https://doi.org/10.34142/2709-7986.2025.30.2.22

GAME-BASED PRACTICES AS A TOOL FOR DEVELOPING LANGUAGE COMPETENCE: THE CASE OF *PERSONA 5: THE PHANTOM X*

ІГРОВІ ПРАКТИКИ ЯК ІНСТРУМЕНТ РОЗВИТКУ МОВНОЇ КОМПЕТЕНЦІЇ: ПРИКЛАД *PERSONA 5: THE PHANTOM X*

Received: 30/09/2025 **Accepted:** 27/10/2025

Victor AKIMOV[1], & Oleksii NALYVAIKO[2]

[1] *3th year student, School of Foreign Languages, V. N. Karazin Kharkiv National University, Kharkiv, Ukraine.*

✉ **E-Mail:** *victor.akimov1202@gmail.com*

https://orcid.org/0009-0000-1065-9595

[2] *Ph.D. in Pedagogy, Associate Professor, Associate Professor of Applied Psychology Department, V. N. Karazin Kharkiv National University, Kharkiv, Ukraine.*

✉ **E-Mail:** *nalyvaiko@karazin.ua*

https://orcid.org/0000-0002-7094-1047

How to Cite (APA Style):

Akimov, V., & Nalyvaiko, O. (2025). Game-based practices as a tool for developing language competence: The case of Persona 5: The Phantom X. *Educational Challenges, 30*(2), 292–316. https://doi.org/10.34142/2709-7986.2025.30.2.22

ABSTRACT

Purpose. *The study explores the pedagogical potential of Persona 5: The Phantom X (P5X) a Chinese narrative-based video game as a tool for developing linguistic and communicative competence in learners of Chinese as a foreign language.*

Мета. *Дослідження присвячене вивченню педагогічного потенціалу "Persona 5: The Phantom X" (P5X) китайської наративної відеогри як інструмента розвитку мовної та комунікативної компетентності у тих, хто вивчає китайську мову як іноземну. Мета роботи полягає в аналізі того, як*

It aims to analyze how game-based interaction, supported by paratexts (i.e., auxiliary game-related materials such as wikis, forums, guides, and fan-produced resources that help players interpret, navigate, and extend the game world) and digital tools, enhances vocabulary retention, pragmatic fluency, and motivation for language learning.

Methodology. *The research used a mixed-methods experimental pilot design with a small cohort (N=4) of Ukrainian students learning Chinese. Over three weeks, participants engaged in daily gameplay (~1.5 hours/day), supplemented by paratextual tasks (e.g., Chinese wikis, forums) and language support tools (Translumo, Reverso Context, AnkiDroid). Data were collected through semi-structured interviews, a lexical-grammatical test, personalized writing prompts, and field notes on in-game interactions. Qualitative and quantitative results were analyzed to evaluate language gains and motivational outcomes.*

Results. *Participants demonstrated improvements in lexical knowledge, contextual comprehension, and motivation to use Chinese actively. The game environment offered authentic dialogues, subtitles, and multimodal cues that fostered attention to form and meaning ("noticing"), supporting incidental vocabulary acquisition. Players reported reduced anxiety and higher autonomy, using game-based reflection and paratexts to reinforce learning. Minor linguistic errors were observed, but overall engagement and vocabulary retention improved, confirming the feasibility of game-based learning for linguistic competence development.*

Conclusions. *The study confirms that structured engagement with Persona 5: The Phantom X can effectively support language competence development through immersive, interactive, and motivationally rich experiences. Integrating paratextual materials and self-regulated digital tools enhances comprehension and long-term retention. Although limited by small sample size and lack of control group, the findings support the educational*

ігрова взаємодія, підкріплена паратекстами (тобто допоміжні матеріали, пов'язані з грою, такі як вікі, форуми, посібники та ресурси, створені фанатами, які допомагають гравцям інтерпретувати, орієнтуватися та розширювати ігровий світ) та цифровими інструментами, сприяє запам'ятовуванню лексики, розвитку прагматичної компетентності та підвищенню мотивації до вивчення мови.

Методологія. *Дослідження здійснено за допомогою експериментального пілотного дизайну зі змішаними методами на невеликій вибірці (N=4) українських студентів, які вивчають китайську мову. Протягом трьох тижнів учасники щоденно грали у P5X (~1,5 години на день), виконували завдання з паратекстами (зокрема китайськими вікі та форумами) і користувалися допоміжними мовними інструментами (Translumo, Reverso Context, AnkiDroid). Дані збиралися за допомогою напівструктурованих інтерв'ю, лексико-граматичного тесту, персоналізованих письмових завдань і спостережень за ігровою взаємодією. Отримані кількісні та якісні результати були проаналізовані для оцінки мовних досягнень і змін у мотивації.*

Результати. *Учасники продемонстрували покращення лексичних знань, розуміння контексту та підвищену мотивацію до активного використання китайської мови. Ігрове середовище забезпечувало автентичні діалоги, субтитри й мультимодальні підказки, що сприяли усвідомленню мовних форм і значень ("noticing") та підтримували мимовільне засвоєння лексики. Гравці повідомляли про зниження мовної тривожності та зростання автономії, використовуючи рефлексію й паратексти для закріплення навчального матеріалу. Незначні мовні помилки спостерігалися, однак загальна залученість і запам'ятовування лексики зросли, що підтвердило ефективність ігрового навчання для розвитку мовної компетентності.*

Висновки. *Дослідження підтверджує, що структурована взаємодія з "Persona 5: The Phantom X" може ефективно підтримувати розвиток мовної компетентності через занурення, інтерактивність та високу мотиваційну залученість. Інтеграція паратекстових матеріалів і саморегульованих цифрових інструментів підвищує рівень розуміння та довготривале засвоєння знань. Незважаючи на обмежену вибірку та відсутність контрольної групи, результати*

integration of digital role-playing games as complementary tools in second language acquisition. Future research should involve larger samples, comparative designs, and pedagogically structured integration of gaming practices into formal learning contexts.

Keywords: *Chinese as a foreign language, digital role-playing games, paratexts, willingness to communicate, self-regulated learning, spaced repetition, moderated text chat.*

підтверджують доцільність освітньої інтеграції цифрових рольових ігор як допоміжного засобу у вивченні іноземних мов. Подальші дослідження варто спрямувати на розширення вибірки, порівняльні дизайни та педагогічно структуроване впровадження ігрових практик у формальні навчальні контексти.

Ключові слова: *китайська мова як іноземна, цифрові рольові ігри, паратексти, готовність до спілкування, саморегульоване навчання, інтервальне повторення, модерований текстовий чат.*

INTRODUCTION

In the world of increasing globalization, the issue of language competence is important for both linguistics and pedagogy. Therefore, the concept of this quality, as well as the methods of its development, are relevant in modern scientific thought. Video games in modern realities are one of the most popular complex types of leisure, the sphere of which is constantly developing (Benson, & Chik, 2011). Therefore, it is of interest to study them in the context of the opportunity to increase linguistic skills.

Digital game-based language learning (DGBLL) has become an important part of CALL, and there is ample evidence that games designed with learning objectives in mind help motivate learners, encourage them to use language in real-life situations, and develop vocabulary in context (Reinhardt & Sykes, 2020; Dixon et al., 2022; Nalyvaiko et al., 2020).

