

## Code-Switching in Online Gaming: Sociolinguistic and Linguistic Patterns Among Jordanian PUBG Players

Rania Alnadi<sup>1</sup>

### Abstract

*This study investigates code-switching (CS) between Jordanian Arabic (JA) and English in the conversations of young Jordanian gamers playing PlayerUnknown's Battlegrounds (PUBG). The research explores the types of CS present in gaming discourse, specifically alternational, insertion, and congruent lexicalization, and examines the sociolinguistic motivations underlying these practices. The analysis reveals that while Jordanian Arabic dominates the conversations, English is predominantly inserted in the form of individual words or short phrases, particularly in relation to gaming-specific vocabulary. Insertion CS is the most common type, reflecting bilingual asymmetry, with English used for technical terms and gaming jargon. Alternational CS, involving switches at the clause or sentence level, occurs less frequently but is used to emphasize points or address globally recognized gaming concepts. Additionally, congruent lexicalization shows how English terms are integrated into the Arabic syntactic structure. The findings suggest that the players' code-switching behavior reflects both their cultural identity and alignment with the global gaming community. The use of English not only facilitates communication within the international gaming environment but also signals affiliation with a transnational digital culture. The study highlights the role of English proficiency, influenced by age and exposure to English media, in shaping bilingual communication strategies. This research contributes to the understanding of code-switching in online gaming and offers implications for language learning, particularly through gaming platforms, which can serve as informal learning environments for English proficiency.*

**Keywords:** Arabic-English, Bilingualism, Code-Switching, Congruent Lexicalization, Gaming Discourse, Sociolinguistics.

### INTRODUCTION

Language interaction transcends time and space, reflecting the dynamic nature of communication in a globalized world. In Jordan, English holds a significant position alongside Arabic, shaped by cultural exchange and globalization (Aljarelah, 2024). English serves as the medium of instruction in fields like medicine, economics, and computer science and is a mandatory subject throughout formal education (Rose et al., 2022). Many Jordanian parents prioritize their children's English proficiency, considering it a marker of prestige and a gateway to better employment opportunities (Al Khatib, 2022). Since the 1990s, online gaming has become an increasingly prevalent activity, offering unique linguistic environments that facilitate English language acquisition (Sanjaya et al., 2023). Games like *Player Unknown Battlegrounds (PUBG)* provide immersive experiences where English predominates, exposing players to diverse vocabulary and interactive communication, often unconsciously enhancing their language skills (Putra Perkasa & Rahman Nur, 2020).

Code-switching (CS), the practice of alternating between languages, emerges naturally in these gaming interactions. Players seamlessly integrate English words and phrases into their native Arabic during gameplay, reflecting their bilingual competence and the linguistic demands of the gaming environment (Albathi, 2022). However, this phenomenon also brings challenges, as players may struggle to pronounce unfamiliar phonemes or adapt to new linguistic norms, revealing the complexities of bilingual communication (Farhat Jahara & Hussein Abdelrady, 2021). The interplay between English and Arabic within online games like *PUBG* is particularly prominent among Jordanian youth, who frequently use English as a communicative tool to strategize and interact with diverse players across global servers. Despite the growing relevance of such interactions, research on CS in online gaming contexts, especially among Arabic speakers, remains sparse (Alipova, 2024; Putra Perkasa & Rahman Nur, 2020; Shah et al., 2023; Zeroual et al., 2017).

This study aims to fill this gap by exploring the types of CS employed by young Jordanian gamers and examining the sociolinguistic meanings embedded in their language use. By focusing on *PUBG* as a case study, the research

---

<sup>1</sup> Department of English Language and Literature, Jadara University, Jordan. E-mail: raniaturky95@gmail.com

investigates how digital gaming environments influence bilingual practices and provide opportunities for language acquisition. This inquiry is significant as it examines a relatively unexplored domain of CS, offering new insights into the role of digital platforms in shaping linguistic behaviors. The findings contribute to sociolinguistic research and highlight the potential of online games as informal language learning environments. Moreover, the study's focus on Arabic-speaking gamers adds a valuable perspective to the growing body of literature on the intersection of language, technology, and globalization. The results may inform educators, linguists, and policymakers interested in leveraging digital tools for language education, emphasizing the transformative potential of online gaming in fostering bilingualism.

By analyzing the interactions of young Jordanian players, this research bridges a critical gap in understanding CS in digital contexts, positioning online gaming as a key site for linguistic and cultural exchange. It underscores the importance of recognizing the educational and sociolinguistic implications of such platforms, offering practical insights for language learning and policy development in multilingual and multicultural communities.

## **BACKGROUND OF THE STUDY**

Code-switching (CS) has long been a prominent focus of sociolinguistics and psycholinguistics, particularly in studies of bilingualism. In the 1940s and 1950s, it was often regarded as a suboptimal linguistic phenomenon (Yaseen & Hoon, 2017). However, scholarly interest surged after Jakobson (1971) conceptualized it as the alternation between linguistic codes during communication. Vogt (1954) later expanded this understanding by linking it to Weinreich's work on language contact. Despite its early conceptualization, CS emerged as an independent field of study only in the 1990s, largely due to foundational research by scholars like J.-P. Blom & Gumperz (1972). Early investigations focused on bilingual migrants in English-speaking countries but have since expanded to diverse linguistic settings, such as the mixing of English and Arabic by Jordanians for specific communicative purposes.

Scholars define CS in varying ways. Grosjean (2020) sees it as a complete transition between languages to replace a linguistic form, while Bokamba (1988) interprets it as the blending of two grammatical systems within a single speech event. Myers-Scotton's (1993) Matrix Language Frame (MLF) model highlights the dominance of one "base language" in syntactic structures, with elements from a "guest language" embedded. For this study, CS is defined as the alternating use of Arabic and English by young Jordanian players in online gaming contexts, where Arabic serves as the base language and English is integrated to fulfill specific communicative needs. This definition reflects both the linguistic and sociocultural dynamics of these interactions.

Since their inception, video games have evolved from a niche hobby in the 1950s to a global entertainment phenomenon (Adams, 2024). Advances in technology have made online gaming accessible, enabling players worldwide to connect through various devices such as computers and smartphones (Sanjaya et al., 2023). The advent of pay-to-play models and in-game purchases has added complexity to gaming, especially among young users (Lee Teh & Pak, 2021). Among the various gaming genres, massively multiplayer online role-playing games (MMORPGs) stand out for their focus on player interaction, making them immensely popular (Achterbosch et al., 2008). English has become the lingua franca of these games, facilitating communication even among non-native speakers. Research suggests that this linguistic dynamic supports language learning, as players acquire new vocabulary and conversational skills while gaming (Rudis & Pošćić, 2018). Within these interactions, CS frequently occurs as players navigate multilingual environments.

