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A Learning Management Model to Enhance Creative Self-Directed Learning Skills in Thailand

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Abstract: The objectives of this research were to study and develop a learning management model that enhances creative self-directed learning skills among school students in Thailand and to prepare policy proposals and practical approaches for implementation in educational institutions. The study was conducted using a research and development methodology in four steps: literature review, development of a learning management model, model testing in sixteen classrooms with a total of 501 learners, and evaluation of the model's effectiveness for enhancing creative self-directed learning skills. The research results revealed that effective learning management models for enhancing creative self-directed learning skills consist of principles, objectives, and learning management procedures with well-defined roles for teachers and learners and continuous evaluation. As teachers play a role in coaching learners, they should engage, empower, and enliven their students according to the context of learning management and the nature of the learners. Testing of the learning management model found that elementary and secondary learners both developed their creative self-directed learning skills with statistical significance at the 0.01 level. The researchers propose a policy to promote self-directed learning management in educational institutions.

Keywords: *Coaching, Professional Learning Community, Self-Directed Learning*

Introduction

The primary objective of contemporary education management is to cultivate learners who embody the essential characteristics and competencies of the twenty-first century. This includes fostering proficiency in core subjects, such as reading, writing, and mathematics, as well as promoting critical thinking and problem-solving abilities (Karatas and Arpaci 2021). Moreover, emphasis is placed on nurturing creativity, innovation, cross-cultural understanding, and collaboration, alongside developing effective communication, leadership, and information and media literacy skills (Ahmad and Ghavifekr 2017; Luterbach and Brown 2011). The integration of computer and information technology, professional expertise, and a commitment to lifelong learning are paramount, alongside the cultivation of moral values, such as kindness, generosity, discipline, and ethics. These characteristics have been identified by the Thai Ministry of Education as playing a crucial role in shaping well-rounded individuals (Office of the Secretariat of the Ministry of Education 2017).

A high-quality learning management process is required to help students develop and achieve the aforementioned goals. It is an important factor in developing learners' love for learning, learning skills, and desirable characteristics that facilitate learning and self-development. One category of important skills that helps learners continuously self-develop is self-directed learning skills. This refers to learning behaviors that reflect a learner's own goals, using their own learning processes and self-assessment for learning development, and exchanging knowledge with other people (Mingsiritham 2009; Thongmon 2007). If learners continuously develop self-directed learning skills through effective learning management, they will have greater opportunities to achieve their learning goals. Learning management models must therefore be designed to foster the development of self-directed learning skills. Self-directed learning will help learners achieve educational goals more efficiently. Acknowledging this premise, the objectives of the current investigation were to study and develop a learning management model that enhances creative self-directed learning skills among Thai school students and to evaluate the effectiveness of that learning management model.

Literature Review

Malcolm Knowles (1975) first introduced the concept of self-directed learning, a process he described as individuals taking the initiative to diagnose their own learning needs, formulate learning goals, identify resources, and evaluate learning outcomes. Since this initial definition, the term has been expanded to emphasize learner autonomy in terms of motivation and control (Candy 1991), self-monitoring and motivation (Garrison 1997), and personal responsibility of the learner (Brockett and Hiemstra 2018). Early studies on self-directed learning focused on understanding the cognitive and metacognitive processes involved (Grow 1991; Pintrich 2000). More recently, focus has shifted to the role of social and contextual factors, such as the influence of peers, instructors, and the learning environment on self-directed learning (Brandt 2020; Bransford, Brown, and Cocking 2000; Morris 2019; Zimmerman 2002). Additionally, qualitative studies have enriched the understanding of self-directed learning by exploring learner experiences, perceptions, and personal narratives (Douglass and Morris 2014; Merriam 2001; Saks and Leijen 2014). Within Thailand, research has considered learning management models that strengthen self-directed learning skills, and this is becoming a popular educational approach (Saisri, Wongsuwankongphao, and Sakonrak 2020; Saengsado 2019; Srivinet 2019; Voraphan, Nuengchalerm, and Malasri 2016). However, gaps remain in domestic scholarship concerning learning management models that foster creative self-directed learning skills and emphasize learning that leads to the innovation of creative learners. A greater depth of knowledge in this area will help promote self-directed learning skills in young people and correspond with a changing Thai society that increasingly values higher creative skills.

