# Development of Chinese Vocabulary Learning Media via Instagram for Upper Secondary School Students in Science, Mathematics, and Technology Programs

**Nongnooch Doungchan[1] Siriphan Phothijak[2] Chanika Sornsakda[3]**
**Phattaraporn Chongnok[4] Saranwit Sattanusorn[5]**
**Triamudomsuksanomklao Nakhonratchasima School[1-5]**
**Nakhon Ratchasima, Thailand[1-5]**
**E-mail: 04122@tns.ac.th[1]**

Received 11 February 2026; Revised 23 March 2026; Accepted 28 March 2026

## Abstract

With China's growing influence in the global economy, trade, and technological innovation, proficiency in the Chinese language has become an essential competency, particularly for students in science, mathematics, and technology programs who require specialized vocabulary. Within the context of educational technology, this study aimed to: (1) design and develop digital Chinese vocabulary learning media via Instagram that integrate daily-life and science–mathematics–technology content, achieving an efficiency criterion of 70/70 (E1/E2); (2) examine the effectiveness of the developed media by comparing students' learning achievement before and after instruction; and (3) investigate learners' satisfaction with the Instagram-based learning media. The participants were 120 upper secondary school students from Triamudomsuksanomklao Nakhonratchasima School, selected through purposive sampling. A mixed-methods research approach was

employed. Quantitative data were collected through achievement tests and satisfaction questionnaires, while qualitative data were obtained from semi-structured interviews. Data analysis involved descriptive and inferential statistics as well as content analysis.

The findings indicated that: (1) the developed digital learning media demonstrated high instructional efficiency, with E1/E2 values of 87.08/77.33, exceeding the established criterion; (2) students' post-test scores were significantly higher than their pre-test scores at the .01 level ($t = -35.7$, $df = 119$, $p < .001$); and (3) learners reported a high level of satisfaction with the media ($\bar{x} = 3.73$, S.D. = 0.79). These results suggest that Instagram-based Chinese vocabulary learning media represent an effective educational technology tool that enhances learning outcomes and meets the learning needs of upper secondary students in science, mathematics, and technology programs.

**Keywords :** Educational technology, Instagram-based learning, Chinese vocabulary learning, Digital learning media, Upper secondary education

## Introduction

Language functions as a fundamental tool for communication and cross-cultural learning, while foreign language education plays a vital role in expanding academic, economic, and social opportunities. Among foreign languages, Chinese has become increasingly important due to China's growing influence in global economic, commercial, and technological sectors. As a result, Chinese language instruction has been increasingly emphasized within the Thai educational system. Nevertheless, many learners continue to experience difficulties in acquiring, retaining, and

effectively using Chinese vocabulary, which is a core component of language proficiency. Conventional instructional approaches that rely heavily on rote memorization often fail to respond to the learning characteristics of adolescents in the digital era, leading to low motivation, limited engagement, and insufficient long-term vocabulary retention.

In the context of educational technology, digital learning media have been widely recognized as effective tools for enhancing learner engagement and learning outcomes. Social media platforms, particularly Instagram, offer distinctive affordances such as concise content presentation, visual attractiveness, interactivity, and high accessibility through mobile devices. These features align well with the learning behaviors and preferences of contemporary students. When systematically designed as instructional media, Instagram-based learning resources have the potential to support meaningful vocabulary learning by enhancing learners' motivation, comprehension, and memory retention. Therefore, the integration of Instagram into Chinese vocabulary instruction represents a promising approach to technology-enhanced language learning.

Moreover, the development of Chinese vocabulary learning media via Instagram contributes academically by integrating language pedagogy with modern educational technology, providing an innovative instructional model for social media–based language learning. From the learner's perspective, such media support upper secondary students in science, mathematics, and technology programs by offering access to vocabulary relevant to both daily communication and discipline-specific academic contexts, enabling learners to apply their language knowledge in authentic learning situations. In addition, Chinese language proficiency is increasingly

important for students in science- and technology-oriented programs, as China hosts numerous leading universities and research institutions in these fields. Thai students with Chinese language skills are more likely to access scholarships, pursue further studies, and engage with Chinese-language academic resources, including scientific documents and research publications. Consequently, the integration of Instagram-based digital learning media into Chinese vocabulary instruction not only enhances language learning effectiveness but also strengthens students' academic potential and competitiveness in an increasingly globalized and technology-driven educational environment.

