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Language Production and Activity Systems in Pokémon Go: A Content Analysis of In-Game Communication

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Abstract: Mobile Augmented Reality (AR) games offer a novel and unexplored context for situated language learning. In these games, players engage in authentic communication influenced by game mechanics, community norms, and shared objectives. This study employs Engeström's (1987) Activity Theory (AT) framework to analyze language production and learning within the Pokémon Go gaming community. By conducting content analysis of a gameplay vlog and first-person observations of the game application, the study investigates how the six components of the activity system—subject, object, mediating artifacts, rules, community, and division of labor—interact to create conditions for language use and learning. The analysis reveals that language functions as both a mediating artifact and an outcome of participation. Game-specific lexical items emerge from and reinforce the activity system's structure, while contradictions between components, particularly between game-imposed rules and community-driven knowledge-sharing practices, generate opportunities for language development. These findings contribute to the growing body of research on game-based language learning and extend the application of Activity Theory to mobile AR gaming environments.

Keywords: Activity Theory, Game-Based Language Learning, Mobile Augmented Reality, Pokémon Go, Language Production

INTRODUCTION

Digital games serve as dynamic spaces for informal learning but are underexplored as opportunities for language development within applied linguistics and educational research. Unlike traditional settings, games use language for authentic, goal-oriented activities—players communicate to achieve objectives, negotiate roles, and build knowledge within communities of practice. This aligns with sociocultural theories that emphasize language emerging from real social participation rather than isolated instruction (Lave & Wenger, 1991; Vygotsky, 1978). Although scholars highlight these opportunities (Gee, 2003; Reinhardt, 2019; Squire, 2011), systematic application of sociocultural frameworks to mobile gaming remains limited.

Pokémon Go, developed by Niantic and Nintendo, exemplifies these dynamics. Since 2016, it has fostered global communities engaged in location-based gameplay — catching, training, and battling Pokémon in virtual and real spaces. Its social structure is unique: players form temporary groups (raid parties) at physical locations, communicate across teams, and share knowledge of game mechanics, Pokémon attributes, and strategies (Klopfer, 2008). A shared language has developed—terms like shiny, IV, gym, raid, and Pokédex—serving as both technical terms and community symbols (Steinkuehler, 2006). This makes Pokémon Go ideal for studying how participation in gaming fosters language development.

Despite growing interest in games as learning environments (Gee, 2003; Hung & Yuen, 2010; Squire, 2011), applying Activity Theory (AT) to mobile AR gaming remains limited. Developed by Engeström (1987, cited in Cole & Engeström, 1993), AT analyzes learning as a collective, tool-mediated, contradiction-driven process. It considers how the structure of activity influences and is shaped by learning, focusing on mediating artifacts, community, rules, and division of labor—ideal for analyzing game environments where learning is shared among players, systems, and social norms (Kaptelinin & Nardi, 2006). This study uses AT to examine how language production in Pokémon Go is organized within the game's activity system.

This study explores how Activity Theory explains language production and learning among Pokémon Go players. Data from content analysis of a gameplay vlog and first-person observation were mapped onto Engeström's activity system triangle, revealing contradictions that create language development. Findings relate to mediated learning, the Zone of Proximal Development, and communities of practice.

RESEARCH METHOD

This study employs qualitative content analysis to examine language production and learning in the Pokémon Go activity system. Content analysis is suitable, as it allows a systematic, replicable examination of communicative content within its natural context, which is ideal for analyzing in-game language used during gameplay (Krippendorff, 2004). The study uses Engeström's (1987, as cited in Cole & Engeström, 1993) Activity Theory framework, which includes six components — subject, object, mediating artifacts, rules, community, and division of labor — operationalized as main categories. This framework facilitates the analysis of individual language events and of the structural conditions within the activity system that enable specific language production.

Two data sources were used. The primary was a YouTube vlog titled "Catching the Most Expensive Pokémon in Pokémon Go" (Mystyc7, 2019), a 26-minutes video documenting a player's Pokémon Go raid participation. The video shows the player navigating locations, joining a raid community, and capturing rare Pokémon — including Regirock, Registeel, and Regigigas. It was chosen for its naturalistic gameplay, capturing in-game and offline community interactions, and observable data on language, tools, rules, and social interaction.

