
Development of Muay Thai Teachers Higher Competency Model in the 21st Century Learning Management

Pichainarong Kongkaew
Chiang Mai University, Thailand
Email: pichainarong.kong@cmu.ac.th

Received: 19/07/2025
Accepted: 08/10/2025
Published: 30/10/2025

Volume: 6 Issue: 6

How to cite this paper: Kongkaew, P. (2025). Development of Muay Thai Teachers Higher Competency Model in the 21st Century Learning Management. *Journal of Practical Studies in Education*, 6(6), 68-78
DOI: <https://doi.org/10.46809/jpse.v6i6.150>

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Abstract

This research aims to: 1) study the higher competency of Muay Thai teachers in 21st century learning management; 2) analyze the components for developing the higher competency of Muay Thai teachers; 3) construct and validate a model for developing the higher competency of Muay Thai teachers in 21st century learning management; and 4) evaluate the developed model's feasibility, utility, and satisfaction. The study employed a Research and Development (R&D) methodology. The sample groups were: 1) individuals providing data on the factors influencing the needs for developing the higher competency of Muay Thai teachers; 2) interviewees regarding the components for developing the higher competency of Muay Thai teachers; 3) experts evaluating the accuracy and appropriateness of the model; and 4) evaluators assessing the model's feasibility and utility. The research instruments included: 1) a questionnaire on the factors influencing the needs for developing the higher competency of Muay Thai teachers; 2) an interview form for analyzing the components for developing the higher competency of Muay Thai teachers; 3) an evaluation form for assessing the model's accuracy and appropriateness; and 4) an evaluation form for assessing the model's feasibility, utility, and satisfaction. Qualitative data were analyzed using content analysis, while quantitative data were analyzed with a statistical software package to determine percentages, means, and standard deviations. The findings were then presented in a descriptive format. The results of the study revealed that 1) There is a significant "competency gap" between the current state and the desired state, particularly in the areas of technology integration, active learning management, learner motivation, and foreign language proficiency. 2) The synthesized higher competency components, based on the KPA-ADRIC framework, comprise eight domains: Knowledge, Practical Skills, Attitudes and Ethics, Active Learning Management, Digital and AI Literacy, Design Thinking, Flexibility, and Thai-Global Citizenship. 3) The developed "THAI-GLOBAL Model" integrates the wisdom of Thai boxing with modern learning innovations, digital technology, and a learner-centered instructional approach. The expert evaluation confirmed the model's accuracy and appropriateness were at the highest level. And 4) The evaluation results of the model indicated that its feasibility and utility were at the highest level, demonstrating its potential for practical application in educational institutions as well as Muay Thai camps.

Keywords: Higher Competency, Teacher Professional Development, Muay Thai Teachers

1. Introduction

Muay Thai is not only a martial art reflecting cultural wisdom and identity but also a powerful medium connecting Thai people with the global community. In an era of rapid global change, Muay Thai instructors must transition from being mere transmitters of physical skills to being well-rounded professionals with higher competencies. This includes mastering digital technology, engaging in deep analytical thinking, motivating students, and preparing them to have a global perspective. Thus, developing higher competency in these instructors is crucial not only for preserving the art but also for preparing them to compete and collaborate on the global stage. As Muay Thai has gained international recognition as a national heritage and a symbol of national prestige (Raksat, Yanthong, & Rianwilairat, 2021) and is part of a "soft power" strategy to generate economic, social, and national security benefits through tourism and the sports industry (The Subcommittee on Consideration and Study of the National Soft Power Strategic Plan on Sports, Martial Arts, and Tourism, 2023), this strategic drive relies heavily on Muay Thai instructors as both tradition bearers and learning designers who can adapt to modern learners (Meaksawan, 2020). Muay Thai is becoming a significant tool for creating soft power and driving the Thai economy. An analysis of the role of Muay Thai instructors reveals that digital-age instructors require more complex skills than their predecessors. Beyond teaching martial arts techniques, they must integrate technology, promote analytical thinking skills, and inspire students to succeed on the international stage. Thus, these instructors are the core drivers of the nation's soft power strategy. The key challenge to be addressed, therefore, is the lack of a clear body of knowledge and practical guidelines for developing Muay Thai instructors' competencies to align with the essential 21st-century skills, enabling them to be both guardians of cultural heritage and modern learning designers.