## Research Objectives

1. To develop Chinese vocabulary learning media via the Instagram platform for upper secondary school students in science, mathematics, and technology programs at Triamudomsuksanomklao Nakhonratchasima School.

2. To examine the effectiveness of the developed Instagram-based learning media by comparing students' learning achievement before and after instruction at Triamudomsuksanomklao Nakhonratchasima School.

3. To investigate students' satisfaction with the Chinese vocabulary learning media delivered through Instagram at Triamudomsuksanomklao Nakhonratchasima School.

## Research Scope

This study focuses on the development and evaluation of Chinese vocabulary learning media delivered through the Instagram platform for upper secondary school students in science, mathematics, and technology

programs at Triamudomsuksanomklao Nakhonratchasima School. The scope of the study covers the design of digital learning media that integrates daily-life and discipline-specific vocabulary, examines learning effectiveness in terms of instructional efficiency and learning achievement, and investigates learners' satisfaction with the developed media. The research emphasizes the application of educational technology and social media–based learning in language education, particularly within the context of technology-enhanced vocabulary learning in a Thai upper secondary school setting.

**1. Conceptual Framework**

The conceptual framework of this study is grounded in the integration of educational technology and Chinese language learning at Triamudomsuksanomklao Nakhonratchasima School. Instagram-based Chinese vocabulary learning media serve as the independent variable, designed as digital instructional content incorporating visual presentation, concise explanations, and interactive elements suitable for students in science, mathematics, and technology programs. Through repeated engagement with the media on mobile devices, learners are expected to demonstrate enhanced motivation, attention, and vocabulary retention. The dependent variables consist of learning achievement, instructional efficiency (E1/E2), and learners' satisfaction. It is assumed that well-designed social media–based learning media will positively influence learning outcomes and learner perceptions within the context of a Thai upper secondary school.

**2. Literature Review**

2.1 Educational Technology and Digital Learning Media in Secondary Education

Educational technology has been widely applied to enhance learning effectiveness by promoting learner engagement, accessibility, and flexibility. Digital learning media enable learners to access instructional content beyond traditional classroom boundaries and support learner-centered, self-directed, and mobile learning environments (Selwyn, 2016; Biggs & Tang, 2011). In secondary education, the integration of digital learning media is particularly important for addressing the learning characteristics of Generation Z learners, who are accustomed to using mobile devices and digital platforms in their daily lives.

In the Thai educational context, several studies have emphasized that digital learning environments play a crucial role in supporting 21st-century learning skills, learner autonomy, and active engagement (Pahe, 2018). Thai scholars have also highlighted that the systematic design of digital instructional media contributes to improved learning outcomes when learning objectives, content, activities, and assessment are appropriately aligned (Promwong, 2013). Therefore, the application of educational technology in upper secondary education, including at institutions such as Triamudomsuksanomklao Nakhonratchasima School, is essential for responding to contemporary learning needs and enhancing instructional effectiveness.

2.2 Social Media–Based Learning and Instagram as a Learning Platform

Social media platforms have increasingly been recognized as potential learning environments due to their accessibility, interactivity, and alignment with learners' digital behaviors (Johnson et al., 2019). Social media–based learning emphasizes informal learning, learner participation, and knowledge construction through interaction and content sharing. When

integrated into educational contexts, social media platforms can promote learner motivation, engagement, and self-directed learning.

Instagram, in particular, offers distinctive affordances for learning, including visual-based content presentation, short-form information delivery, and interactive features such as stories, hashtags, and content sharing. Previous studies have indicated that Instagram can be effectively used as a learning platform when instructional content is intentionally designed to support learning objectives (Lee & Chen, 2021). In the Thai context, research has shown that the use of social media in education can enhance learner participation and positive learning attitudes, especially among secondary school students who are familiar with these platforms (Wandeesutthinan & Boonruang, 2020). These findings support the use of Instagram as an appropriate learning platform for students at Triamudomsuksanomklao Nakhonratchasima School, where learners demonstrate high levels of digital familiarity.

