The Effects of the ADMIRE Program on the Learning Motivation and Self-regulated Learning of University Students

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Abstract: Learning motivation and self-regulated learning are prominent and essential characteristics to possess in this time of change, leading to lifelong learners. The aim of this study was to investigate the impact of the ADMIRE program on the learning motivation and self-regulated learning behavior of undergraduate students. The research consisted of a quasi-experimental design conducted for two months. The participants were divided into two homogenous groups including the intervention group (n = 85) and the control group (n = 79). Data were collected before and after the intervention using the learning motivation scale and self-regulated learning behavior scale. Finally, data were analyzed using MANOVA. The study results revealed that the ADMIRE program made a significant impact on the learning motivation and self-regulated learning behavior. Therefore, it can be concluded that the use of the ADMIRE program can lead to greater learning motivation and self-regulated learning behavior in the intervention group compared to the control group. The ADMIRE program gives students the opportunity to participate in initiatives to reach the desired learning outcomes. Instructors can also use the ADMIRE program during the process of proactive learning in various forms.

Keywords: *Learning motivation, learning opportunity, self-regulated learning behavior, undergraduate students.*

Introduction

Learning motivation and self-regulated learning behavior are necessary to promote and develop lifelong learning (Edisherashvili et al., 2022; Taranto & Buchanan, 2020). This aligns with the current paradigm of education that emphasizes learning motivation and self-regulated learning behavior to help students manage themselves until they reach their goals (Payan-Carreira et al., 2022; Sicilia et al., 2021). In addition, the development of human potential with positive psychology plays a vital role in encouraging students to draw and develop their learning potential by strengthening their inner minds in a relaxed, safe, and reliable climate (Alam, 2022). Developing human potential through positive psychology results in students having the internal learning motivation to explore on their own, as well as the resilience to face failure, thus leading to a smooth learning process. This fosters active participation, connection, integration, and the application of what is learned in real life, ultimately achieving the set goals (Lambert et al., 2019). Positive psychology is based on the belief that every human has different strengths and weaknesses (Boniwell & Tunariu, 2019). Therefore, the researchers applied this concept in organizing the learning experience by considering individual differences to fulfill and develop each learner. However, Thailand is currently facing a sudden transformation, which is posing a challenge to revolutionizing the traditional approach to teaching and learning. Previously, passive learning was prioritized with an emphasis on content through the conventional lecture approach, where teachers held control over the classroom while students had a passive role as knowledge receivers. They were compelled to learn through memorization rather than exploration based on their own interests (Vanichvasin, 2021). Similarly, as Chomeya et al. (2022) discovered, undergraduate students in Thailand exhibited moderate levels of self-regulated learning behavior with lower self-regulation scores compared to undergraduate students in Australia. These results had a statistical significance level of .05. This could be attributed to the cultural influences resulting from the different learning behavior among undergraduate students. In Thailand, passive learning is predominantly employed, without focusing on personalized learning environments, leading to student boredom, lack of motivation, and lower levels of self-regulation in learning. According to positive psychology, more in-depth studies on developing students' learning motivation and self-regulated learning behavior are still needed.

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Learning Motivation

Motivation is derived from the Latin verb "Movere," which means to move or push. Many scholars have given the meaning of motivation in a similar direction, stating that "motive" means a state in which a person is motivated and driven to act to achieve the intended goal. Motivation consists of causing behavior, behavior inhibition, or setting guidelines for the expression of behavior to respond to demand. Motivation is characterized by a dynamic state and a process that always occurs. Learning motivation refers to being motivated from within and outside, causing the behavior to show up in learning (Spaulding, 1992). Learning motivation can be divided into intrinsic motivation, such as the desire to achieve, and extrinsic motives, such as rewards and compliments (Ryan & Deci, 2020). According to DeBacker and Nelson (2000), learning motivation can be divided into three components: (a) Goal, meaning that the students are committed to learning; (b) Perception, meaning that students know and think about themselves and their self-learning ability; and (c) Value, meaning giving importance to learning. McDevitt et al. (2004) stated that learning motivation is the desire that determines the direction of behavior to achieve the set goal. Learning motivation is the drive that propels learning and a characteristic that students need to be successful in their studies. In this current study, learning motivation can be divided into five components: commitment to learning, self-reliance, enthusiasm for learning, study planning, and responsibility for learning. Learning motivation refers to a state within a person that drives them to become enthusiastic, diligent, and show purposeful learning behaviors. Learning motivation consists of intrinsic and extrinsic motives.