A prime example of a game fostering such cross-cultural communication is PlayerUnknown's Battlegrounds (PUBG), a globally popular battle royale game. In PUBG, up to 100 players are dropped onto a large map where they scavenge for resources and compete to be the last one standing. The game emphasizes individual skill and teamwork, offering modes like solo, duo, and squad play. Its expansive maps and immersive gameplay have cemented its status in the battle royale genre (GooglePlay, 2024). Beyond gameplay, PUBG promotes social interaction through esports tournaments, live streaming, and community engagement, particularly on platforms like Facebook Gaming. Players often use English for real-time coordination and collaboration, reflecting the game's role as a hub for cross-cultural communication and multilingual interaction. PUBG's global

reach, exemplified by over one billion downloads on Google Play (GooglePlay, 2024), underscores its significance as a platform for language integration.

Facebook further enhances the role of CS in gaming through features like live streaming and chat, enabling bilingual users to alternate seamlessly between languages ((Banikalef, Al Bataineh, and Al-Natour 2023). This integration of gaming and social media has made CS a vital tool for communication within games like PUBG and across platforms like Facebook Live (Chou et al., 2023). As online gaming and streaming continue to grow, platforms like Facebook are instrumental in connecting players globally and fostering language and cultural exchange.

This study addresses the gap in research by exploring the types of code-switching employed by young Jordanian gamers in PUBG and analyzing the sociolinguistic meanings embedded in their language use. It examines how players alternate between Arabic and English, focusing on the linguistic patterns, contexts, and functions of code-switching during in-game interactions. By doing so, the study aims to provide insights into how these gamers use language to navigate social dynamics, construct their identities, and engage in cross-cultural communication within the digital gaming environment.

Bloom and Gumperz (1972) identify two main types of CS: situational and metaphorical. Situational CS arises when shifts in participants, topics, or settings influence language choice, while metaphorical CS serves as a communicative strategy to emphasize points, tell jokes, or express refusal. Poplack (1980) further categorizes CS into tag-switching, inter-sentential switching, and intra-sentential switching. Tag-switching involves inserting fillers or tags like “you know” or “يعني” into another language and requires minimal grammatical integration. Inter-sentential switching occurs at sentence boundaries and demands high bilingual proficiency, while intra-sentential switching, the most complex type, integrates multiple languages within a single sentence and is typically employed by highly proficient bilinguals.

Muysken (2000) expands these classifications into alternation, congruent lexicalization, and insertion. Alternation mirrors Poplack’s intra-sentential switching, while congruent lexicalization involves structural overlaps between languages, enabling seamless integration. Insertion refers to embedding elements from one language into the grammatical framework of another, resembling lexical borrowing. These frameworks underscore the diversity of strategies bilinguals use to navigate linguistic choices.

Other related terms enrich the understanding of bilingual language use. Borrowing, as described Hickey (2009), involves adopting lexical items from another language without full code-switching. Translanguaging emphasizes bilingual practices for meaning-making, focusing on flexibility rather than language separation (Lewis et al., 2012). Interference, or transfer, differs from CS as it refers to unintentional deviations caused by language contact (Weinreich, 1953). In contrast, CS is deliberate and reflects a speaker's communicative competence (Beardsmore, 1986).

In light of the intricate interplay between code-switching, online gaming, and cross-cultural communication, a review of the existing literature is essential to situate this study within the broader academic discourse. The following section critically examines previous related studies, highlighting their contributions, limitations, and relevance to the current investigation of code-switching among Jordanian PUBG players. By synthesizing these studies, the review aims to establish a foundation for understanding the linguistic, social, and cultural dimensions of code-switching in online gaming contexts.

## LITERATURE REVIEW

Code-switching (CS) is a key phenomenon in bilingual communication, where speakers alternate between languages depending on social and contextual factors. Several theoretical frameworks, such as Grosjean’s (2020) transition model, Myers-Scotton's (1993) Matrix Language Frame, and Blom and Gumperz's (1972) situational and metaphorical categories, provide insight into the underlying processes and motivations of CS. These theories help explain how bilinguals use language flexibly to navigate various communicative settings. This section reviews these theoretical perspectives, applying them to the emerging context of online gaming, where players like those in *PUBG* frequently switch between Arabic and English for interaction and strategy.

Code-switching (CS) is a multifaceted phenomenon, explored across various disciplines like sociolinguistics, psycholinguistics, syntax, and bilingualism. Foundational works by Poplack (1980) and J.-P. Blom & Gumperz (1972) shaped our understanding of how bilinguals and multilinguals employ CS. In sociolinguistics, studies focus on how language choice varies with social, cultural, and contextual factors. For example, Gumperz's (1972) distinction between situational and metaphorical switching explains how CS can indicate solidarity or social differentiation, while Myers-Scotton (1993) further demonstrates how bilinguals use CS to assert identity or align with particular social groups.

From a syntactic perspective, Poplack (1980) introduced constraints, such as the "Equivalence Constraint" and "Free Morpheme Constraint," which suggest that bilinguals switch codes only when syntactic structures align between languages. However, this model has been critiqued for being overly rigid (Belazi et al., 1994), leading to the development of Myers-Scotton's Matrix Language Frame (MLF) model (1993), which describes how one language (the matrix) dominates the syntactic structure of a code-switched utterance, while the other (the embedded language) contributes lexical elements.

Auer's (1999a; 1999b) conversational approach shifts the focus to the context of communication, arguing that CS should be understood not only through grammatical rules but also in terms of its role in maintaining coherence and signaling social relationships. In bilingual interactions, speakers choose a language based on pragmatic needs, such as emphasizing identity or adjusting to conversational flow. For instance, in Jordan, English often emerges in everyday speech not as a marker of status but as a tool for facilitating communication, particularly in technical or globalized contexts.

These perspectives will help analyze code-switching in specific contexts, like online gaming, where players navigate between languages to address social and conversational dynamics. In conclusion, the theoretical frameworks discussed above provide a comprehensive understanding of code-switching (CS) from sociolinguistic, syntactic, and conversational perspectives. These models highlight the dynamic interplay between language choice and social, cultural, and contextual factors. To further explore how these frameworks manifest in practice, it is crucial to examine related studies that apply these theories to real-world settings, particularly in contemporary environments such as online gaming. The following section reviews relevant studies that explore code-switching in various bilingual contexts, with a focus on digital platforms, to illustrate how players navigate between languages in their interactions and strategies.