In teaching Muay Thai to develop 21st century citizens, instructors must possess competencies beyond physical skills. They require abilities in active learning instruction, digital literacy, and the application of artificial intelligence technologies to enhance learning management to its highest potential. This aligns with the concept of teacher development in the Thailand 4.0 era, which aims to integrate knowledge and innovation to promote student skills. Despite a growing awareness of the importance of curriculum reform and community collaboration to preserve wisdom and create economic value, a "competency gap" remains among current Muay Thai teachers. This gap is particularly evident in their ability to utilize technology for learning management, motivate learners, and apply foreign language skills, all of which are critical factors limiting the full potential of Muay Thai 's role on the international stage. Furthermore, recent crises have underscored the urgent need to develop Muay Thai teachers' capacity for adaptability and innovation to ensure the long-term sustainability of the martial art. Therefore, it is imperative to study and develop a specific model for Muay Thai teacher higher competency development to bridge this gap and prepare teachers to truly manage learning that responds to global societal changes. (Nimprang, Vajarintaragoon, & Boonkanaan, 2019; Sonrach, & Netpracha, 2019; Sangwipark, 2021; Srimaca, & Muneenam, 2021; Pramann, Kawjaratwilail, & Tanphanich, 2022; Ruankum, & Suthasinobol, 2022; Saokaew, 2022; Sudto, Steannoppakao, & Chalakbang, 2023; Kumsree, Tongchai, Jamrern, & Sawangpai, 2024).

The 21st century educational landscape presents significant challenges for teachers across all disciplines, including Muay Thai instructors. These educators must evolve from mere technical knowledge transmitters into change agents capable of integrating Muay Thai principles with future-ready skills. Previous studies by (Chuensangjan, 2020; Chaimalai, 2022; Tiengnil, 2022) have highlighted a critical need to develop Muay Thai teachers' competencies in areas such as Active Learning, the application of digital technologies, and Authentic Assessment to foster learners' analytical thinking, teamwork, and adaptability. However, a significant gap remains in the existing body of research. While the necessity for teacher development and its components has been identified, there is a distinct lack of in-depth studies on a concrete and effective model for developing advanced (Higher) competencies among Muay Thai instructors. This model should be rigorously validated for its feasibility and utility by experts and be practically applicable within the context of Muay Thai education, particularly concerning the creation of instructional innovations and professional networks to drive 21st century education forward.

The current body of research on the professional development of Muay Thai teachers reveals a significant gap, particularly concerning the advancement toward higher competencies that are responsive to the dynamics of the 21st century. While previous studies have explored the needs and guidelines for developing Muay Thai instructors, most have primarily focused on teaching and learning management within the core curriculum. There is a notable lack of systematic integration to elevate the capabilities of these teachers, enabling them to effectively blend local wisdom with modern learning innovations. Furthermore, most studies on Muay Thai have emphasized its management for economic and social benefits, while the dimension of academic development for teachers to create active learning innovations using technology remains limited. This represents a crucial area for further research to fill this knowledge gap. Therefore, this study aims to develop a model that integrates the art of Muay Thai with digital technology and creative learning to build a competitive advantage and elevate the role of Muay Thai teachers, ensuring they can sustainably and internationally transmit this valuable national art in the digital age.

2. Research Methodology

2.1. Research Methodology

This Research and Development (R&D) project is focused on creating educational innovations through a systematic process. It begins with the comprehensive collection of qualitative and quantitative data from various sources, such as questionnaires, interviews, and evaluation forms. The collected data is then analyzed and synthesized to present the findings through descriptive

analysis. This approach provides a detailed description and summary of the research outcomes, which will be used for future development and further work.

2.2. Population and Sample Population

The informant group, which provided data on factors affecting the need for high-level competency development among Muay Thai teachers, comprised 1,000 physical education students from three educational institutions.

