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Learning Languages Through Commercial Video Games: A Mixed-Methods Study on the Role of Mobile Gaming in Vocabulary Acquisition

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ABSTRACT

This study investigates incidental vocabulary acquisition among English as a foreign language (EFL) learners through engagement with video games, particularly the mobile RPG Genshin Impact and the mobile first-person shooter Call of Duty: Mobile (CODM). Although the field of digital game-based language learning (DGBLL) is expanding, there is a paucity of research comparing the effectiveness of different genres or concentrating on specific, highly engaging mobile games. Forty intermediate EFL university students in Iran participated in a six-week study. They were divided into experimental groups (Genshin Impact, CODM) and control groups. Quantitative data from Vocabulary Knowledge Scale (VKS) pre/post-tests assessed vocabulary gains, while qualitative data from focus groups, stimulated recall interviews, and gameplay logs examined learning experiences and strategies. Analysis of variance (ANOVA) and post-hoc tests revealed that the Genshin Impact group outperformed the CODM group in vocabulary gains, though both experimental groups showed statistically significant improvements compared to the control group. The findings suggest these games hold significant potential for vocabulary development at the intermediate level, though efficacy for lower proficiency remains a question for future research. While CODM exposure was more contextually sparse, qualitative analysis revealed the critical roles of contextual richness, repetition, motivation, and learner agency in Genshin Impact. Commercially successful mobile games, especially narrative-rich role-playing games like Genshin Impact, prove effective for incidental vocabulary learning, mainly due to contextual embedding, high-frequency exposure, and intrinsic motivation. This study bridges gaps in genre comparison and transferable vocabulary acquisition, supporting

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the integration of such games into supplemental language learning contexts.

1. Introduction

Digital technologies permeate daily life, and video games enjoy global popularity. These advancements enable novel approaches to language learning. Digital Game-Based Language Learning (DGBLL) constitutes a significant component of Computer-Assisted Language Learning (CALL), exploiting the interactive, immersive, and motivating attributes of games to facilitate language acquisition (Reinhardt, 2019). While purpose-built educational games exist, scholarship increasingly investigates Commercial Off-The-Shelf (COTS) games—primarily designed for entertainment—as tools for incidental language learning (Sylvén & Sundqvist, 2012; Peterson, 2013). Incidental learning occurs when learners acquire linguistic features, particularly vocabulary, while focusing on meaning and gameplay objectives rather than explicit study (Hulstijn, 2001).

The surge in mobile gaming enables ubiquitous access to sophisticated immersive experiences. Games like Call of Duty: Mobile (Activision, 2019), a fast-paced first-person shooter (FPS), and Genshin Impact (HoYoverse, 2020), an open-world action role-playing game (RPG), have enormous global player bases that include millions of non-native English speakers interacting with English-language interfaces, narratives, and communication. Different genres are represented by these games: While FPS games emphasize action, reflexes, and frequently little linguistic input beyond menus and brief communication, RPGs offer rich narratives, dialogue, environmental text, and complex systems that require comprehension.

Despite this potential, significant research gaps persist. First, while studies show that games can facilitate vocabulary learning (e.g., deHaan et al., 2010; Rodgers, 2018), there is still not enough strong evidence linking high-engagement mobile COTS games to measurable vocabulary gains, especially when using standardized instruments. Second, direct comparisons of the efficacy of different game genres (e.g., RPGs vs. FPS) for language learning are scarce (Butler et al., 2014), despite their unique linguistic demands. Third, the transferability of incidentally acquired vocabulary to formal academic contexts requires investigation (Bytheway, 2015), as game-acquired vocabulary may remain context-bound. Fourth, more research employing a variety of techniques is required to comprehend the precise mechanisms—contextual cues, repetition, motivation, and interaction—through which various game genres promote vocabulary acquisition.