The interactive, problem-solving nature of commercial games aligns with the principles of situational learning, long noted in the learning sciences literature (Gee, 2003). In applied linguistics, empirical studies in multi-user environments further show that gameplay can increase learners' willingness to communicate and promote pragmatic development with appropriate support (Reinders & Wattana, 2014; Reinders & Wattana, 2015). Taken together, these trends position DGBLL not so much as a technological add-on, but rather as an experiential, socially integrated approach to second language use and development.

Despite this growth, the literature disproportionately focuses on English-speaking ecosystems and Western games, while research on East Asian gaming worlds and mobile platforms remains relatively scarce and fragmented (Peterson et al. 2021; Peterson & Jabbari, 2022). At the same time, extracurricular digital interaction, often referred to in theory as out-of-school English or IDLE, has been shown to be associated with motivation and communication outcomes, yet comprehensive descriptions of how non-Western, narrative-driven games mediate intercultural communication and literacy practices remain limited (Sundqvist & Sylvén, 2016; Guo & Lee, 2023; Zadorozhnyy et al., 2023).

Filling this gap, the present study examines *Persona 5: The Phantom X* (*P5X*), a Chinese adaptation of the Persona franchise, as a potential environment for developing linguistic and communicative competence among learners of Chinese as a foreign language.

LITERATURE REVIEW

The issue of using digital technologies, in particular video games, in the development of language competence is actively studied in modern pedagogy and applied linguistics. Scientific sources indicate the growing role of interactive media as tools for learning

foreign languages, especially for young learners (Dobroskok et al., 2023). According to Gee (2003), video games create authentic contexts for acquiring knowledge and developing language skills, combining textual information, communicative interaction and problem-based learning. The researcher emphasizes that the player in the game is in a situation of active problem-solving, where language acts as a tool for achieving goals, which makes learning deeper and more conscious (Gee, 2003).

Digital games have become an important part of research in the field of computer-assisted language learning (CALL), and the results of this research show their undeniable benefits for motivation and the possibility of authentic, contextual language use. Chick (2014) describes how players organize learning around and within games, using autonomy and community practices that support second language development. Systematic reviews and field studies show that the promise of games depends on their design (Nalyvaiko et al., 2021), structure, and how learning is integrated into them, rather than on the games themselves (e.g., research synthesis and bibliometrics in the broader GBL/CALL space). It is important to note that controlled studies in the field of DGBLL show measurable emotional and communicative gains, but also caution that many assessments still lack longitudinal controls.

Another important aspect is related to the possibilities of Massively Multiplayer Online Role-Playing Games (MMORPG) that allow for real-time communicative interaction with native speakers. Peterson (2010) points out that such games provide conditions for a natural, authentic speech experience, which is consistent with the principles of the communicative approach to language learning. massively multiplayer online role-playing game.

Massively Multiplayer Online Game (MMOG) environments emphasize real-time interaction, collaboration, and discourse conditions associated with pragmatic development and willingness to communicate (WTC). Reinders and Wattana (2014) found that Thai students who played Ragnarok Online in English as a second language demonstrated significantly higher levels of WTC than when performing non-game-related tasks; subsequent work has detailed the affective mechanisms underlying these findings. Peterson's review of MMORPGs (2010) in CALL summarizes evidence that playing MMOGs promotes discussion of meanings, access to communities of practice, and the formation of positive attitudes, while noting methodological gaps. Taken together, these studies show that the communicative possibilities of MMOGs can stimulate L2 use, provided that the activity is structured and supported from a pedagogical perspective.

Reinhardt and Sykes (2014) focus on the motivational aspect: learning through games is perceived by students as a pleasant, exciting activity that causes deep involvement and interest in the language. Researchers emphasize that it is emotional involvement that is a powerful factor in the formation of long-term language skills.

However, scientists also note a number of limitations. For example, according to Thorne (2008), despite the potential of online games as a platform for learning, without proper methodological support and pedagogical integration, this tool can be ineffective or even disorienting for a novice linguist. In addition, the specific vocabulary, jargon and language structures inherent in a particular gaming environment can complicate initial immersion in the language.

Research by Cornillie, Thorne, and Desmet (2012) confirms that achieving a high educational effect requires structured integration of video games into the learning

process with a clear definition of learning goals, selection of appropriate game mechanics, and monitoring of the learner's language progress.

Beyond the game itself, paratexts (refers to the materials that surround and frame a main text or game, guiding how it is interpreted and used) walkthroughs, wikis, fan guides, developer blogs, streams mediate interpretation and practice, creating additional opportunities for contact with and use of the language. This concept originates from Genette's (1997) theory of paratextual "thresholds," which was later adapted for the study of games.

Consalvo (2017) shows how paratexts sometimes shift the focus away from "the game as text", bringing the surrounding media and player practices to the fore; Shvelch (2020) provides a comprehensive theoretical overview of paratextuality in game studies. In education, classroom work based on game paratexts (e.g., analysis of walkthroughs/forums, multimodal texts) is used to connect students' gaming and academic literacy (Apperley & Walsh, 2012).

For learning Chinese through *Persona 5: The Phantom X*, parallel fan wikis, forum threads, and user-generated glossaries form a plausible ecosystem for incidental vocabulary acquisition and pragmatic practice relevant to this literature.

Evidence for the effectiveness of gamification and game-based approaches is positive, but context-dependent. A landmark review by Hamari et al., (2014) concluded that effects vary widely depending on design and settings, and this conclusion has been echoed in later syntheses calling for clearer constructs and stronger study designs. Methodological limitations, short interventions, small samples, and limited pre/post measures remain common in DGBLL/MMOG studies, complicating claims of generalizable improvements in language proficiency and highlighting the need for structured analysis and evaluation aligned with learning outcomes.

Thus, a review of the current literature allows us to conclude that video games, when used correctly in a didactic way, have significant potential in the formation of language competence. This tool is particularly effective in terms of expanding vocabulary, developing communicative skills, and forming intercultural competence.

Based on these theoretical assumptions, this study aims to examine how *Persona 5: The Phantom X* (*P5X*) functions as an informal, but cognitively rich environment for language acquisition and communication skills development among learners of Chinese as a foreign language. The hybrid design of the game, combining role-playing mechanics, social simulation, and narrative dialogue, provides an opportunity to explore how linguistic competence develops through interaction, immersion in a language environment, and contextual problem solving. In particular, the study examines how authentic discourse in the game, multimodal cues, and peer collaboration contribute to both vocabulary retention and pragmatic fluency. Accordingly, the study pursues three interrelated goals:

- To analyze the linguistic and communicative mechanisms embedded in *Persona 5: The Phantom X* that facilitate exposure to authentic Chinese language use, including narrative dialogues, character interactions, and game missions;
- To explore the role of paratextual materials, such as fan-created wiki sites, gameplay forums, and online communities, in extending and reinforcing the learning process beyond the game itself;
- To evaluate the pedagogical potential of an integrated methodological framework that combines immersion in the game environment with digital language support

tools (e.g., Translumo, Reverso Context, and AnkiDroid) for vocabulary acquisition and comprehension improvement.

The significance of this study lies in its contribution to the evolving understanding of informal digital learning ecosystems. By positioning *Persona 5: The Phantom X* as an educational and cultural artifact, the study expands current discussions about how entertainment media can serve as incidental learning environments spaces where language development occurs through meaning-oriented participation rather than formal instruction.