In its early guise, self-directed learning was largely associated with traditional, face-to-face learning models (Knowles 1975). However, the emergence of new technologies, including online learning platforms, and 1:1 digital devices, has significantly expanded the

scope of self-directed learning (Dabbagh and Kitsantas 2012). These tools have enabled learners to access a wide range of learning networks, interact with their peers and instructors, and collaborate on learning projects that foster a more learner-centered and flexible learning environment (Rashid and Asghar 2016; Song and Hill 2007; Sumuer 2018). Furthermore, research has shown that there is significant potential for adaptive and intelligent learning systems to support and enhance self-directed learning (Chatti, Jarke, and Specht 2010).

Most often, this modern technology is combined with problem-based learning strategies to enhance self-directed learning. This is "a teaching method in which complex real-world problems are used as the vehicle to promote student learning of concepts and principles," and is an effective instructional style for promoting self-directed learning because it encourages students to take responsibility for their learning and to develop their own learning strategies (University of Illinois Urbana-Champaign, n.d.). Self-directed learning is closely linked to the acquisition of higher-order thinking skills associated with problem-based learning (Leary et al. 2019). Consequently, problem-based challenges provide an ideal environment for promoting self-directed learning skills, as educators are required to provide support and guidance to help students develop the skills and attitudes needed for self-directed learning. There are nonetheless several factors that can further influence the success of problem-based learning in encouraging self-directed learning, including the complexity of the problem, the availability of resources and feedback, and the characteristics of the learners themselves (Blumberg 2000; Robinson and Persky 2020).

Central to the idea of problem-based challenges is the concept of the growth mindset, which aims to foster self-awareness in learners that encourage them to embrace difficulties and overcome problems through self-development (Dweck 2016). Through such an approach, students learn from experiences and develop themselves accordingly (Dweck 2008, 2012a, 2012b; Flores, Lemons, and McTernan 2011; Good, Aronson, and Inzlicht 2003). Learners with a growth mindset believe that they can learn anything with enough effort, determination, and perseverance (Alerson 2017; Blackwell, Trzesniewski, and Dweck 2007; Rienzo, Rolfe, and Wilkinson 2015; Vedder-Weiss and Fortus 2013). Despite the emphasis on student discovery, the teacher is a key component in the learning journey. Coaching is perhaps a more accurate description of the role of the modern teacher in a self-directed classroom (Marzano and Simms 2012; Sobel and Panas 2012). The teacher plays a role in stimulating the students' advanced thinking, inspiring learning, guiding learners to use the learning process effectively, and evaluating and giving constructive feedback to learners. With this guidance, learners develop a sense of ownership of their learning, which leads to active growth (Costa and Garmston 2002; Knight 2009; Sweeney 2011).

Nonetheless, the roles of the teacher and the learner require clear definition and understanding in order for the self-directed approach to work. Academic research has identified a number of potential problems with the self-directed method that must be acknowledged and addressed by education managers in order to mitigate negative impacts and ensure the success of self-directed programs. Such problems include a lack of structure

and guidance (Knowles 1975; Candy 1991), inequality in learning opportunities (Warschauer and Matuchniak 2010), limited social interaction (Haythornthwaite and Andrews 2011), inadequate assessment and feedback (Boud and Molloy 2013), overemphasis on individual autonomy (Illeris 2009), and inconsistency in quality and rigor (Dron and Anderson 2007). In designing this investigation, the researchers were mindful of these criticisms and took steps to guard against them.

Research Methodology

This investigation was conducted using a research and development methodology in four phases. In the first phase, researchers studied primary information regarding learning management model development with a focus on enhancing creative self-directed learning skills of Thai school students. Ten academic experts were interviewed on the development of learning management models that enhance creative self-directed learning skills. Ten teachers were interviewed to gather their opinions regarding the development of learning management models that enhance creative self-directed learning skills. A group discussion was conducted with thirty learners on the development of the learning management models that they feel enhance creative self-directed learning skills.

