# LEVELING UP LANGUAGE LEARNING: THE IMPACT OF GAMIFICATION ON ACADEMIC SELF-EFFICACY OF GRADE 12 EFL STUDENTS IN PUBLIC SECONDARY SCHOOLS IN CHONBURI PROVINCE

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## Abstract

Academic self-efficacy is a critical psychological construct influencing learners' motivation, persistence, and achievement in foreign language learning; however, empirical evidence in secondary-level EFL contexts remains limited. This study investigated the effects of gamification on the academic self-efficacy of Grade 12 students learning English as a Foreign Language (EFL) in public secondary schools in Chonburi Province, Thailand.  Employing a mixed-methods explanatory sequential design, the study first adopted a quasi-experimental pre-test–post-test approach, followed by focus group interviews to gain in-depth insights into students' learning experiences. A total of 83 students participated, with 42 assigned to an experimental group receiving instruction integrated with *Duolingo for Schools* and 41 assigned to a control group receiving traditional instruction. Quantitative data were analyzed using paired-sample and independent-sample t-tests.  The results revealed a statistically significant improvement in academic self-efficacy among students in the experimental group, with mean scores increasing from 2.85 (SD = 0.45) to 4.10 (SD = 0.35), while the control group obtained a lower post-test mean score of 3.40 (SD = 0.40) (p < .01). Qualitative findings corroborated the quantitative results, indicating that the gamified learning environment promoted engagement, motivation, and autonomous learning through features such as immediate feedback, progress tracking, and game-based challenges.

The findings suggest that gamification, when systematically integrated into formal EFL instruction, can significantly enhance students' academic self-efficacy. This study provides empirical support for the pedagogical value of gamified learning environments and offers practical implications for educators and policymakers seeking to strengthen learner engagement and psychological readiness in secondary-level EFL classrooms.

**Keywords:** Academic Self-Efficacy , Gamification , EFL Learners , Language Learning
                Enhancement

https://so11.tci-thaijo.org/index.php/J_SSR/about

## Introduction

Gamification, defined as the integration of game-like elements such as points, badges, and leaderboards into non-game contexts, has gained increasing attention as an instructional strategy for enhancing student engagement and learning outcomes (Kapp, 2012; Laksanasut et al., 2021; Fitriani, 2024). In language education, gamified tools offer opportunities for personalized learning, immediate feedback, and increased learner autonomy, which are essential for sustaining motivation in second and foreign language learning environments (Bicknell et al., 2023; Herni & Halim, 2024). Previous studies have consistently reported that gamification can improve learners' motivation, enjoyment, and engagement in English as a Foreign Language (EFL) classrooms (Latiff et al., 2024; Malak, 2024). However, empirical evidence regarding its influence on academic self-efficacy, particularly in formal secondary school contexts, remains limited.

Academic self-efficacy is a central construct within Bandura's (1977) Social Cognitive Theory and refers to learners' beliefs in their capability to successfully perform academic tasks. These beliefs play a crucial role in shaping students' motivation, learning strategies, persistence, and academic achievement (Bandura, 1977; Zimmerman, 2000). In the context of EFL learning, academic self-efficacy is especially important, as language learners often encounter anxiety, communication barriers, and repeated failure experiences that may negatively affect their confidence (Meccawy et al., 2023; Thamanun & Bamroongcheep, 2025). Consequently, identifying instructional approaches that can strengthen learners' self-efficacy is essential for improving language learning outcomes.

Although a growing body of international research has examined the educational applications of gamification, relatively few studies have investigated its direct impact on academic self-efficacy among EFL learners at the secondary school level. Existing research has predominantly focused on higher education, workplace training, or informal learning environments, and gamified tools are often treated as supplementary rather than fully integrated components of classroom instruction (Fitriani, 2024; Foroutan & Taghizadeh, 2024). In Thailand, where EFL instruction has traditionally emphasized memorization and teacher-centered practices, limited opportunities for interactive language use may further contribute to low academic self-efficacy among students (Laksanasut & Seubsang, 2021). While some Thai-based studies have explored gamification in relation to motivation and learning achievement, research explicitly examining academic self-efficacy in secondary school EFL contexts remains scarce.