The group of interviewees who were interviewed about the components for developing higher competency of Muay Thai teachers, comprising Muay Thai teachers at educational institutions and boxing camps with more than 5 years of teaching experience.

The group of evaluators who assessed the validity and appropriateness of the advanced competency development model for Muay Thai teachers for 21st century learning management, comprising experts, specialists, and academics in Muay Thai who are widely recognized in the sport and have more than 10 years of experience.

The group of evaluators who assessed the feasibility, utility, and satisfaction with the advanced competency development model for Muay Thai teachers for 21st century learning management, comprising administrators from institutions that offer Muay Thai instruction and Muay Thai boxing camps.

Sample:

300 Muay Thai teachers were surveyed regarding the factors influencing the essential needs for developing their higher competency. A Simple Random Sampling method was used to select the participants.

20 Muay Thai teachers from both educational institutions and boxing camps were interviewed about the components for developing their higher competency. Purposive Sampling was used to select the participants for the interviews.

Twelve evaluators were selected using Purposive Sampling to assess the accuracy and suitability of the developed model for enhancing the higher competency of Muay Thai teachers for 21st century learning management.

Thirty evaluators were selected using Purposive Sampling to evaluate the feasibility, utility, and satisfaction with the developed model for enhancing the higher competency of Muay Thai teachers for 21st century learning management.

2.3. Research Instruments

The research instruments were as follows:

A questionnaire on the factors influencing the needs for developing Muay Thai teachers' higher competencies.

An interview form for analyzing the components of developing Muay Thai teachers' higher competencies.

An evaluation form for the accuracy and appropriateness of a developmental model for Muay Thai teachers' higher competencies in 21st century learning management.

An evaluation form for the feasibility and beneficial aspects of a developmental model for Muay Thai teachers' higher competencies in 21st century learning management.

2.4. Data Collection

A Study of Factors Influencing the Need for Muay Thai Teacher Competency Development. This phase aims to investigate the factors that influence the necessary development of higher competencies for Muay Thai teachers. The sample group consisted of 300 physical education students selected from Chiang Mai University, Chiang Mai Rajabhat University, and the National Sports University, Chiang Mai Campus. A simple random sampling method was used, with clear inclusion and exclusion criteria. The research instrument was a 5-point Likert scale questionnaire designed to survey opinions on various aspects, including teachers, students, administrators, facilities, and the learning environment.

Analysis of Components for Developing Muay Thai Teacher Competencies. This step focused on analyzing the essential components required for developing the higher competencies of Muay Thai teachers. The sample group consisted of 20 Muay Thai teachers with at least five years of experience, selected through purposive sampling from educational institutions and Muay Thai camps in Chiang Mai Province. Clear inclusion and exclusion criteria were established, along with a defined procedure for withdrawal from the study. The research instruments used were a five-level rating scale questionnaire and interviews to collect data on various components, including knowledge, skills, virtues, and the use of technology. The collected data were then analyzed using descriptive statistics and subjected to a triangulation process to confirm the accuracy and reliability of the analytical findings.

Development and Validation of the Muay Thai Teacher Competency Development Model. This step involved two sub-phases: drafting and validating the THAI-GLOBAL Model, a framework for developing the higher competencies of 21st century Muay Thai teachers. The model was drafted based on the findings from the research in Steps 1 and 2. It was then submitted to a purposive sample of 12 experts, consisting of scholars and specialists in Muay Thai and educational curricula, to be evaluated for its accuracy and appropriateness. The research tools used were a focus group discussion and a 5-point Likert scale questionnaire. The discussion was audio and video recorded for subsequent qualitative content analysis, while the questionnaire data was analyzed using descriptive statistics.

Evaluating the Muay Thai Teacher Development Model. The final step involved evaluating the THAI-GLOBAL Model for its feasibility and benefits from the perspective of 30 selected administrators from educational institutions and Muay Thai camps that offer Muay Thai instruction. These participants were chosen using purposive sampling based on predefined criteria. The instrument used was a 5-point Likert-scale questionnaire, which had been previously validated for content validity by experts. The collected data were analyzed using mean and standard deviation, similar to the previous steps. The criteria for concluding that the model is feasible and beneficial were a mean score greater than 3.51 and a standard deviation not exceeding

1.50. This analysis aimed to confirm that the model can be effectively and practically applied within the context of Muay Thai teachers.