2.3 Technology-Enhanced Vocabulary Learning

Vocabulary knowledge is a fundamental component of language proficiency and serves as the foundation for meaningful communication (Nation, 2013). Technology-enhanced language learning supports vocabulary acquisition by providing multimodal input, repeated exposure, and contextualized learning opportunities, which are essential for vocabulary retention and application (Huang & Kuo, 2018). Digital and mobile learning environments allow learners to encounter vocabulary in varied contexts and at their own pace, thereby supporting deeper processing and long-term memory.

Thai educational research has similarly emphasized that the use of multimedia and digital learning tools can enhance vocabulary learning by increasing learner engagement and reducing cognitive barriers, particularly for beginners (Khammani, 2017). The integration of visual elements, pronunciation guides, and contextualized examples aligns with learner-centered instructional principles and supports effective vocabulary learning in foreign language education.

2.4 Chinese Language Learning for Science and Technology Students

For students in science, mathematics, and technology programs, acquiring discipline-specific Chinese vocabulary is increasingly important due to China's prominent role in scientific research, technological innovation, and higher education. Chinese language proficiency enables learners to access academic resources, research publications, international study opportunities, and scholarships at leading Chinese universities (Wang & Li, 2020). Discipline-specific vocabulary knowledge is particularly critical for understanding scientific concepts and engaging with academic content in Chinese.

In the context of Thai upper secondary education, strengthening Chinese language skills among science- and technology-oriented students aligns with national and institutional goals to prepare learners for global academic and professional environments. At Triamudomsuksanomklao Nakhonratchasima School, the integration of Chinese vocabulary learning with science, mathematics, and technology content supports both communicative competence and academic language development. This approach reflects the broader educational objective of developing learners

who are linguistically proficient and academically prepared for participation in international and interdisciplinary contexts.

## Research Methodology

### 1. Population and Sample

The population of this study consisted of Thai upper secondary school students enrolled in science, mathematics, and technology programs. The sample comprised 201 upper secondary school students from Triam udomsuksanomklao Nakhonratchasima School, selected through purposive sampling. The selected students represented learners who were studying in science-, mathematics-, and technology-oriented learning tracks and had access to mobile devices and social media platforms for learning purposes.

### 2. Research Variables

2.1 Independent Variable

The independent variable was the Instagram-based Chinese vocabulary learning media, which included vocabulary for daily communication as well as discipline-specific vocabulary related to science, mathematics, and technology.

2.2 Dependent Variables

The dependent variables consisted of:

2.2.1 The instructional efficiency of the developed learning media.

2.2.2 Students' learning achievement as measured by pre-test and post-test scores.

2.2.3 Students' satisfaction with the Instagram-based Chinese vocabulary learning media.

2.3 Control Variables

The control variables included:

2.3.1 Upper secondary education level.

2.3.2 Enrollment in science–mathematics–technology programs.

**3. Research Instruments**

3.1 Learning Media Development Tools

The learning media were developed using Instagram as the primary learning platform, with supporting digital tools including Canva for visual content design and CapCut for video editing.

3.2 Quantitative Data Collection Instruments

Quantitative data were collected using:

3.2.1 A pre-test and post-test consisting of 20 four-option multiple-choice items.

3.2.2 Formative tests administered during the learning process.

3.2.3 A learner satisfaction questionnaire based on a five-point Likert scale.

3.3 Qualitative Data Collection Instrument

Qualitative data were collected through semi-structured interviews conducted with selected participants to obtain in-depth feedback on learning experiences and perceptions of the Instagram-based learning media.

3.4 Instrument Development and Validation

3.4.1 The achievement tests were validated by subject-matter experts, with an Index of Item-Objective Congruence (IOC) value of at least 0.50.

3.4.2 The Chinese vocabulary learning media consisted of 10 content categories covering 70 vocabulary items. The media were pilot-tested with 120 students and revised according to the instructional efficiency criterion of 70/70 (E1/E2).

3.4.3 The learner satisfaction questionnaire was reviewed and validated by experts to ensure content validity and clarity.