In the second phase of the research, results from the preliminary study were analyzed and used to inform the development of a learning management model to enhance creative self-directed learning skills. The quality of the model was checked for consistency, suitability, and feasibility before being applied to a pilot group of forty-one elementary school students who would not then be included in the main research sample. These individuals volunteered to participate for a period of one month. Full parental consent was also obtained prior to investigation.

In the third phase of the investigation, results from the pilot study were taken to adapt the model where necessary. A full implementation of the management model was then undertaken with 501 students: 189 elementary school students and 312 secondary school students. All students volunteered to participate in the project for a period of three months. A workshop seminar was organized for the instructors who participated in the experimental model by clarifying concepts, principles, objectives, learning management procedures, instructor roles, learner roles, and evaluation. Then, the practice was encouraged to design the learning management according to the learning management model that enhanced creative self-directed learning skills. The data were collected on creative self-directed learning skills by allowing teachers to assess their students according to the real condition-based assessment approaches. The emphasis was placed on observing the student's behaviors using a creative self-directed learning skill assessment form.

To ensure a thorough understanding of the impact of the learning management model on students' creative self-directed learning skills, a repetitive analysis of variance was employed on the skill scores of elementary school students. This method was chosen due to its efficacy in determining statistical differences between multiple groups over several time points. By using

repetitive analysis of variance, we were able to assess whether there were any significant changes in creative self-directed learning skill scores over time and if these changes were consistent across different groups of students. This approach offered a comprehensive insight into the effectiveness of the learning management model while also controlling for any time-related fluctuations in student performance. In this final phase of the investigation, the effectiveness of the learning management model was thus evaluated, leading to the preparation of a policy proposal to promote self-directed learning management and implementation in educational institutes. The implementation was conducted after the model trial had been completed.

Results

Principles of the Learning Management Model

The learning management model developed by the researchers was based on three key principles:

1. Learners practice setting goals and self-learning with emphasis on practical actions according to their own interests and with the help of an instructor until the learners succeed in performing the learning activities.
2. Instructors use coaching as a tool to encourage learners to be self-disciplined, to use their own learning process in multiple ways, to increase their self-esteem, and to value learning.
3. Instructors assess creative self-directed learning skills during learning activities. A variety of methods are used, especially observing student behaviors, reviewing work, and providing constructive feedback to inform student self-improvement.

The creative self-directed learning skills were developed in the following ten-step process. Students (1) set their own learning goals, (2) developed a step-by-step and flexible learning plan, (3) used various learning processes, (4) self-managed to achieve learning goals, (5) self-directed when performing learning activities, (6) assessed their own learning progress, (7) created work that reflected their own learning outcomes, (8) evaluated their own learning according to the predetermined goals, (9) reflected and shared their learning with others, and (10) improved their own learning process.

There were three core components in the learning management process. The first was *passion*. Instructors encouraged learners to see value in learning the main concepts. Learners set their own learning goals flexibly. The step-by-step learning plan was set using activities that met the interests of learners according to their age. The community and social context was also used to inform activity design and motivate learners to want to learn and practice learning activities. The second component was *progression*. The learners used various learning processes, such as seeking knowledge, cognitive building processes, analytical thinking, and group work. This included self-management, self-regulation in the practice of learning activities, and assessment of their own progress based on evidence. The third component was *production*. Learners used their experiences to create work that reflected their own learning

processes and outcomes. This reflected knowledge and understanding of links, integrations, and evaluations of their own learning outcomes according to the set goals. This also reflected exchanges with others to improve the individual learning process.

The instructor's role required three characteristics: (1) *engagement*—building trust with the learners, building positive relationships based on acceptance and respect, treating learners with respect for human dignity, paying attention, following up, and listening deeply to the learners, not rushing to conclusions or decisions; (2) *empowerment*—encouraging learners to have a growth mindset, to set their own learning goals, to be disciplined, to be self-directed, to use the learning processes and the power of questions to stimulate advanced thinking, and to make decisions; and (3) *enlivening*—stimulating a desire to learn, inspiring intrinsic motivation, challenging, communicating, creating an active and conducive atmosphere for learning, encouraging commitment and effort, showing enthusiasm, and embodying learning.

