

# The Influence of Gamification Learning APP on the Autonomous Learning Interest of College Minority Language Learners

Xuefei Chen\*

College of Oriental Languages, Zhejiang Yuexiu University of Foreign Languages, Shaoxing, China

**Abstract.** The research on the interest in autonomous learning is one of the key topics in the field of modern minority language learning, and some studies have found that the adoption of gamified learning apps has a significant impact on the autonomous learning ability of college language learners. However, there is still a lack of unified understanding of the active mechanism formed behind it. Therefore, this article collects comprehensive literature on gamification and autonomous learning of minority languages over the past five years, through sorting and analysis, this study first reviews the current situation of students' use of gamified applications, and it probes into the impact of gamification learning applications on the initiative of autonomous learning among students of minor languages in universities. The study reveals that the utilization of gamification learning applications generally exerts a positive influence on the autonomous learning of minor languages among college students, through gamified learning APPs, students' learning motivation has been remarkably promoted. Furthermore, the language output environment and cultural characteristic context within the APPs can not only meet the learners' thirst for knowledge but also alleviate their sense of anxiety. These factors effectively tackle the core issues in traditional self-directed learning, including insufficient motivation, emotional anxiety, and the lack of context.

## 1 Introduction

### 1.1 Research background

With the in-depth development of globalization and the continuous progress of the Belt and Road Initiative, the significance of the demand for talents in non-common languages in society has become increasingly prominent. As the primary cultivation bases for talents in less commonly taught languages, various universities and colleges bear the significant responsibility of cultivating and supplying the country with compound and internationalized talents. However, there are still many difficulties for colleges and universities in cultivating students in minority languages, such as the lack of language environment, limited class hours, and insufficient learning motivation of students. Viewed from the macroscopic background,

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\* Corresponding author: [2330751@stu.zyufli.edu.cn](mailto:2330751@stu.zyufli.edu.cn)

with the development of the global economy and the continuous advancement of technology, digital learning tools have been gradually popularized, and as a category of digital tools, learning apps have gained popularity among learners of minority languages. Based on the above discussion, it is of great practical significance to conduct research on the influence of learning apps on the autonomous learning ability of college students learning minority languages.

## **1.2 Literature review**

### *1.2.1 Gamified learning apps*

Gamification is a learning methodology grounded in games, aesthetics, and cognitive processes. It serves to engage individuals, facilitate learning, and address problems. Students can enhance their knowledge absorption efficiency through the formal participation strategies and dynamics inherent in gamification [1]. At its core, gamification involves applying the principles of game thinking to address challenges related to learning motivation, engagement, and other aspects, rather than simply developing educational games. It is capable of providing timely feedback on learners' behaviors and implementing appropriate reinforcement measures. In recent years, gamification learning applications have exhibited novel trends, with a continuous increase in their overall quantity. For example, Duolingo adopts a level-challenging model and Rosetta Stone incorporates dramatized scenarios. Gamified applications can effectively stimulate learners' interest in learning, enhance learning efficiency, and explore individual potential. They are not merely tools for motivating students, but also contribute significantly to the cultivation of good learning habits. In the design of gamified learning apps, the foundational framework is established by incorporating constraints and challenges, while various competitive and collaborative mechanics, tasks, and social components are employed to drive meaningful interactions among students. These applications can be regarded as an integration of education and gaming, offering a novel approach to learning and enabling the overcoming of the limitations encountered in traditional classroom instruction. The core innovations of gamified learning applications are manifested in the following aspects: gamification mechanisms, competition and collaboration elements, and artificial - intelligence - driven components.

### *1.2.2 Autonomous learning of minority languages*

The theoretical underpinnings of autonomous learning ability primarily draw from theories such as constructivism, cognitive psychology, and humanism. Among these, constructivism particularly highlights that learning is not a simple process of external knowledge infusion. Instead, it is a process in which learners actively construct knowledge, which fully exemplifies the autonomy of learning. In the domain of foreign language teaching, fostering learners' autonomous learning ability has become a broad consensus [2]. From the perspective of learning ability, autonomous learners of less - commonly - taught languages are those who have the capacity to establish their own learning goals, devise learning plans, and carry out self - learning monitoring. In particular, in an era characterized by the rapid advancement of online multimedia information, the ability to autonomously learn less - commonly - taught languages holds exceptional value. Cultivating autonomous learning skills in minority languages is key to stimulating students' initiative, building their confidence, and nurturing their innovative capacities. This process fundamentally contributes to a comprehensive enhancement of students' overall competence.