This study aims to fill existing gaps by comparing vocabulary acquisition across two popular but different mobile game genres (RPG vs. FPS) among Iranian EFL learners. It goes beyond anecdotal evidence by using a controlled intervention and a validated vocabulary scale (VKS) to measure learning gains relative to control group. Additionally, it looks into whether the vocabulary learned in these game worlds can be used in academic contexts. The study uses a mixed-methods approach to explore the learning strategies and motivation factors that influence vocabulary acquisition in each genre.

This study examines how two widely played mobile COTS games _ Genshin Impact (narrative-rich RPG) and Call of Duty: Mobile (action-focused FPS) _ facilitate English vocabulary acquisition among intermediate EFL learners. It assesses the transferability of acquired vocabulary, compares gains across genres, measures gains

using a validated vocabulary scale, and employs qualitative techniques to identify the learning processes at play.

Research Question 1: What quantifiable gains in receptive and productive English vocabulary knowledge do intermediate EFL learners demonstrate after playing Genshin Impact or Call of Duty: Mobile, compared to a control group?

Research Question 2: Do learners in the Genshin Impact (RPG) group demonstrate statistically greater vocabulary acquisition gains than those in the Call of Duty: Mobile (FPS) group?

Research Question 3: To what extent is vocabulary encountered in these games transferable to decontextualized, academic-like contexts?

Research Question 4: What attitudes, strategies, and motivational factors do learners report when using these games for language learning?

2. Review of Literature

The theoretical underpinnings of game-based learning come from a number of important fields. According to Krashen's (1982) Input Hypothesis, acquisition requires intelligible input that is just slightly above the learner's current level (i+1). Games provide this through multimodal context (visuals, audio, action) that supports linguistic input. (Reinhardt & Sykes, 2012). According to Gee's (2007) groundbreaking research on semiotic domains and situated meaning, games are intricate systems of meaning-making in which language is acquired as instruments for action within particular contexts rather than learned as abstract rules. Through embodied experience, players internalize the "grammar" of the game. Incidental Learning Theory (Hulstijn, 2001) describes vocabulary uptake while concentrating on communicative tasks—in this case, gameplay objectives. Two important variables affecting retention are the encounter frequency and the processing depth.

Empirical support for game-mediated vocabulary learning is growing. Early research focused on MMORPGs (Massively Multiplayer Online Role-Playing Games) due to their social interaction potential (Zheng, Newgarden & Young, 2015). Peterson (2010) found that EFL students who played Wonderland acquired a lot of new words because they had to figure out what they meant and put them in context. Rankin et al. (2006) also observed vocabulary gains through playing Ever Quest II. In a review, Rodgers (2018) noted that games offer repeated exposure to target words in meaningful contexts, enhancing retention, but highlighted methodological inconsistencies across studies. Studies on non-MMO games are also promising: deHaan et al. (2010) demonstrated vocabulary learning among Japanese EFL learners via a baseball video game, emphasizing the role of visual support.

Research on mobile games is expanding. Mobile gaming is a prime example of the situated, contextual language learning potential of mobile devices, as noted by Godwin-Jones (2014). Studies like Lee & Gerber (2013) link mobile RPGs to vocabulary growth via narrative engagement. However, rigorous research on popular titles like Genshin Impact and CODM remains limited, often relying on anecdotal evidence or small case studies rather than controlled interventions with standardized measures.

Game genre plays an important but understudied role. Different genres allow for different kinds of language practice, according to Butler et al. (2014). In contrast to action-oriented genres like FPS and racing, which may rely more on procedural language and little communication, narrative-driven games (RPGs, adventures) usually

offer richer linguistic input (dialogues, descriptions, quest text) (Bytheway, 2015). Scholz (2017) notes that genre-based variations in language density and complexity afford distinct learning opportunities. However, few direct comparative studies measure vocabulary gains across different genres, such as FPS and RPG.

Importantly, there is still considerable debate regarding the transferability of vocabulary learned through games. Vocabulary acquired within specialized game contexts may not activate easily in academic or conversational settings (Nation, 2013). Bytheway (2015) discovered that gamers had context-bound vocabulary knowledge, indicating the necessity of bridging exercises. To evaluate practical utility, studies that specifically test the recognition and recall of game-based vocabulary in non-gaming contexts are required.