**4. Data Collection Procedure**

Data were collected following these steps:

4.1 The sample group completed a pre-test via Google Forms consisting of 20 items.

4.2 Students engaged in learning activities through the Instagram-based Chinese vocabulary learning media.

4.3 After completing the learning activities, students took a post-test via Google Forms consisting of 20 items.

4.4. Learner satisfaction questionnaires and interview data were collected to supplement quantitative findings.

**5. Data Analysis**

5.1 The instructional efficiency of the developed learning media was analyzed using the 70/70 (E1/E2) efficiency criterion.

5.2 Learning achievement was analyzed using a paired-sample t-test to compare pre-test and post-test scores.

5.3 Learners' satisfaction levels were analyzed using descriptive statistics, including mean ($\bar{x}$) and standard deviation (S.D.), and interpreted based on a five-level rating scale.

## Research Results

### 1. Results of the Development of Instagram-Based Chinese Vocabulary Learning Media

The development of the Instagram-based Chinese vocabulary learning media focused on vocabulary for daily communication and discipline-specific terminology related to science, mathematics, and technology for upper secondary school students in science–mathematics–technology programs. The learning media were delivered through the Instagram platform and designed to present each vocabulary item with Chinese characters, pinyin, Thai pronunciation guides, example sentences, and Thai translations to facilitate comprehension and retention.

The instructional content was organized into ten thematic categories comprising a total of 70 vocabulary items. The first category focused on greetings and basic expressions, including 你好 (hello), 谢谢 (thank you), 不客气 (you're welcome), 对不起 (sorry), and 再见 (goodbye). The second category addressed basic question forms, such as 这是什么？ (What is this?), 多少钱？ (How much is it?), 你好吗？ (How are you?), 你叫什么名字？ (What is your name?), and 哪里？ (Where?). The third category covered places, including 学校 (school), 商店 (shop), 医院 (hospital), 火车站 (train station), and 机场 (airport). The fourth category consisted of common objects, such as 书 (book), 笔 (pen), 手机 (mobile phone), 桌子 (table), 椅子 (chair), 衣服 (clothes), 钱包 (wallet), 电脑 (computer), 钥匙 (key), and 杯子 (cup). The fifth category focused on occupations, including 老师 (teacher), 医生 (doctor), 护士 (nurse), 工程师 (engineer), and 警察 (police officer). The sixth category addressed pronouns, namely 我 (I), 你 (you), 他 (he), 她 (she),

and 我们 (we). The seventh category included adjectives such as 好 (good), 快 (fast), 慢 (slow), 贵 (expensive), and 便宜 (cheap). The eighth category focused on verbs, including 吃 (eat), 喝 (drink), 看 (see/watch), 听 (listen), and 走 (walk). The ninth category addressed time expressions, such as 今天 (today), 明天 (tomorrow), 昨天 (yesterday), 现在 (now), and 时候 (time/when). The tenth category emphasized science, mathematics, and technology vocabulary, comprising 20 key academic terms, including 理科 (science), 数学 (mathematics), 物理 (physics), 化学 (chemistry), 生物 (biology), 科学 (science), 实验 (experiment), 实验室 (laboratory), 能量 (energy), 电路 (electric circuit), 分数 (score), 公式 (formula), 解题 (problem solving), 编程 (programming), 算法 (algorithm), 数据库 (database), 源代码 (source code), 加密 (encryption), 云计算 (cloud computing), and 区块链 (blockchain). This category was designed to support students' academic language development and enable them to connect Chinese vocabulary learning with content knowledge in science and technology fields.

**2. General Characteristics of the Sample Group**

The sample group consisted of 120 upper secondary school students from Triamudomsuksanomklao Nakhonratchasima School. In terms of gender, the majority of participants were female students (62.50%), while male students accounted for 37.50% of the sample. The participants were evenly distributed across grade levels, with equal representation from Grade 10 (Matthayom 4), Grade 11 (Matthayom 5), and Grade 12 (Matthayom 6), each comprising 33.33% of the total sample.