### *1.2.3 The influence of gamification learning on autonomous learning interest*

Firstly, an analysis of existing research indicates that the absence of interest is one of the contributing factors to the lack of autonomous learning motivation among university students. Meanwhile, gamification learning has been empirically verified to be capable of motivating and engaging students. Thus, from the perspective of learning motivation, gamification learning is indeed capable of stimulating students' learning interests. Secondly, the influence of the traditional education system also leads students to hold a negative attitude towards courses and not actively participate in learning and a body of research has demonstrated that the application of gamification and game - based solutions in institutions of higher education exhibits a positive tendency [3]. Consequently, it is postulated that gamification learning might exert a positive influence in rectifying the deficiency of autonomous learning. This hypothesis, however, necessitates further empirical validation.

## **1.3 Research issues**

The above research indicates that gamification learning has a positive impact on the autonomous learning of minor languages, effectively promoting students' learning interests. However, there are still some deficiencies: first, to date, there has been a paucity of research regarding the motivation types of autonomous learners of less - commonly - taught languages using gamification learning applications. Second, the diversity of research subjects remains inadequate. There are significant gaps in research on less - commonly - taught languages in the true sense, such as Southeast Asian languages and Eastern European languages. This study supplements the analysis of the impact of the gamification APP on the autonomous learning interest of minority language learners in universities by analyzing the initiative of different minority language learners in universities in autonomous learning through the APP and how the design of cultural background can stimulate the deep learning motivation of learners.

## **2 The application of gamified learning APPs in autonomous learning of students of minority languages**

### **2.1 The popularity trend of gamified Apps in autonomous learning of minority languages**

In the realm of language learning, integrating traditional learning approaches into games to mitigate the tedium associated with learning has emerged as a prevalent strategy among students of less - commonly - taught languages in higher education institutions in recent years. The advancement of technology has also fueled the proliferation and widespread adoption of mobile learning applications, as evidenced by their sustained parallel increase in both downloads and development over multiple years. And those well-known language learning apps such as Duolingo and Memrise have over a million users worldwide. When contrasted with traditional classroom instruction, the limitations inherent in the classroom setting can be well mitigated through the utilization of gamification applications. The biggest challenge in autonomous learning is that the one - size - fits - all learning content fails to accommodate individual proficiency levels and learning rhythms. Nevertheless, the use of digital games enables the flexible adjustment of learning difficulty, allowing for specialized customization tailored to learners' individual requirements and capabilities [4]. These gamification apps are adaptable to any time and location. Learners are inclined to proactively make use of

fragmented time periods to engage in 3–5 minutes language games, thereby attaining an immediate sense of accomplishment.

## **2.2 Virtual communities for communication and interaction in gamified language learning apps**

Within gamification applications, the functionality of virtual communities constitutes a core element in constructing a sustainable autonomous learning environment. The provision of this element shifts the APP from being a learning tool to becoming a context of use. Language learners can utilize the target language spontaneously to pose questions or engage in discussions regarding a particular topic. This accomplishes the ultimate objective of language learning: communication. Learners from diverse regions join clubs or associations. The communities on these applications offer a virtual space for co - presence to users, fulfilling learners' needs for constructing their individual identities and a sense of group identity [5]. At the same time, members of the community can provide learners with authentic, multi-dimensional feedback. This includes language knowledge such as idiomatic expressions, pronunciation, and intonation, which AI is unable to offer learners. However, it is worthy of exploration that the quality of communities varies significantly. These learning - oriented APPs still need to enhance management and supervision to eliminate inappropriate information.