Learners were expected to analyze and set their own learning goals with a learning plan consistent with their own nature, use various learning processes, and be self-directed in the performance of learning activities to achieve learning goals, create works that reflect their own learning outcomes, evaluate learning outcomes and progress according to the set goals, reflect, and share knowledge with other people to improve their own learning process.

Assessment in the learning management model was conducted in four intervals: (1) instructors observed learning behaviors that reflected creative self-directed learning skills, (2) instructors evaluated student work that reflected creative self-directed learning skills, (3) learners reflected and assessed their own creative self-directed learning skills, and (4) learners evaluated one another's creative self-directed learning skills and used the assessment results to improve themselves.

Effectiveness of the Learning Management Model

Research results revealed that the developed learning management model was effective in enhancing creative self-directed learning skills. It enabled learners to develop creative self-directed learning skills according to each of the four assessment periods. Table 1 shows that elementary school students had different development of creative self-directed learning skills, with statistical significance at the 0.01 level. The result of comparison of each pair is shown in Table 2. Table 2 shows that elementary school students had creative self-directed learning skills from all 4 measurements, taken 1 month apart, with a significant difference at the 0.01 level. The latter measurement had a higher mean than every previous measurement, showing that the elementary school students had higher development of creative self-directed learning skills.

Table 1: Results of Repetitive Analysis of Variance on Creative Self-Directed Learning Skill Scores of Elementary School Students

Sources of Variance	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
4 assessment intervals	36346.556	3	12115.519	604.119	0.000**

Note: **with statistical significance at 0.01 level

Table 2: Results of the Mean Multiplication Analysis of Creative Self-Directed Learning Skill Scores of Elementary School Students

Measurement (I)	*Measurement (J)*	*Mean Difference (J-I)*	*Std. Error*	*Sig.*
1st time	2nd time	7.746	0.344	0.000**
	3rd time	12.032	0.473	0.000**
	4th time	19.132	0.658	0.000**
2nd time	3rd time	4.286	0.294	0.000**
	4th time	11.386	0.544	0.000**
3rd time	4th time	7.101	0.340	0.000**

Note: **with statistical significance at 0.01 level

Table 3 shows that secondary school learners had different development in creative self-directed learning skills at the statistical significance level of 0.01. The pairwise comparisons are shown in Table 4. Table 4 shows that secondary students had creative self-directed learning skills from all four measurements, one month apart, with a significant difference at the 0.01 level. The latter measurement had a higher mean than every previous measurement, meaning that the secondary school students developed higher creative self-directed learning skills.

Table 3: Results of Repetitive Measure Analysis of Variance on Creative Self-Directed Learning Skill Scores of Secondary School Learners

Sources of Variance	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
4 measurement intervals	77521.458	3	25840.486	1721.925	0.000**

Note: **with statistical significance at 0.01 level

Table 4: Results of the Mean Multiplication Analysis of Creative Self-Directed Learning Skill Scores of Secondary School Students

Measurement (I)	*Measurement (J)*	*Mean Difference (J-I)*	*Std. Error*	*Sig.*
1st time	2nd time	7.542	0.243	0.000**
	3rd time	15.260	0.356	0.000**
	4th time	20.869	0.450	0.000**
2nd time	3rd time	7.718	0.176	0.000**
	4th time	13.327	0.318	0.000**
3rd time	4th time	5.609	0.240	0.000**

Note: **with statistical significance at 0.01 level

Table 5 shows that all students had different developments in creative self-directed learning skills at the statistical significance level of 0.01. The results of pairwise comparisons are shown in Table 6. Table 6 shows that all learners had creative self-directed learning skills from all four measurements, one month apart, with a significant difference at the 0.01 level.

The latter measurement had a higher mean than every previous measurement, showing that learners developed higher creative self-directed learning skills.