Addressing this gap is particularly important in light of ongoing curriculum reforms in Thailand that aim to enhance English proficiency but continue to face challenges related to language anxiety and learners' confidence (The Office of the Secondary Education Service Area Chonburi–Rayong, 2024). Therefore, this study investigates the integration of Duolingo for Schools as a gamified learning platform within conventional English instruction to examine its

effects on the academic self-efficacy of Grade 12 EFL students in public secondary schools in Chonburi Province. Grounded in Bandura's (1977) Self-Efficacy Theory, the study seeks to provide empirical evidence and practical implications for teachers and policymakers regarding the effective use of gamification in formal EFL classrooms.

## Research Objectives

1. To compare the academic self-efficacy of Grade 12 EFL students before and after participating in a gamified instructional intervention.

2. To examine differences in academic self-efficacy between Grade 12 EFL students taught using a gamified approach and those taught through traditional instruction.

## Literature Review

### 1. Gamification in Education and Language Learning

Gamification is the practice of incorporating game elements like points, badges, leaderboards, levels, progress bars and rewards into non-game environments to stimulate motivation, interaction and learning efficiency (Choeichit et al., 2025; Laksanasut et al., 2021; Fitriani, 2024; Kapp, 2012). The main goal of including these elements is to recreate the game's motivational flow and make the learners more active in facing difficulties, tracking their progress, and getting timely feedback. For instance, points are awarded to the learner for completing a task, badges represent the learner's accomplishment and leaderboards bring a competitive or cooperative aspect among the students. Moreover, it is essential to note that gamification is not the same as game-based learning, which refers to the use of fully conceived games or simulations specifically made for educational purposes. Game-based learning allows for teaching through play but in a confined area of the game, while gamification introduces motivational elements, thus enriching the traditional learning process.

Gamified platforms, particularly AI-driven tools like Duolingo, are among the most important ones to use in the field of language learning, offering features such as spaced repetition, adaptive challenges, real-time feedback, and goal setting (Bicknell et al., 2023; Herni & Halim, 2024). These capabilities contribute to the personalization of learning experiences, the empowerment of learners, and the facilitation of differentiated instruction. The literature has shown that these platforms not only increase learner engagement but also allow teachers to monitor their students' progress and performance (Fitriani, 2024; Foroutan & Taghizadeh, 2024). However, on the one hand, gamification has been the subject of numerous studies for its role in motivating and engaging EFL learners, while, on the other hand, there have been only a few studies that have looked at the impact of gamification on academic self-efficacy, especially when the gamified instruction is delivered in the regular classroom context rather than as a supplement to non-gamified instruction. This gap needs to be addressed, and a keen interest is warranted in knowing how the gamified elements that are incorporated into the

structured curricula influence students' self-beliefs and academic behaviors in real-life educational settings.

## 2. Self-Efficacy in Learning and Assessment

Self-efficacy—the confidence in one's capacity to accomplish academic activities—has become an integral part of learning theory, hence, it affects the students' motivation, persistence, and performance (Bandura, 1977; Zimmerman, 2000). It is very much the case with SLA that self-efficacy plays a major role in the most difficult parts of communication, grammar, and culture that the students would have to face (Meccawy et al., 2023; Pakkawattana et al., 2025). As Bandura (1977) put it, self-efficacy is a compound of four main factors: mastery experiences, vicarious learning, social persuasion, and emotional states. The application of game elements to activities has the potential to positively affect all four.

First, mastery experiences which are the most powerful source, are available through gamified learning platforms like Duolingo, which provide learners with suitable and adaptive tasks that let them go through the process of achieving success repeatedly, thus their feeling of being competent is endorsed.

Second, a student's observation of peers accomplishing goals tends to be a cause for him/her/them to learn second hand—in this case the use of leaderboards and visible progress bars can motivate the learners by showing that they can have success just like others.

Thirdly, social influence in the form of gamification is incorporated by the means of positive reinforcement strategies. These include the awarding of congratulations, badges, and, notifications of leveling up that signal the efforts made by the learners. In addition, emotional states that have an impact on the learners' self-confidence can be through the playful and low-stress atmosphere that gamified tools usually create, thus making the learning process more enjoyable and less anxious.

While past studies stress the role of feedback and adaptive learning in the development of self-efficacy, it still remains a fact that not much has been done in tracing the interactions of the four sources of self-efficacy particularly in the context of gamified EFL instruction and in the case of formal classroom settings where such tools are integrated. This study is meant to fill that gap by investigating the effect of Duolingo for Schools, along with regular teaching, on the EFL learners' self-efficacy in a Thai secondary school context.