To sum up, learner factors are crucial. One well-established advantage of game-based learning is motivation, especially intrinsic motivation fueled by engagement and enjoyment (Ryan & Deci, 2000; Ushioda, 2013). Games may help with acquisition by lowering affective filters (Krashen, 1982). Learning pathways are also influenced by learner agency, or the choices players make about language exposure, interaction, and exploration in the game (Zheng et al., 2015). Vocabulary acquisition is mediated by the use of strategies, such as dictionary lookups (common in games like Genshin), inferencing from context, or ignoring unknown words (Cohen & Macaro, 2007).

Building on this foundation, this study employs a mixed-methods approach to capture both quantitative outcomes and learners' qualitative experiences while empirically examining vocabulary gains from two distinct, popular mobile game genres, specifically to address gaps in genre comparison, mobile COTS efficacy, and transferability assessment.

3. Methods

A mixed-methods, quasi-experimental design was employed. The quantitative component used a pre-test/post-test control group design to measure vocabulary gains (RQ1 & RQ2). To obtain a comprehensive grasp of the learning process, context, transferability, and learner experiences, the qualitative component employed focus groups, stimulated recall interviews, and gameplay logs (RQ3 & RQ4).

3-1. Participants

This section describes the characteristics of the study population, the sampling techniques employed, the sample size, and the recruitment process. It also includes information on ethical approvals, informed consent procedures, and the measures taken to protect participant confidentiality (i.e., ethical considerations).

Participants were recruited via announcements in English courses at an Iranian public university.

Inclusion criteria:

- University students (18–25 years).
- Non-native English speakers.
- Intermediate proficiency (self-reported + Oxford Quick Placement Test, B1-B2).
- Smartphone proficiency.
- Video game familiarity but minimal experience (<10 hours) with CODM or Genshin Impact.
- Willingness to dedicate 5 hours/week for 6 weeks to gameplay/research.

Forty eligible participants (20M, 20F) were randomly assigned to three groups:

- Genshin Impact Group (GG): n = 14 (7M, 7F). Assigned to spend five hours a week playing Genshin Impact in English.
- CODM group (CG): n = 14 (7M, 7F). Played CODM in English (5 hours/week)
- Control Group (ConG): n = 12 (6M, 6F). They were advised to stick to their regular schedules but refrain from playing these two games or any other brand-new English-learning games. To control for general English exposure, weekly group discussions on neutral topics were held in English for one hour. The slightly smaller control group size occurred because two participants dropped out during the initial recruitment phase, before the intervention began.

All participants were Persian L1 speakers. The mean age was 20.3 years (SD=1.5). A one-way ANOVA confirmed no significant differences in initial English proficiency (OQPT scores) across the three groups ($p > .05$), ensuring homogeneity at baseline.

3-2. Data Collection Instruments

1. Vocabulary Knowledge Scale (VKS):

A 60-item, 5-point self-report scale (Wesche & Paribakht, 1996) was used for pre- and post-testing:

I. Unfamiliarity.

II. Recognition without meaning.

III. Meaning guess (synonym/translation). A correct synonym or translation was necessary for a score of III or IV.

IV. Confirmed meaning knowledge (synonym/translation).

V. Ability to use in a sentence.

Target words were selected based on frequency and range analysis of transcripts from both games, prioritizing words frequent in-game but likely unknown to intermediate learners. The test demonstrated high reliability (Cronbach's $\alpha = .91$-$.92$). Words were categorized as: RPG-specific (e.g., "artifact," "resonate"), FPS-specific (e.g., "loadout," "perk"), game-common (e.g., "objective," "upgrade"), or transferable/academic (e.g., "investigate," "resource"). Scoring was done by two independent raters, who had high agreement (Cohen's $\kappa = .94$).

2. Gameplay Logs:

Participants recorded session details, including date, duration, tasks, and unfamiliar words encountered, along with any strategies used (look-up, ignore, guess).