### **Related Studies on Code-Switching in Online Gaming Contexts**

Kärnä (2015) examined code-switching (CS) in English-language electronic games, focusing on Finnish bilingual players who communicated with both game characters and other players in English. The study found that while participants, who were not perfect bilinguals, often switched to English for extended utterances, Finnish remained the matrix language. Kärnä concluded that players adapted the game's English vocabulary into Finnish, demonstrating how CS facilitated communication and identity expression in a non-institutionalized context. Eldin (2014) explored CS in Facebook interactions among Arabic-English bilinguals, noting that CS was often used to convey emotions and impress others, with incomplete language proficiency playing a role. Kniaż and Zawrotna (2021) focused on CS in Egypt, examining embedded verbs and identifying four patterns influenced by grammatical factors, thus supporting the validity of Myers-Scotton's Matrix Language Frame (MLF) model. H. Al-Daher (2021) studied CS among Jordanian immigrants in Canada, revealing its sociopragmatic functions, such as humor expression and mitigating embarrassment. Hamouda (2015) explored CS in an Egyptian TV show, where hosts and guests used it to fulfill functions like euphemism or overcoming lexical gaps, with noun phrases being the most frequently switched components.

Recent studies on CS in online gaming focus on bilingual communication in digital environments. Yus (2021) and He (2022) investigate CS in massively multiplayer online games (MMOs), where players switch languages to enhance social interactions or convey strategies. Yus (2021) explores CS in Spanish-English bilingual settings, emphasizing its role in signaling group membership and fostering a shared in-game identity. Similarly, He (2022) examines Mandarin-English CS in Chinese gaming communities, highlighting its role in balancing global gaming norms with local cultural expressions. These studies demonstrate the multifaceted role of CS in gaming, reinforcing social bonds and group dynamics. Platforms like Discord and Twitch also provide real-time

bilingual communication, offering insights into how CS evolves in gaming communities (Kaufer and Carney 2023).

In Jordan, recent studies have explored CS in university settings and popular media. Al-Ma'aytah et al. (2024) focused on university students, showing that CS serves as a tool for social and academic success. Al-Zoubi & Al-Tamimi (2023) examined CS in Jordanian satire, revealing its role in critiquing social issues and reinforcing linguistic identity. These studies reflect the socio-pragmatic functions of CS in Jordanian contexts.

This study on CS in online gaming, specifically in the Jordanian context, extends previous research on bilingual communication in digital environments. While studies like Kärnä (2015) and Yus (2020) examined CS in gaming contexts across different languages, this study explores how Jordanian players use CS in online games like PUBG. It builds on findings by Al-Ma'aytah et al. (2024) and Al-Zoubi and Al-Tamimi (2023), who have shown how CS functions as a tool for social interaction and identity expression in Jordan. By focusing on online gaming, this study contributes to the understanding of CS in the emerging context of multilingual gaming communities, where language choice influences both social dynamics and strategic interaction. Thus, the current study situates itself within a broader framework of bilingual communication in digital contexts, extending these insights to the evolving world of online gaming.

## METHOD

### Research Design and Data Collection

This study employs a descriptive qualitative research method to explore the patterns of code-switching (CS) in the speech of two Jordanian streamers playing PUBG Mobile. The primary focus is on how the participants integrate the game's English content into their conversations in Jordanian Arabic, demonstrating their bilingual abilities. The study examines whether the bilingualism exhibited by the participants serves functional purposes in the context of live-streamed gameplay.

Data was collected from live-streamed sessions, observed over 32 days, where participants interacted with other players. The data consists of 15 carefully selected dialogue excerpts that feature instances of CS. The interactions, which are primarily in English due to the nature of the game, are supplemented by the participants' commentary in both English and Jordanian Arabic. This study analyzes the participants' use of English in-game content and their conversational shifts to Jordanian Arabic, observing how these bilingual interactions serve as a tool for communication and identity expression during the gameplay. The inclusion of a "face cam" in the live streams allows for the examination of non-verbal communication, such as gestures and facial expressions, which provide further context to the language use.

The study is based on live-stream data from two Jordanian streamers: Abdullah (Abod), a 14-year-old male with over 6 million Facebook followers, who streams PUBG daily to a large audience, and Alaa, a 19-year-old female with over 5,000 followers, who has been streaming since 2018. Both streamers have at least seven years of formal English education and use both Arabic and English throughout their streams. Their interactions with their viewers and fellow players provide a rich source of data for examining the types and functions of code-switching in an online gaming environment.

### Data Analysis

The analysis of the data follows a qualitative approach, informed by the theoretical framework of Code-Switching (CS) and the Matrix Language Frame (MLF) model proposed by Myers-Scotton (1993). The data, consisting of live-stream videos from two Jordanian PUBG Mobile streamers, was transcribed and analyzed to identify different patterns of CS. Specifically, the analysis is guided by the understanding that CS, as a bilingual phenomenon, can serve a range of sociolinguistic functions, including identity negotiation, group solidarity, and discourse management (Gumperz, 1982; Gardner-Chloros 2009).

The video clips, selected based on the frequency and relevance of CS, were examined in light of the Matrix Language Frame model, which helps classify and analyze how different languages interact in bilingual discourse. This model posits that in a bilingual conversation, one language typically serves as the "matrix" language (often the syntactic framework), while the other functions as an "embedded" language (Myers-Scotton, 1993). By

categorizing each instance of CS within these two roles, we can better understand how the participants navigate between English and Jordanian Arabic during gameplay.

In addition to syntactic considerations, the sociolinguistic implications of CS were also considered. This includes understanding how bilingual streamers use CS for functions such as reinforcing social bonds, signaling group identity, and expressing emotions (Auer, 1999; Blom & Gumperz, 1972). The analysis also considers the pragmatic motivations behind CS, such as clarifying game-related terms, overcoming lexical gaps, and addressing diverse audiences (Kiesling 2004).

Thus, the data analysis follows a two-step process: first, identifying and categorizing the types of CS according to the MLF model, and second, interpreting these instances in terms of their sociolinguistic functions within the gaming context. This approach enables a comprehensive examination of how CS operates both at the level of linguistic structure and social interaction, as well as how it reflects the broader digital gaming culture in Jordan.