Our research is interesting not only because it can become the basis for learning one of the most complex languages in the world, but also as an opportunity for further development of language competences using the gaming environment. Persona 5: X is created in the style that is popular in the segment of oriental, especially Chinese, RPG games, which combine offline and online elements. Thus, the project allows the player to develop language competence in literate, professionally prescribed activities and, at the same time, have access to social interaction with other players in real time, which implements conversational practice.

METHODOLOGY

Design

This was an experimental pilot project using mixed methods, with a single cohort (N=4) and post-intervention assessment. Quantitative data consisted of the results of a special lexical-grammatical test based on the game text; qualitative data consisted of semi-structured long interviews and observations of interactions in the game / paratext. The aim was to ensure ecological validity in a real commercial gaming environment, rather than testing hypotheses using control groups.

Participants

Four Ukrainian students whose native language is not Chinese participated in the study (three of them are third-year students, and one is a fourth-year student); they used different devices (PC and/or phone). Throughout the study, the pseudonyms Nparticipant 1–N4 were used. When recruiting participants, special attention was paid to their willingness to play *Persona 5: The Phantom X* (*P5X*) regularly for three weeks. Previous experience playing *P5X* was not required. The identities of the participants were anonymized in all records.

Table 1

Participant information (students who took part in the study)

Participant	Device	Mother language	Discipline	Grade
N1	PC, Phone	Ukrainian	Chinese	3rd year student
N2	PC	Ukrainian	Chinese	3rd year student
N3	PC	Ukrainian	Chinese	3rd year student
N4	Phone	Ukrainian	Chinese	4rd year student

Setting, intervention, and support

– Participants played *P5X* – a Chinese (**普通**话) adaptation of the Persona franchise with narrative dialogues, social systems, and limited MMOG-like features for 3 weeks, ~1.5

hours per day. Players could exchange messages with other participants via server chat (a public message feed visible to all players on the same server), private messages (direct one-on-one in-game messaging), and (where applicable) WeChat (a widely used Chinese messaging and social media app); one participant joined a clan. joined a «clan» (i.e., a structured in-game group or guild of players who cooperate to complete special tasks, gain collective rewards, and participate in group-based competitions within the game). To facilitate understanding and maintain contact with L2, participants use *Translumo* (OCR + machine translation for selected areas of the screen) *XUnity.AutoTranslator* (optional full-screen machine translation (MT); *DeepL*-based version used with caution); Capture2Text or OS screen capture for OCR fragments; *Reverso Context*, Chinese dictionaries (e.g., *Pleco* / *Trainchinese* / online dictionaries), and Chinese search (e.g., *Baidu*) to check meaning; *AnkiDroid* to create personal sets for spaced repetition.

Participants were instructed to first try to understand the text without assistance, to refer to the tools only in case of difficulty, and then to write down paraphrased key phrases to facilitate matching form and meaning.

Paratextual tasks

Each week, the participants worked with Chinese-language wiki pages, manuals, and forums related to the tasks they had just completed. They identified unfamiliar elements, checked their usage in paratexts, and created Anki flashcards (definition, example, and, if necessary, fill-in-the-blank). If public publication was not appropriate, reflections were recorded privately.

Data sources and instruments

a) Long semi-structured interviews (post-only).

Each participant completed a detailed written questionnaire (averaging approximately 16,000 characters) covering the following topics:

– perceived benefits and challenges;

– use of tools;

– meaningful interactions with other participants;

– opinions on the usefulness of the paratext.

The questionnaire questions were designed in accordance with established principles of qualitative interviewing (e.g., moving from general experiences to specific episodes).

b) Individual lexical and grammatical test (post-only).

The 15-question test focused on the elements and structures most frequently encountered/important in a specific segment of the game, which all participants took. To create the question bank, the team collected game texts from that segment, and generated a word cloud/frequency analysis to identify the most important words and patterns. Elements included matching form and meaning, lexical-grammatical choices, short translation, and short writing on topics related to the project. The test was constructed based on established principles of vocabulary testing (e.g., coverage/utility; (Nation, 2013; Schmitt, 2010)).

c) Personalized thematic prompts (post-only).

In short open-ended prompts, participants had to write a few sentences on topics they personally found interesting in *P5X* (e.g., social issues in the plot).

d) Field notes on interaction in the game.

During the intervention, the team documented the channels used (server chat, private messages, WeChat), tone and register, use of slang (e.g., ~27% of interlocutors reported using Chinese slang), and moderation context; the approximate number of interlocutors among participants was recorded (≈45 in total). These observations contextualize the topics of the presentations and interviews.

Note: In this iteration, standardized HSK measurement was not implemented before and after; the focus was on the feasibility of the assessment obtained in the game, as well as rich qualitative reports.

Procedure

- **Week 0.** Orientation on *P5X*, chat communication rules, and auxiliary tool workflows (screen OCR → meaning verification → Anki card).
- **Weeks 1–3.** Daily play (~1.5 hours), light reflection after sessions, weekly paratextual assignments; special check-ins with researchers to address technical questions.
- **End of Week 3.** Post-intervention package: long interview → 15-item lexical-grammatical test → personalized prompts.

Ethics and data processing

All participants gave their informed consent to anonymous reporting. Pseudonyms (participant N1–N4) were used; chat fragments that could identify participants were paraphrased or edited. Sensitive interactions (e.g., a single instance of negative attitudes toward foreigners) were recorded without verbatim reproduction.

Limitations of the method used

This pilot research design lacked a control/comparison group and baseline data prior to intervention, which limits the ability to draw conclusions about cause and effect. The special test was domain-specific and short (15 items), which limits its generalizability. Nevertheless, the consistency between the content of the game, the use of paratext, and the assessment goals provides an initial holistic view of the feasibility and external validity.

RESULTS

Online games are one of the main leisure time activities among the younger generation (Pew Research Center, 2024; Dobroskok et al., 2023). One of the main advantages of using video games in the development of language competence is interactivity (Nalyvaiko et al., 2020; Nalyvaiko et al., 2021).

Unlike those forms of entertainment in which a player is only an observer, video games require constant solving of various tasks, direct interaction with a number of prescribed mechanics and a game interface. Each interaction entails direct work with the language being studied.

This is not only a priori useful and even necessary for mastering a high level of language competence, but also contributes to increasing the user's active lexical dictionary. In addition, video game projects are characterized as a field for creativity that can unite all major forms of art, from music to writing skills (Murray, 2017; Collins, 2008).

Thus, practice in the field of video games can significantly improve, if not all, then at least most of the aspects that make up the concept of language competence (*Linguistic*

competence refers to a user's knowledge of, and ability to use, the language system including lexical, phonological, grammatical, and orthographic features enabling control over language form and structure. It is one of the three main components of communicative language competence, alongside sociolinguistic and pragmatic competences (Council of Europe, 2020, p. 91). Considering the fact that video games are also a popular leisure activity, everyone can find a project that will interest them. It is important to note that in this way the motivational issue, which is one of the main ones in modern didactics, can be solved. (Zadorozhnyy et al., 2023; Reinders & Wattana, 2015; Wang & Xue, 2022).