## 3. Gamification and Its Impact on Academic Self-Efficacy

Gamification has been associated with the rise of self-efficacy through the involvement and the provision of instant feedback. The study of Bitrián et al. (2024) showed that gamified training in the workplace had a positive effect on self-efficacy as regards the application of skills, which in turn, indicated a similar effect for education. In the context of higher education, Latiff et al. (2024) noted that the self-efficacy of university students enrolled in gamified courses was higher, especially when adaptive learning and progression tracking were part of the curriculum. Malak (2024) pointed out the necessity of instant feedback in gamified learning,

as in the case of Kahoot!, which enabled students to polish their strategies and gain self-efficacy. The implications of these studies support the claim of gamification's potential, however, the majority of them are applicable mainly to higher education and professional training and overlook the case of secondary level EFL learners. Furthermore, the impact of the combination of Duolingo's outstandinglyattthe classroom setting on self-efficacy has also not yet been the subject of research explorations.

Gamification is supported by a number of studies as a motivator and an engagement factor; nevertheless, its role in the development of self-efficacy among EFL learners in a formal setting is still an issue that remains to be investigated. Previous studies have regarded the gamification tools as supplementary aids, but little is known about their incorporation into current teaching methods, especially in high schools. In this context, the present research intends to fill the gap by investigating the impact of Duolingo for Schools supplemented with traditional instruction on the self-efficacy of Thai Grade 12 students. The study will measure changes in self-efficacy levels and collect qualitative insights with the goal of informing the best practices for the development of self-efficacy through gamified EFL learning environments.

## Methodology

### Research Design

The researchers applied a mixed-methods research strategy and particularly an explanatory sequential design to determine the influence of gamification on the academic self-efficacy of Thai grade 12 students in the English language as a foreign language (EFL) area. When using this particular design, the quantitative data which were collected and analyzed first through quasi-experimental pre-test/post-test format to measure changes in self-efficacy over time, then the qualitative data was gathered through focus group interviews which were conducted to support the quantitative results and provide deeper insights into them. The aim of such a sequence was to grasp better through the students' personal reflections and experiences what the gamified intervention might have had in terms of their academic self-efficacy, learning motivation, and classroom engagement.

### Population and Sample

The population of this study consisted of 426 public secondary school students of Grade 12 in Chonburi Province, Thailand, all of whom were studying English as a Foreign Language (EFL), a compulsory subject under the Thai national curriculum (The Office of the Secondary Education Service Area Chonburi–Rayong, 2024).

For the quantitative phase, a cluster random sampling technique was employed. Two intact Grade 12 classrooms with comparable academic backgrounds and English proficiency levels were selected from the population to ensure representativeness and minimize selection bias. These two classrooms were then randomly assigned to either the experimental group or

the control group. A total of 83 students aged 17–18 years participated in the quantitative component of the study. The experimental group comprised 42 students (23 females, 19 males) who received instruction integrating Duolingo for Schools as a gamified learning tool alongside traditional instruction, while the control group consisted of 41 students (22 females, 19 males) who received traditional instruction only. All participants were native Thai speakers and had received formal English instruction for at least ten years. Based on school records and standardized language assessment results, their English proficiency levels ranged from A2 to B1 according to the Common European Framework of Reference for Languages (CEFR), indicating an intermediate proficiency level prior to the intervention.

For the qualitative phase, 10 students were selected from the quantitative sample using purposive sampling to participate in focus group interviews. The selection criteria included gender, level of English proficiency, and degree of classroom participation (active and passive learners) to ensure a diversity of perspectives. Five students were drawn from the experimental group and five from the control group. This approach allowed the qualitative data to provide deeper insights into students' learning experiences and perceptions of both the gamified and traditional instructional approaches, thereby supporting and explaining the quantitative findings.