2.5. Data Analysis

The researcher employed an interpretive content analysis approach to analyze the qualitative data. This method was used to summarize key themes from distinct data groups and to analyze the relationships between these data points in alignment with the study's objectives.

The quantitative data, collected from the assessment forms, were analyzed using a suitable statistical software program. The analysis was performed using descriptive statistics, and the results are presented in the form of frequencies, percentages, means, and standard deviations.

3. Results

In this research study, the collected data were categorized and the findings presented in accordance with the pre-defined research objectives. The conclusions of this study can be summarized as follows:

A study on the higher competency of Muay Thai teachers in 21st century learning management found the following results regarding the factors promoting Muay Thai physical activity in educational institutions for health and well-being.

Table 1. Factors Influencing the Essential Needs for Developing the Higher Competency of Muay Thai Teachers (n=300)

Factors	Current Condition			Level	Expected Condition		
	M	SD	Level		Factors	M	SD
1. Muay Thai Teachers	2.93	1.27	Moderate	1. Muay Thai Teachers	3.83	1.22	High
2. Students	2.78	1.30	Moderate	2. Students	3.82	1.11	High
3. Administrators	2.71	1.25	Moderate	3. Administrators	3.89	1.20	High
4. Management	3.07	1.28	Moderate	4. Management	3.91	1.07	High
5. Environment	2.86	1.18	Moderate	5. Environment	3.95	1.10	High
6. Facilities	2.93	1.25	Moderate	6. Facilities	3.93	1.11	High
Total	2.89	1.25	Moderate	Total	3.89	1.19	High

Based on the data in Table 1, the mean scores for all factors in the current condition were at a moderate level (2.71 - 3.07), with a total mean of 2.89. This finding indicates that the current implementation of Muay Thai activities in educational institutions is not highly developed and is subject to limitations that require improvement. Conversely, the mean scores for all factors in the expected condition were at a high level (3.82 - 3.95), with a total mean of 3.89. This result suggests that stakeholders have a strong desire and high expectations for the development and enhancement of these factors. This would allow Muay Thai to become an effective tool for promoting health and well-being. The analysis reveals a significant gap between the current and expected conditions across all factors, particularly in management (Mean 3.07 vs. 3.91), environment (Mean 2.86 vs. 3.95), and facilities (Mean 2.93 vs. 3.93). These areas are perceived by stakeholders as top priorities for development. In conclusion, the data from this table indicate that the current promotion of physical activity through Muay Thai in educational institutions does not fully meet expectations. Therefore, it is essential to develop and improve the relevant factors to maximize the benefits of these activities for both students and the institutions.

An analysis of the components for developing the higher competency of Muay Thai teachers reveals that the development of this competency in the 21st century requires eight interconnected and systematically supportive components. First, knowledge is crucial, encompassing both traditional knowledge, such as the history and core techniques of Muay Thai, and modern knowledge, including sports science, instructional design, and evidence-based assessment. This knowledge must be integrated with practice skills to ensure the accurate and safe execution of all techniques, correct demonstrations, and personalized guidance. These are built upon a foundation of attitude, morality, and ethics, emphasizing integrity, respect for training partners, and serving as a positive role model.

Furthermore, the learning process must incorporate Active Learning to promote engagement, hands-on practice, and reflection. This should be complemented by Digital Literacy & AI Literacy, which involves the safe use of videos, applications, and AI to analyze training performance. Teachers must also possess resilience to adapt their plans and teaching methods to suit different situations and constraints. Additionally, innovative skills are essential for designing new media and activities, while a Citizen Thai with a Global Perspective mindset is vital for bilingual communication, understanding global cultures, and leveraging Muay Thai as a soft power tool. These components work together to create a new generation of Muay Thai teachers who are well-equipped to manage learning in the present and future.