Table 5: Results of Repetitive Analysis of Variance of Creative Self-Directed Learning Skill Scores of All Students

Sources of Variance	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
4 measurement intervals	112948.568	3	37649.523	2152.904	0.000**

Note: **with statistical significance at 0.01 level

Table 6: Results of the Mean Multiple Analysis of Creative Self-Directed Learning Skill Scores of All Students

Measurement (I)	*Measurement (J)*	*Mean Difference (J-I)*	*Std. Error*	*Sig.*
1st time	2nd time	7.619	0.199	0.000**
	3rd time	14.042	0.293	0.000**
	4th time	20.214	0.376	0.000**
2nd time	3rd time	6.423	0.173	0.000**
	4th time	12.595	0.288	0.000**
3rd time	4th time	6.172	0.199	0.000**

Note: **with statistical significance at 0.01 level

Evaluation Results of the Effectiveness of the Learning Management Model

According to the results of repetitive analysis on variance of creative self-directed learning skill scores and the results of the mean multiple comparison analysis of creative self-directed learning skill scores, it can be concluded that the learning management model is effective according to the specified criteria.

Table 7: Summary of Results of Evaluating the Effectiveness of the Learning Management Model

No.	*Criteria of Effectiveness*	*Results of Data Analysis*	*Summary of the Results*
1	The elementary school students had higher development of creative self-directed learning skills.	Have higher development	Passed
2	The secondary school students had higher development of creative self-directed learning skills.	Have higher development	Passed
3	All students had higher development of creative self-directed learning skills.	Have higher development	Passed

The learning management model developed during this research was built on several foundational elements. At its core, the model emphasizes the importance of learners practicing goal-setting and self-learning. Students are not left alone in this endeavor; an instructor guides them, adopting a coaching methodology to instill self-discipline in the learners and urging them to adopt multiple learning processes, thereby increasing their self-esteem and understanding of the intrinsic value of learning. The assessment is not just traditional, as it focuses heavily on observing and reviewing student behaviors and providing feedback that students can use for self-improvement. In this model, learning follows a ten-

step process that requires students to set goals, manage their own learning, regularly reflect on their progress, and continuously seek ways to improve. Throughout, there are three core components: passion, progression, and production (Figure 1).

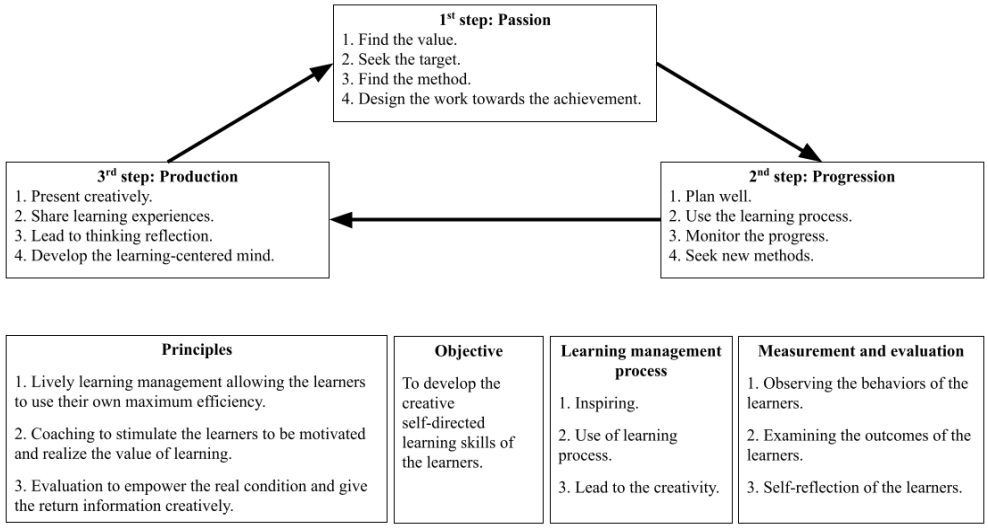

Figure 1: Learning Management Model to Enhance Creative Self-Directed Learning Skills