Speaking specifically about research with network functions, even greater prospects can be opened up. After all, online projects not only must often receive support from developers even after release, thanks to which the language nuances incorporated with each update will keep up with the times, but also provide direct interaction with other players. Speaking of foreign projects, this is a chance to establish contact with native speakers in real time. In addition, this is not an abstract dialogue, but communication to solve common game tasks, in which everyone will be motivated to understand each other by the game process itself. This not only accelerates language practice, but is also an extremely useful practical experience within this practice.

Of course, one cannot fail to mention the undeniable disadvantages of using video game experience in the field of language competence development. Since most popular game developers are not interested in using their projects within the framework of language practice, game projects are often aimed exclusively at native speakers.

This means that in order to use them to practice language skills, players must already have a certain level of language proficiency, sothe choice of interesting game projects for a beginner linguist is greatly reduced.

In the video game industry, as in any echo of pop culture, a layer of its own slang and specialized concepts has managed to emerge, which the player should be prepared for when diving into one of the projects. Over time, this is mastered and can even be useful as a supplement to the current lexical dictionary, but someone who has not previously played video games may experience initial inconvenience.

The most obvious issue when talking about the online component of video games is the lack of a "quality mark." That is, no one is responsible for the interlocutor and their literacy. Players do not even have to be native speakers, which is most relevant for learning English. Therefore, it is impossible to recommend online projects as didactic materials without careful preparation and high-quality selection.

One such variant could be *Persona 5: The Phantom X* (hereinafter referred to as *P5X*), which was developed by the Chinese Black Wings Game Studio in collaboration with the Japanese P-Studio. The publishers were Beijing Perfect World and Atlus. The project was released as a closed beta version in mainland China in 2023, open testing began in 2024 and also included Taiwan, Hong Kong, Macau, Japan, and Korea.

P5X was created in Chinese (**普通**话), has Chinese (**普通**话) and Japanese voice acting. Currently, it is also localized into Japanese and Korean, and has a version using traditional characters (**繁体中文**) for the respective regions.

Next, the gameplay and the functionality/toolkit that *P5X* offers will be examined in more detail.

Figure 1. *Screenshot from the promotional poster of Persona 5: The Phantom X. © ATLUS / SEGA / Perfect World.*

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

Interaction with other players in *P5X* is implemented on several levels. Players can communicate with each other in groups, limited to the number of players on the current server, chats, and through personal messages. In addition, the player is able to display two characters on the profile, which allows any of the player's friends to use them in their team. Both players receive a unique game currency for this, and the process itself can help people get closer, motivate them to expand their circle of gamer acquaintances, and aligns with one of the game's main themes – namely, the importance of social connections.

Figure 2.

Screenshot from the game Persona 5: The Phantom X demonstrating the friendship assistance system. © ATLUS / SEGA / Perfect World

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

The game also has clan mechanics (i.e., in-game social groups that allow players to collaborate, complete tasks, and compete collectively).They have their own set of tasks and a specific selection of game opponents, special for clan activity. Unfortunately, only

one player was able to become a member of the clan during the testing period of the methodology.

This is explained by the fact that most such groups are created to effectively earn game resources, and gain a place as leaders among their peers, so it is difficult for newcomers to *P5X* to get into it. However, there are also separate clans without broad ambitions, especially for such players, which is where the participant ended up. Thus, *P5X* allows players to interact with each other in various ways, but the selection is strictly limited. Direct contact between players in the game world is also impossible.

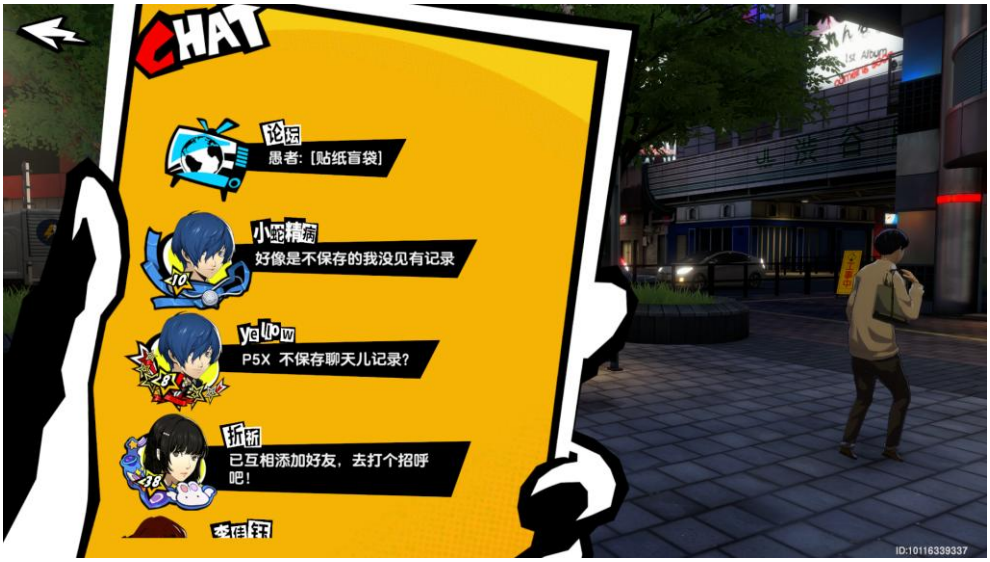
On the one hand, in this respect *P5X* loses to projects such as WoW, which, as Rama et al. (2012) argued, promote interaction through immersive worlds that promote the development of communicative competence, and provide purposeful actions between experienced and novice players.

On the other hand, this eliminates the factor of player rivalry, noted in the work of Harviainen et al. (2014), which contributes to the creation of safe spaces for learning and language acquisition. The only competitive element in *P5X* is the activity of clans, and this is expressed by a visual leaderboard among different large groups of players. There is no violent confrontation between characters.

Regarding game dialogues, as the main way of contact between players in *P5X*, to which all other levels of interaction often directly lead, several conclusions can be drawn. The Chinese audience does not have generally accepted preferences regarding the place of communication. It can be a general server chat, private messages or even WeChat, where the dialogue can smoothly transition.

Figure 3

Screenshot from the game Persona 5: The Phantom X demonstrating the in-game chat system. © ATLUS / SEGA / Perfect World.



Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

The experience of communicating with other users of the project left a generally positive impression. The number of active interlocutors of all the participants reached approximately 45 people. Opinions about communication on the network converged. Of course, this sample cannot be considered representative, but it clearly demonstrates possible examples of online communication for the purpose of developing language competence in *Persona 5 X*.

The interlocutors behaved politely and benevolently. There was no foul language. Such behavior is facilitated by strict moderation, at least in the version of the game for the Chinese region. The players' style of speech, in general, can be called conversational, literate, although some nuances such as lengthy and "overloaded" sentences, or, conversely, messages from separate, broken phrases were encountered. The local audience liked to embellish their speech with 颜文字 (horizontal reactions from symbols, in the Japanese style), and also often used figurative phrases to describe their thoughts and feelings. In addition, 27% of the Chinese interlocutors had examples of Chinese slang in their speech.

Dialectisms that were not typical of Putonghua or obvious violations of the grammar of the state language were not noticed. This may have been facilitated by the division of the game servers into mainland China (简体中文) and Taiwan (**繁体中文**), which immediately eliminates some dialect groups that are closer to the traditional language from the considered version. The participating in this study found the practice of online communication with other players pleasant and interesting, and noted that it gave them a new experience.