## **2.3 The learning purposes of minority language learners using gamification APPs**

The primary objective for language learners in using gamification APPs is to tackle the central hurdle of autonomous learning in a manner characterized by low entry barriers, high interactivity, and sustainability. The APP has the ability to convert what learners perceive as monotonous elements, including letters, pronunciations, and basic vocabulary of various languages, into engaging learning tasks. This effectively stimulates students' enthusiasm for learning. Regarding knowledge acquisition, university students primarily aim to improve their listening, speaking, reading, and writing skills through language learning. Existing research has provided evidence that the learning materials incorporated in these gamified APPs yield remarkable results in enhancing students' listening comprehension, oral proficiency, reading ability, and writing skills [6]. More importantly, learners can cultivate a lasting learning habit through dedicated language learning apps, and make learning a daily routine by taking advantage of daily tasks, check-ins and other gamification designs.

# **3 The Impact of Gamified Learning APPs on the Initiative of Autonomous Language Learning**

## **3.1 In-app rankings motivating students to challenge and compete**

The leaderboard integrated within the APP stands as one of the most straightforward and efficacious mechanisms in gamification design, serving to motivate learners' engagement in the learning process. Some studies have revealed that the utilization of leaderboards as an external motivational approach can effectively enhance students' academic achievements [7]. Leaderboards quantify and make public learners' performance, thereby stimulating learners' inherent competitive instincts. When learners perceive the disparity between their own rankings and those of their peers, this stimulates them to initiate learning efforts aimed at enhancing their rankings. This is a powerful extrinsic motivator that impels students to launch

the APP and engage in challenges. However, leader boards are a double-edged sword. Improper design may instead induce anxiety and a sense of frustration among learners. Moreover, such a competitive environment imposes invisible social pressure on students who are unwilling to engage in competition. Therefore, in the context of this game design element, gamified APPs should employ a diverse range of metrics or permit learners to disable relevant features, aiming to alleviate the associated negative impacts.

### **3.2 Sustaining motivation with post-game rewards**

The reward mechanism serves as the pivotal factor for sustaining learners' motivation within gamified APPs. When learners complete a specific topic on the APP, they are entitled to corresponding rewards (such as points, badges, or virtual currency). This mechanism can effectively fulfill learners' sense of accomplishment. The reward mechanisms in educational games engage learners emotionally by providing immediate positive feedback, and serve as a bridge to progressively cultivate their intrinsic learning motivation. A good learning state facilitates learners in sustaining their learning engagement and sense of novelty. Empirical studies have indicated that these reward systems are capable of boosting learners' intrinsic motivation [8]. But when learners regard rewards as placing excessive emphasis on external control (such as simply for the purpose of badge - collecting) rather than being integral to the learning process itself, or when learners consider that they have a sense of control, the reward system forfeits the characteristic of autonomy [9]. In light of this, the current gamified APPs advocate the adoption of a balanced reward framework, which links rewards to the learning progress, thereby enabling learners to engage in sustainable learning.

### **3.3 An interactive language environment for active use and study**

One of the distinctions between gamified language learning APPs and traditional language teaching lies in the creation of a multitude of diverse language production environments (such as virtual chat rooms or a certain adventure story in a fantasy world). These language environments can be selected in accordance with students' individual interests, thus enabling learners to produce language output based on their limited language proficiency. There is a significant difference between active and passive learning, where the former is driven by internal motivation and the latter relies entirely on external motivation [10]. The environment in gamified language learning APPs can effectively activate learners' cognitive mechanisms. It shifts language output from a form of assessment to a tool and an experience, fundamentally encourages learners to transform from passive knowledge recipients at the beginning into confident and active language users.

## **4 The deep impact mechanism of cultural background design within APPs on learners' initiative**

### **4.1 Culturally immersive visuals and audio for a flow experience**

Flow experience refers to a state of deep concentration where individuals are completely immersed in an activity, deriving enjoyment and losing awareness of the passage of time. Comprising nine dimensions, it is intricately linked to learners' motivation and level of engagement [11]. Vision serves as the primary channel through which learners acquire information. Cultural visuals are manifested via artistic and cultural settings, character design, and costume culture. Audition has the capacity to hold the ambiance and communicate emotions. In gamified APPs, this is predominantly exemplified by environmental sound

effects and background music. Studies have indicated that the integration of auditory and visual elements can enhance learners' experiential perception [12]. By providing diverse sensory stimuli and constructing a cultural context, learners can obtain timely multi-sensory feedback from these two elements. This further intensifies their learning state, enabling them to immerse themselves fully in the learning process.