3. Stimulated Recall Interviews (SRI):

Conducted post-intervention, participants reviewed screenshots of unfamiliar word encounters and described their thought processes and strategies at the time.

4. Focus Groups:

Separate 60-minute semi-structured sessions were held for each experimental group post-testing to explore experiences, perceptions, motivation, and challenges.

5. Background Questionnaire:

Collected demographic data, language learning history, gaming habits, and attitudes towards game-based learning.

3-3. Data Collection Procedure

1. Week 0:

Background questionnaire, OQPT, VKS pre-test, tutorial on data logging.

2. Weeks 1–6: Intervention

GG & CG: At least five hours per week were spent playing the designated game. English was selected as the language of the game. Players were encouraged to keep logs while playing naturally (exploring, finishing quests, and matches). Local storage was used to run screen recording software in the background.

ConG: The Players participated in a weekly one-hour English-language discussion group about non-academic subjects (movies, vacations, pastimes). They were told not to play games that teach new languages, CODM, or Genshin.

Everybody: Compliance monitored (logs/submissions; gameplay time verified via profiles)

3. Week 7:

VKS post-test (randomized order), SRIs (GG/CG only).

4. Data Handling:

All audio/video data was transcribed verbatim for analysis.

3-4. Data Analysis

1. Quantitative (VKS):

Responses scored I=0, II=1, III=2 (correct meaning), IV=3 (correct meaning), V=4 (correct sentence). Incorrect meanings scored I. Total Vocabulary Knowledge Score (0–240 per participant).

RQ1: Paired t-tests (within-group gains: Pre vs. Post). Independent t-tests (experimental vs. control group gains: Post-Pre).

RQ2: Independent t-test (GG vs. CG gains: Post-Pre).

RQ3 (Partial): Repeated-measures ANOVAs (gains by word category within/between groups). Effect sizes (partial eta squared, η^2) are reported for all ANOVAs.

2. Qualitative:

Thematic analysis (Braun & Clarke, 2006) using NVivo. Inductive and deductive coding of transcripts/logs focused on: word encounters, strategies, contextual support, motivation, challenges, and transfer. Triangulation of logs (exposure/strategies), SRI (processing depth), and focus groups (perceptions/examples) ensured validity. GG/CG patterns were contrasted.

4. Results

4-1. Quantitative Results

1. Overall Vocabulary Gains (RQ1):

Vocabulary Gains Compared to Control Group. Both experimental groups demonstrated significant vocabulary gains from pre-test to post-test, outperforming the control group.

GG: Significantly improved from the Pre-test (M=78.21, SD=12.45) to the Post-test (M=102.86, SD=10.18), $t(13)=8.74$, $p<.001$, $d=1.85$ (large effect size). Mean Gain = 24.64 (SD = 7.92). This gain was significantly greater than that of the control group ($t(24)=8.92$, $p<.001$, $d=3.37$).

CG: Significant improvement (Pre: M=76.93, SD=11.87; Post: M=88.00, SD=9.74), $t(13)=4.21$, $p=.001$, $d=0.89$. Mean Gain=11.07 (SD=7.35). This gain was also significantly greater than that of the control group ($t(24)=3.98$, $p<.001$, $d=1.50$).

ConG: Showed no significant change from pre-test (M=77.50, SD=10.82) to post-test (M=78.58, SD=9.67), $t(11)=0.65$, $p=.528$. The mean gain was 1.08 (SD=5.76).

2. Genre Comparison (GG vs. CG - RQ2):

The Genshin Impact group demonstrated significantly greater vocabulary gains than the CODM group. The mean gain for GG (M=24.64, SD=7.92) was more than double that of CG (M=11.07, SD=7.35). An independent samples t-test confirmed this difference was statistically significant, $t(26)=4.82$, $p<.001$, $d=1.81$, indicating a large effect size.

3. Gains by Transferability & Word Type (RQ3):

Gains by Word Category and Transferability. A repeated-measures ANOVA revealed significant differences in gains based on word category, and these patterns differed markedly between groups.