Among the extraordinary situations that occurred, several humorous spammers who added themselves as friends to the participants, and wrote similar humorous texts can be singled out. Also, the conversation did not work out with one of the participants due to a biased attitude towards foreigners, but this example was unique.

Also, in this respect, the practice confirmed the theses of Chik (2011, 2012, 2014) that sometimes native speakers become not only interlocutors, but also mentors in learning the language. There were several examples in which, when the dialogue gained speed and the discussion moved on to ambiguous topics, for example, social, expressions of impressions and feelings, the Chinese audience noticed the unusual syllables of the participants and, if their foreign origin had not been consecrated earlier, the players guessed it.

However, no humiliations on a linguistic basis arose. It should be noted that although some Chinese users did not want to waste time talking to a person who did not yet speak their language fluently, most native speakers were not averse to telling the participants the meaning of a word or its correct use. In general, the ratio of these Chinese players with different points of view can be described as 40%/60%.

However, it is worth bearing in mind that, just as in the work of Chik (2011, 2012, 2014), gamers almost never act as full-fledged consultants and advisors for new players, there were almost no native speakers who were ready to regularly and voluntarily devote time to helping a foreign beginner. The only such case occurred in the practice of one of the students, but it was a consequence not so much of the Chinese player's interest in mentoring, but of the native speaker's desire to become a friend, to get to know the participant better.

In general, such a result is understandable: *P5X* is perceived by most Chinese as an entertaining pastime, and the practice of a game guide can be difficult and requires significant and voluntary efforts.

The simplified Chinese used in the game can be described as a variant close to colloquial, both in the communication of the characters and in the interface. There are no dialectisms that differ from the spoken norms of Mandarin. As a result, *P5X* can be recommended to those who are studying the state language. A separate advantage is

the proximity of the characters' language to the "natural" everyday communication of the Chinese: the characters' language is full of colloquial abbreviations, colloquial phrases, and even figurative expressions.

In addition, due to the style of the project, almost every dialogue between the characters is accompanied by built-in subtitles which the player can stop after each phrase – a classic approach to the design of the characters' conversations for projects of this genre. For players who practice Mandarin, Mandarin is a valuable material (language).

Figure 4

Screenshot from the game Persona 5: The Phantom X demonstrating an in-story dialogue. © ATLUS / SEGA / Perfect World.

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

By combining modern everyday life, psychological theory, the religion and mythology of different countries, and occult practices such as tarot cards, *P5X* provides language practice in various areas. The built-in plot, on the topic of current social problems, contributes to the study of various complex phrases and contexts that are rarely used in textbooks. The modern interface allows the player to get acquainted with a number of network terms relevant to China.

Nevertheless, one of the important aspects of language competence, namely cultural, is expressed ambiguously: since *P5X* was originally a Japanese franchise, so the game setting is made in the style of modern Tokyo. However, since the language component of the project is still performed by native speakers, it fully retains the subtleties of meaning characteristic of the Chinese language.

The analysis of game-inspired paratexts deserves special attention. Apperley and Walsh (2012) note that good games involve players not only in the process itself, but also in reading and writing articles about them on interest-oriented sites. At the same time, Chik (2011, 2012, 2014) argues that game paratexts produced in both first and second languages serve as "funds of knowledge" that support language learning – a concept originally developed by Moll et al. (1992) to describe the cultural and intellectual resources learners bring to educational contexts. For players who tested this study's our method of acquiring language competence in *P5X*, game paratexts also turned out to be extremely important.

Due to the complexity of the game mechanics and the importance of effective character development, three out of four players regularly used them. The sphere of paratexts for

P5X has recently evolved into a very interesting situation. By the time this article was written, the project/game had already been released for a Western audience, with official translations in English and Japanese. Thus, the vast majority of game materials are currently either in Chinese, most often in Mandarin, or are hastily translated versions of the Chinese originals. This creates a unique field for fruitful mastery of a foreign language.

Figure 5

Demonstration of the game Wiki on the Gamekee website

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

Based on the interviews carried out, *P5X* paratexts are extremely important for novice players. As mentioned earlier, the game is full of many mechanics. As mentioned earlier, the game is full of many mechanics i.e., the underlying rules and systems that govern how players interact with the game, such as turn-based combat, dialogue choices, skill progression, inventory management, and social relationship building. Written in the original language, *P5X* paratexts provide the best set of educational materials for such a wide game.

For most players, studying them implies attentiveness and assiduous reading of Chinese-language materials, because sometimes the correct answer may depend on a single phrase. Of course, in the process of mastering a second language, this practice offers great benefits.

In addition, fan art, which can also be part of this concept, is very original and, as the experienced players themselves noted, sparks greater interest in the game itself, be it by reminding of vivid episodes, the opportunity to look at some aspects of the game from a different perspective, or discussing a pleasant topic.

Thus, the analysis of the scope of paratexts for *P5X* confirms the conclusions of previous studies on the topic. At the same time, it shows that the specific language situation around *P5X* is able to solve one of the problems of language practice, highlighted, in particular, es by Chik (2012, 2014), namely student fatigue from constant work with material in the language being studied. A person wishing to master Chinese can now, in many cases, switch at will from Chinese-language materials to more familiar English-language, and even Ukrainian-language materials from school years without serious information losses.

Methodology for effective development of language competence through interaction with *P5X*

In order to conduct a practical assessment of the above theses, a methodology was created for effective development of language competence through interaction with *P5X*. One of the key factors in the benefit of online video games for training a linguist is, as described earlier, the experience of direct practice with the language being studied. The goal was to make this process as convenient and effective as possible. Unfortunately, the Ukrainian market of applications for learning foreign languages, especially Eastern ones, is currently not as well developed as the European one, so the applications presented in the example require knowledge of English for fruitful use. This is not a significant problem, since level B1 will be enough for confident use. In the Ukrainian education system, this level corresponds to an applicant who has completed secondary education.

It should be noted that due to the specifics of different operating systems, a method of working with a Windows-based project is under consideration. This system has the largest library of resources useful for the research undertaken, and the official release of *P5X* was on Windows. Also, Windows was the most convenient operating system for the person who agreed to try the method described in this study.

The first step is to understand the general context of the situation. If the player's skills at the time of the game are not enough for correct interpretation, third-party programs with screen capture can provide support. Often, a description of the general context from the player's side is enough to understand what was written.

It was decided to use *Translumo* as the main source of real-time machine translation. Its main advantage is the ability to translate only the selected area, which avoids overloading the text with unnecessary terms, as well as a decent selection of OCR models that put different loads on the system. Another acceptable option, due to the appropriate basic software, is *XUnity.AutoTranslator*. This version, based on *DeepL* receives constant updates from the game's fanbase. However, since *XUAT* automatically translates all on-screen text, **making it impossible to see the original phrases**, the software can be recommended only to novice linguists because it removes the practice of real-time translation.

Figure 6

Screenshot from the game Persona 5: The Phantom X demonstrating the 'Translumo' application. © ATLUS / SEGA / Perfect World

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

Figure 7

Screenshot from the game Persona 5: The Phantom X demonstrating the 'XUnity.AutoTranslator' application. © ATLUS / SEGA / Perfect World

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

The next step is to highlight the nuances of the text that are of interest, whether they are new words or grammatical constructions. For those who are starting their practice with XUAT, this problem is solved by the fact that the software saves all the translated text in a document, where it can be studied in detail after the game session. Translumo does not offer such a detail, so in this case, additional programs should be used. A valid option is a free application like Capture2Text. Also, if the large number of software applications does not suit the user, Windows 10 and 11 have a built-in photo selection function. A screenshot can be deciphered into text using Google Translator. Despite the obvious shortcomings, it has been shown to work well with the *P5X* text. The existing text can be studied using both offline and online dictionaries (Pleco, Trainchinese, Slovaronline...), Reverso Contex, if common expressions are involved, Chinese search engines like Baidu, and so on.