#### **4.2 Foreign cultural narratives that satisfy intellectual curiosity**

The narrative context of foreign languages successfully stimulates learners' intellectual curiosity and desire for stories by integrating language elements into a storyline rich in narratives, emotions, or objectives, which could enhance learners' autonomy in language acquisition. An effective narrative context serves not only as a linguistic framework, but also as a medium for conveying the cultural practices, social norms, and modes of thought inherent to the target country of language learners. Duolingo employs a wealth of relatable storylines that allow learners to make choices based on their personal interests, thereby significantly enhancing learning immersion. Through this mechanism, learners transition from passive recipients of knowledge to proactive explorers and decision-makers. Furthermore, fragmented information becomes consolidated into learners' personal experiential knowledge.

#### **4.3 Balancing the affective filter through the integration of language and culture**

The Affective Filter Hypothesis posits that learners' learning states resemble an adjustable "filter." When experiencing anxiety, lacking confidence, or having low motivation, learners will find it arduous to comprehend and assimilate knowledge. Conversely, the situation is reversed. The study of minority languages is highly likely to cause a sense of unfamiliarity and anxiety among learners. This is primarily attributable to the substantial disparities between the alphabet systems, pronunciation features of these languages and those of the learners' mother tongues. However, the seamless integration of cultural elements and linguistic knowledge in gamified applications can effectively alleviate learners' sense of unfamiliarity in a timely manner, while simultaneously facilitating profound comprehension and creating durable memory anchors, thereby significantly enhancing their self-confidence. Concurrently, the timely integration of language knowledge and cultural elements also serves as a form of formative feedback for language acquisition. Moreover, research has demonstrated that gamified feedback systems exert a positive influence on students' affective dispositions [13]. Applications provide learners with a secure environment where they can freely attempt tasks and make mistakes while receiving accurate knowledge feedback. This mechanism significantly reduces the psychological cost associated with trial and error, thereby naturally mitigating the effects of the affective filter. In language learning, a certain degree of nervousness and anxiety is deemed essential. Appropriate levels of anxiety among students can serve to further stimulate their learning motivation [14]. Furthermore, the timely feedback mechanism embedded within gamified learning applications plays a crucial role in establishing a dynamic equilibrium between such tension and learners' confidence. It not only alleviates the sense of frustration that might be engendered by students' excessive self-imposed pressure, but also positively reinforces their sense of self-efficacy. Thereby effectively facilitate their progression towards autonomous learning.

## 5 Conclusion

Through a comprehensive analysis of relevant literature, this research reveals that the utilization of gamified learning applications generally exerts a positive influence on the autonomy of college students in their acquisition of minority languages. Gamification learning APPs, through their unique motivational designs based on principles such as Self-Determination Theory and the Affective Filter Hypothesis, offer highly promising solutions for active learning of minority languages under mechanisms like community engagement, cultural integration, and environmental creation. Nevertheless, in certain mechanisms designed to foster deep learning, such as leader boards and reward systems, there remain notable limitations. Consequently, the gamified learning applications should not be construed as disruptors of traditional language education. Instead, they function as potent supplementary tools capable of stimulating students' learning interests and cultivating their learning habits. This article provides a reference for the initiative of minority language learners in using gamified learning apps to study languages. It not only deepens the understanding of how gamification elements meet learners' basic psychological needs to influence the learning process of minority languages, but also offers a new analytical perspective on the motivation of students learning languages on gamified learning apps. Moreover, it provides clearer warnings and design principles for language educators and app developers, it emphasizes that successful gamification design requires a deep integration of language content and cultural context. Finally, this research did not comprehensively account for the influence of different player types on learners' initiative in language learning. Looking ahead, it would be advisable to integrate gamified learning applications with personalized systems. By tailoring narrative scenarios, reward mechanisms, and community interaction strategies according to the player types of learners using the application, educators and developers can maximize students' levels of engagement and their long - term commitment to learning.

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