Discussion

In designing the learning management model, the researchers were mindful of the potential problems with self-directed learning identified in the literature review and took steps to guard against them. To address the lack of structure and guidance (Knowles 1975; Candy 1991), the model emphasizes goal-setting and self-learning with the help of an instructor, providing learners with guidance and support while maintaining student autonomy. In order to counter inequality in learning opportunities (Warschauer and Matuchniak 2010), the model encourages instructors to consider learners' interests, age, and social context in designing activities, making learning more accessible and relevant to diverse learners. This contextual acknowledgment also mitigates potential overemphasis on individual autonomy (Illeris 2009). The facilitation and coaching role of the teacher helps learners develop self-discipline, self-esteem, and value for learning, which can enhance motivation and learning skills for all students. Group work was integrated into the plan by encouraging learners to reflect and share their learning with others as part of the assessment and evaluation stage, addressing the issue of limited social interaction (Haythornthwaite and Andrews 2011). Furthermore, the instructor's role in engagement, empowerment, and enlivening focuses on building trust, relationships, and a conducive learning environment, emphasizing the social aspects of learning. To tackle the problem of inadequate assessment and feedback (Boud and Molloy 2013), the researchers ensured that assessment was a key part of the model, including instructor observations, evaluation of student work, self-assessment, and peer evaluation.

Lastly, to address the inconsistency in quality and rigor (Dron and Anderson 2007), the learning management model incorporated a clearly defined ten-step process for developing self-directed learning skills and outlined the instructor's role with clear expectations, maintaining consistency throughout the learning experience.

The learning management model used in this investigation proved effective in facilitating the development of learners' creative self-directed learning skills, which showed steady improvement during assessments. This growth enabled learners to set personalized learning goals and design flexible, step-by-step learning plans. They were able to employ diverse learning processes to enhance self-management and achieve their objectives. Self-direction in carrying out learning activities allowed learners to assess their progress and produce work reflecting their unique learning outcomes. They were also able to evaluate their learning based on predetermined goals, engage in reflection, share knowledge with others, and continually improve their learning processes. Adherence to student-centered learning management principles is crucial for fostering creative self-directed learning skills, taking into account learners' interests and needs. This aligns with Khemmanat Mingsiritham's (2009) assertion that self-directed learning should originate from learners' voluntary engagement, discipline, and responsibility, ultimately leading to meaningful learning experiences. Learners should recognize the ongoing pursuit of self-knowledge, promoting a lifelong learning culture that is both effective and enduring. Self-directed learning should empower learners to learn effectively on their own, using various learning processes and persevering until they achieve knowledge, understanding, and skills according to their individual specifications (Thongmon 2007). This is best achieved by focusing on learners' interests, with the teacher acting as a coach to provide personalized support (Morris 2020).

The present research results underscored the importance of three core components in the learning management model: passion, progression, and production. These elements were found to have a positive impact on learners' creative self-directed learning skills, aligning well with the model's ten-step process and the instructor's role in engagement, empowerment, and enlivening. Firstly, teachers fostered learners' passion by encouraging them to see the value in learning and providing activities tailored to their interests, age, community, and societal context. This approach aimed to inspire curiosity and self-driven activities, which served as a foundation for developing creative self-directed learning skills. Voraphan, Nuengchalerm, and Malasri (2016) and Saengsado (2019) similarly emphasized the importance of motivation and student-centered activities in their self-directed learning models, despite having a different number of components in their models. Secondly, progression was facilitated through learners employing various self-directed learning processes, such as knowledge-seeking, cognitive building, and analytical thinking, which were integrated within the model's ten-step process. Srivinet (2019) developed a teaching and learning model for chemistry students that emphasized a self-directed learning process in four steps to promote independent thinking and learning achievement. Her model aligns well with the progression component of the current study. Thirdly, the production component of

this investigation emphasized learners applying their creativity to create works reflecting their learning processes and outcomes, demonstrating their understanding and competence. Saisri, Wongsuwankongphao, and Sakonrak (2020) developed a learning and teaching model based on commitment and self-directed learning to promote reading habits with principles resonating with the learning management model's focus on goal setting, learner autonomy, and evaluation as a part of learning. In each of the studies mentioned here, self-directed learning skills were found to improve with a 0.05 level of statistical significance. Clearly, while the number of steps, phases, or components in these models differed, they succeeded due to the underlying principles of motivation, self-directed learning processes, and creative application. These principles, regardless of the specific structure of the models, appear to be crucial in promoting self-directed learning and enhancing learning outcomes.