The secondary data source was a personal player account created by the researcher for this study. First-person engagement with the game offered an emic perspective on its features—interface, instructions, rules, and communication—that wouldn't be fully visible through video observation alone. This aligns with established game studies and ethnographic research of researcher-as-participant observation, where the researcher's experience is a valid data source (Boellstorff et al., 2012). The subjective aspect of this involvement is noted as a methodological consideration and discussed further in the positionality statement below.

Data collection involved systematic observation and field notes from both sources. The primary video, 26 minutes long, was watched multiple times, with notes taken based on AT-derived categories such as tool use, mediation, rule-following behavior, community interactions, role differentiation, and game-specific language. Timestamps were recorded to link observations to specific moments in the video. For the secondary source, notes were taken during active gameplay, focusing on the game's instructional structure, the communicative functions of interface elements, and the lexical systems within menus and prompts.

The observational data collected were analyzed in two stages. Initially, each note was coded based on the six AT components, and the relationships between these components were visualized using Engeström's activity system triangle. Special emphasis was placed on spotting *contradictions*—structural tensions between components—that reveal how language use and learning emerge within the system. In the second stage, instances of game-specific language were compiled and examined for their mediating roles: how each term conveys shared knowledge, guides activity, and signifies community membership. Throughout, the focus was on the actual language use in relation to the activity system component it influences, rather than on isolated linguistic forms.

The researcher's dual role as both analyst and participant deserves recognition. Their prior familiarity with the Pokémon franchise, along with active engagement with the game during data collection, made them an emic observer—someone who brings insider knowledge of community practices and communication norms into the analysis. This positionality is seen as a valuable asset in the researcher-as-participant observation approach (Boellstorff et al., 2012), as it helped identify subtle communicative cues, game-specific vocabulary, and community conventions that might be hidden to outsiders. Simultaneously, the researcher's familiarity was balanced by the systematic use of the AT analytical framework, which provided an external structure for filtering and interpreting observations.

RESULT AND DISCUSSION

Content analysis of the gameplay vlog and personal observation of the game application identified findings based on Engeström's (1987) activity system components: mediating artifacts, subject, rules, community, division of labor, and object. Each component is described in terms of its role within the Pokémon Go activity system, its relationships, and its influence on language production and learning. These findings show a tightly interconnected system where language is not just a by-product but a key mediating artifact—shaping and being shaped by the activity's structure and organization.

The analysis shows that the Pokémon Go activity system comprises six interconnected components that influence each other, rather than separate parts. This section examines their interactions and contradictions, and what they reveal about learning and language organization. The focus is on three themes: how game knowledge evolves from spontaneous and scientific ideas; the impact of ZPD and distributed mediation on learning; and how game-specific language functions as a mediating artifact that both reflects and supports the system's structure.

Results

The analysis identified two categories of mediating artifacts in Pokémon Go: physical/technical tools and psychological tools, based on Vygotsky (1978) and Wertsch (1991). As shown in Table 1, physical artifacts include smartphones and players, while intangible artifacts include the game interface and language. This dual classification shows that mediation is layered: technical tools enable the activity, while language organizes and encodes knowledge.

Table 1: Mediating Artifacts in the Pokémon Go Activity System

Category	Examples	Mediating Function
Physical / technical artifacts	Smartphone device; other players (human mediators)	Enable material participation in the activity
Psychological / intangible artifacts	Game interface; Professor Willow; gym leader; game-specific language (shiny, IV, raid, etc.)	Regulate, coordinate, and encode knowledge within the activity

Note. Categories adapted from Wertsch (1991). Examples drawn from video observation (Mystyc7, 2019) and personal gameplay.

Game-specific language serves as a psychological artifact, with terms such as shiny, IV, gym, raid, and Pokédex encoding the rules, goals, and social ties of the activity. These terms form a semiotic system that organizes and transmits the activity's meanings. Peterson (2012) shows similar lexical systems in multiplayer online games, serving as tools for coordination and community identity.

The activity system centers on the player featured in the vlog, a seasoned trainer who has reached Level 40, the highest level available in this version of the game. The player's expertise is important for two reasons. First, it places him at

the core, rather than the periphery, of the community of practice within the activity system (Lave & Wenger, 1991): his actions, choices, and language demonstrate complete enculturation into the community's norms and practices. Second, achieving Level 40 reflects the learning process supported by the activity system — it represents the accumulated outcome of years of interacting via the system's tools, rules, and community. Thus, the subject is both the agent propelling the activity and a product of it, exemplifying the reciprocal, dialectical relationship between the individual and the system that is fundamental to activity theory (Leont'ev, 1978).