Self-regulated Learning Behavior

Self-regulated learning behavior is the process by which students use cognitive strategies, motivation, and actions to manage their self-management in education (Zimmerman, 2008). Components of self-regulated learning behavior in understanding include pre-learning planning, self-monitoring, and self-reflection (Cheng, 2011; van der Graaf et al., 2022; Zimmerman, 2013). In addition, Edisherashvili et al. (2022) proposed a model of self-regulated learning that could be divided into three steps: (a) Preparation, which involves using metacognitive strategies for students to understand the learning objectives, setting learning goals, organizing, and planning their own learning to enhance learning efficiency; (b) Performance, which involves implementing the designed plan through self-observation and self-control; and (c) Appraisal, which involves monitoring, checking, evaluating the learning outcomes, and self-development to achieve the set objectives.

Various methods have been employed to develop self-regulated learning behavior; for example, Yen et al. (2023) examined the impact of project-based learning on self-regulated learning behavior among undergraduate English majors in Vietnam. The authors found an increase in self-regulated learning behavior among students who had received training in goal setting and problem-solving through real-life project activities, including planning, monitoring, controlling, evaluating, and self-assessing their own projects. This aligns with the findings of Zarouk et al. (2020), who discovered that flipped project-based learning significantly increased self-regulated learning behavior among students. These results had a statistical significance level of .05. However, during project implementation, students could experience a loss of motivation to participate, conflict among group members, or emotional challenges. Therefore, it would be advisable to incorporate principles of positive psychology in teaching and learning to facilitate students' self-guidance, motivation, and happiness in the learning process.

The ADMIRE Program Concepts for Developing Learning Motivation and Self-Regulated Learning Behavior

In this study, the self-regulated learning framework of Edisherashvili et al. (2022) was integrated with Seligman's (2011) PERMA Model, implemented through project-based learning, thus resulting in the development of the ADMIRE program. This program aimed to promote self-regulated learning in students by creating a positive personal learning environment that required them to self-regulate through project-based activities based on their interests and preferences systematically. The ADMIRE program aligns with the process of developing self-regulated learning behavior used by Edisherashvili et al. (2022), which could be divided into three steps: (a) preparation, which involves using metacognitive strategies for students to understand the learning objectives, set learning goals, organize, and plan their own learning to enhance learning efficiency; (b) performance, which involved implementing the designed plan through self-observation and self-control; and (c) appraisal, which involved monitoring, checking, evaluating the learning outcomes, and self-development to achieve the set objectives. Moreover, this program comprised a set of activities designed based on Seligman's (2011) PERMA model. The PERMA model was introduced by Seligman (2011) with the aim of enhancing well-being. This program consisted of six steps: (a) Action Plan. The process of designing an action plan involved the teacher clarifying the objectives and learning outcomes through project-based learning. After that, the students use the SMART goal worksheet to set goals for their learning and designed a plan based on the project. The teacher served as a guide and facilitated the creation of a clear action plan. This fostered the students' desire to learn and generated the internal motivation to pursue the goals they had set for themselves. This represented the integration of cultivating positive emotions in positive psychology with the process of self-regulation in learning. It combined the emotional state of the PERMA with the planning stage of self-regulated learning behavior. (b) Doing. In this step, students implemented their self-designed plan by engaging in the project with enthusiasm and dedication. (c) Monitoring. Students and teachers monitored the project's progress by focusing on the learning process rather than merely on the outcomes. (d)

Improvement. Students received guidance from the teacher, who served as a coach and created a friendly and supportive learning environment. Students incorporated the feedback provided to refine their work. These steps combined activity engagement and relationship building in the PERMA with the self-monitoring step of self-regulated learning behavior. (e) Reflection. Students engaged in reflective thinking and generated insights and knowledge from their project work after undertaking the project. It combined the sense of meaning and accomplishment aspects of the PERMA with the self-reflection step of self-regulated learning behavior. (f) Evaluation. This involved assessing the learning outcomes in relation to the predefined goals, allowing students to determine if they had achieved their objectives. The teacher provided friendly feedback, which enabled the students to recognize their learning progress and continue their personal development. It combined the sense of meaning and accomplishment aspects of the PERMA with the self-reflection step of self-regulated learning behavior. As such, these six steps provided students with the opportunities to practice and develop self-regulated learning behavior through engaging in project-based activities based on their personal interests within a positive learning environment. Students also had the opportunity to initiate and guide their own efforts in studying, seeking knowledge, and developing various skills on their own rather than relying on others. They could adapt and cope with unexpected changes by fostering a fluid learning experience characterized by active involvement, commitment, and the integration of diverse knowledge with project implementation. As a result, they were able to achieve the project objectives.

