

Game-Based Learning in Language Education: A Review of Empirical Studies from 2009 to 2018

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Abstract: This study conducted a systematic review of 35 empirical research regarding game-based language learning (GBLL) published by five high-impact international journals (*Language Learning & Technology*, *ReCALL*, *Computer Assisted Language Learning*, *System* and *CALICO*) from 2009 to 2018. Based on content analysis, we analyzed the research trends, research foci, and strengths and challenges of the game-based language learning. A number of findings were reported based on the above three aspects. The results showed that GBLL improves the overall language proficiency and academic performance of learners. Challenges were summarized for better designing and developing future digital games for language education.

Keywords: Digital games; Language teaching; Systematic literature review; Content analysis

1. Introduction

Employing digital games for the purpose of language learning has become ever more pertinent in computer-assisted language learning research within the last decade. Digital games themselves have many characteristics that are expressly applicable to general learning contexts, and specifically those found in the domain of L2 learning (Sykes & Reinhardt, 2013). In this study, three main questions are used to guide the analysis of the literature.

- a) What is the general research trend indicated by the GBLL studies?
- b) What are the main research foci of the GBLL publications?
- c) What are the promises and challenges of GBLL revealed by the publications?

2. Methodology

The content analysis method was adopted in this study. The collected data was analyzed according to the coding framework by Zheng et al. (2019) and then presented with frequencies along with detailed descriptions.

In this literature review, five representative refereed journals in the field of technology-enhanced language learning, *Language Learning & Technology (LLT)*, *ReCALL*, *Computer Assisted Language Learning (CALL)*, *System* and *CALICO*, were selected to search for research articles on GBLL. First, research papers were chosen for containing words like “game”, “gaming”, “play” and names of games in their titles, keywords and abstracts through reading every article in the five journals from 2009 to 2018. After searching, 42 articles related to game-based language learning were selected. As a few articles did not employ digital games and/or did not connect digital games with language learning, the 42 articles were re-examined carefully. Finally, seven unrelated articles were removed and 35 articles were identified for further analysis.

3. Results

3.1 General research trends of the empirical studies from 2009 to 2018

3.1.1 Number of empirical studies published from 2009 to 2018

Thirty-five empirical studies that employed digital games to promote students' language learning in the five journals during 2009-2018 were identified for review. In the past ten years, *ReCALL* and *CALICO* published the largest number of studies (12 and 9 studies respectively), accounting for more than half of the total. Studies focusing on the application of digital games in language learning has gradually increased since 2011, with certain ups and falls in attention. The year of 2012 witnessed the largest number of publications, in which, six studies were published in five journals. In general, the total number of articles published in this field is still quite small and the empirical studies were still in the preliminary stage.

3.1.2 Research sites of the empirical studies from 2009 to 2018

As we can see from Figure 1, more than one-third studies were conducted in America. In general, most of the empirical studies on digital game-based language learning were carried out in major developed countries, while relevant studies in other countries were insufficient.

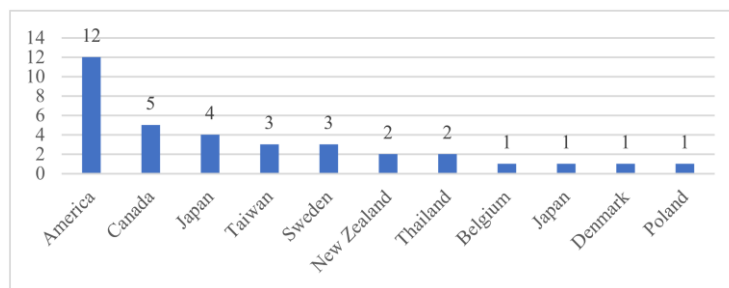


Figure 1. Research Sites of the Empirical Studies from 2009 to 2018

3.1.3 Target languages of the empirical studies from 2009 to 2018

Figure 2 depicted the target language of the empirical research during this decade. During the past decade, English was the most important target language, which reflects that English as the lingua franca of the world is widely used in academic, economic and technical fields. It also shows using emerging technologies to learn English well is still a vital topic in the field of language teaching, which has great value and potential to be further discussed.

Hong et al. (2017) investigated the effectiveness of using Chinese radical learning game (CRLG) to practice recognizing Chinese radicals. With China increasingly playing its role on the global stage, Chinese is becoming more and more popular, and studies on Chinese learning through digital games is expected to increase in the next few years.