In implementing a learning management model that fosters creative self-directed learning skills, the instructor's role is crucial. This requires a shift from the traditional instructor-led approach to one that allows learners to have autonomy in setting their own objectives and designing learning processes that align with learning standards. Teachers should focus on inspiring and guiding learners rather than providing prescriptive instruction or immediate solutions. The instructor's role in fostering commitment and self-confidence in learners is critical for promoting self-directed learning. By engaging student consciousness, empowering students to think, and enlivening their thought processes, teachers can enhance learners' self-esteem and encourage their pursuit of self-development. This approach aligns with Ausubel's Theory of Meaningful Learning, emphasizing the importance of relating new information to previous knowledge and experiences, catering to each learner's potential, and encouraging reflection and connection between new and past learnings (Agra et al. 2019; Ausubel 2012; da Silva 2020). Importantly, teachers as facilitators must encourage learners to have a growth mindset (Dweck 2016). This plays an important role in helping learners gain confidence so that they can develop their own knowledge and abilities using a variety of methods, and this must be the starting point for the development of creative self-directed learning skills.

By facilitating communication and fostering an enthusiastic learning atmosphere, teachers can encourage learners to commit to their studies and persevere in their learning efforts. This role promotes active learning processes, such as knowledge-seeking, self-training, self-assessment, and peer learning exchanges (Costa and Garmston 2002; Knight 2009). Moreover, teachers can create a supportive environment that enables learners to focus on their learning activities with a clear and worry-free mindset, fostering confidence in expressing opinions and engaging in various activities (Marzano and Simms 2012; Sobel and Panas 2012; Sweeney 2011). This role further encourages self-management and self-direction in achieving learning goals and assessing progress. These are all concepts contained within the enliven element of the teacher role in this management model. Two-way communication between instructors and learners, coordination of learning activities, and empowering learners to set objectives, learning directions, and evaluation criteria are all integral aspects of this role.

Measurement and evaluation are crucial elements in promoting learners' creative self-directed learning skills. Effective assessment practices should empower learners by adhering to four key principles: (1) involving multiple assessors, such as teachers, learners, and peers; (2) employing diverse assessment methods, including observation, questioning, and performance evaluation; (3) conducting assessments at various stages throughout the learning process, including before, during, and after learning, as well as follow-up evaluations; and (4) using assessment results for reflection and continuous improvement of both learners and learning management. By following these four approaches, assessments can continuously monitor learners' progress in creative self-directed learning skills, providing teachers with valuable information to tailor their instruction based on accurate assessment outcomes. These assessment principles align with the concepts presented by Wongyai and Patphol (2015), Hodges (2007), Scharmer (2007), Sprenger (2008), Tan and Seng (2008), Leighton and Gierl (2011), and Battista (2012), which all emphasize the transformative developmental role played by assessment for learning. This investigation showed that teachers and students can use assessment data as feedback to identify learning challenges, enhance learning strategies, and support the growth of individual learners.

Limitations and Suggestions

While this investigation provides an initial framework for a learning management model that enhances creative self-directed learning skills, several limitations must be acknowledged. The limited sample size and diversity of respondents means that the findings may not be generalizable. Moreover, the voluntary participation of students could introduce selection bias, and the relatively short duration of the study does not fully capture the long-term impact of the learning management model on students. The reliance on teacher evaluations for assessing creative self-directed learning skills introduces further potential for subjectivity and bias. Meanwhile, the absence of a control group makes it challenging to determine the extent to which the observed improvements can be attributed to the intervention. Through the recognition of a potential shortcoming in the ex-post-facto design, it is indeed plausible that the observed increase in creative self-directed skills might have arisen simply from teaching taking place, irrespective of the learning management system's use. To circumvent this limitation, future investigations could opt for either an experimental or quasi-experimental design. This approach would involve a control group, which proceeds without the proposed learning management system, and an experimental group that integrates it, providing a clearer lens to evaluate the system's direct impact. Future research could address these limitations to provide further insights into the effectiveness and scalability of the learning management model for enhancing creative self-directed learning skills. Nonetheless, despite these limitations, the investigation presented in this article contributes to the growing body of knowledge on self-directed learning in Thailand and has the potential to inform educational policies and practices in various settings.

