assisted language learning*, (pp. 183–200). Bloomsbury.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
- Long, M. H. (1996). Authenticity and learning potential in L2 classroom discourse. *University of Hawai'i Working Papers in English as a Second Language*, 14(2), 127–149.
- Malim, G. (2018). Video games market is worth more than music and movies combined so why aren't CSPs launching games services? Webpage. Accessed June 4, 2020 from: [www.vanillaplus.com/2018/07/05/40093-video-games-market-worth-music-movies-combined-arent-csps-launching-games-services/](http://www.vanillaplus.com/2018/07/05/40093-video-games-market-worth-music-movies-combined-arent-csps-launching-games-services/)
- Meskill, C. (1990). Where in the World of English is Carmen Sandiego? *Simulation & Gaming*, 21(4), 457–459. <http://dx.doi.org/10.1177/104687819002100410>
- Miller, M., & Hegelheimer, V. (2006). The SIMs meet ESL Incorporating authentic computer simulation games into the language classroom. *Interactive technology and smart education*, 3(4), 311–328.
- Newgarden, K., & Zheng, D. (2016). Recurrent languaging activities in World of Warcraft: Skilled linguistic action meets the Common European Framework of Reference. *ReCALL*, 28(3), 274–304. <http://dx.doi.org/10.1017/S0958344016000112>
- Peterson, M. (2012a). EFL learner collaborative interaction in Second Life. *ReCALL*, 24(1), 20–39. <http://dx.doi.org/10.1017/S0958344011000279>
- Peterson, M. (2012b). Learner interaction in a massively multiplayer online role playing game (MMORPG): A sociocultural discourse analysis. *ReCALL*, 24(3), 361–380. <http://dx.doi.org/10.1017/S0958344012000195>
- Peterson, M. (2013). Computer games and language learning: Theoretical rationales. In *Computer Games and Language Learning* (pp. 51–60). Palgrave Macmillan. [http://dx.doi.org/10.1057/9781137005175\\_4](http://dx.doi.org/10.1057/9781137005175_4)
- Peterson, M. (2016). The use of massively multiplayer online role-playing games in CALL: An analysis of research. *Computer Assisted Language Learning*, 29(7), 1181–1194. <http://dx.doi.org/10.1080/09588221.2016.1197949>
- Piirainen-Marsh, A., & Tainio, L. (2014). Asymmetries of knowledge and epistemic change in social gaming interaction. *The Modern Language Journal*, 98(4), 1022–1038. <http://dx.doi.org/10.1111/modl.12153>
- Plass, J., Mayer, R., & Homer, B. (Eds.) (2020), *Handbook of game-based learning*. MIT Press.
- Purushotma, R. (2005). 'You're not studying, you're just...'. *Language Learning & Technology*, 9(1), 80–96.

- Rama, P. S., Black, R. W., Van Es, E., & Warschauer, M. (2012). Affordances for second language learning in World of Warcraft. *ReCALL*, 24(3), 322–338. <http://dx.doi.org/10.1017/S0958344012000171>
- Rankin, Y. A., Morrison, D., McNeal, M., Gooch, B., & Shute, M. W. (2009). Time will tell: In-game social interactions that facilitate second language acquisition. In *Proceedings of the 4th international conference on foundations of digital games* (pp. 161–168). <http://dx.doi.org/10.1145/1536513.1536546>
- Reinders, H. (Ed.) (2012). *Digital games in language teaching and learning*. Palgrave Macmillan. <http://dx.doi.org/10.1057/9781137005267>
- Reinders, H., & Wattana, S. (2014). Can I say something? The effects of digital game play on willingness to communicate. *Language Learning & Technology*, 18(2), 101–123.
- Reinhardt, J. (2017). Digital Gaming. In C. Chapelle & S. Sauro (Eds.), *Handbook of technology in second language teaching and learning* (pp. 202–216). Wiley-Blackwell.
- Reinhardt, J. (2019). *Gameful second and foreign language teaching and learning: Theory, research, and practice*. Springer. <http://dx.doi.org/10.1007/978-3-030-04729-0>
- Reinhardt, J., (2021). “Not all MMOGs are created equal: A design-informed approach to the study of L2 learning in multiplayer online games”. In M. Peterson, K. Yamazaki, & M. Thomas (Eds.), *The state of play: Digital games and language learning*. Bloomsbury.
- Reinhardt, J., & Thorne, S. L. (2016). Metaphors for digital games and language learning. In F. Farr & L. Murray, (Eds.), *Routledge handbook of language learning and technology* (pp. 415–430). Routledge.
- Reinhardt, J., & Han, Y. (2021). Learnful L2 gaming: The wisdom of the wild. In C. Fuchs, M. Dooly, & M. Hauck (Eds.), *Language education in digital spaces: Perspectives on autonomy and interaction*. Springer.
- Scholz, K. (2017). Encouraging free play: Extramural digital game-based language learning as a complex adaptive system. *CALICO Journal*, 34(1), 39–57. <http://dx.doi.org/10.1558/cj.29527>
- Scholz, K. W., & Schulze, M. (2017). Digital-gaming trajectories and second language development. *Language Learning & Technology*, 21(1), 100–120.
- Shaughnessy, M., Fulgham, S., & Gee, J. P. (2010). Interview with James Paul Gee. *Educational Technology*, 50(1), 37–42.
- Shintaku, K. (2016). The interplay of game design and pedagogical mediation in game-mediated Japanese learning. *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT)*, 6(4), 36–55. <http://dx.doi.org/10.4018/IJCALLT.2016100103>
- Sykes, J., & Reinhardt, J. (2012). *Language at play: Digital games in second and foreign language teaching and learning*. Pearson.
- Thorne, S. L. (2008). “Transcultural communication in open Internet environments and massively multiplayer online games”. In S. Magnan (Ed.), *Mediating discourse online* (pp. 305–327). John Benjamins.
- Thorne, S. L., & Hellermann, J. (2017). Mobile augmented reality: Hyper contextualization and situated language usage events. In *Proceedings of the XVIII International CALL Conference: CALL in Context* (pp. 721–730). University of California.
- Thorne, S. L., Hellermann, J., Jones A., & Lester D. (2015). Interactional practices and artifact orientation in mobile augmented reality game play. *PsychNology Journal*, 13(2–3), 259–286.
- Vazquez-Calvo, B. (2018). The online ecology of literacy and language practices of a Gamer. *Educational Technology & Society*, 21(3), 199–212.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge University Press. <http://dx.doi.org/10.2307/j.ctvjf9vz4>
- Wijman, T. (2018). Mobile revenues account for more than 50% of the global games market as it reaches \$137.9 billion in 2018. Webpage. <https://newzoo.com/insights/articles/global-games-market-reaches-137-9-billion-in-2018-mobile-games-take-half/>
- Zheng, D., Young, M. F., Wagner, M. M., & Brewer, R. A. (2009). Negotiation for action: English language learning in game-based virtual worlds. *The Modern Language Journal*, 93(4), 489–511. <http://dx.doi.org/10.1111/j.1540-4781.2009.00927.x>
- Zheng, D., Newgarden, K., & Young, M. F. (2012). Multimodal analysis of language learning in World of Warcraft play: Linguaging as values-realizing. *ReCALL*, 24(3), 339–360.