Within GG: Gains were significantly higher for RPG-specific words (M Gain=8.21) and Transferable/Academic words (M Gain=7.93) than for Game-common (M Gain=5.29) and FPS-specific words (M Gain=3.21), $F(3, 39)=15.87$, $p<.001$, $\eta^2=0.55$. Post-hoc tests confirmed that gains on RPG and Transferable words were significantly greater than on Game-common and FPS words ($p<.01$).

Within CG: Gains were highest for FPS-specific words (M Gain=4.14), followed by Game-common (M Gain=3.50), RPG-specific (M Gain=2.21), and Transferable/Academic words (M Gain=1.21), $F(3, 39)=8.42$, $p<.001$, $\eta^2=0.39$. Post-hoc tests showed FPS gains were significantly greater than RPG and Transferable gains ($p<.05$). Gains on Transferable words were the lowest and significantly weaker than gains on Game-common words ($p<.05$).

Between-Group Comparison on Transferable Words: Crucially, the GG demonstrated significantly greater gains on Transferable/Academic words (M Gain=7.93) than the CG (M Gain=1.21), $t(26)=6.01$, $p<.001$, $d=2.27$. For GG, gains on these transferable terms were robust and on par with gains for words specific to its RPG genre.

Table 1

Mean (and Standard Deviation) Vocabulary Gains on the VKS by Word Category and Group

Word Category	Genshin Impact Group	CODM Group	Control Group
RPG-Specific	**(2.45) 8.21**	(1.87) 2.21	(1.23) 0.33
FPS-Specific	(1.98) 3.21	(1.76) 4.14	(0.90) 0.42
Game-Common	(2.01) 5.29*	(1.63) 3.50	(0.94) 0.17
Transferable/Academic	**(2.38) 7.93**	(1.45) 1.21	(1.06) 0.25
Total Score	**(7.92) 24.64**	**(7.35) 11.07**	**(5.76) 1.08**

Note. The format is Mean Gain (Standard Deviation)

Bold denotes a total or sub-score gain that was significantly greater than the control group's corresponding gain ($p < .001$).

* denotes a within-group gain for that specific category that was significant at $p < .05$.

GG gains on RPG-specific and Transferable words were significantly greater than CG gains on those same categories ($p < .001$).

CG gains on FPS-specific words were significantly greater than GG gains on that category ($p < .05$).

4-2. Qualitative Findings

The qualitative results can be explained by different learning experiences and mechanisms between the groups, which were found through focus groups, SRIs, and gameplay log analysis.

A summary of the contrasting themes is provided in Table 2:

Table 2

Summary of Contrasting Qualitative Themes between Game Groups

Call of Duty: Mobile Group (CG)	Genshin Impact Group (GG)	Theme
Sparse, functional, menu-based, action-oriented	Rich, narrative-driven, multimodal, exploratory	**Context**
Primarily ignoring words, occasional external look-ups, shallow processing	Frequent dictionary use, inferencing from context, note-taking	**Strategies**
High engagement (competition, skill mastery), low language focus	High intrinsic motivation (story, exploration, characters)	**Motivation**
Low perceived transfer; vocabulary seen as context-bound	High perceived and reported transfer to academic contexts	**Transferability**

1. Genshin Impact Group (GG):

Rich Context & Repetition: As primary sources of vocabulary, participants frequently cited character dialogues, item/ability descriptions, narrative depth, and environmental text (books, signs). Frequently used terms included "commission," "artifact," "domain," "alchemy," "resonate," "investigate," "formidable," and "extract." *"You pay attention to the words because the story makes you want to know what happens next."* said P3 (GG). Character Lisa frequently discusses "alchemy" and "elements," and you can see them in menus when upgrading weapons. Key narrative and system terms were encountered frequently, according to the logs.

Dictionary and Strategy Use: The majority of GG players made extensive use of the built-in translation/dictionary feature (tap-and-hold on text) when they came across new terms that were essential for completing quests or comprehending mechanics. According to SRIs, this frequently resulted in deeper processing (Stage IV/V on VKS). Less important words were also frequently inferred from context and images.