The research on the development and validation of a higher competency model for Muay Thai teachers in 21st century learning management revealed that the researcher had developed a model called the "THAI-GLOBAL Model." This model comprises ten key components: 1) Transformative Teaching, 2) Holistic Development, 3) AI Literacy & Adaptability, 4) Innovation Integration, 5) Global Citizenship, 6) Learner-Centered Approach, 7) Outcome-Based Learning, 8) Blended Pedagogy, 9) Authentic Assessment, and 10) Leadership & Lifelong Learning. These components are detailed as follows:

Transformative Teaching (T) is a process that focuses on shifting the role of a Muay Thai teacher from a one-way knowledge transmitter to a "visionary learning designer." This shift aims to create sustainable change in learners. Experts suggest that

Muay Thai teachers should design creative learning activities with clear objectives, utilizing Active Learning and Project-based Learning Alongside Reflective Practice. This integrated approach is intended to lead to the deep development of learners' competencies.

Holistic Development (H) is a process that emphasizes the integrated development of teachers, encompassing their knowledge, skills, ethics, personality, and attitudes. It is proposed that the training of Muay Thai teachers should cover both the development of professional skills and the promotion of the spiritual virtues of the art of Muay Thai, which are intertwined with respect, endurance, and discipline. The goal is to create a model teacher who serves as both an instructor and an inspiration.

AI Literacy & Adaptability (A) refers to a process that emphasizes the fundamental knowledge and skills modern Muay Thai instructors should possess in using digital technology and artificial intelligence (AI). This includes using AI-powered applications for stance analysis, collecting learner development data, communicating through online platforms, and employing technology for self-directed learning, such as microlearning or LMS (Learning Management Systems). Crucially, instructors should maintain a positive and critical attitude toward technology, exercising digital literacy to select and apply tools that are appropriate for their target audience without neglecting the value of direct, hands-on learning experiences.

Innovation Integration (I) is a process that focuses on fostering creative integration through the application of Design Thinking in Muay Thai instruction. This can involve tasks such as challenging learners to design their own applied Muay Thai techniques, analyzing case studies, or engaging in Problem-based Learning. These approaches collectively stimulate learners' innovative thinking and enhance their ability to solve real-time problems. To achieve this, teachers should receive systematic training to effectively apply these approaches in diverse learning environments and adapt them to their specific contexts.

Global Citizenship (G) is a process that focuses on the need for teachers to instill the concept of global citizenship without neglecting Thai identity. This is achieved through activities that link Thai and global cultures, such as learning Muay Thai alongside using the English language, organizing international exhibitions, conducting online cultural exchanges, or presenting student videos to a global audience. Through these activities, learners are promoted in foreign language proficiency, understanding of cultural diversity, and effective cross-cultural communication.

Learner-Centered Approach (L) is an educational process that genuinely focuses on placing students at the center of learning. In this approach, teachers must analyze each student individually, understanding their interests, abilities, and learning goals. The teacher then designs flexible learning activities that are aligned with the students' specific needs. Examples of this include allowing students to select their own content, using negotiated assessment methods, or implementing platforms that promote personalized learning.

Outcome-Based Learning (O) is a process that focuses on defining clear and measurable learning outcomes that align with a curriculum's goals. These outcomes are often assessed through methods like practical performance evaluations, attitudinal analysis, or the use of portfolios. The assessment criteria must be designed to be flexible, comprehensive, and applicable to a diverse range of learners.

Blended Pedagogy (B) is an instructional approach that focuses on Muay Thai teachers integrating practical, hands-on training with technology-enhanced learning. This can include using videos to demonstrate techniques, leveraging mobile applications for skill practice, or communicating with students via online platforms. The utilization of digital tools in this manner makes learning more engaging, modern, and accessible, as students can review content anytime, anywhere. This approach is especially well-suited for young learners.

Authentic Assessment (A) is a process that emphasizes the use of evaluation methods that reflect real-world competencies. This includes, for example, demonstrations, expert evaluations, and portfolio assessments. The process should be guided by clear and fair criteria for the learners. Additionally, assessments should be gathered from multiple sources, such as peers, trainers, teachers, or parents, to provide a comprehensive qualitative overview of the learner's development.