This study addresses the general research question: "Does the ADMIRE program affect the learning motivation and self-regulated learning behavior of university students?" The purpose of this study was to investigate whether the ADMIRE Program would help Thai university students with learning motivation and self-regulated learning behavior. Based on previous studies and the strong theoretical positions on the role of the PERMA in learning, the learning motivation and self-regulated learning behavior of undergraduate students taught by the ADMIRE program were expected to be significantly higher than that of students in the control group. The research framework is presented below.
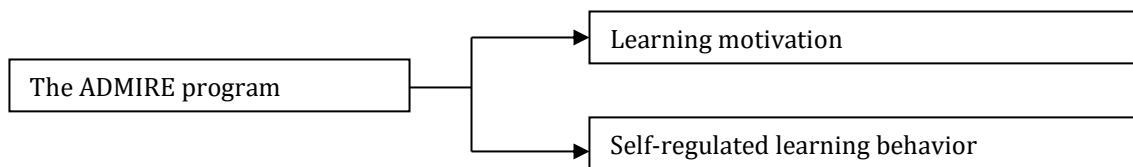

Figure 1. Research Framework

Methodology

Research Design

In this study, a quasi-experimental design was employed, which included both intervention and control groups, over a period of two months. Quasi-experimental methods, which involve the establishment of a comparison group, are typically utilized when it is not possible to randomly assign individuals or groups to intervention and control conditions (Maciejewski, 2020).

Sample

For the study, 164 undergraduate students were divided into two groups: 85 students in the intervention group and 79 in the control group. The intervention group consisted of undergraduate students who received the program, whereas the control group contained undergraduate students who received the regular academic method. The criteria for selecting the research participants were: (a) Undergraduate students studying at a university in Bangkok enrolled in a 2022 semester; (b) Able to communicate in Thai; and (c) Willing to participate in the research without prejudice or coercion. The scores or grades of students who refrained from participating would not be affected in any subject.

Instruments and Data Collection

1. The Learning Motivation Scale was developed and improved by the researchers based on Spaulding's (1992) measurement of learning motivation. It was divided into two measurement components (intrinsic motivation and extrinsic motivation in learning), totaling ten items. The measurement used a 5-level rating scale; the scoring criteria comprised 0 (lowest level) to 4 (highest level). This measure had a consistency index between the questions and objectives (IOC) ranging from 0.67 to 1.00. The reliability by the Cronbach's alpha coefficient equated to .77.

2. The Self-regulated Learning Behavior Scale was used to measure the self-regulated learning behavior of undergraduate students by Nambiar et al. (2022). This consisted of a 15-item measurement and a 5-level rating scale, with scoring criteria comprising 0 (lowest level) to 4 (highest level). This measure had a consistency index between the questions and objectives (IOC) ranging from 0.67 to 1.00. This measure met the Cronbach's alpha coefficient at .81.

3. The ADMIRE program is a series of activities using project-based learning to promote self-regulated learning based on the concept of Edisherashvili et al. (2022) self-regulated learning framework integrated with Seligman's (2011) PERMA

Model. It utilizes project-based learning to create a positive personal learning environment and provides opportunities for students to self-regulate their learning through project implementation aligned with their interests and preferences in a systematic manner. The ADMIRE program consists of six steps: (a) Action Plan Design, (b) Doing, (c) Monitoring, (d) Improvement, (e) Reflection, and (f) Evaluation. These six steps provide the students with the chance to practice and develop self-regulated learning behavior through projects they find interesting within a positive personal learning environment. The students are able to initiate and guide their own efforts to study, seek knowledge, and develop various skills on their own, rather than relying on others. They could adapt and cope with the changes that occurred, resulting in a smooth learning process characterized by active participation, commitment, and the integration of different knowledge components within the project, enabling them to achieve their intended project goals. This program consists of objectives, duration of activities, concepts, theories, activities, and assessments in organizing each activity. The program involves six sessions lasting about 1 to 1.5 hours with an IOC ranging from 0.67 to 1.00.