## RESULTS

The researcher applies Pieter Muysken's (1995, 1997) models of code-switching, particularly the concepts of congruent lexicalization and alternation, to analyze how bilinguals switch between languages. Congruent lexicalization occurs when languages share syntactic structures, allowing words or phrases from one language to be inserted into the grammatical framework of another. Alternation, on the other hand, involves switching languages at a higher discourse level, often at the level of entire clauses or sentences. In addition to Muysken's framework, the Matrix Language Frame (MLF) model (Myers-Scotton, 1993) is employed to explore how the matrix language (Jordanian Arabic) governs the grammatical structure, while content words, primarily borrowed from English, are inserted from the embedded language.

These frameworks provide a nuanced understanding of how bilinguals in gaming contexts leverage their linguistic resources, blending English and Arabic to communicate effectively and efficiently within the global gaming community. The instances of code-switching in the analyzed data not only reflect the linguistic capacities of the participants but also reveal their social motivations. These motivations include identity signaling, cultural affiliation, and active participation in the global gaming community, where English often dominates as the *lingua franca*.

The researcher examines code-switching (CS) in the context of conversations from livestream gaming videos, analyzing instances through various types of CS and their communicative functions. The examples below are categorized into insertion CS, congruent lexicalization, and alternation CS, illustrating the interplay between English and Jordanian Arabic in the gaming discourse.

### Insertion Code-Switching (CS)

Insertion CS occurs when foreign lexical items are inserted directly into the structure of the matrix language (in this case, Jordanian Arabic), without changing their form. This type of code-switching is commonly used in gaming, where English terms, particularly those related to gaming, technology, or global culture, are frequently borrowed due to a lack of equivalent terms in Arabic.

- **Example 1:** "*Biddi ʔalʔab maʔ tiimak*" ("I want to play with your team") and "*Okay, bas xayef tetlaʔ boot*" ("Okay, but I am afraid you are a bot").

In this example, "teamak" (your team) is congruently lexicalized in Jordanian Arabic, as the English word "team" is incorporated into the Arabic structure with the possessive suffix "-ak." On the other hand, "boot" (referring to a non-professional player) is inserted directly from English, remaining unmodified. This illustrates how English terms are seamlessly integrated into the Arabic discourse, reflecting a linguistic asymmetry where English is used to convey more specific or technical meanings.

- **Example 2:** "*Fi tiim bushby*" ("There is a team pushing to me") and "*Okay, xod kavar*" ("Okay, take cover").

The words "team," "bush," and "kavar" (cover) are inserted into the Arabic sentence without any morphological changes. These terms, commonly used in gaming contexts, are borrowed from English because they are more efficient in conveying complex gameplay actions, such as "bush" (a tactic to advance or rush enemies) and "cover" (to protect oneself in the game). This is a typical example of insertion CS, where English terms fill gaps in the Arabic lexicon, especially in specialized fields like gaming.

- **Example 3:** "*ʔaʕiini skoop*" ("Give me a scope") and "*maʕi kol skoopat, ʔay skoop beddak?*" ("I have all types of scopes, which one do you want?"). The term "skoop" is borrowed directly from English, and the Arabic plural suffix "-at" is added to make it "skoopat" (scopes). The insertion of "scope" into Arabic discourse without changing its form exemplifies how English terms are used to efficiently describe gaming-specific equipment that may not have a direct Arabic equivalent. In this context, insertion CS helps players to communicate quickly and accurately, highlighting the linguistic economy in bilingual discourse.

Insertion CS, therefore, serves the dual purpose of bridging lexical gaps and maintaining communicative efficiency. English, as a global language, provides a repository of gaming-related terms, reflecting its dominance in the gaming community and the global nature of the discourse ((Pennycook, 2006)

### Congruent Lexicalization

Congruent lexicalization happens when lexical items from both languages fit within the syntactic rules of the matrix language. In this case, English terms are adapted to the Arabic syntactic structure, allowing them to blend seamlessly without disrupting the overall grammatical integrity of the sentence.

- **Example 4:** "*Sammek bisorʕab*" ("Throw smoke immediately") and "*dagiigab ʔana imlagleg*" ("Wait a minute, I am lagged").

Here, the term "smoke" is adapted into Arabic as "sammek," and "lagged" is modified into "imlagleg" in Arabic. Both terms retain their meaning but are integrated into the Arabic sentence with Arabic grammatical morphology. This demonstrates congruent lexicalization, where English words are adjusted to fit Arabic's grammatical rules. The use of English terms is justified by their specific meaning in the context of gaming, but the structure remains entirely Arabic.

- **Example 5:** "*shootoh, shootoh*" ("Shoot him, shoot him") and "*mish ʕaref, eemi Sayer byexʕi*" ("I can't, my aim is not good").

In this example, the verb "shoot" is adapted with the Arabic suffix "-oh" to form "shootoh," meaning "shoot him." Similarly, "aim" is adapted with the suffix "-i" to become "aimi," meaning "my aim." These English words are modified by Arabic inflections, showing how bilingual speakers can maintain syntactic cohesion while incorporating foreign terms. The ability to mix languages at the morphological level without causing disruption highlights the flexibility and fluency of bilingual speakers.

- **Example 6:** "*Malak mutet?*" ("Why did you die?") and "*muhunweb hacker*" ("Because he is a hacker").

The term "hacker" is borrowed directly from English and integrated into the Arabic phrase. In this case, "hacker" is a global term that fits within the Arabic structure, representing a concept related to gaming culture. Its seamless integration without changing its form reflects congruent lexicalization, showcasing how bilinguals blend languages when there is no need for significant syntactic restructuring (Muysken 2000).

Congruent lexicalization in gaming contexts reflects the syntactic compatibility of English and Arabic. In many cases, the integration of English terms into Arabic structures does not require any alteration in the sentence's overall grammatical structure. This flexibility suggests that bilingual speakers possess a high degree of linguistic competence, enabling them to switch between languages without disrupting the integrity of either language.

### Alternation Code-Switching (Alternation CS)

Alternation CS occurs when bilingual speakers switch languages at a higher discourse level, typically between entire clauses or sentences. This type of CS is often used to signal emphasis, clarify complex ideas, or refer to global terms that are more easily understood in one language than the other. Alternation can be seen as a marker of cultural and social identity, reflecting the speaker's relationship with both languages and the broader community.