Rules in Activity Theory govern behavior and relationships within a community, including norms, conventions, and regulations (Cole & Engeström, 1993). In Pokémon Go, rules are both explicit game design rules and implicit community norms arising from social interaction. Table 2 summarizes these rules, their functions, and the AT components they influence.

Table 2: **Rules Identified in the Pokémon Go Activity System**

Rule	Function	Components Mediated
Stay aware of surroundings	Safety regulation for outdoor AR gameplay; displayed by application	Subject ↔ Community
Choose a team	Structures in-game affiliation; determines access to team-specific benefits and community alignment	Subject ↔ Community ↔ Division of Labor
Battle in groups	Encourages collective action; legendary raids require multiple players to complete	Subject ↔ Community ↔ Object
Complete tasks	Directs progression through structured quest system; awards experience points and items	Subject ↔ Object ↔ Tools
Walk in real world	Core AR mechanic; physical movement required for egg hatching, Pokémon encounters, and Pokéstop access	Subject ↔ Object ↔ Tools
Spin the Pokéstop	Enables item acquisition; reinforces physical navigation of real-world space	Subject ↔ Tools
Level up	Progression mechanism unlocking new tools and privileges, including Player Nomination and gym leadership	Subject ↔ Object ↔ Division of Labor

Note. Rules identified through systematic observation of the vlog (Mystyc7, 2019) and personal gameplay. Arrow notation indicates mediated relationships between AT components.

Several rules create productive tensions in the activity system. The group-battle rule establishes a dependency between the subject and community: no individual can reach the activity's main goal without collective effort. This interdependence drives the real-time coordination and shared vocabulary seen in the video, even among strangers. Huizenga et al. (2009) noted similar dynamics in mobile game learning, where location-based mechanics foster collaboration and communication.

The community aspect of Pokémon Go's activity system exists on two related levels. The online community is integrated into the game's structure, where players are divided into three teams—Mystic (blue), Valor (red), or Instinct (yellow). Joining a team determines access to in-game perks and defines a player's connection to the overall game environment. Meanwhile, the offline community develops naturally around raid events, where players from any team gather at physical gym sites to team up against a common opponent. As shown in the video, this offline raid community serves as the main venue for direct social interactions and peer-to-peer language use: players exchange strategies, share info about Pokémon targets, and coordinate roles in real time, in a space that isn't entirely governed by the game's formal rules.

These two community types coexist, creating notable tension within the activity system. The online community is organized by game rules that separate players into teams and foster competition. In contrast, the offline community emphasizes cooperation that crosses team lines—players from different teams often work together during raids because their shared goal takes precedence over team loyalty. This clash between the competitive game structure and the collaborative offline practices results in a communicative need that neither aspect alone would generate. Steinkuehler and Duncan (2008) have identified similar contradictions in online gaming communities, showing that the ongoing tension between competition and collaboration consistently drives complex communication and cognitive engagement.

The division of labor assigns roles to human and non-human participants. Humans primarily act as trainers, but in offline raid communities, role differentiation develops naturally—more experienced players often mentor others in Pokémon types, items, and attack strategies. At 20:51 in the vlog, one player asks a peer for strategic advice, reflecting the mentor-novice dynamic from Lave and Wenger's (1991) concept of legitimate peripheral participation.

The division of labor includes non-human advisors, or so-called Non-Player Characters (NPCs): Professor Willow acts as an institutional knowledge mediator, offering structured guidance, while gym leaders advise on battle strategies by suggesting type matchups.

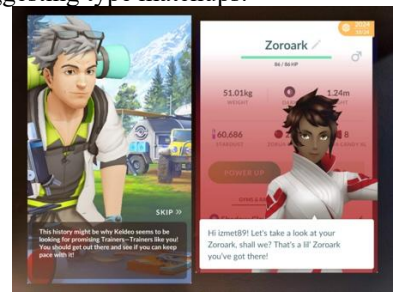

Figure 1. Gym leader and Professor Willow, the Non-Player Character as advisor

Both human and non-human advisors demonstrate AT's view that mediation is distributed across the system, not just among humans (Kaptelinin & Nardi, 2006). A tension exists between the game's algorithmic advisors — providing rule-based, context-independent guidance — and human peers, who offer situated, experience-based knowledge the game's systems cannot replicate. Players communicate *because* the game's guidance alone isn't enough for the raid community's situated needs.