### Research Instruments

Instruments employed in this research included (1) Gamified Learning Tool (Duolingo for Schools): The students who were in the control group got to experience a widely used approach to teaching that mixed up traditional methods with the Duolingo for Schools app, with every session lasting one hour, and they got a total of 20 hours of instruction. The teacher-guided instruction occupied the first half of each session. Lessons were based on the standard English textbook used in the school and continued with grammar, vocabulary, reading comprehension, and structured language practice. In the second half of each session, students worked on the Duolingo for Schools app independently on their own devices but still in the classroom with the researcher. The platform provided the students with the possibility of doing the assigned language exercises and taking part in the interactive tasks that were suitable for their proficiency levels, for example, vocabulary practice, sentence formation, listening tasks, and grammar drills. The researcher was the one who monitored participation remotely, provided technical support if needed, and made sure that the students were involved throughout the whole session. (2) Traditional Teaching Approach: Only the Traditional Learning Approach was utilized for the control group students' instruction. Each session lasted one hour, and thus, the total instruction time was 20 hours. Teacher-led instruction was conducted in the control group using the standard English textbook as the primary source. The lessons included grammar explanations, vocabulary development, reading comprehension, and structured language drills. The teacher conducted practice exercises, discussions, and feedback sessions. In contrast to the experimental group, the control group students did not use

Duolingo or any other gamified digital learning tool; thus, their learning experience remained strictly textbook-based. (3) Pre- and Post-Surveys (Self-Efficacy Assessments): In order to measure the academic self-efficacy of the students prior to and after the interventions, the pre- and post-surveys were taken from established scales made by Bandura (1977) and Schwarzer and Jerusalem (1995) with some adjustments. The altered tool had 40 items and was based on the seven dimensions of English language self-efficacy: (1) reading comprehension, (2) writing skills, (3) speaking ability, (4) problem-solving in English, (5) resource utilization, (6) time management, and (7) exam performance. Each of them was scored on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree), which made it possible for the students to show their self-assuredness in every particular area. In order to guarantee the validity of the content, the questionnaire went through an Item-Objective Congruence (IOC) analysis conducted by three specialists in language teaching and educational measurement. Those items which scored 0.67 or more on the IOC were kept, and at the same time, some slight changes were made to improve the understanding and the fit with the research goals. Besides, the Content Validity Index (CVI) was computed at the scale level and was found to be 0.92, which means that there was a very high agreement among experts about the items being relevant. In order to confirm the trustworthiness, a mini research was done with 30 twelfth graders from a neighboring school with comparable demographics and academic standings. The survey's internal consistency was measured by Cronbach's alpha which gave a score of 0.89, thus showing excellent reliability. The identical set of approved items was given before (pre-survey) and after (post-survey) the intervention to monitor any change in students' self-efficacy through time. (4) Focus Group Interviews (FGIs): In addition to the quantitative findings, focus group interviews (FGIs) were performed with 10 participants in total, 5 from the experimental group and 5 from the control group. The participants for the FGIs were selected through purposive sampling based on the criteria of being male or female, having a certain level of English skills, and being active or passive during the class. This method guaranteed that various views and experiences of the students were reflected in the qualitative data. The FGIs took place in a cozy, informal setting where the students felt comfortable enough to speak freely and honestly. All sessions were recorded on tape with the consent of the participants and later on, the transcripts were created for the purpose of analysis. A thematic analysis approach was used to analyze the data which included the process of coding, spotting patterns, and arranging themes that are related to students' learning experiences, difficulties, and perceptions of the gamified and traditional instructional methods. The qualitative insights gained were then triangulated with the quantitative survey results to further explain how the different teaching methods affected students' academic self-efficacy..

Data Collection

The data collection for this research was a five-phase process consisting of; baseline evaluation, preliminary analysis of pre-survey data, teaching interventions, post-survey evaluation and focus group discussions.

**1. Baseline Assessment:** In order to determine the initial academic self-efficacy of the participants, every student took a pre-survey. Conducted in a standardized way, the pre-survey included 40 items that assessed the self-efficacy of the students in different areas of learning the English language such as reading comprehension, writing skills, speaking ability, problem-solving in English, resource utilization, time management, and exam performance. The baseline evaluation gave a wide-ranging view of the perceived capabilities of every student right before the teaching interventions.

**2. Initial Analysis of Pre-Survey Data:** In the beginning, responses to the survey were examined through descriptive statistics to find out the baseline self-efficacy levels of the two groups. The overall mean self-efficacy score along with standard deviation was computed for the purpose of measuring variability. The initial self-efficacy scores of the experimental and control groups that were low in comparison to the intervention are summarized in Table 1. The differences between the groups were not statistically significant ($p > .01$) according to different statistical methods.