- **Example 7:** *"ʔakalit and, let's play again"* ("I ate, and let's play again"). In this instance, the switch from Arabic to English occurs mid-sentence, where the entire phrase "let's play again" is in English. This type of alternation highlights the ease with which bilinguals navigate between languages, depending on the communicative context. The switch to English is used here to emphasize the desire to continue the game, marking a shift in both language and focus.
- **Example 8:** *"my server is Asia, shu ʔinta?"* ("My server is in Asia, what is yours?"). The use of "my server is in Asia" as an English clause is an example of alternation CS, where the term "server" and the phrase "in Asia" are considered globally understood concepts. Switching to English here signifies the global nature of online gaming, where such terms are universally recognized. By using English, the speaker signals both fluency and alignment with the international gaming community (Pennycook, 2006). The shift in language also emphasizes the specificity of the term "server," which may not have a precise equivalent in Arabic.

Alternation CS, thus, serves a strategic function, allowing bilingual speakers to navigate complex, globalized domains where certain terms are better expressed in one language over the other. This type of switching is often employed for emphasis, as it allows speakers to focus attention on specific ideas, concepts, or actions, demonstrating a high level of bilingual competence.

## DISCUSSION

### **Sociolinguistic Motivations Behind Code-Switching in Gaming Discourse Among Jordanian Arabic Speakers**

The findings of this study suggest that code-switching (CS) in the context of PUBG gaming is influenced by both linguistic constraints and sociolinguistic motivations. For Jordanian Arabic speakers, CS serves not only as an efficient communicative tool but also as a strategic act to express identity, cultural affiliation, and align with global gaming norms (Blom and Gumperz 2020). The role of Arabic-English code-switching is particularly significant in a bilingual community like Jordan, where English is widely spoken, but Arabic remains the dominant language (Al-Ma'aytah et al., 2024). The data collected from native Jordanian Arabic speakers in gaming contexts sheds light on how local and global factors intertwine in bilingual discourse, providing further nuance to the understanding of CS in digital and transnational settings.

### **Insertion Code-Switching: Filling Lexical Gaps and Conveying Specialized Meaning**

Insertion CS is the most frequent form of code-switching observed in the gaming discourse. This form of CS is often employed to fill lexical gaps or introduce specialized meanings that are not readily available in the Arabic lexicon (Albathi, 2022). In the context of Jordanian Arabic, the integration of English terms such as "team," "bot," "scope," and "cover" into the discourse reflects the globalized nature of gaming terminology, where English has become the lingua franca. The prevalence of insertion CS among Jordanian speakers underscores the linguistic asymmetry between Arabic and English in specialized domains like gaming, where the Arabic language may lack the requisite vocabulary for technical terms related to digital gaming culture.

The linguistic flexibility of Jordanian Arabic in accommodating English terms reflects both the pragmatic nature of bilingual speakers and their familiarity with English as a global lingua franca (Al-Zoubi & Al-Tamimi, 2023). In Jordan, where English is taught as a foreign language in schools and widely used in professional and social contexts, bilingual speakers are adept at switching between Arabic and English with ease. This proficiency allows speakers to borrow English terms seamlessly, ensuring that communication remains efficient and clear, especially when discussing complex gaming concepts (S. Yaseen et al., 2021). The ease with which Jordanian



speakers integrate English into Arabic structures can be viewed as a reflection of their bilingual fluency, facilitating not only effective communication but also participation in the global gaming culture.

### **Congruent Lexicalization: Linguistic Compatibility and Cultural Adaptability**

Congruent lexicalization occurs when English terms are integrated into the Arabic sentence structure without disrupting the grammatical flow, which is a notable feature in the analyzed data. This phenomenon is particularly evident in the Jordanian Arabic context, where bilingual speakers exhibit high levels of linguistic competence that allow them to fluidly alternate between the two languages without disrupting the syntactic integrity of the base language. For example, English words like "smoke," "lagged," and "hacker" are adapted to Arabic syntax with little to no alteration, such as the Arabic plural marker on "smoke," which becomes "smokeat."

The ability of Jordanian Arabic to accommodate English terms in this manner highlights the syntactic compatibility between the two languages, particularly in the realm of gaming discourse. This reflects the broader linguistic landscape in Jordan, where bilingualism is common, and the social and cultural adaptation of English into Arabic is routine (BaniKalef & Maros, 2013). Moreover, the ease with which these English terms are adapted to Arabic syntax indicates that bilingual Jordanian speakers possess a high level of proficiency in both languages, demonstrating their cultural and linguistic adaptability. This linguistic fluidity allows them to switch between languages effortlessly, often within the same conversation, without confusing the listener or disrupting the flow of communication.

### **Alternation Code-Switching: Identity Signaling and Cultural Affiliation**

Alternation CS, where entire clauses or sentences are switched between Arabic and English, serves as a key tool for identity signaling and cultural affiliation. This form of CS is particularly relevant in the context of Jordanian gamers, as it reflects both local and global identities (Z. Al-Daher, 2021). In the analyzed data, alternation CS often involves switching between Arabic and English in ways that emphasize global connectivity, emotional states, or personal affiliation with the global gaming community.

For example, the phrase "my server is Asia, shu ?inta?" ("My server is in Asia, what is yours?") reflects a global gaming orientation, where players not only use English for its technical specificity but also align themselves with the larger, transnational gaming network. This type of alternation is common in Jordan, where English is not just a foreign language but also a marker of international engagement, particularly in digital and online spaces (Al-Ma'aytah et al., 2024). The alternation between languages in this context is both a communicative strategy and a cultural practice, allowing speakers to situate themselves within the broader global gaming community while maintaining their local linguistic and cultural identity.

Furthermore, alternation CS is employed as a means of emotional emphasis or signaling particular states of mind. In the Jordanian context, where social identity and cultural affiliations are of paramount importance, switching between languages enables speakers to express nuanced emotions, attitudes, and personal stances more effectively. For instance, when a gamer switches to English for emphasis or to make a point clearer, it may signal frustration, excitement, or the need to assert their identity within the global gaming community.

### **The Dynamic Interplay Between Local and Global Influences in Gaming Discourse**

The analysis of code-switching in livestream gaming conversations reveals the dynamic interplay between English and Jordanian Arabic. For Jordanian speakers, CS serves as a strategic tool for both communication and identity expression (Algweirien et al., 2024). The study shows that code-switching is not merely a necessity but a conscious choice influenced by several factors, including the need for effective communication, the desire to align with global gaming norms, and the expression of a local identity in the global digital space.