Regarding academic tracks, most students were enrolled in the science–mathematics program (70.00%), while the remaining participants

studied in the science–mathematics–digital program (30.00%). Concerning Instagram usage behavior, the majority of students reported using Instagram on a daily basis, followed by those who used the platform four to six days per week. The most frequently reported time for Instagram usage was between 18:00 and 22:00 hours, indicating that students commonly engaged with social media during evening hours. In terms of content preferences, entertainment-related content was the most frequently followed category, followed by educational content, technology-related content, and science-related content, respectively. These findings indicate that Instagram is a familiar and frequently used platform among the participants, supporting its suitability as a learning medium.

**3. Instructional Efficiency of the Learning Media**

The instructional efficiency of the Instagram-based Chinese vocabulary learning media was evaluated using the 70/70 (E1/E2) criterion. The results indicated that students achieved high performance during the learning process, with an instructional efficiency (E1) value exceeding the specified criterion. Similarly, post-instruction performance (E2) demonstrated that learners were able to retain and apply the acquired vocabulary knowledge effectively. Overall, the efficiency values surpassed the established benchmark of 70/70, indicating that the developed learning media were effective in terms of both instructional delivery and learning retention. These findings confirm that the Instagram-based learning media possess high instructional quality and are suitable for supporting Chinese vocabulary learning among upper secondary students in science–mathematics–technology programs.

**4. Comparison of Pre-Test and Post-Test Learning Achievement**

A comparison of students' learning achievement before and after using the Instagram-based learning media revealed a substantial improvement in vocabulary knowledge. Prior to the intervention, students demonstrated relatively low baseline vocabulary knowledge, as reflected in modest pre-test scores. After engaging with the learning media, students' post-test scores increased markedly, indicating significant learning gains. The mean post-test score was considerably higher than the pre-test score, with a mean increase of 8.92 points. Statistical analysis using a paired-sample t-test showed that the difference between pre-test and post-test scores was statistically significant at the .01 level ($t = -35.7$, $df = 119$, $p < .001$). Notably, all students demonstrated improvement, with no participant showing a decrease in performance. These results provide strong evidence that the Instagram-based learning media were highly effective in enhancing Chinese vocabulary knowledge for both daily communication and science–mathematics–technology contexts.

**5. Learners' Satisfaction with the Instagram-Based Learning Media**

The evaluation of learners' satisfaction revealed that overall satisfaction with the Instagram-based Chinese vocabulary learning media was at a high level ($\bar{x}$ = 3.73, S.D. = 0.79). Satisfaction was assessed across three dimensions: content quality, design and presentation, and usability. Among these dimensions, usability received the highest mean score, indicating that learners found the media easy to access, navigate, and use across different devices. Content quality was also rated highly, particularly in terms of alignment with learning objectives and appropriateness of difficulty level.

Design and presentation were positively evaluated, with students and experts highlighting the clarity, visual appeal, and systematic organization of the learning materials. The relatively narrow range of standard deviation values suggests consistent agreement among evaluators, reflecting the overall quality and effectiveness of the developed learning media.

**6. Qualitative Analysis of Learners' Feedback**

Qualitative data obtained from semi-structured interviews with 15 students provided further insights into learners' experiences with the Instagram-based learning media. The findings were categorized into four main themes. First, students reported clear learning benefits, including the acquisition of new vocabulary related to school subjects, increased confidence in using Chinese for communication, and improved ability to connect language learning with scientific knowledge. Second, participants emphasized the suitability of Instagram as a learning platform, noting its familiarity, ease of access, and features that support content saving and sharing. Third, students highlighted the attractiveness of the instructional design, particularly the use of visuals, color schemes, and the inclusion of pinyin and Thai pronunciation guides, which facilitated comprehension and memory retention. Finally, learners provided constructive suggestions for further development, such as incorporating live question-and-answer sessions, differentiating content by difficulty levels, and adding interactive games or supplementary activities.

Overall, the qualitative findings indicate that Instagram-based digital learning media support active engagement, self-directed learning, and knowledge construction among upper secondary students. The integration of social media into vocabulary instruction effectively reduces learning

barriers for beginners and promotes meaningful interaction with learning content.