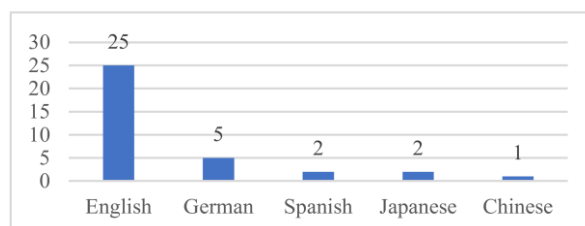


Figure 2. Target Languages of the Empirical Studies from 2009 to 2018

3.1.4 Research settings of the empirical studies from 2009 to 2018

As indicated in Figure 3, more than half of the articles we reviewed were conducted in high education (undergraduate and postgraduate) settings, indicating the popularity of applying the digital games to the language education among adult students. It is easy to understand since adult learners may be more competent with new technological innovations such as virtual reality employed in some digital games. An interesting research trend is that researchers have started to realize the potential effectiveness of applying digital games in language learning.

As Pitura and Pacut (2018) mentioned, being able to communicate in foreign languages, along with the remaining key competences for lifelong learning, are of special significance for upper-secondary school students. More studies should be conducted to investigate factors that may affect children’s learning behaviors and characters in digital-based language learning.

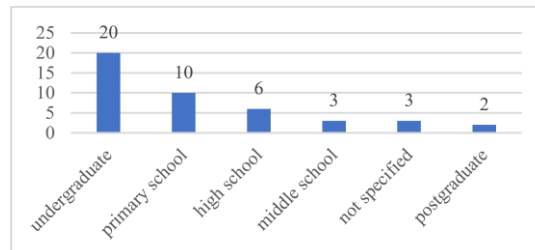


Figure 3. The Research Settings of the Empirical Studies

3.2 Research themes of game-based language learning

3.2.1 GBL for linguistic knowledge and skills

Among the reviewed articles, we found eighteen studies focusing on the themes of GBL for improving language learners’ linguistic knowledge and skills. As we can see from Figure 4, over half of these studies (9 articles) explored the potential benefits of digital games for enhancing language learners’ overall language proficiency, language performance or target language output. Others dealt with specific linguistic skills achieved through effective learning tasks in game-based language learning, such as listening, speaking, writing and vocabulary.

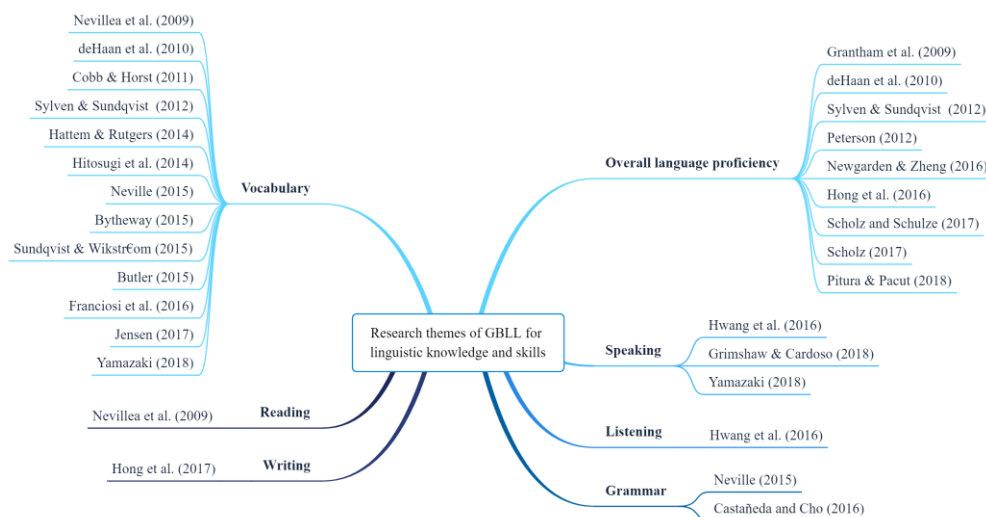


Figure 4. Research Themes of GBL for Linguistic Knowledge and Skills

3.2.2 GBL for non-linguistic knowledge and skills

Fourteen studies were identified as to explore the themes of digital games for improving learners’ non-linguistic knowledge and skills (see Figure 5). A variety of aspects concerning their non-linguistic knowledge and skills were discussed, among which, five studies centered on fostering language learners’ communicative skills, strategies or their social cultural interactions through the applications of

digital games. The benefits of digital games for other non-linguistic knowledge and skills also include boosting learners' critical thinking, cross-cultural competence, and collaborative learning skills. Be more specific, Reinders and Wattana (2014) reported on a study into the effects of digital game play on learners' communicative skills with a popular online role-playing game Ragnarok Online. Grantham et al. (2009) discussed how learners' learning experience through the virtual reality games may impact their cultural knowledge acquisition, positive attitudes toward the target culture and their cross-cultural adaption or adjustment.