P7 (GG): *"The tap-to-translate function was a lifesaver. If a quest said something like 'investigate the anomaly,' I would press and hold immediately. You can't progress if you don't understand the objective, so you are forced to learn the word to finish."*

P9 (GG): *"I looked up words like 'resonate' and 'alchemy' constantly because they were key to understanding the elemental systems. Seeing the official game translation helped me lock in the exact meaning, which felt more reliable than just guessing."*

Transferability: Participants said they saw transferable words outside of the game. The use of narrative context to anchor abstract terms like "diligence" or "justice" was discussed in focus groups.

P10 (GG): *"I was reading my economics textbook and the word 'resource' jumped out at me. My first thought was gathering resources in Teyvat for character ascension.*

Now I consciously use words like 'significant' and 'extract' in my essays because I remember their power from describing damage stats or mining ore."

P4 (GG): *"The game's story gives weight to words that would otherwise be boring. A character's dialogue about 'justice' or 'diligence' isn't just a definition; it's tied to a moral choice in the plot. You remember the word because you remember the story and the feeling it evoked."*

Motivation & Agency: Exploration, story progression, character development, and world-building were the main sources of the high levels of intrinsic motivation that were reported. The most common vocabulary encountered was influenced by agency in selecting quests and areas of exploration.

P5 (GG): *"I never woke up thinking 'I need to study English today.' I just wanted to play and enjoy the beautiful world. The learning happened because I was deeply involved in the experience itself, not because I was trying to learn."*

P11 (GG): *"I spent hours just fishing and cooking because I enjoyed it, so I learned all the specific words for different fish, bait, and ingredients. My friend, who only focused on combat, learned a completely different set of words. The game lets you learn what you're interested in."*

Multimodality: Sound effects, music, visuals, and character voice acting (in English) were mentioned as being essential for word comprehension and recall.

P12 (GG): *"I will never forget the term 'Glaze Lily.' I heard the character voice line saying it clearly while I was literally looking at the glowing flower and needing to collect it for a quest. The sound, the image, and the goal all connected perfectly."*

P2 (GG): *"Hearing the English voice actors pronounce challenging words like 'formidable' or 'commission' was incredibly helpful. It wasn't just a silent text on the screen; I heard how it's said with emotion and emphasis, which made it stick in my memory."*

2. Call of Duty: Mobile Group (CG):

Sparse and Limited Context: Menus ("Loadout," "Perk," "Operator," "Scorestreak," "Extraction"), short pre-match/mission instructions ("Secure the point," "Eliminate all enemies"), and kill-feed messages ("Headshot," "Double Kill") were the main sources of exposure. There wasn't much narrative context. P19 (CG): *"Most of the time, it's just brief phrases on buttons or throughout the game. You only learn "equip," "grenade," and "capture."* Logs revealed less repetition of terms other than core action terms and fewer unique word encounters.

Strategies & Focus: Participants stated that they mostly ignored new words unless they directly interfered with gameplay (e.g., not understanding a mode name). Look-ups were uncommon, and when they did occur, they frequently involved fast external searches. SRIs showed shallow processing; while many words were identified (Stage II/III), they were not fully comprehended or effectively recalled. Action and reflexes were the main focus. P16 (CG): *"You're too busy to read. You can tell it's a mode when you see "Search and Destroy." You don't consider "search" and "destroy" to be distinct words."* Despite these limitations, some CG participants recognized the benefit of learning core action vocabulary. P20 (CG) remarked, *"I definitely know words like 'objective,' 'capture,' and 'eliminate' perfectly now. They are simple but very clear from the game action."*

Problems with transferability: Gains were mostly limited to simple action verbs and nouns that were specific to FPS. Participants found it difficult to remember or give examples of transferable words that they had only learned from CODM. P21 (CG):

"Terms like 'extraction' or 'perk'... I wouldn't use them in class, but I am familiar with them from the game." "Loadout" seems like a game word. The low quantitative gains on transferable words are consistent with this.