Data Collection

The researchers contacted the students to explain the research objectives and provide details of the research process. The undergraduates were instructed to give their consent if they wished to participate. Subsequently, they were assigned to either the intervention group or the control group. During the initial session, they filled out the pre-test questionnaires regarding learning motivation and self-regulated learning behavior. The intervention for this study was an 8-week program that offered components of the ADMIRE program aimed at fostering learning motivation and self-regulated learning behaviors in the students of the intervention group. In this study, a researcher organized each session into six parts: the stages of action plan design, doing, monitoring, improvement, reflection, and evaluation. The researcher led all of the sessions. After the completion of the program, the students in the intervention and control groups were administered the questionnaires regarding learning motivation and self-regulated learning behavior. The data obtained from the questionnaire were then analyzed to assess the impact of the ADMIRE program on learning motivation and self-regulated learning behavior. Finally, the gathered data were analyzed, and the results were summarized and reported.

Analyzing Data

The data were analyzed using the multivariate analysis of variance (MANOVA) to compare the mean scores for the learning motivation and self-regulated learning behaviors of undergraduate students in both the intervention and control groups at the posttest.

Results

The sample group in this research consisted of 164 tertiary students at the undergraduate level. The samples were divided into the intervention and control group. Most of the participants were female (97 people, 59.15%), had grades ranging from 3.01 to 3.50 (115 people, 70.15%), and did not live with their parents (120 people, 73.17%). When considering the general information on the sample group of 85 people, most were found to be female (44 people or 51.76%), had grades ranging from 3.01 to 3.50 (60 people, 70.59%), and did not live with their parents (62 people, 72.94%). In similarity, to the general information on the control group of 79 people, most were female (53 people, 24.70%), had grades ranging from 3.01 to 3.50 (55 people, 69.62%), and did not live with their parents (58 people, 73.42%).

MANOVA was conducted to test the dependent measures at the pretest. The results indicated that there was no significant difference in pretest scores for learning motivation and self-regulated learning behaviors between the intervention group and control group at a statistical significance of .05 (Wilks' Lambda = 0.979; F = 1.1729; p =.181).

For the post-experimental period, the intervention group receiving the ADMIRE program exhibited different learning motivation and self-regulated learning behaviors compared to the control group at a statistical significance of .05 (Wilks' Lambda = 0.929; F = 6.157; p-value = .003) as shown in Tables 1 and 2.

Table 1. Wilks' Lambda Results for Students' Learning Motivation and Self-Regulation Learning Behavior

Multivariate test	Value	F	Hypothesis df	Error df	Sig
Wilks' Lambda	0.929	6.157	2.000	161.000	.003

Note: Box M = 2.117, *df* = 3, *p* = .554. Levene's test Reg *F* = .020, *p* = .888, Moti *F* = 2.884, *p* =.091. Bartlett's Likelihood = 0.231 Approx Chi-square = 2.878 *df* = 2 *p* =.237

Table 2. The Individual Comparison among Students' Learning Motivation and Self-Regulation Learning Behavior at the Posttest

Dependent variables		SS	df	MS	F	Sig
Learning motivation	Contrast	1.140	1	1.140	4.773	.030
	Error	38.681	162	.239		
	Corrected Total	39.81	163			
Self-regulation learning behavior	Contrast	2.195	1	2.195	7.123	.008
	Error	49.920	162	.308		
	Corrected Total	53.115	163			

Note *SS* sum of squares; *df* degrees of freedom; *MS* mean square.

The paired comparison of learning motivation and self-regulated learning behaviors in the post-experimental period between the intervention group and the control group revealed that the mean scores in the intervention group were significantly higher than the control group at the .05 level with the mean difference of 0.23 and 0.16 respectively, according to the hypothesis shown in Figure 2.
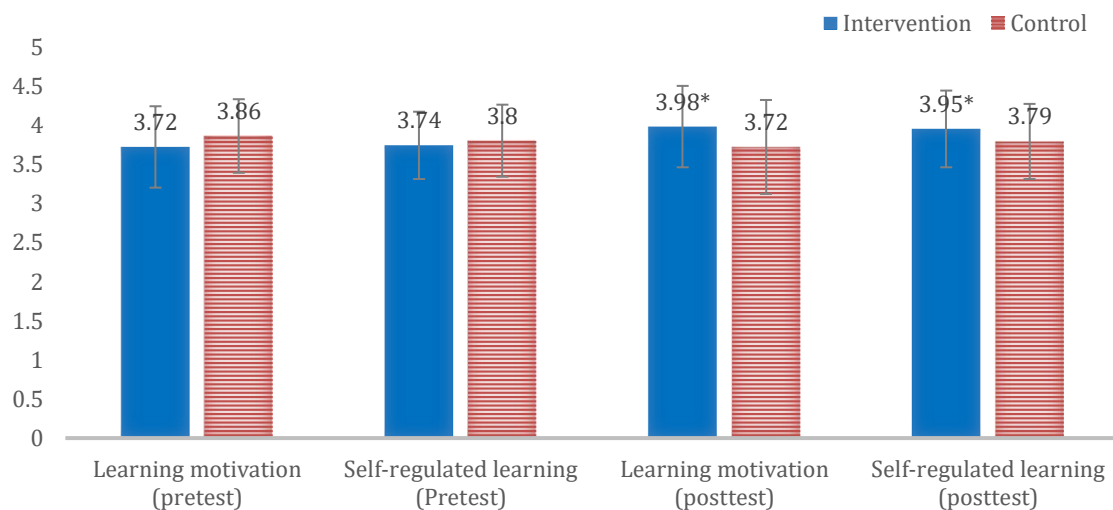