In light of the study's findings, it is essential to propose a structured approach to integrate the learning management model within the Thai education landscape. The first step is for the Ministry of Education to establish a clear framework. To achieve this, a task force should be convened, bringing together educators, policymakers, researchers, and other stakeholders to draft comprehensive guidelines that will lay the foundation for the model's introduction and scalability in schools. Equally crucial is ensuring that schools possess the necessary infrastructure and resources. The government should allocate a dedicated budget for the acquisition of technological tools and materials that bolster creative self-directed learning. This could range from cutting-edge virtual reality sets to AI-driven learning platforms, which would serve as catalysts in enhancing the learning experience. For the model to be effective, educators must be its chief proponents. Thus, it is vital to offer them robust training and professional development opportunities. Funding should be designated for ongoing programs, workshops, and courses that delve deep into the nuances of the learning management model, especially its three core components: passion, progression, and production. Furthermore, the success of the model hinges on wide-ranging support from all corners of the community. Regular town-hall meetings and feedback sessions should be organized. These platforms would offer parents, educators, students, and the broader community a voice, allowing them to share their perspectives on the model's challenges and triumphs.

In terms of more general recommendations, future investigation in the field of self-directed learning should address the challenges and opportunities identified in recent studies. One key area to explore is whether self-directed learning is universally beneficial, as it may not be the optimal approach for learners with low self-efficacy or those in high stakes learning situations. Additionally, investigating the role of culture and its impact on self-directed learning is essential, as learners from diverse cultural backgrounds may exhibit different preferences and attitudes toward the approach. Lastly, with rapid technological advancements, further research is needed to understand how emerging technologies like artificial intelligence, virtual reality, and data analytics can be employed to support self-directed learning, fostering more personalized, adaptive, and engaging learning experiences.

Following this investigation, the researchers recommend that the Thai education system incorporates a learning management model fostering creative self-directed learning skills with passion, progression, and production components. Educators should be provided with professional development and training opportunities to facilitate creative self-directed learning. Emerging technologies should be utilized to support self-directed learning, enabling personalized and engaging learning experiences. A comprehensive assessment framework should be established, with ongoing assessment and reflection. Collaboration among stakeholders, including educational institutions, teachers, parents, and the community, should be encouraged to create a supportive learning environment that fosters the development of creative self-directed learning skills for students in an increasingly complex world.

Conclusion

This investigation has illuminated the critical role of a structured learning management model in fostering creative self-directed learning skills among students. By emphasizing three core components—passion, progression, and production—and the pivotal role of instructors as facilitators, the model offers a promising avenue to optimize the self-directed learning experience. The identified limitations of this study highlight areas for refinement and further research. Nonetheless, the findings of this investigation underscore the potential of self-directed learning in equipping students with the autonomy, skills, and mindset necessary to navigate an ever-evolving educational landscape. The researchers urge the integration of self-directed learning principles and practices in Thai education; a pedagogical focus on fostering students' abilities to independently navigate, understand, and shape their learning journeys is paramount. This investigation reaffirms the belief that with the right guidance, resources, and environment, students can be empowered to take charge of their learning, ultimately fostering lifelong learners equipped to face future challenges with resilience, creativity, and adaptability.

Informed Consent

All research participants gave informed consent to participate in this investigation. If a research participant was under the legal age of consent, their parents provided written confirmation of participation. The investigation received ethics approval from Srinakharinwirot University.

Conflict of Interest

The author declares that there is no conflict of interest. All listed authors participated in every stage of the investigation and the production of this manuscript. All authors read and approved the final manuscript.

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