Figure 5. Research Themes of GBL for Non-Linguistic Knowledge and Skills

3.2.3 GBL for language learner characteristics

Individual differences in second language learning are the main factors affecting second language learning. Among 35 reviewed studies, 12 articles focused on language learner characteristics (see Figure 6). The series of challenges presented by digital games are unpredictable and competitive, which can stimulate the curiosity of language learners and become an intrinsic motivation. This is why online games can serve as learning tools, providing learners with a brand new way of entertainment (Ampatzoglou & Chatzigeorgiou, 2007). Six articles explored the impact of games on learner motivation. The benefits of digital games for other language learner characteristics also include promoting learner perceptions and attitudes, and learner engagement. This literature review indicated that existing studies have paid less attention to factors that affect students' language learning, such as learner self-efficacy and language ability tendency.

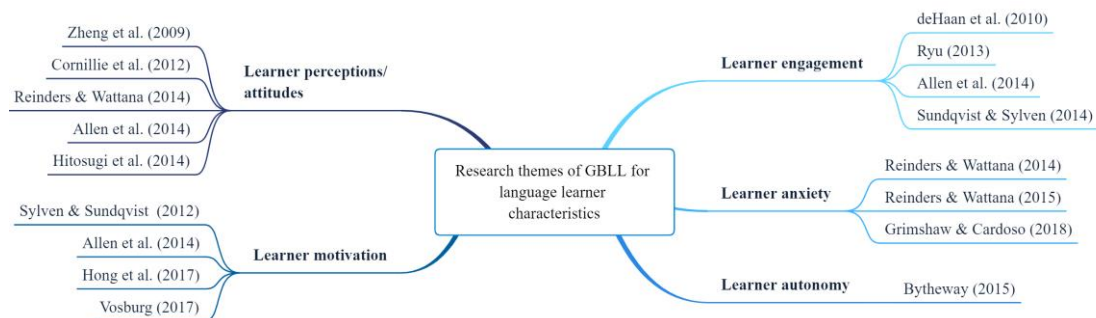


Figure 6. Research Themes of GBL for Language Learner Characteristics

3.3 Strengths and challenges of game-based language learning

3.3.1 Strengths of game-based language learning

Three advantages of using digital games to promote language learning are proposed based on the reviewed studies.

First, digital games have interesting user interfaces and game designs. Digital games constitute immersive virtual worlds which function as language-learning environments (Scholz, 2017). What's more, digital games enhance learners' learning interest and motivation (Jensen, 2017), and improve learners' overall participation.

Second, users in digital games can be anonymous. As Grimshaw & Cardoso (2018) suggested that digital games with virtual environments tend to reduce anxiety for language learners and present a bridge to language use in the target language community.

Third, digital games provide real-time interaction. Immediate feedback from peers in the game can effectively improve learners' engagement (Castañeda & Cho, 2016), and images and sound effects in human-computer interaction also play a positive role in encouraging users to learn continuously. Digital games seem to present a diverse and linguistically complex social-semiotic environment for L2 learners of English, and encourage learners' collaborative learning skills and problem-solving ability.

3.3.2 Challenges of game-based language learning

Three challenges are summarized according to the reviewed studies.

First, students may have difficulty in applying this new technology to their language learning as digital games is different from traditional teaching practices. Reinders & Wattana (2015) found that a small number of participants in the study said they did not like gameplay and they hoped there would still be sufficient face-to-face instruction as well.

Second, language teachers need to be fully equipped with theories and trainings on digital game-based learning. Peterson (2012) showed that some sentences used in digital games may be grammatically incorrect, which would be a potential risk for learner participation in MMORPGs as well as in other types of CMC environment where access is provided to native speaker interlocutors. Therefore, teachers need to select appropriate digital games for students.

Third, it is expensive to develop suitable digital games for language learning, and there are high requirements for computers and Internet service, which many schools and language labs are not able to meet. This may make the popularity of digital game-based learning harder to achieve.

4. Conclusion

This study reviewed 35 studies on digital game-based language learning from 2009 to 2018. From the three aspects of the research trends, research themes and promises and challenges, a coding and analysis framework was constructed for a systematic literature review. It would be conducive to follow-up studies to use the content analysis method to conduct a systematic literature review of the relevant literature on the application of emerging technology education.

Through this review and analysis, a number of studies were carried out to ascertain the suitability of digital games in language learning. Digital games boast strong application potential in the field of language learning due to their interesting, anonymous and interactive features. However, the deep integration of digital games and language learning must rely on the cooperation in the field of language learning and educational technology, especially reasonable teaching design, well-targeted system development and long-term in-depth empirical research.

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