Figure 8

Screenshot from the game Persona 5: The Phantom X demonstrating the Capture2Text application. © ATLUS / SEGA / Perfect World

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

To consolidate new vocabulary, keeping a personal online dictionary is suggested. Of the free analogues on all major platforms, AnkiDroid copes with this task perfectly. It compiles various flashcard options and its own system for memorizing new words, increasing the time intervals between them as the user's memorizing skills improve.

Figure 9

Screenshot from AnkiDroid demonstrating its use

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

Manual tuning of various neural networks was not considered in this trial since this is a topic that affects a large number of different aspects, and deserves a separate study, which could not be included in the scope of the current study.

As part of this study, the above interaction model (methodology) was tested by one user over several weeks, during which at least 1.5 hours per day were devoted to the game process for the purpose of language learning.

After the time ran out, users were offered the opportunity to take a prepared test. This test can be divided into three main parts:

- The first was a text-based in-depth interview of the participants with an average of 16,000 characters each. During the preparation, all the main principles described by Kvale and Brinkmann, (2015) were taken into account. This approach made it possible to get to know the test subjects' impressions of the game process in as much detail as possible; to highlight interesting nuances that arose during their practice; to better assess the strengths and weaknesses of the methodology. Such conversations provided a much deeper understanding of the results of organized practice than, for example, the Likert scale that had been used before.
- The second part was to test the participant's knowledge in those branches of the Chinese language that were most used in the section of the game that the users went through, and therefore could be remember most accurately in the best way. These "branches" were identified by means of a systematic collection of the text containing the considered section of the game, and the construction of a "word cloud" based on it. To prepare competent lexical and grammatical testing, the work of Nation (2013) and Schmitt (2010) in particular were used.

Figure 10

Demonstration of a "word cloud" based on the first five hours of gameplay

Note. *Used under fair use for educational and scholarly commentary. No commercial use.*

The third part provided questions based on topics that were most interesting to the participants personally.

The questions for the second and third parts of the test consisted of tasks to determine the grammatically and lexically correct answer, translation, as well as requests to express themselves in several sentences on the topic highlighted in the project.

The results of the interviews conducted in the first part could be observed in the multiple references to them throughout the text of this study. It is worth noting that all the subjects assessed the benefits of such practice very positively, but the fact that it is still unusual for them plays its role, and makes their responses somewhat more restrained. In particular, getting acquainted with the functionality of the proposed applications required additional time. Moreover, three out of four players would have liked to become more acquainted with the project, but there was not enough time due to their academic obligations.

Regarding the general impression of the practice, all the responses were extremely positive. The students really liked this format and found it very interesting. Considerable attention was paid to motivation, which was regularly stimulated during the game until the very end of the practice.

In terms of assessing the participants' knowledge with regard to the most used branches of the Chinese language in the project, Participant 1 made one mistake: it occurred due to the subtlety of the context of one of the expressions. After analyzing the task, the participant easily understood what the essence of this inaccuracy was, and which answer option was correct. Participant 2 made about three comments, of which one was grammatical and two lexical. He referred to the fact that subjective circumstances could have hindered his results, but also admitted that it was very difficult to navigate the project topics, which deviate from the usual vocabulary of language textbooks in his

program. Also, according to his comment, he needed a fairly long time to learn new vocabulary, and the framework for testing the methodology turned out to be insufficient. The subject recognized the benefit and interest of the developed practice, but to achieve ideal results he needed more time. tudent 3 made about two lexical comments. They were made due to the ambiguity of one of the phrases (which coincides with the phrase where participant N1 made a mistake), and, according to the student, his personal inattention when answering one of the questions. Participant 4 completed the test with a perfect result. This can be explained not only by the fact that he remembered all the nuances of the current game vocabulary at a sufficient level, but also by the fact that this student is a representative of the senior, 4th year, and therefore has a greater baggage of practical knowledge of the Chinese language. In general, considering the total volume of the test in 15 test questions, it can be concluded that the error rate of the partocoàmts was small.

In separate reviews of sthe participants' knowledge of the topics of *P5X* that are of personal interest to them, participants 1, 3 and 4 did not make any mistakes. Participant 2, who had the greatest difficulties with new material and an unusual approach to learning, showed an almost excellent result. Specifically, this participant again encountered difficulty in the section containing new vocabulary that he had not yet had time to practice. He was able to quickly understand and correct his mistake after summing up.

In the tasks for a short expression of their thoughts on one of the topics updated in the project, Participants 1, 2 and 3 did not make any mistakes. The exception was participant 4. This is due to the fact that he decided to go further, and made a very long statement on the topic of a person in modern society which was revealed in the game. And even though he has the most experience among the participants, several remarks could not be avoided in such a voluminous and contextually complex written response. However, the fact that *P5X* is able to motivate players to immerse themselves in rather ambiguous topics, providing direct interaction with difficult language vocabulary and context, can be called an interesting detail of the project. In addition, it can be noted that in this task, students often used statements directly borrowed from the game, which may indicate good memorization of these key phrases by all subjects. Even participant 2, thanks to successful memorization of key sections of the game vocabulary and a certain freedom of expression, which enabled him to choose words confidently, did not allow misunderstandings. In general, the test result showed a positive effect of the methodology confirmed the previously mentioned theses, and highlighted several nuances that warrant attention in future research.

The study suggests that online video games, when used purposefully, can be an effective tool for developing language competence. The *P5X* game is an example of a language environment that combines elements of authentic communication, story-telling, and interactive interaction.

DISCUSSION

This exploratory study investigated whether *Persona 5: The Phantom X*, a narrative-driven video game in Chinese, could support intermediate L2 learners in developing lexical knowledge and reading fluency. Despite the small sample size and exploratory nature of the project, several key patterns emerged that highlight the potential of integrating entertainment-based digital media into language learning practices.

Participants demonstrated consistent engagement with the game's rich linguistic environment, navigating its subtitled dialogues, quest descriptions, and interactive elements using a combination of deductive reasoning and tool-assisted strategies. These behaviors align with previous research emphasizing the role of context-rich, incidental vocabulary learning in digital game-based environments (Peterson, 2010; Sykes & Reinhardt, 2013). Through repeated exposure and self-regulated learning techniques such as dictionary lookups and spaced repetition, learners gradually developed both receptive and productive lexical competence, confirming prior observations by Sundqvist and Sylvén (2012) regarding the pedagogical potential of out-of-school gaming.

Additionally, the game's structured input, especially scrollable subtitles, dialogue choices, and visual cues supported focused attention on form and meaning. These features align with the principles of input enhancement and allowed learners to engage in what Schmidt (2001) defines as noticing, a precursor to long-term language acquisition.