Leadership & Lifelong Learning (L) is a process that focuses on promoting Muay Thai teachers to become leaders within their professional community. This is achieved through a robust system of mentorship, Professional Learning Communities (PLCs), and a commitment to lifelong learning. Teachers should be provided with platforms for sharing experiences, such as Best Practice forums, workshops, or participation in international collaborative projects.

This THAI-GLOBAL Model, as proposed and discussed, reflects deep-seated concepts and substantive recommendations that can be developed into an effective, comprehensive, and sustainable learning management approach. Ultimately, this model genuinely addresses the needs of both teachers and students in the 21st century. It can be summarized in a diagram as shown in Figure 1.

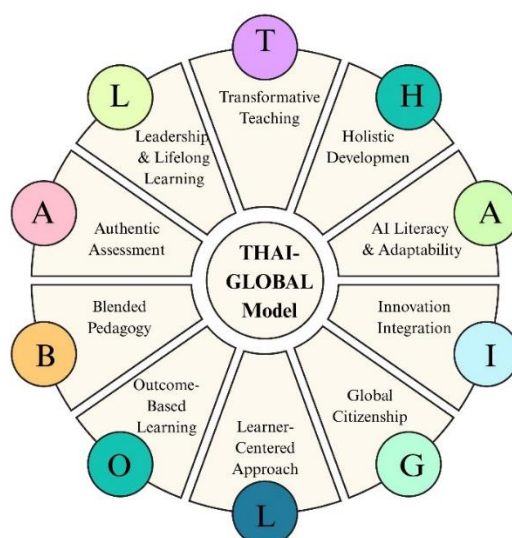


Figure 1. The THAI-GLOBAL Model for Developing Higher Competency in Muay Thai Teachers in the 21st Century Learning Management.

The researcher then evaluated the accuracy and appropriateness of the " The THAI-GLOBAL Model for Developing Higher Competency in Muay Thai Teachers for 21st Century Learning Management. The results were as follows:

Table 2. Mean, Standard Deviation, and Evaluation Results for The Accuracy And Appropriateness of the THAI-GLOBAL Model for Developing Higher Competency in Muay Thai Teachers in the 21st Century Learning Management (n=12)

Evaluation list	Accurate			Appropriate		
	M	SD	Level	M	SD	Level
1. Takes a leading role in developing a professional teacher community.	4.75	0.62	Highest	4.67	0.78	Highest
2. Exchanges knowledge with teachers in a network.	4.75	0.45	Highest	4.75	0.62	Highest
3. Develops new knowledge to enhance the role of a teacher.	4.92	0.29	Highest	4.92	0.29	Highest
4. Learns from experience and training.	4.83	0.39	Highest	4.50	0.90	Highest
5. Participates in academic seminars and training.	4.58	0.67	Highest	4.50	0.52	Highest
6. Demonstrates leadership in Muay Thai academics.	4.58	0.67	Highest	4.75	0.62	Highest
7. Serves as a good role model for lifelong learning.	4.83	0.39	Highest	4.83	0.58	Highest
8. Uses technology to develop self-potential.	4.83	0.39	Highest	4.83	0.58	Highest
9. Has a continuous self-development plan.	4.67	0.65	Highest	4.58	0.79	Highest
10. Attends national or local forums.	4.83	0.39	Highest	4.83	0.39	Highest
11. Participates in organizing workshops.	4.67	0.49	Highest	4.83	0.39	Highest
12. Encourages fellow professionals to continue learning.	4.58	0.67	Highest	4.83	0.39	Highest
13. Sets long-term self-development goals.	4.75	0.45	Highest	4.67	0.65	Highest
14. Consistently uses new knowledge to develop learners.	4.92	0.29	Highest	4.67	0.65	Highest
15. Inspires learners to see the value of learning.	4.83	0.39	Highest	4.75	0.45	Highest