*Figure 2. The Average Learning Motivation was Achieved by Intervention and Control Groups at the Pretest and Posttest. Error Bars Represent the Standard Deviation of the Mean (Note * p < .05)*

Discussion

The ADMIRE program had a statistically significant effect on the learning motivation and self-regulated learning behaviors of undergraduate students at the .05 level. The ADMIRE program involved a series of activities to promote self-regulation in education, integrating the Edisherashvili et al. (2022) concept with Seligman's (2011) positive psychology through project-based learning. It facilitated a positive personal learning environment in a blended way, whether in a classroom or mixed with education outside the classroom, and monitored the understanding of activities through the LMS system. This required the students to regulate themselves in learning through a project based on their aptitude and interests in a systematic way. The ADMIRE program, focusing on the strengths and unique characteristics of individuals, consisted of six steps: (a) Action plan design, (b) Doing, (c) Monitoring, (d) Improvement, (e) Reflection, and (f) Evaluation. These six phases allowed students to practice and develop self-regulated learning behaviors through engaging in projects of interest in a positive personal learning environment. Students could take the initiative and direct their efforts to study, seek knowledge, and develop skills independently rather than relying on others. Furthermore, students could adapt or cope with dramatic changes, causing a flow of learning, participation, engagement, and linking knowledge with the project until achieving the project's goal. From the action plan design for implementing the program, students actively participated in setting goals based on their own interests and desires for self-directed learning. This led to increased awareness, curiosity, and recognition of the value and meaning of learning, thus resulting in intrinsic motivation within the students' own learning process. During the goal-setting process, instructors consistently explained the objectives and significance of the activities. They also established connections to demonstrate how these activities could be applied to solve problems or benefit the students (linked to the future). Moreover, if these connections referred to previous learning or experiences, instructors fostered a positive relationship between themselves and the students. This facilitated a more enjoyable understanding of the overall picture, meaning, and value of learning, resulting in increased comprehension, a desire to excel, openness to change, and a sense of delight in the learning process. During the doing, monitoring, and improvement phases, students engaged in hands-on learning and actively participated in self-monitoring and self-improvement. Furthermore, instructors acted as personal coaches by providing regular feedback in

a friendly atmosphere. This generated a positive emotional response and allowed students to recognize the value of learning. During the reflection process, students evaluated and reflected upon what they had learned, their emotional experiences, and whether they had positive emotions. They also assessed the extent of their relationships with their peers and instructors, level of engagement in the activities, impact of new learning on their lives, and sense of accomplishment. In addition, they experienced a positive sense when reflecting on what had been gained, even the smallest things, such as knowledge, ideas, skills, or new perspectives. For example, they developed a thirst for knowledge, a desire to learn, a passion for reading, and an eagerness to exchange opinions within the group. Additionally, through evaluation, they learned whether their intended learning outcomes had been achieved or expectations met. Instructors consistently provided feedback and adhered to the predefined timelines, thereby enabling students to understand their progress and identify appropriate pathways for personal development aligned with their individual abilities. This fostered a sense of pride in the students.