The findings also suggest that the bilingual nature of Jordanian speakers plays a significant role in shaping their code-switching behaviors. As Jordanian Arabic is deeply embedded in the local culture, it serves as a means of signaling local identity, while English facilitates engagement with global gaming communities. This dual

linguistic orientation allows bilingual speakers to navigate between local and global identities, depending on the communicative context and the social functions they wish to achieve.

### **Linguistic Flexibility in Gaming Discourse**

Insertion CS is the most prevalent form of code-switching among Jordanian Arabic speakers in gaming discourse. This is consistent with previous studies, which show that bilinguals often use insertion CS to borrow technical terms or words that lack direct equivalents in their primary language (Myers-Scotton, 1993; Muysken, 1995). In the case of Jordanian speakers, English serves as the repository for specialized gaming vocabulary, reflecting the influence of global gaming culture, where English terms have become standardized. The frequent use of terms like "team," "bot," and "cover" underscores the global dominance of English in the gaming world, where such terms are universally understood across linguistic boundaries.

Moreover, the use of insertion CS reflects the linguistic economy of bilinguals. In a fast-paced gaming environment, where quick communication is essential, bilingual speakers opt for the most efficient terms available. For Jordanian speakers, English provides an expedient solution to lexical gaps, reinforcing the global dominance of English in the gaming sphere and highlighting the role of bilingual speakers as active participants in this globalized culture (Pennycook, 2006).

### **Social Motivations and Identity Expression**

The findings suggest that bilingual speakers engage in code-switching as a tool for negotiating identity and signaling cultural affiliation. In Jordanian Arabic gaming discourse, the mixing of English and Arabic reflects the negotiation of both local and global identities. Arabic serves as the primary language for day-to-day communication, while the strategic use of English enables speakers to express their connection to the global gaming community. This process of identity negotiation is not unique to Jordan but is indicative of the broader phenomenon of bilingual speakers using language to project multiple aspects of their social identity ((Holmes & King, 2017).

Furthermore, the widespread use of English in gaming underscores the role of language as a form of cultural capital. As English dominates the global gaming landscape, bilingual speakers in Jordan recognize the value of using English to signal their participation in a larger, transnational network. This aligns with the concept of linguistic capital, where proficiency in English provides access to global networks and cultural resources, allowing speakers to engage fully in the digital world (Canagarajah 2006).

This study of code-switching in livestream gaming conversations provides valuable insights into how Jordanian bilingual speakers navigate their linguistic resources within a globalized digital context. The data reveal that code-switching is not merely a linguistic necessity but a strategic practice that facilitates communication, enables cultural expression, and helps speakers negotiate multiple identities. By seamlessly switching between Arabic and English, Jordanian speakers engage in a dynamic interplay between local and global languages, reflecting the complex role of language in identity construction and social affiliation in the digital age.

Moreover, the impact of globalization is evident in the ways Jordanians employ English as part of their gaming discourse. As English becomes increasingly dominant in global media, entertainment, and technology, gaming serves as a significant domain where bilingual Jordanians are exposed to English-language content. This exposure, coupled with the global nature of online gaming communities, has contributed to a shift in the linguistic practices of Jordanian gamers. The widespread use of English in the gaming world not only reflects global trends but also influences Jordanians' ability to integrate English into their everyday speech, thereby enhancing their English proficiency. In this context, the need to communicate with a global network of players makes English indispensable in gaming contexts, further solidifying its role as the language of the gaming community.

Furthermore, the practice of code-switching reflects a broader social and cultural shift in the formation of identity among Jordanian gamers. As they navigate between Arabic and English, they simultaneously negotiate their local identity as Jordanian Arabs and their affiliation with a global, digitally connected gaming community. The use of English, particularly in gaming environments, has become a marker of global membership, offering Jordanian speakers a way to assert their participation in a transnational, digital culture. This phenomenon highlights the complex relationship between language, identity, and globalization, where English serves not only as a practical tool for communication but also as a symbol of access to global cultural capital.

Ultimately, these findings suggest that gaming, as a globalized activity, plays a crucial role in shaping English proficiency and identity among Jordanians. It fosters a sense of belonging to both local and global communities. In this way, code-switching emerges as a multifaceted practice that reflects the intertwining of linguistic resources, cultural engagement, and personal identity in the digital age.

## CONCLUSION

This study examines the use of code-switching (CS) between Jordanian Arabic (JA) and English in the conversations of young Jordanian gamers playing *PlayerUnknown's Battlegrounds* (PUBG). The primary aim was to explore the types of code-switching utilized in gaming discourse, including alternational, insertion, and congruent lexicalization, while also examining the sociolinguistic implications underlying these language practices.

The findings indicate that Jordanian Arabic predominates in the majority of conversations, with English being predominantly integrated into the discourse in the form of single words or short phrases. The most common form of code-switching observed is insertion CS, wherein English terms are seamlessly incorporated into Arabic speech. This practice reflects a bilingual asymmetry, with English typically used for technical or gaming-specific vocabulary, demonstrating a higher proficiency in English among the players. This pattern aligns with previous studies on bilingualism, which suggest that language dominance is influenced by exposure to specialized content and the need for precise communication (Muysken, 2000; Myers-Scotton, 1993).

Alternational CS, involving switches at the level of clauses or sentences, was less frequent but occurred primarily when players transitioned to English to emphasize points or discuss globally recognized gaming terminology. This form of code-switching suggests a higher level of bilingual competence, particularly in English. Additionally, congruent lexicalization, where English and Arabic terms are blended without disrupting the syntactic structure of the sentence, was also observed. This finding supports Myers-Scotton's (1993) notion that bilingual speakers exhibit flexibility in adapting linguistic elements from both languages without causing significant structural disruption.

Sociolinguistically, the code-switching behavior observed among the players appears to reflect both their cultural identity and alignment with the global gaming community. English is often employed in contexts that highlight the international nature of gaming, particularly when discussing gameplay mechanics or team strategies. The use of English not only facilitates communication within the global gaming community but also acts as a form of identity signaling, indicating the players' affiliation with a transnational, digital network (Pennycook, 2006).

Furthermore, the study suggests that code-switching patterns are influenced by the players' varying levels of English proficiency, which is often linked to factors such as age and educational background. Younger players, who are typically exposed to English through gaming interfaces and social media, demonstrate more fluid bilingualism, switching effortlessly between Arabic and English as the context demands. This proficiency enables them to naturally incorporate English terms into Arabic sentences, reflecting a high degree of linguistic competence and sociolinguistic dexterity.