## Discussion of Results

The findings of this study indicate that the Instagram-based Chinese vocabulary learning media were effective in enhancing students' vocabulary knowledge, learning achievement, and satisfaction. These results can be systematically interpreted through the frameworks of Mobile-Assisted Language Learning (MALL), Multimedia Learning Theory, and Social Media–Based Learning, while also aligning with instructional design and learner-centered learning principles emphasized in both international and Thai educational research.

From the perspective of Mobile-Assisted Language Learning (MALL), the significant improvement in students' post-test scores supports the effectiveness of mobile technologies in facilitating flexible and self-directed language learning. MALL emphasizes accessibility, portability, and learner autonomy, enabling learners to engage with instructional content beyond traditional classroom constraints (Kukulska-Hulme & Shield, 2008; Sharples et al., 2007). In the Thai educational context, digital learning environments have been found to support learner engagement and skill development aligned with 21st-century learning competencies (Pahe, 2018). The use of Instagram as a mobile learning platform in this study allowed students to access vocabulary content repeatedly and at their own pace, which contributed to the observed learning gains.

In terms of instructional efficiency, the high E1/E2 values exceeding the 70/70 criterion reflect the effectiveness of the systematic design of the

learning media. This finding is consistent with instructional media development principles that emphasize efficiency-based evaluation to ensure both effective instruction and knowledge retention (Promwong, 2013). The results suggest that Instagram-based learning media, when developed through a structured instructional design process, can function as effective educational technology tools in language learning contexts.

The effectiveness of the learning media can also be explained through Multimedia Learning Theory. According to Mayer (2009), learners process information more effectively when verbal and visual information are presented in an integrated manner that reduces cognitive load and supports dual-channel processing. In this study, Chinese characters, pinyin, Thai pronunciation guides, visual elements, and example sentences were systematically combined, enabling learners to form meaningful associations between linguistic forms and meanings. This approach aligns with learner-centered instructional principles emphasizing multiple representations and active knowledge construction (Khammani, 2017).

Furthermore, the high level of learner satisfaction supports the relevance of Social Media–Based Learning in secondary education. Instagram's familiar interface, visual orientation, and interactive features contributed to positive learner perceptions, particularly in terms of usability and engagement. These findings are consistent with studies indicating that social media platforms can enhance learner motivation and participation when intentionally designed for educational purposes (Johnson et al., 2019; Wandeesutthinan & Boonruang, 2020). The ability to save, revisit, and share learning content further promoted self-directed learning and peer-supported knowledge construction.

The qualitative findings also revealed that learners perceived the instructional design as visually appealing and easy to understand, reflecting principles of active and constructivist learning. Active learning environments encourage learners to construct knowledge through interaction, participation, and reflection (Dechakup, 2016). Students' suggestions for incorporating live interactions, differentiated difficulty levels, and interactive activities further support the need for adaptive and participatory learning environments in technology-enhanced language instruction.

Overall, the discussion of results demonstrates that the integration of Instagram-based learning media into Chinese vocabulary instruction is pedagogically sound and theoretically supported. By integrating international frameworks such as MALL, Multimedia Learning Theory, and Social Media–Based Learning with instructional design and learner-centered principles derived from Thai educational scholarship, this study confirms that social media platforms can serve as effective educational technology tools for enhancing vocabulary acquisition and learner engagement among upper secondary students in science, mathematics, and technology programs.

## Recommendations

Based on the findings and discussion of this study, several recommendations can be proposed for educational practice and future research. First, educational institutions and language teachers should consider integrating social media platforms, particularly Instagram, as supplementary learning media for Chinese vocabulary instruction. Given its accessibility, familiarity, and mobile-friendly features, Instagram can effectively support Mobile-Assisted Language Learning by enabling learners to engage with

vocabulary content beyond classroom boundaries and according to their own learning pace. Teachers are encouraged to design instructional content that aligns with learners' digital behaviors while maintaining clear learning objectives and systematic instructional design.

Second, the design of Instagram-based learning media should emphasize multimedia principles to enhance learning effectiveness. The integration of Chinese characters, pinyin, pronunciation guides, visual elements, and contextualized example sentences should be carefully planned to reduce cognitive load and promote meaningful learning. Educators should apply multimedia learning principles to ensure that visual and verbal elements complement one another rather than overwhelm learners. In addition, instructional content should be organized into thematic categories with increasing levels of complexity to accommodate learners with different proficiency levels.