One of the most prominent outcomes was the increase in learner autonomy and motivation (Holubnycha et al, 2025), (Ptushka, 2024). All participants reported that the narrative of the game was not only engaging but also motivating, leading them to persist through complex dialogues and even seek out supporting materials such as wikis and fan guides written in Chinese. This sense of personal investment is significant, given the centrality of motivation in second language acquisition theory (Liu et al, 2025). The autonomy granted by the game letting players choose when, where, and how deeply to engage mirrors the core tenets of self-determination theory (Ryan & Deci, 2000), which posits that meaningful learning flourishes when learners perceive competence, autonomy, and relatedness.

Participants also reported a reduction in affective filters such as language anxiety, as interactions with the game occurred in a private, non-judgmental space. As Gee and Hayes (2011) note, such environments can lower the perceived cost of linguistic risk-taking, facilitating deeper engagement with input that might otherwise feel overwhelming.

The current study has several limitations that should be considered. The sample size was small (N=4), and a control group was not used, making generalization difficult. Furthermore, despite the use of pre- and post-tests, the assessment focused on lexical recognition and short contextual comprehension tasks; more detailed measures of productive language use (e.g., written tasks, oral production) could yield deeper insights in future studies.

Another limitation lies in the specific nature of the game itself. *Persona 5: The Phantom X* offers an unusually rich storyline and a large amount of readable text. Not all games offer the same opportunities. Therefore, future research could focus on comparing different genres (e.g., role-playing games and action games) or identifying specific design features, such as subtitle formatting, in-game explanations, or narrative pacing, that most directly contribute to language development.

Furthermore, while participants benefited from access to the game's paratextual ecosystem, this content was not always pedagogically prepared. Integrating teacher-developed learning tools or collaborative classroom activities based on these materials can enhance their effectiveness while maintaining the autonomy that students value.

In the context of the limitations of the study, it is necessary to express a number of observations that were recorded during interaction with applicants.

This study focused primarily on individual practices, not including planned contacts between participants. Even the surveys were conducted in isolation. The development of a group methodology could both improve the trial and expand the research in a completely new direction.

No less important for future work may be the feedback collected from the participants. Their complaints and suggestions can become valuable material.

When selecting applications for the implementation of the described methodology, the main criteria were accessibility, PC-oriented, ease of use and compliance of the functionality with the specified goals. The issue of adapting this methodology to function effectively on other devices (e.g., mobile phones, tablets, or operating systems beyond Windows) remains unresolved. With a more detailed study, the specified programs can be replaced or even written independently, provided that the appropriate skills are available. The prospect of using neural networks, which have been developing more and more rapidly in recent years, is also applicable to this methodology, although in this study it was deliberately excluded. Considering the aforementioned importance of paratexts for this study and the unusual linguistic situation associated with them, it makes sense to archive and categorize the most valuable material in order to preserve them, and make the participants' work with them more efficient.

CONCLUSIONS

This study demonstrated that the *Persona 5: The Phantom X* (*P5X*) can serve as an effective resource for intermediate-level Chinese language learners, providing meaningful engagement with authentic texts and interactions in simple social contexts. Although modest in scale, the results suggest that structured gameplay, supported by light learning and reflection protocols, can promote not only incidental vocabulary acquisition, but also sustained motivation, increased willingness to communicate, and productive use of paratextual materials such as wikis and tutorials.

The success of this trial appears to depend on a combination of several factors: learner interest in the game genre, semi-structured integration of paratextual tasks, and the thoughtful use of tools that facilitate comprehension without reducing cognitive effort. The data collected, quantitative performance data, qualitative interviews, and behavioral models, indicate that learners not only consumed content, but also actively transformed input into output through searching, paraphrasing, and short production procedures.

Despite limitations in scope and generalizability, this pilot project contributes to the growing body of research on game-based language learning and points to promising avenues for future research. Specifically, it calls for larger, comparative studies to assess the relative impact of various design features (e.g., chat moderation, story-based development, asynchronous coordination) on learning outcomes. It also highlights the need for improved assessment tools that account for the interaction patterns characteristic of text-rich leisure environments.

Ultimately, this study confirms the pedagogical potential of game-based learning not as a substitute for formal instruction, but as a complementary, ecologically valid space where learners can develop personal interests, engage with meaningful content, and experiment with language, all while engaging in social integration and stimulating cognitive abilities.

The results obtained indicate an increase in lexical activity, improved understanding of the context, as well as increased motivation to learn a foreign language. The methodology, which involves step-by-step work with the text content of the game, has shown its effectiveness even when used individually. Despite certain limitations associated with gaming slang and the need for an initial language level, video games have significant potential as an additional educational resource in the field of language skills formation. Further research into the structured integration of gaming platforms into formal language learning is promising.

IMAGE USE DISCLAIMER

All figures in this paper are used solely for non-commercial, educational purposes, under the fair use provisions of copyright law. *Persona 5: The Phantom X* and related imagery are the intellectual property of *Atlus / SEGA / Perfect World*. Visual representations of third-party applications (e.g., Translumo, AnkiDroid) are included only to illustrate their educational functions. No infringement is intended.

CONFLICT OF INTERESTS

The authors declare that there are no conflicts of interest regarding the publication of this paper.

FUNDING

The authors declare that this study received no specific financial support.

REFERENCES

Apperley, T., & Walsh, C. (2012). What digital games and literacy have in common: A heuristic for understanding pupils' gaming literacy. *Literacy*, *46*(3), 115–122. https://doi.org/10.1111/j.1741-4369.2012.00668.x

Benson, P., & Chik, A. (2011). Towards a More Naturalistic CALL: Video Gaming and Language Learning. *International Journal of Computer-Assisted Language Learning and Teaching*, *1*(3), 1–13. https://doi.org/10.4018/ijcallt.2011070101

Chik, A. (2011). Learner autonomy development through digital gameplay. *Journal of Digital Culture & Education, 3*(1), 30–45. https://www.digitalcultureandeducation.com/s/Chik-April-2011.pdf

Chik, A. (2012). *Digital gameplay for autonomous foreign language learning: Gamers' and language teachers' perspectives*. In H. Reinders (Ed.), *Digital games in language learning and teaching* (pp. 95–114). Palgrave Macmillan. https://doi.org/10.1057/9781137005267_6

Chik, A. (2014). Digital Gaming and Language Learning: Autonomy and Community. *Language Learning & Technology, 18*(2), 85–100. https://doi.org/10.64152/10125/44371

Collins, K. (2008). *Game sound: An introduction to the history, theory, and practice of video game music and sound design.* MIT Press. https://doi.org/10.7551/mitpress/7909.001.0001

Consalvo, M. (2017). When paratexts become texts: de-centering the game-as-text. *Critical Studies in Media Communication*, *34*(2), 177–183. https://doi.org/10.1080/15295036.2017.1304648

Cornillie, F., Thorne, S. L., & Desmet, P. (2012). ReCALL special issue: Digital games for language learning: challenges and opportunities: Editorial Digital games for language learning: from hype to insight?. *ReCALL*, *24*(3), 243–256. https://doi.org/10.1017/s0958344012000134

Council of Europe. (2020). *Common European Framework of Reference for Languages: Learning, teaching, assessment – Companion volume*. Council of Europe Publishing. https://www.coe.int/en/web/common-european-framework-reference-languages/

Dixon, D. H., Dixon, T., & Jordan, E. (2022). Second language (L2) gains through digital game-based language learning (DGBLL): A meta-analysis. *Language Learning & Technology*, *26*(1), 1–25. https://doi.org/10.64152/10125/73464