**Table 1** Initial Analysis of Pre-Survey Self-Efficacy Scores

| Group | N | Mean | (S.D.) |
|---|---|---|---|
| Experimental Group (Gamified Learning Tool) | 42 | 2.85 | 0.45 |
| Control Group (Traditional Teaching Approach) | 41 | 2.90 | 0.50 |
| Overall | 83 | 2.87 | 0.48 |

According to the statistical summary presented in Table 1, the two groups started with self-efficacy levels that were lower, and the mean scores of the experimental and control groups showed only slight differences.

**3. Instructional Interventions:** The whole instructional phase took 20 hours of teaching. The group that participated in the experiment was taught using a blended instructional approach combining traditional teacher-led instruction with gamified learning using Duolingo for Schools. Each session consisted of two 30-minute segments. Teacher-led instruction was the first of these segments, during which the standard English textbook was used and topics like grammar, vocabulary, and reading comprehension were covered. The second segment was for the students to work with Duolingo for Schools on their own devices, where they did interactive language exercises designed for their proficiency levels. The control group, on the other hand, had the traditional instruction only conducted by teachers and still lasting an hour per session, which was moderate textbook-based.

**4. Post-Survey Assessment:** All the participants filled in a post-survey right after the intervention period and the conditions were the same as those of the pre-survey. The survey consisted of the same 40 items that were used to measure self-efficacy regarding different areas of English language learning. It was through the comparison of pre- and post-survey responses that academic self-efficacy changes due to the instructional interventions were assessed.

**5. Focus Group Interviews:**  Semi-structured focus group interviews were carried out to get a better understanding of the students' personal experiences with the teaching methods. A purposive sampling technique was implemented to choose a subgroup of students from both the experimental and control groups, representing different backgrounds. The interviews took place in a comfortable atmosphere, were audio-recorded with the consent of the participants, and were transcribed verbatim. The transcripts obtained were then subjected to thematic analysis to discover the patterns and insights concerning the influence of the instructional interventions on students' self-efficacy, motivation, and engagement that reappeared over the period.

Data Analysis

**1. Quantitative Analysis:** The quantitative analysis included the calculation of descriptive statistics in order to find out the average scores, standard deviations, and the ranges for the self-efficacy assessments that were done before and after the surveys. Within each group, paired t-tests were done to compare the scores of the pre-survey and post-survey and thus to reveal the areas where there were statistically significant enhancements in self-efficacy over time. Moreover, an independent t-test was used to compare the post-survey scores of the experimental and control groups, which helped to confirm that the differences seen were the result of the teaching methods used and not due to variability in baseline characteristics.

**2. Qualitative Analysis:** The thematic analysis was applied to the qualitative data gained from the focus group interviews. The researchers first made themselves very familiar with the transcripts of the interviews, and then they coded the main statements and finally regrouped them into larger themes that corresponding to students' experiences of the gamified as well as the traditional instruction methods. In order to add more credibility to the results of the study, triangulation was used to compare qualitative data with quantitative data from the survey, thus making sure that there was a concurrence between the experiences reported by the students and the statistical results pertaining to the changes in academic self-efficacy.

## Findings

The findings of this study are presented in accordance with the research objectives and follow a mixed-methods explanatory sequential approach. Quantitative results are reported

first to address statistical comparisons, followed by qualitative findings that provide explanatory support for the quantitative outcomes.

**Research Objective 1: To compare the academic self-efficacy of Grade 12 EFL students before and after participating in a gamified instructional intervention**

To address the first research objective, a paired-samples t-test was conducted to compare the pre-survey and post-survey academic self-efficacy scores of students in the experimental group. The results revealed a statistically significant improvement in academic self-efficacy following the gamified intervention. The mean self-efficacy score increased from 2.85 (S.D. = 0.45) in the pre-survey to 4.10 (S.D. = 0.35) in the post-survey, with the difference reaching statistical significance at the .01 level ($p < .01$), as shown in Table 2.

**Table 2** Experimental Group – Pre-Survey and Post-Survey Self-Efficacy Scores

| Experimental Group | Mean | S.D. | p-value |
|---|---|---|---|
| Before the gamified intervention | 2.85 | 0.45 | 0.00* |
| After the gamified intervention | 4.10 | 0.35 | |

*$p < .01$

These results indicate that the integration of gamification through Duolingo for Schools had a positive effect on students' perceived academic capabilities in learning English.