In conclusion, the findings underscore the significance of bilingualism in gaming contexts, demonstrating that code-switching serves as both a linguistic tool and a social strategy. The ability to fluidly alternate between Arabic and English not only reflects the players' linguistic competence but also their engagement with the broader, globalized gaming community. This study adds to the growing body of research on code-switching,

particularly in digital and online spaces, and offers valuable insights into the social and communicative functions of bilingualism in interactive environments.

Moreover, the study suggests that online games, often viewed as recreational, can serve as powerful tools for language learning. In particular, they offer opportunities to expand vocabulary and enhance linguistic skills, especially in terms of technology and global communication. Educators could consider leveraging gaming platforms as informal learning environments to teach English, particularly in regions where exposure to English is limited.

By integrating both grammatical and sociolinguistic perspectives, this research fills a gap in the current literature on code-switching in online gaming. Future studies could further explore the distinctions between code-switching and linguistic interference, particularly in educational settings or formal classrooms. Additionally, future research could investigate how code-switching practices in gaming differ across various age groups or geographical regions, contributing to a broader understanding of bilingualism within global digital cultures.

## REFERENCES

- Achterbosch, L., Pierce, R., & Simmons, G. (2008). Massively multiplayer online role-playing games. *Computers in Entertainment*, 5(4), 1–33. <https://doi.org/10.1145/1324198.1324207>
- Adams, J. (2024, October 28). Gaming for Fun: The Evolution of Video Games as Entertainment. *Armchairarcade*. <https://armchairarcade.com/perspectives/2024/10/28/gaming-for-fun/#prettyPhoto>
- Al Khatib, A. J. (2022). The Level of Involvement of Jordanian Parents of Kindergarten Children and Its Relationship to Parents' Gender and Educational Qualification. *Child Care in Practice*, 28(4), 708–720. <https://doi.org/10.1080/13575279.2020.1848800>
- Albathi, F. S. (2022). Arabic-English Code-Switching in the Saudi Video Gaming Community: A Sociolinguistic Perspective. *International Journal of English Linguistics*, 12(6), 25. <https://doi.org/10.5539/ijel.v12n6p25>
- Al-Daher, H. (2021). Sociopragmatic Functions of Code-Switching Among Jordanian Immigrants in Canada." *Journal of Pragmatics and Discourse* 45 (4): 477–487. *Journal of Pragmatics and Discourse* , 45(4), 447–487.
- Al-Daher, Z. (2021). Code-Switching to English amongst Arabic-speaking Jordanians in Canada \*. *Jordan Journal of Modern Languages and Literatures*, 13(3), 477–499. <https://doi.org/10.47012/ijmll.13.3.7>
- Algweiriien, H., Al-Quran, M., & Al-Khawaldeh, N. (2024). Diglossic Code-Switching Phenomenon in Jordanian Newspaper Satirical Articles. *GEMA Online Journal of Language Studies*, 24(1), 114–133. <https://doi.org/10.17576/GEMA-2024-2401-07>
- Alipova, A. (2024). Evaluating the Effectiveness of Gaming Practices in Enhancing Computer Science Terminology Learning among Primary School Students. *International Journal of Information and Education Technology*, 14(6), 865–875. <https://doi.org/10.18178/ijiet.2024.14.6.2112>
- Aljarelah, A. K. (2024). Language And International Communication the Impact of Language on International Understanding and Diplomatic Relations. *The American Journal of Social Science and Education Innovations*, 6(6), 144–175. <https://doi.org/10.37547/tajssei/Volume06Issue06-23>
- Al-Ma'aytah, M., Al-Tamimi, M., & Al-Qudah, Ahmad. (2024). Code-Switching as a Tool for Social and Academic Success Among Jordanian University Students. *Journal of Education and Social Science* , 36(1), 78–91.
- Al-Zoubi, M., & Al-Tamimi, M. (2023). Code-Switching in Jordanian Satirical Discourse: Language, Power, and Identity. *Journal of Arabic and Media Studies* , 15(2), 115–130.
- Auer, P. (1999a). From codeswitching via language mixing to fused lects: Toward a dynamic typology of bilingual speech. *International Journal of Bilingualism*, 3(4), 309–332.
- Auer, P. (1999b). From codeswitching via language mixing to fused lects: Toward a dynamic typology of bilingual speech. *International Journal of Bilingualism*, 3(4), 309–332.
- BaniKalef, A. A., & Maros, M. (2013). *Apology Strategies of Jordanian Learners of English*. Penerbit UKM.
- Banikalef, A., Al Bataineh, K., & Ali Al-Natour, M. (2023). Protest in the Digital Era: A Critical Analysis of Facebook Posts of the Fourth Circle Protests in Jordan. *Journal of Language Teaching and Research*, 14(4), 1073–1082. <https://doi.org/10.17507/jltr.1404.26>
- Beardsmore, H. (1986). *Bilingualism: Basic Principles* (2nd ed.). *Multilingual Matters*.
- Belazi, H., Rubin, E., & Toribio, J. (1994). Code-switching and X-bar theory: The functional head constraint. *Linguistic Inquiry*, 25(2), 221–237.
- Blom, J. P., & Gumperz, J. J. (2020). Social meaning in linguistic structure: code-switching in Norway. *The Bilingualism Reader*, Second Edition, 75–96. <https://doi.org/10.4324/9781003060406-12/SOCIAL-MEANING-LINGUISTIC-STRUCTURE-CODE-SWITCHING-NORWAY-BLOM-JAN-PETTER-JOHN-GUMPERZ>
- Blom, J.-P., & Gumperz, J. (1972). Social meaning in linguistic structure: Code-switching in Norway. In Gumperz & Hymes (Eds.), *Directions in Sociolinguistics: The Ethnography of Communication* (pp. 404–434). Holt, Rinehart & Winston.