Dobroskok, I., Nalyvaiko, O., Masych, V., Vasyuchenko, P., Melnyk, T., & Zhernovnykova, O. (2023). Development of quest games in the process of teaching students of technical specialties. In *AIP conference proceedings* (Vol. 2928(1), p. 090006). https://doi.org/10.1063/5.0172914

Gee, J. P. (2003). What video games have to teach us about learning and literacy. *Computers in Entertainment*, *1*(1). https://doi.org/10.1145/950566.950595

Gee, J. P., & Hayes, E. R. (2011). *Language and learning in the digital age*. Routledge. https://doi.org/10.4324/9780203830918

Genette, G. (1997). *Paratexts: Thresholds of interpretation*. Cambridge University Press. https://doi.org/10.1017/cbo9780511549373

Guo, X., & Lee, J. S. (2023). A systematic review of Informal Digital Learning of English: An ecological systems theory perspective. *System*, *117*, Article no. 103097. https://doi.org/10.1016/j.system.2023.103097

Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does Gamification Work? – A Literature Review of Empirical Studies on Gamification. In *2014 47th Hawaii International Conference on System Sciences* (pp. 3025–3034). https://doi.org/10.1109/HICSS.2014.377

Harviainen, J. T., Lainema, T., & Saarinen, E. (2014). Player-reported impediments to game-based learning. *Transactions of the Digital Games Research Association*, *1*(2), 55–83. https://doi.org/10.26503/todigra.v1i2.14

Holubnycha, L., Kostikova, I., Besarab, T., & Koshechkina, T. (2025). Teaching methods for large student groups at a Chinese university. *Educational Challenges, 30*(1), 26–39. https://doi.org/10.34142/2709-7986.2025.30.1.02

Kvale, S., & Brinkmann, S. (2015). *Interviews: Learning the Craft of Qualitative Research Interviewing* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Liu, G., Hu, J., & Kostikova, I. (2025). Music therapy and its impact on anxiety and mental well-being of Chinese students: An experimental comparison of traditional and VR approaches. *Acta Psychologica, 255*, Article 104898. https://doi.org/10.1016/j.actpsy.2025.104898

Moll, L. C., Amanti, C., Neff, D., & Gonzalez, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory Into Practice*, *31*(2), 132–141. https://doi.org/10.1080/00405849209543534

Murray, J. H. (2017). *Hamlet on the Holodeck: The future of narrative in cyberspace*. MIT Press.

Nalyvaiko, O., Reznichenko, H., Kulakova, I., Kudaieva, O., & Bondarenko, A. (2020). Learning chinese using digital applications. *Scientific Notes of the Pedagogical Department, 47*, 64–77. https://doi.org/10.26565/2074-8167-2020-47-08

Nalyvaiko, O., Zhukova O., Ivanenko, L., Shvedova, Y., & Nekrashevych, T. (2021). Gamification as a New Format of Projects Method in Blended Learning Conditions Studying Disciplines of the Pedagogical Cycle. *Revista Romaneasca Pentru Educatie Multidimensionala*, *13*(4), 17–30. https://doi.org/10.18662/rrem/13.4/468

Nation, I. S. P. (2013). *Learning vocabulary in another language* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/cbo9781139858656

Peterson, M. (2010). Massively multiplayer online role-playing games as arenas for second language learning. *Computer Assisted Language Learning, 23*(5), 429–439. https://doi.org/10.1080/09588221.2010.520673

Peterson, M. (2016). The use of massively multiplayer online role-playing games in CALL: An analysis of research. *Computer Assisted Language Learning, 29*(7), 1181–1194. https://doi.org/10.1080/09588221.2016.1197949

Peterson, M., & Jabbari, N. (Eds.). (2022). *Digital games in language learning: Case studies and applications*. Routledge. https://doi.org/10.4324/9781003240075

Peterson, M., Thomas, M., & Yamazaki, K. (Eds.). (2021). *Digital games and language learning: Theory, development and implementation*. Bloomsbury Publishing. https://www.researchgate.net/publication/352831232

Pew Research Center. (2024, May 9). *Teens and video games today*. Pew Research Center. https://www.pewresearch.org/internet/2024/05/09/teens-and-video-games-today

Ptushka, A. (2024). Level Characteristics of Foreign Language Communicative Competence Development of Students for Technical Specialties. *Educational Challenges, 29*(1), 124–134. https://doi.org/10.34142/2709-7986.2024.29.1.09

Rama, P.S., Black, R. W., Van Es, E., & Warschauer, M. (2012). Affordances for second language learning in World of Warcraft. *ReCALL, 24*(3), 322–338 https://doi.org/10.1017/S0958344012000171

Reinders, H., & Wattana, S. (2014). Can I say something? The effects of digital gameplay on willingness to communicate. *Language Learning & Technology, 18*(2), 101–123. https://doi.org/10.64152/10125/44372

Reinders, H., & Wattana, S. (2015). Affect and willingness to communicate in digital game-based learning. *ReCALL, 27*(1), 38–57. https://doi.org/10.1017/S0958344014000226

Reinhardt, J., & Sykes, J. M. (2014). Special issue commentary: Digital game activity in L2 teaching and learning. *Language Learning & Technology, 18*(2), 2–8. http://llt.msu.edu/issues/june2014/commentary.pdf

Reinhardt, J., & Sykes, J. M. (2020). *Gameful second and foreign language teaching and learning: Theory, research, and practice*. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-04729-0

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, *55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Schmidt, R. A. (2001). *Attention, cognition, and second language instruction*. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3–32). Cambridge University Press. http://dx.doi.org/10.1017/CBO9781139524780.003

Schmitt, N. (2010). *Researching vocabulary: A vocabulary research manual*. Palgrave Macmillan. https://doi.org/10.1057/9780230293977

Sundqvist, P., & Sylvén, L. K. (2016). Extramural English in teaching and learning: From theory and research to practice. *ELT Journal*, *73*(1), 95–97. https://doi.org/10.1093/elt/ccy051

Švelch, J. (2020). Paratextuality in game studies: A theoretical review and an argument for expanding the field. *Game Studies, 20*(2). https://gamestudies.org/2002/articles/jan_svelch

Sykes, J., & Reinhardt, J. (2012). *Language at Play: Digital Games in Second and Foreign Language Teaching and Learning*. New York: Pearson.

Sylvén, L. K., & Sundqvist, P. (2012). Gaming as extramural English L2 learning and L2 proficiency among young learners. *ReCALL, 24*(3), 302–321. https://doi.org/10.1017/S095834401200016X

Thorne, S. L. (2008). Transcultural communication in open internet environments and massively multiplayer online games. In S. Magnan (Ed.), *Mediating discourse online* (pp. 305–327). John Benjamins. https://www.researchgate.net/publication/237201225

Wang, Q., & Xue, M. (2022). The implications of expectancy-value theory of motivation in language education. *Frontiers in Psychology*, *13*, 992372. https://doi.org/10.3389/fpsyg.2022.992372

Zadorozhnyy, A., & Lee, J. S. (2023). Informal Digital Learning of English and willingness to communicate in a second language: self-efficacy beliefs as a mediator. *Computer Assisted Language Learning*, *38*(4), 669–689. https://doi.org/10.1080/09588221.2023.2215279