Qualitative data obtained from focus group interviews further supported the quantitative findings. Students reported that instant feedback, rewards, and progress indicators helped them recognize their improvement and increased their confidence in completing English learning tasks. Representative student statements included:

**Examples of Student's Statement:**

*"The instant feedback after each exercise made it clear where I was improving, which increased my self-efficacy."*

*"I noticed a change in how I approached English tasks; the challenges and rewards encouraged me to push myself."*

*"Using the gamified system transformed the lessons into a personal challenge, and earning badges reinforced my belief in my ability to succeed."*

Overall, the findings demonstrate that students' academic self-efficacy was significantly enhanced after participating in the gamified instructional intervention, as evidenced by both quantitative and qualitative data.

**Research Objective 2: To examine differences in academic self-efficacy between Grade 12 EFL students taught using a gamified approach and those taught through traditional instruction**

To address the second research objective, an independent-samples t-test was conducted to compare post-survey academic self-efficacy scores between the experimental and control groups. The results showed a statistically significant difference between the two groups at the .01 level. Students in the experimental group achieved a higher mean post-

survey self-efficacy score (M = 4.10, S.D. = 0.35) than those in the control group (M = 3.40, S.D. = 0.40), as presented in Table 3.

**Table 3** Comparison of Post-Survey Self-Efficacy Scores

| Group | N | Mean | S.D. | p-value |
|---|---|---|---|---|
| Experimental Group (Gamified Learning Tool) | 42 | 4.10 | 0.35 | 0.00* |
| Control Group (Traditional Teaching Approach) | 41 | 3.40 | 0.40 | |

*$p < .01$

These findings indicate that students who received instruction through the gamified approach demonstrated higher academic self-efficacy than those who experienced traditional instruction alone.

Qualitative findings further explained this difference. Students in the experimental group emphasized that game-like elements such as points, badges, adaptive challenges, and real-time feedback enhanced their motivation and confidence. In contrast, students in the control group described the lessons as well-structured but less engaging, which limited their confidence development. Sample student statements included:

**Examples of Student's Statement:**

*"Seeing my progress in real time and earning rewards encouraged me to achieve more; it made me feel capable of mastering English."*

*"The interactive tasks and adaptive challenges made each session more engaging and gradually built my self-efficacy."*

*"The gamified system transformed routine lessons into engaging challenges, and the instant feedback helped me stay motivated."*

*"The traditional lessons were clear and structured, but without interactive elements, I did not feel as confident."*

*"I learned the material well, yet I often wished for more engaging activities that could have increased my self-efficacy further."*

*"Although the teacher provided good support, the absence of gamified feedback made my progress feel slower."*

In summary, the findings reveal a clear and statistically significant difference in academic self-efficacy between students taught using a gamified instructional approach and those taught through traditional methods, with qualitative evidence providing meaningful explanations for the observed statistical differences.

## Discussions

This study aimed to examine the effects of gamification on the academic self-efficacy of Thai Grade 12 EFL students by comparing learners who received gamified instruction through Duolingo for Schools integrated with traditional teaching and those who received traditional instruction alone. The findings demonstrated that students in the experimental group exhibited

significantly higher academic self-efficacy than those in the control group, and that participation in the gamified intervention resulted in a significant improvement in self-efficacy over time.

The higher mean self-efficacy score of the experimental group can be explained through the lens of Bandura's Self-Efficacy Theory (1977). Gamified instruction provided frequent mastery experiences, which are considered the strongest source of self-efficacy. Through adaptive tasks, leveled challenges, and repeated success in Duolingo activities, students were able to experience continuous achievement, reinforcing their belief in their ability to learn English. This finding aligns with Latiff et al. (2024), who reported that learners exposed to adaptive gamified environments showed greater confidence in academic performance due to repeated task success.

In addition, social persuasion and emotional regulation, two other key sources of self-efficacy, were strongly evident in the experimental group. Gamified elements such as badges, instant feedback, and progress visualization provided consistent positive reinforcement, encouraging students to persist in learning tasks. Qualitative findings revealed that students felt more motivated and confident when their efforts were immediately acknowledged. Similar outcomes were reported by Malak (2024), who found that real-time feedback in gamified environments reduced learning anxiety and promoted positive emotional states, thereby strengthening learners' self-efficacy.