Evaluation list	Accurate			Appropriate		
	M	SD	Level	M	SD	Level
16. Effectively manages a professional development plan.	4.75	0.45	Highest	4.83	0.39	Highest
17. Supports a learning culture within the organization.	4.50	0.80	Highest	4.50	0.52	Highest
18. Continuously keeps up with new knowledge in the field.	4.67	0.65	Highest	4.67	0.49	Highest
19. Shares knowledge with fellow teachers and learners.	4.83	0.39	Highest	4.67	0.49	Highest
20. Plays a role in creating a professional teacher network.	4.75	0.62	Highest	4.75	0.45	Highest
Total	4.74	0.51	Highest	4.72	0.55	Highest

Based on the provided Table 2, the evaluation of 20 skills and behaviors indicates a strong consensus among experts regarding the value of all items, with an overall "Highest" level of agreement. The total mean scores for accuracy and appropriateness were 4.74 and 4.72, respectively. The findings reveal several key points: 1) High Consensus: All evaluated items received a mean score (M) ranging from 4.50 to 4.92, reflecting a strong agreement and the significance of each component from the experts' perspectives. 2) Importance of Knowledge Creation and Sharing: The items with the highest mean scores for accuracy were "developing new knowledge to enhance the teacher's role" and "consistently applying new knowledge to develop learners" (M = 4.92, SD = 0.29). This highlights the critical role of teachers as creators and appliers of new knowledge for continuous instructional improvement. 3) Leadership and Networking: Items related to leadership and professional networking, such as "taking a leading role in developing the professional teacher community" (M = 4.75) and "playing a role in creating a professional teacher network" (M = 4.75), were also rated very highly. This indicates that a teacher's role today extends beyond the classroom to include academic leadership and community development. 4) Lifelong Learning and Self-Development: Behaviors reflecting lifelong learning, such as "being a good role model in lifelong learning" (M = 4.83), "using technology for self-development" (M = 4.83), and "having a continuous self-development plan" (M = 4.67), were affirmed as highly important for modern teacher professional development. In conclusion, the evaluation confirms that the THAI-GLOBAL Model for developing higher competency in Muay Thai teachers for 21st century learning management is highly accurate and appropriate, and it can effectively serve as a guideline to promote and develop the potential of educational personnel for future changes.

The evaluation of the Muay Thai teachers' higher competency development model for 21st century learning management revealed the following results:

Table 3. Mean, Standard Deviation, and Evaluation Results for the Feasibility and Benefit of THAI-GLOBAL Model for Developing Higher Competency in Muay Thai Teachers in the 21st Century Learning Management (n=30).

Evaluation list	M	SD	Level
Feasibility			
1. The proposed development model aligns with the current context of Muay Thai instruction.	4.80	0.42	Highest
2. The model can be appropriately integrated into Muay Thai teachers' schedules and work.	3.90	1.37	Moderate
3. The budget for implementing this model is feasible and cost-effective.	4.80	0.42	Highest
4. The learning resources and materials used in the model are readily available and accessible.	4.80	0.42	Highest
5. The preparation of Muay Thai teachers to have a positive attitude and readiness to undergo development according to the proposed model.	4.20	1.23	High
6. There is a guideline for administrators and stakeholders to provide sufficient support for implementing this model in practice.	4.50	0.97	Highest
7. The duration of the development according to this model is appropriate and achievable.	4.50	0.97	Highest
8. The post-development evaluation and follow-up can be done systematically and continuously.	4.20	1.23	High
9. The development model is flexible enough to be adapted for teachers with diverse backgrounds and experiences.	4.50	0.97	Highest
10. The preparation of human resources, such as speakers, experts, and assistants, is highly feasible.	4.80	0.42	Highest

Evaluation list	M	SD	Level
Total	4.50	0.84	Highest
Benefit			
11. The model helps develop skills in designing and managing learner-centered Muay Thai instruction.	4.80	0.42	Highest
12. Development through this model will help Muay Thai teachers use technology and innovation for effective instruction.	4.30	0.82	High
13. The model encourages teachers to assess learners in diverse and comprehensive ways.	4.90	0.32	Highest
14. Teachers who complete the development will be able to inspire and instill the values of Muay Thai in their learners more effectively.	4.50	0.97	Highest
15. This development model helps Muay Thai teachers connect the art of Muay Thai with 21st-century skills such as critical thinking and teamwork.	4.20	0.92	High
16. The development will help increase the competitiveness of Muay Thai teachers on the international stage.	4.70	0.67	Highest
17. The model helps promote knowledge exchange and build a strong professional community of Muay Thai teachers.	4.30	0.82	High
18. Implementing this model will have a clear positive impact on students' academic achievement and skills.	4.40	1.07	High
19. This development model helps to elevate the overall professional standards of Muay Thai teachers.	4.70	0.67	Highest
20. This model is a guideline that can be applied to develop teachers in other fields in the future.	4.50	0.85	Highest
Total	4.53	0.75	Highest