- Bokamba, E. G. (1988). Code-mixing, language variation, and linguistic theory: *Lingua*, 76(1), 21–62. [https://doi.org/10.1016/0024-3841\(88\)90017-4](https://doi.org/10.1016/0024-3841(88)90017-4)
- Canagarajah, A. S. (2006). Negotiating the local in English as a lingua franca. *Annual Review of Applied Linguistics*, 26, 197–218. <https://doi.org/10.1017/S0267190506000109>
- Chou, S.-Y., Jang, W. (William), Ma, S. C., Chang, C.-H., & Byon, K. K. (2023). Is mobile gaming a new pillar of esports? Exploring players' in-game purchases in PC and mobile platforms by using flow and clutch. *International Journal of Sports Marketing and Sponsorship*, 24(2), 311–332. <https://doi.org/10.1108/IJSMS-07-2022-0134>
- Eldin, A. (2014). Code-Switching in Online Communication: Arabic-English Bilinguals on Facebook. *Journal of Pragmatics*, 72, 80–86.
- Farhat Jahara, S., & Hussein Abdelrady, A. (2021). Pronunciation Problems Encountered by EFL Learners: An Empirical Study. *Arab World English Journal*, 12(4), 194–212. <https://doi.org/10.24093/awej/vol12no4.14>
- Gardner-Chloros, P. (2009). *Code-Switching*. Cambridge University Press.
- GooglePlay. (2024). *PUBG Mobile – Google Play Store Overview*. <https://play.google.com>
- Grosjean, F. (2020). *Bilingual: Life and Reality*. Harvard University Press.
- Gumperz, John. (1982). *Discourse Strategies*. Cambridge University Press.
- Hamouda, A. (2015). Code-Switching in Egyptian TV Talk Shows: The Case of “Shabab Beek.” ..” *International Journal of Applied Linguistics*, 25(1), 45–56.
- He, X. (2022). Mandarin-English Code-Switching in Chinese Gaming Communities: Bridging Global and Local Identities. *Language and Communication*, 72, 25–42.
- Hickey, T. (2009). Code-switching and borrowing in Irish. *Journal of Sociolinguistics*, 13(5), 670–688. <https://doi.org/10.1111/j.1467-9841.2009.00429.x>
- Holmes, J., & King, B. W. (2017). Gender and sociopragmatics. *The Routledge Handbook of Pragmatics*, January, 121–138. <https://doi.org/10.4324/9781315668925>
- Jakobson, R. (1971). Results of a Joint Conference of Anthropologists and Linguists. In *Word and Language* (pp. 554–567). DE GRUYTER MOUTON. <https://doi.org/10.1515/9783110873269.554>
- Kärnä, A. (2015). Code-Switching in Online Gaming: Language Practices in Multiplayer Video Games. *Journal of Sociolinguistics*, 19(4), 490–510.
- Kaufer, D., & Carney, L. (2023). Real-time Code-Switching on Discord and Twitch: Observing Bilingual Communication in Online Gaming. *Journal of Digital Communication*, 16(3), 356–371.
- Kiesling, S. (2004). Dude. *American Speech*, 79(3), 281–305.
- Kniaż, M., & Zawrotna, Justyna. (2021). Code-Switching in Egyptian Arabic-English: Verb Embedding and Grammatical Patterns. *Journal of Language and Linguistic Studies*, 17(22), 623–663.
- Lee Teh, P., & Pak, I. (2021). Pay to Play: Understanding Gamer's Motivation through Semantic Analysis. *The 23rd International Conference on Information Integration and Web Intelligence*, 168–175. <https://doi.org/10.1145/3487664.3487688>
- Lewis, G., Jones, B., & Baker, C. (2012). Translanguaging: origins and development from school to street and beyond. *Educational Research and Evaluation*, 18(7), 641–654. <https://doi.org/10.1080/13803611.2012.718488>
- Muysken, P. (2000). *Bilingual Speech: A Typology of Code-Mixing*. Cambridge University Press.
- Myers-Scotton, C. (1993). *Duelling languages: Grammatical structure in code-switching*. Clarendon Press.
- Pennycook, A. (2006). *Global Englishes and Transcultural Flows*. Routledge. <https://doi.org/10.4324/9780203088807>
- Poplack, S. (1980). Sometimes I'll start a sentence in Spanish Y TERMINO EN ESPAÑOL: toward a typology of code-switching1. *Linguistics*, 18(7–8). <https://doi.org/10.1515/ling.1980.18.7-8.581>
- Putra Perkasa, S., & Rahman Nur, D. (2020). Effectiveness of Player Unknown Battleground (PUBG) Video Game in Improving Vocabulary. *Borneo Educational Journal (Borju)*, 2(2), 73–77. <https://doi.org/10.24903/bej.v2i2.629>
- Rose, H., Sahan, K., & Zhou, S. (2022). Global English Medium Instruction: Perspectives at the crossroads of Global Englishes and EMI. *Asian Englishes*, 24(2), 160–172. <https://doi.org/10.1080/13488678.2022.2056794>
- Rudis, D., & Poštić, S. (2018). Influence of video games on the acquisition of the English language. *Verbum*, 8(8), 112–128. <https://doi.org/10.15388/Verb.2017.8.11354>
- S. Yaseen, M., A. Sa'di, R., & A. Sharadgah, T. (2021). Functions of Code Switching from Arabic to English among Jordanian Pilots in their Daily Informal Conversations: A Case Study. *Arab World English Journal*, 12(2), 109–124. <https://doi.org/10.24093/awej/vol12no2.8>
- Sanjaya, K., Chandra, R., & Jose, J. (2023). The Digital Gaming Revolution: An Analysis of Current Trends, Issues, and Future Prospects. *Russian Law Journal*, 11(1), 18–29.
- Shah, Z., Chen, C., Sonnert, G., & Sadler, P. M. (2023). The influences of computer gameplay and social media use on computer science identity and computer science career interests. *Telematics and Informatics Reports*, 9, 100040. <https://doi.org/10.1016/j.teler.2022.100040>
- Vogt, H. (1954). Language Contacts. *WORD*, 10(2–3), 365–374. <https://doi.org/10.1080/00437956.1954.11659533>
- Weinreich, U. (1953). *Languages in Contact*. The Hague.
- Yaseen, B., & Hoon, T. B. (2017). Code-Switching in Online Communication Among Arabic-English Speakers. *PJSRR*, 3(2), 1–9. <http://www.pjsrr.upm.edu.my/>

*Code-Switching in Online Gaming: Sociolinguistic and Linguistic Patterns Among Jordanian PUBG Players*

- Yus, F. (2021). Code-Switching in Massively Multiplayer Online Games: A Study of Social Interaction and Identity. *Journal of Sociolinguistics*, 24(2), 223–245.
- Zeroual, I., El Kah, A., & Lakhouaja, A. (2017). Gamification for Arabic Natural Language Processing: Ideas into Practice. *Transactions on Machine Learning and Artificial Intelligence*, 5(4). <https://doi.org/10.14738/tmlai.54.3323>