On the object, the activity system functions on two levels. The immediate goal is capturing rare Pokémon, like shiny and legendary ones in raids. The broader goal is level progression through experience and resources, eventually reaching Level 40 with privileges like Player Nomination and gym leadership. This dual structure keeps players engaged: the immediate goal motivates each session, while the long-term goal encourages sustained participation and learning. In AT terms, the object is a dynamic motive that organizes and gives meaning to the system's components (Leont'ev, 1978).

Discussion

The findings reveal a Pokémon Go activity system in which six interconnected components influence one another. It emphasizes three themes: how game knowledge develops from both spontaneous and scientific ideas, the roles of ZPD and distributed mediation in learning, and how game-specific language acts as a mediating artifact that reflects and supports the system's structure.

From Spontaneous to Scientific Knowledge: The Dialectics of Game Learning

A key insight of the AT framework is that learning in the Pokémon Go activity system begins well before a player installs the app. The observable expertise of the vlog's subject—such as his quick recognition of item types, Pokémon attributes, and strategic priorities—demonstrates a dialectical process. This process involves a relationship between spontaneous knowledge gained through prior engagement with the Pokémon franchise and the scientific systems that the game's design makes explicit and systematic. Research by Sylvén and Sundqvist (2012) on extramural gaming shows a similar pattern, where players develop functional lexical skills through informal play, which are later organized through community interaction and reflection—precisely the spontaneous-to-scientific development described by Vygotsky (1978).

This dialectical process is evident in the player's use of game-specific language. When they effortlessly use terms like *IV*, *shiny*, or *legendary* without explanation, it shows that these scientific ideas have been fully internalized — having moved, according to Vygotsky, from the intermental to the intramental level. The Pokédex serves as an effective mediating tool in this transformation: it organizes the player's empirical interactions with Pokémon into a hierarchical, relational knowledge framework — exactly the shift from spontaneous to scientific understanding described by Vygotsky. The game not only rewards knowledge but also, through its design, creat*es* the conditions needed for developing scientific concepts.

Distributed Mediation and the Zone of Proximal Development

The AT framework shows that the ZPD in Pokémon Go is not limited to a single dyadic relationship but is distributed across the activity system, mediated through multiple overlapping channels. Three distinct mediating relationships correspond to different nodes of the activity system triangle.

The first channel involves the game's official instructional structure. Professor Willow leads the player through task sequences that gradually introduce new concepts and methods. At 5:55, the player attempts a task requiring knowledge they haven't yet mastered, exemplifying the ZPD concept. Gym leaders serve a similar role in combat, offering advice on type-effectiveness matchups beyond the player's current strategic understanding. In both instances, the guidance comes through automated, non-human systems—what the role division describes as formal advisory functions. Reinhardt (2019) describes these advisory frameworks as scaffolded learning environments mirroring pedagogical principles rooted in sociocultural theory.

The second channel is peer mediation in the offline raid community. In the video, the player asks a peer which Pokémon would boost his combat power, showing peer-mediated ZPD. This interaction highlights a contradiction: the game's formal guidance offers general rules, but peers provide specific, contextual knowledge that algorithms can't supply. The player seeks peer help where formal guidance falls short. This tension between formal and informal knowledge channels makes peer communication essential to the activity system.

The third channel is the collective ZPD emerging from the raid community (Moll & Whitmore, 1993). No single player can defeat a legendary raid boss alone—it's a structural feature of the game. The raid boss exceeds any player's independent zone, requiring a community where players' ZPDs interrelate and scaffold. The real-time negotiation of strategy, roles, and Pokémon is essential: without communication, the collective ZPD and the goal cannot be achieved. Hung and Yuen (2010) noted similar structures in collaborative game-based learning, where shared objects beyond individual ability foster language use and conceptual growth.