Third, learning activities delivered through social media platforms should incorporate interactive and participatory elements to strengthen learner engagement. Features such as live question-and-answer sessions, short quizzes, discussion prompts, and gamified activities can further promote active learning and learner interaction. These strategies align with social media–based learning and constructivist learning principles, which emphasize learner participation, collaboration, and knowledge construction through meaningful interaction.

Fourth, educational administrators and curriculum developers may consider integrating Instagram-based or social media–supported learning activities into formal language curricula as supplementary or blended learning components. Such integration can enhance learner motivation,

promote self-directed learning, and support the development of digital literacy skills alongside language competence. Clear guidelines and professional development opportunities should be provided for teachers to ensure effective and responsible use of social media in educational contexts.

Finally, future research should expand the scope of this study by examining the long-term effects of Instagram-based language learning on vocabulary retention and language proficiency. Comparative studies across different social media platforms, educational levels, or learner groups may provide deeper insights into the effectiveness of social media–based learning environments. Further research may also explore additional variables such as learner motivation, digital literacy, learning strategies, and teacher roles to better understand how technology-enhanced learning environments can be optimized for foreign language education.

## References

Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university* (4th ed.). Open University Press.

Dechakup, P. (2016). *Active learning*. Chulalongkorn University Press.

Huang, Y. M., & Kuo, Y. H. (2018). The effects of digital game-based learning on students' learning motivation and achievement in vocabulary acquisition. *Educational Technology & Society, 21*(2), 113–125.

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2019). *NMC horizon report: 2019 higher education edition*. The New Media Consortium.

Khammani, T. (2017). *The science of teaching: Knowledge for effective learning process management* (21st ed.). Chulalongkorn University Press.

Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL, 20*(3), 271–289.

Lee, J. S., & Chen, H. Y. (2021). The impact of social media on vocabulary learning: A case study of Instagram-based language instruction. *Computer Assisted Language Learning, 34*(5–6), 1–24.

Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.

Nation, I. S. P. (2013). *Learning vocabulary in another language* (2nd ed.). Cambridge University Press.

Pahe, S. (2018). Learning management in the digital age and learner development in the 21st century. *Journal of Education, 19*(2), 1–15.

Promwong, C. (2013). *Instructional media development: Concepts and applications*. Chulalongkorn University Press.

Selwyn, N. (2016). *Education and technology: Key issues and debates*. Bloomsbury Academic.

Sharples, M., Taylor, J., & Vavoula, G. (2007). A theory of learning for the mobile age. In R. Andrews & C. Haythornthwaite (Eds.), *The SAGE handbook of e-learning research* (pp. 221–247). Sage.

Wandeesutthinan, W., & Boonruang, C. (2020). The use of social media to promote student learning at the secondary education level. *Journal of Education, 48*(1), 85–101.

Wang, Y., & Li, J. (2020). Chinese language learning in the context of international education and scientific collaboration. *Journal of Language Teaching and Research, 11*(4), 567–575.

**Name:** Nongnooch Doungchan
**Highest Education:** High School Triamudomsuksanomklao Nakhonratchasima School
**Affiliation:** Triamudomsuksanomklao Nakhonratchasima School

**Name:** Ms. Siriphan Phothijak
**Highest Education:** Master of Arts (English Language Teaching) Thammasat University
**Affiliation:** Nakhon Ratchasima Provincial Administrative Organization, Triamudomsuksanomklao Nakhonratchasima School

**Name:** Miss Chanika Sornsakda
**Highest Education:** Bachelor of Arts (Business Chinese) Khonkaen University
**Affiliation:** Nakhon Ratchasima Provincial Administrative Organization, Triamudomsuksanomklao Nakhonratchasima School

**Name:** Phattaraporn Chongnok
**Highest Education:** High School Triamudomsuksanomklao Nakhonratchasima School
**Affiliation:** Triamudomsuksanomklao Nakhonratchasima School

**Name:** Saranwit Sattanusorn
**Highest Education:** High School Triamudomsuksanomklao Nakhonratchasima School
**Affiliation:** Triamudomsuksanomklao Nakhonratchasima School