The control group, despite receiving structured and well-organized instruction, lacked opportunities for immediate feedback and visible progress tracking. As a result, students often expressed uncertainty about their improvement, which may have constrained their self-efficacy development. This finding is consistent with Foroutan and Taghizadeh (2024), who argued that traditional EFL instruction often fosters teacher dependency and limits learners' sense of autonomy and confidence. In contrast, gamified instruction empowered learners to take ownership of their learning, which contributed to the significantly higher self-efficacy observed in the experimental group.

The findings of this study also correspond with broader gamification research. Hamari and Tuunanen's (2014) meta-analysis highlighted that gamification produces positive learning outcomes when feedback, goal-setting, and autonomy are meaningfully integrated—features that were central to the design of Duolingo for Schools. Furthermore, the results support the work of Fitriani (2024), who emphasized that gamified systems not only enhance engagement but also foster learners' self-perceptions of competence when integrated into formal classroom instruction rather than used as supplementary tools.

**Research Limitations**

Despite its contributions, this study has several limitations that should be acknowledged. First, the intervention period was relatively short, which may limit the generalizability of the findings regarding long-term self-efficacy development. Academic self-

efficacy is a dynamic construct that may fluctuate over time; therefore, longitudinal studies are recommended to examine sustained effects of gamified instruction.

Second, the study was conducted in only one public secondary school in Chonburi Province, with a relatively small sample size. While cluster random sampling was employed to reduce selection bias, the findings may not fully represent EFL learners in different regions or school contexts in Thailand.

Third, the study focused primarily on academic self-efficacy rather than direct language proficiency outcomes. Although increased self-efficacy is strongly linked to improved performance, future research should investigate the relationship between gamification, self-efficacy, and measurable language skills such as speaking, writing, or reading comprehension.

Finally, the qualitative data were derived from focus group interviews with selected participants, which may reflect subjective perceptions and social desirability bias. Future studies could triangulate findings using classroom observations or learning analytics data from gamified platforms.

## Conclusion

This study demonstrated that integrating Duolingo for Schools with traditional instruction significantly enhanced the academic self-efficacy of Thai Grade 12 EFL students. The findings support Bandura's Self-Efficacy Theory by showing that mastery experiences, immediate feedback, social reinforcement, and positive emotional states embedded in gamified learning environments contribute meaningfully to learners' confidence in language learning.

Compared with traditional instruction alone, gamified instruction provided students with greater autonomy, clearer progress indicators, and continuous motivation, which collectively resulted in higher academic self-efficacy. These findings suggest that gamification, when thoughtfully integrated into formal EFL classrooms, can address persistent challenges in Thai secondary education such as language anxiety, low learner confidence, and passive learning behaviors.

From a practical perspective, the results highlight the importance of incorporating gamified digital tools into EFL curricula to support learners' psychological readiness for language learning. For policymakers and educators, this study provides empirical evidence supporting the strategic use of gamification as a complement to traditional instruction rather than a replacement.

Future research should explore the long-term effects of gamification across diverse educational settings, examine its impact on specific language skills, and investigate how different gamified design elements interact with learner characteristics. Such research will further inform the development of effective, learner-centered EFL instruction in Thailand and beyond.

## Recommendations

### Recommendations for Applying the Research Findings

1. It is highly advisable that teachers to incorporate Duolingo for Schools or other comparable gamified platforms into their traditional teaching in order to improve the self-efficacy of EFL learners.

2. It is the responsibility of the educators to adapt their teaching methods and use real-time feedback along with challenging situations to develop a positive attitude and motivation among students to a greater extent.

3. The use of gamification features, for example, rewards and leaderboards, should be a strategy that is adopted by teachers in order to promote the persistence and intrinsic motivation of language learners.

### Recommendations for Future Research

1. Long-term studies are a must to investigate the whole mechanism of gamification on self-efficacy; thus, the question of whether the gains last still stand.

2. It is worth looking into the effects of different gamified aids and digital environments on users' self-efficacy in different EFL contexts as a research theme.

3. Future research will be critical in revealing the role of gamification in other facets of language learning such as speaking and writing skills development.

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