Language as Mediating Artifact: The Game-Specific Register

The key finding involves language as a mediating artifact in the Pokémon Go activity system. As the framework suggests, language serves as a tool for coordinating social activity and as a semiotic system that conveys meaning (Lee, 2000; Wertsch, 1991). The game-specific lexicon exemplifies these functions. Table 3 lists key terms, their meanings, and the AT component each primarily mediates.

Table 3: Game-Specific Language as Mediating Artifacts in Pokémon Go

Term	Semantic Content	AT Component Mediated	Function in Activity
Shiny	Rare color variant; highly valued within the community	Object / Community	Encodes shared value system; signals desirability and rarity
IV (Individual Value)	Statistical measure of a Pokémon's combat strength (0–100 scale)	Tools / Object	Encodes strategic evaluation criteria; mediates tool selection decisions
Gym	Physical location for team-based combat and territorial control	Rules / Community / Division of Labor	Encodes team affiliation and territorial rules; organizes community interaction
Raid	Time-limited collaborative boss battle at a gym location	Rules / Community / Object	Encodes conditions for collective participation and the activity's central object
Pokéstop	Physical landmark for item acquisition; activated by spinning	Tools / Rules	Mediates relationship between physical space and game resources
Pokédex	In-game database cataloguing all encountered Pokémon with their attributes	Tools / Object	Systematizes spontaneous knowledge into scientific conceptual structure

Several features of this lexicon merit analysis. First, terms differ from everyday language, even if they look similar. For example, 'gym' signifies rules about team affiliation, community structure, and the roles of defenders and challengers. Using the term correctly means understanding the relational structure it encodes. Learning this 'Discourse' involves more than vocabulary; it includes thinking and acting patterns that the vocabulary reflects, as described by Gee (2003).

Second, the lexicon acts as a community boundary marker. Terms like *shiny*, *IV*, and *raid* are unintelligible outside the community — used without explanation among experienced players, signaling shared membership and expertise. This aligns with Wenger's (1998) idea that shared repertoire defines communities of practice: their specialized vocabulary results from participation and sustains it. In Pokémon Go, language is not just an output of learning but *evidence* and a means of community reproduction. Steinkuehler (2006) argued that acquiring specialized discourse is both the medium and outcome of community participation in online gaming.

The AT framework uncovers a productive contradiction in the game's language. Many terms encode tensions between formal rules and community practices. For example, "shiny" refers to Pokémon that are rare by rule but gain value through community admiration. The value of a shiny Pokémon depends on both the game's algorithm and community desirability, creating a contradiction. Language serves as the medium for negotiating this tension.

The Pokémon Go Activity System: An Integrated Analysis

Figure 2 illustrates the activity system triangle as applied to Pokémon Go in this study. Read in a dynamic manner — as AT advocates — it uncovers the relational structure that facilitates learning and language production

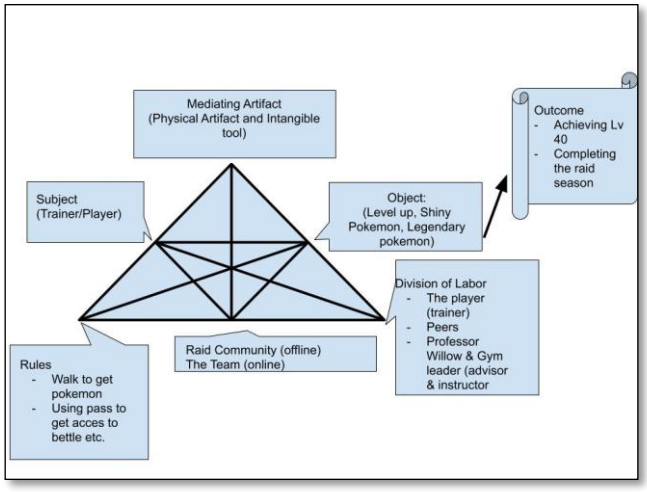

Figure 2: AT model in Pokémon Go

Three key systemic relationships are highlighted. First, the bidirectional link between mediating artifacts (tools/language) and the subject influences what the subject can know and do; active use of tools reproduces and extends their meaning within the community. Second, the relationship between rules and community involves productive tension: formal rules shape community formation, while the community develops informal norms that sometimes bypass rules. Third, the dynamic between community and division of labor sees roles shift as players gain expertise, moving from peripheral participation to more central, instructional roles (Lave & Wenger, 1991). Language plays a central role in all three, mediating understanding, negotiation, membership, and roles. Although the data source was the video showing interaction between players who are likely native English speakers, due to the nature of the game mechanics, as an online mobile multiplayer game, players who are not native to English will surely develop their linguistic skills due to the necessity of engaging in interaction to move forward in the game.