Competition, skill mastery, and social play (with friends, frequently in L1) were the main sources of motivation. The language learning component was mostly incidental and ancillary, despite the high level of engagement. P18 (CG): *"Playing with friends and winning is enjoyable. The only reason English is present is that the game is in English. I play for other reasons besides learning new words."* Message: Little vocabulary expansion was provided by in-game voice/text chat, which was primarily utilized for short tactical calls in simple English or mixed L1/English ("Push B!", "Sniper!").

3. Control Group:

Reported routine English exposure but no significant encounters with VKS target words.

5. Discussion

This study aimed to answer four research questions about measurable vocabulary gains, genre-based differences, transferability, and learner experiences. The results provide strong evidence that popular mobile COTS games help with incidental English vocabulary learning, while also showing important genre-based differences.

In comparison to the control group, Genshin Impact and Call of Duty: Mobile both enabled notable vocabulary gains (RQ1), supporting the fundamental idea of DGBLL (Reinhardt, 2019; Sylvén & Sundqvist, 2012). This shows that even action-focused games like CODM offer enough understandable input in their core mechanics and interfaces (Krashen, 1982) for some incidental learning to take place, mostly of high-frequency and genre-specific action vocabulary. This exposure was probably influenced by the sheer amount of engagement (5 hours per week).

The hypothesis that narrative-rich role-playing games provide a better environment for incidental vocabulary acquisition than action-packed first-person shooter games is strongly supported by the noticeably larger gains seen in the Genshin Impact group (RQ2). This result is consistent with the well-ordered problem and situated meaning concepts proposed by Gee (2007). Genshin incorporates language into an engaging story, intricate character interactions, thorough item descriptions, and an expansive, explorable world. According to deHaan et al. (2010), this rich multimodal context generates deeper cognitive hooks for memory and offers a wealth of hints for meaning inference. Because quest objectives, dialogue options, and system mechanics must be understood in order to advance, learners are compelled to use comprehension techniques like dictionary look-ups, which are common in the GG. This leads to deeper processing (Craik & Lockhart, 1972) and higher VKS scores, especially for productive knowledge (Stage V). The high gains on RPG-specific and transferable words can be explained by the frequent repetition of important thematic and systemic vocabulary in a variety of related but varied contexts (Nation, 2013). Accounts of motivation from participants that focus on narrative engagement and immersion highlight the importance of intrinsic motivation (Ryan & Deci, 2000) in maintaining the exposure required for acquisition.

Although Call of Duty: Mobile's linguistic environment proved less conducive to broader, deeper vocabulary learning, it was effective in teaching its core vocabulary. Menus, succinct instructions, and kill notifications are examples of functional and fragmented language. Less information is available in this sparse context to help deduce

the meaning of uncommon words. Because gameplay is fast-paced and high-pressure, players are discouraged from taking the time to look up words or consider meaning; action, not comprehension, is the main focus (Bytheway, 2015). As a result, processing was frequently superficial, leading to improvements mostly at the recognition level (VKS Stages II/III) for common and FPS-specific action words. Exposure to more abstract or varied vocabulary was reduced by the absence of descriptive text or narrative depth. In CODM, learner agency has less to do with language exploration and more to do with tactical decisions.

One important finding fills in the transferability gap (RQ3). Significant improvements in transferable/academic vocabulary (such as "resource," "significant," "investigate," and "extract") were shown by the Genshin Impact group, and participants reported using these words on their own outside of the game. It is important to view these VKS gains as a good indicator of potential transferability, but a direct measure would require productive tasks in real academic settings. This finding implies that vocabulary encountered in a rich, varied, and meaningful narrative context is more likely to transfer, particularly words that have wider semantic applications outside of the game mechanic itself. A solid conceptual basis that could be connected to other contexts was offered by the situated learning in the game world (Gee, 2007). On the other hand, Bytheway's (2015) findings are consistent with the observation that vocabulary learned in the highly specific, functional context of CODM (such as "perk," "loadout," and "extraction" in the tactical sense) remained largely context-bound. Basic gaming terminology may transfer more readily, as evidenced by the moderate gains in game-common words in both groups.