These findings were consistent with the process of developing self-regulated learning behaviors by Theobald (2021), which was divided into three steps. Firstly, the preparation involved the use of metacognitive strategies so that the students could understand the learning objectives, set learning goals, and organize and plan their learning to make it more efficient. Secondly, the performance consisted of implementing the plan designed through self-observation and self-control. Thirdly, the appraisal involved a follow-up, inspection, evaluation, learning, and self-development to achieve the objectives. In similarity to the study on the development of self-regulated learning behaviors in personal education through project-based and inquiry-based learning in music subjects (Mamedov, 2022), individual learning helped to increase the self-regulated learning behaviors through teaching and learning activities that used project-based and inquiry-based learning. In addition, the study of Tur et al. (2022), consisting of a systematic review of the literature from 2010 to 2020, found that learning management that focused on fostering a positive personal learning environment had a causal relationship with self-regulated learning behaviors. Lastly, the study of Ma and Guo (2023) investigated that the factors affect the self-regulated learning among 13 undergraduates in 8 provinces in China. The study found that the role of personality as a mediator in the relationship between learning motivation and self-regulated learning (SRL) may be significant. The impact of a self-regulated learning climate on SRL is dependent on the extent of interaction between teachers and students.

Furthermore, the results showed that the ADMIRE program was effective in improving students' intrinsic learning motivation, which students had designed and managed to learn by themselves. Learning motivation is observed when students engage in their academic tasks driven by the desire for pleasure, curiosity, self-expression, or personal challenge in their academic tasks (Hammill et al., 2022; Warren, 2017). The instructor functioned as a coach, allowing students to learn by themselves appropriately and meeting the needs of the students in an atmosphere where they felt comfortable and had freedom and good relationships or interactions within the class. This is consistent with the finding of Jie et al. (2022), who investigated the impact of a positive education intervention rooted in the PERMA model on Chinese college students, specifically focusing on their experiences of learning-related academic boredom, class-related academic boredom, and intrinsic motivation. The authors found that implementing a 13-week physical education (PE) program rooted in the PERMA model, emphasizing positive activities and practical skills, enhanced students' positive emotions and fostered their intrinsic motivation to learn. Each session of the program comprised four interconnected stages designed to make the learning process enjoyable and applicable within the classroom. Ultimately, this approach initiated a positive cycle of emotional well-being, resulting in reduced academic boredom and improved performance. The results of this study are also supported by Aldridge and Rowntree (2022), who conducted a study exploring the relationship between the perceived positive learning environment, motivation, and self-regulated learning behaviors among female students. They found that the perception of a positive learning environment directly influenced learning motivation and self-regulated learning behaviors while indirectly influencing self-regulated learning behaviors through learning motivation. Learning motivation also directly affects self-regulated learning behaviors.

Conclusion

In conclusion, the findings of this study indicate that the ADMIRE program has a significant impact on the learning motivation and self-regulation learning behavior of undergraduate students. There were no statistically significant changes in the scores of the control group. The new finding from this study was that the ADMIRE program enhances the motivation for learning and encourages self-regulated learning behavior among undergraduate students. This research adds to the in-depth knowledge of student development to help them make the most of their abilities. It helps to develop students to become people with the potential for self-development and drive society and the country forward. Furthermore, it is hoped that this intervention will provide crucial in-depth information to academics and education officials as a guide for managing and addressing the issues of boredom and low motivation in undergraduate students. Thus, the researchers believe it is necessary to encourage teachers in higher education to adopt the ADMIRE program to foster sustainable personal growth and happiness from within.

Recommendations

Considering the results of this research, it is suggested one to three years after the analysis has been conducted. Long-term studies should be conducted to monitor the effects of the ADMIRE program on learning motivation and self-regulated learning behavior and investigate its sustainability among undergraduate students. Moreover, the researcher encourages the implementation of the ADMIRE program within other cultures or through different contexts, such as secondary schools, for use as a guideline for the development of students to acquire the ability to self-regulate and the motivation to study various subjects. Lastly, to gain a more holistic assessment of the impact of the ADMIRE program on university students, it would be beneficial to conduct qualitative research that analyzes the teaching process and individual experiences within the classroom. This could involve methods such as observation, interviews, or experience sampling. However, it is important to note that the technique used in this study does not actively incorporate and examine the effect of the intervention across diverse languages, cultures, and socioeconomic groups. Therefore, the generalizability of the results may be somewhat limited.

Limitations

As for the limitations of this study, teaching and learning in the classroom were impossible due to the spread of COVID-19. Consequently, teachers had to follow up and provide feedback online from activity sheets sent by the students rather than having thorough face-to-face discussions.

Ethics Statements

This study was reviewed and approved by the Institutional Review Board of Srinakharinwirot University, SWUEC-137/25565E. The participants provided their written informed consent to be interviewed in this study.

Conflict of Interest

The authors declare no conflict of interest.

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Authorship Contribution Statement

Klaykaew: Conceptualization, design, securing funding. Prasittichok: Conceptualization, design, analysis, writing, editing/reviewing.

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