The outcomes observed in the vlog data — such as successfully capturing three legendary Pokémon and their shiny variants, along with the subject reaching Level 40 — are best understood as products of the activity system operating in harmony. The player's ability to catch legendary Pokémon shows that he has internalized the rules, learned the specialized vocabulary, played appropriate roles within the division of

labor, and actively participated in the community's knowledge-sharing practices to coordinate collective action effectively. Achieving Level 40 is a related but distinct outcome: it unlocks roles that are inherently instructional and help organize the community. In AT terms, the subject moves from the periphery toward the center of the community of practice, becoming a more knowledgeable other for future newcomers (Lave & Wenger, 1991) — reproducing the social structure that makes learning possible for others in the future.

CONCLUSION

This study uses Engeström's (1987, as cited in Cole & Engeström, 1993) Activity Theory to analyze language production and learning in Pokémon Go. It identified all six components of the activity system as observable and productive within the game, revealing that these components form an interlinked system where tensions foster learning and language use. Three main findings emerge: first, learning in Pokémon Go progresses dialectically from spontaneous to scientific understanding, mediated by game tools, community support, and specialized language; second, the Zone of Proximal Development (ZPD) is distributed across the system, seen through instructional design, peer mediation, and collaborative raid events; third, game-specific language acts as a key mediating artifact, encoding rules, values, community ties, and strategic knowledge in a condensed form. Mastery of this language is inseparable from community participation—language and practice mutually shape each other.

These findings expand the applications of Activity Theory (AT) in two ways. First, they show AT's effectiveness in mobile augmented reality gaming, such as Pokémon Go, which blends virtual and physical spaces—an aspect that earlier frameworks did not fully address. Pokémon Go's rules control real-world behavior, while tools and community operate across physical and digital domains, fitting AT's model of mediated, tool-based, collective activity better than individual-focused frameworks (Kaptelinin & Nardi, 2006). Second, the findings broaden the understanding of language within AT. While language is seen as a mediating artifact (Wertsch, 1991), its role as a community boundary marker and in expressing embedded contradictions has been less explored. Analyzing Pokémon Go's language reveals it is more than a coordination tool; it is a semiotic system that encodes, reproduces, and challenges the activity's structure—relevant to researchers studying digital communities (Lantolf & Thorne, 2006; Thorne, 2008).

Implication

For language educators, game communities are underused sites for authentic language development. The demands of raid participation—real-time coordination, peer sharing, and register learning—align with sociocultural theory's ideal conditions for language learning: purposeful, community-based communication (Lantolf, 2000; Reinhardt, 2019). Educators and curriculum designers should consider the activity system's structure, not just game motivation or vocabulary delivery.

For researchers using AT in digital and gaming contexts, the study highlights the importance of examining contradictions within activity systems. The two identified contradictions—the gap between formal game architecture and informal community knowledge, and between online competition and offline cooperation—shaped language use. Future AT research should focus on contradiction analysis as a key strategy (Engeström, 1987, as cited in Cole & Engeström, 1993).

Limitation and Direction for Future Study

This study has limitations, primarily relying on a single gameplay vlog by an experienced player, limiting generalizability and excluding novice players and varied community contexts. The vlog doesn't capture all interactions, especially verbal exchanges at raid locations. The researcher's dual role as analyst and player may bias interpretations. Future research should include direct observation, interviews, and online platform analysis for a fuller understanding of language use and learning in Pokémon Go system.

Several future research directions emerge from this study. Applying AT to other mobile AR games, including those for language learning, would enable comparison of how different activity system setups influence language production. Ethnographic or mixed-method studies with observation and interviews could reveal communicative dynamics that video analysis cannot fully capture (Boellstorff et al., 2012). Longitudinal research tracking individual players' language development within game communities would provide evidence for the spontaneous-to-scientific trajectory identified here as a structural feature of the activity system. These studies could strengthen understanding of digital game communities as sites of language development, increasingly relevant as gaming becomes more integrated into social life.

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Conflicts of Interest

The authors declare no conflict of interest

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