Genshin Impact's design promoted vocabulary learning strategies (RQ4). The narrative supported making inferences, and the need to understand triggered the use of dictionaries. The qualitative data showed the interaction between game design, learner behavior, and outcomes. Persistence came from strong intrinsic motivation. In contrast, the design of CODM discouraged deep linguistic engagement. Motivation did not focus on language learning, and strategies were minimal. This shows that while games can offer learning opportunities, the game's demands and design influence learner agency and the strategies they use (Zheng et al., 2015).

Several limitations should be noted. The sample size (N=40) was adequate to detect statistically significant effects, but the homogeneous sample (Iranian university students) limits how broadly the findings can be applied. Cultural and L1-specific factors could affect engagement and strategy use, which suggests a need for future cross-cultural research. Additionally, the Hawthorne Effect likely boosted the observed results; participants were aware they were in a language learning study and tracked their progress, which may have encouraged more strategic behavior (like looking up words) than in natural play. This suggests that while the learning potential is evident, the measured gains might represent the highest levels achievable in a structured setting.

According to this study, teachers can use well-known COTS games—especially story-heavy role-playing games like Genshin Impact—as effective extra resources for vocabulary instruction. The linguistic environment's richness and the engagement it encourages are crucial. But playing any game isn't enough; genre is important. Vocabulary gains for first-person shooter games are probably restricted to terms specific to the genre. Learning in rich environments can be improved by promoting the use of strategies (such as using in-game dictionaries and taking notes on vocabulary). By specifically connecting game-acquired vocabulary to academic settings through follow-

up activities that involve discussing newly learned words, using them in writing prompts, or drawing analogies, educators can further aid transfer.

6. Conclusion

This study offers strong proof that popular mobile video games, especially immersive role-playing games like Genshin Impact, can be very useful for helping intermediate learners acquire English vocabulary incidentally. The study quantitatively shows that regular gameplay leads to significant vocabulary gains that outperform those of a control group and an action-oriented first-person shooter like Call of Duty: Mobile. More importantly, it emphasizes how crucial contextual richness is, including character interaction, descriptive text, narrative depth, and the thoughtful incorporation of language into gameplay mechanics and objectives. Genshin Impact is a prime example of this rich environment, which promotes deeper processing, strategic vocabulary learning behavior (such as using dictionaries), high intrinsic motivation, and vocabulary transfer to non-gaming contexts. Although first-person shooter games can impart genre-specific vocabulary, their focus on action and limited linguistic context prevents players from learning more extensive and complex vocabulary.

This study shows that popular COTS games can greatly boost learner engagement and support incidental language acquisition. However, the findings highlight that it is essential for educators to select games based on their genre and linguistic features, not just their popularity. Narrative-driven role-playing games like Genshin Impact, which have rich contextual elements, create a better environment for deep and transferable learning than action-oriented genres.

Based on these results, several key implications for language teaching emerge:

1. Game Selection as a Teaching Choice: Educators should focus on games that provide rich, multimodal input. This study strongly suggests that narrative-rich RPGs are better than action-FPS games for comprehensive vocabulary learning.

2. Strategic Integration into Curricula: Simply assigning a game is not enough. To optimize learning, teachers should support gameplay with pedagogical strategies, such as instruction on how to use strategies and activities that connect game vocabulary to academic contexts.

In order to further maximize the potential of these potent tools, future research should examine long-term retention, the effect on other language skills (speaking, writing), the function of multiplayer interaction, and the creation of detailed pedagogical frameworks. When selected and integrated thoughtfully, games like Genshin Impact can create dynamic, immersive, and highly motivating language learning environments that extend learning beyond the classroom. This study clearly shows the educational value of these digital spaces for language learning.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Disclosure of AI Use in Manuscript Preparation

During the preparation of this manuscript, the authors used DeepSeek to enhance clarity. The authors have thoroughly reviewed and revised all content produced by this tool and accept full responsibility for the accuracy, integrity, and originality of the final work.

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