Based on Table 3, the evaluation of the feasibility and benefit of THAI-GLOBAL Model for developing higher competency in Muay Thai teachers for 21st century learning management by 30 experts can be summarized as follows:

The overall evaluation results for feasibility were at the highest level ($M=4.50$, $SD=0.84$), indicating a consensus among experts that the development model is practical and can be implemented. Specifically, the model demonstrated strong alignment with the current context of Muay Thai instruction and received the highest ratings for the availability of human resources, budget, and access to learning materials. However, a key point of concern was the integration of the model into the existing schedules and duties of Muay Thai teachers, which received a moderate average score of only 3.90. This suggests that the detailed design of the model must prioritize flexibility and effective time management for teachers to ensure its practical application without disrupting their core responsibilities.

The overall evaluation results for the utility of the development model were at the highest level ($M=4.53$, $SD=0.75$), confirming that the model is highly valuable and provides significant benefits for both teachers and students. Specifically, experts highlighted two key areas: 1) Comprehensive Development, noting that the model is particularly beneficial for promoting teachers' ability to implement diverse and comprehensive student assessments ($M=4.90$) and for developing their skills in designing student-centered learning management ($M=4.80$), thereby elevating the overall professional standards of Muay Thai teachers; and 2) Future Impact, with the model also highly rated for its potential to enhance the competitiveness of teachers on the international stage and serve as a development guideline for educators in other disciplines in the future.

In summary, the expert evaluation confirms that THAI-GLOBAL Model for developing higher competency in Muay Thai teachers for 21st century learning management possesses both the highest level of feasibility and benefit. This is crucial for driving the professional development of Muay Thai teachers to align with the skills of the 21st century. However, its practical implementation requires careful consideration of the flexibility needed to integrate the model with teachers' workloads to achieve the maximum effectiveness endorsed by the experts.

4. Discussion

A study on the higher competency of Muay Thai teachers in 21st century learning management. Factors influencing the needs for developing the higher competency of Muay Thai teachers were identified. The crucial factors affecting the need to develop teachers' higher competency encompass the teachers themselves, learners, administrators, management, environment, and facilities. These factors are positively correlated with the enhancement of teaching quality and the sustainable preservation of Muay Thai. Ultimately, these factors directly impact the design and implementation of learning management to align with the context of a modern society and international standards.

The development of higher competencies in Muay Thai teachers requires the consideration of several intertwined components. The Muay Thai teacher is the central element in the transfer of knowledge and skills, needing both academic

expertise and instructional skills that meet the needs of digital-age learners. The learners must be developed with the motivation and ability to engage in active learning. Administrators play a crucial role in setting policies, providing resources, and fostering an organizational culture that facilitates development. The management must have an effective system to support training, evaluation, and continuous development. The environment should be conducive to training and learning, ensuring safety and aligning with Thai wisdom. Finally, facilities must be comprehensive, including training equipment, instructional media, and modern technology to enhance learning efficiency. The combination of these factors allows Muay Thai teachers to continuously adapt and develop their potential, keeping pace with the changes in the world of sports, education, and society.

This aligns with Saokaew's (2022) research, which states that effective Muay Thai management for community benefit requires highly competent teachers with strong knowledge and activity management skills to create social and economic value. Sonrach & Netpracha's (2019) work indicates that the development needs of Muay Thai teachers must be considered within the context of the Basic Education Core Curriculum, with an emphasis on integrating local wisdom and teaching innovations. Yomditand, et al.'s (2017) research supports the use of Muay Thai as a tool for tourism, which necessitates teachers and personnel with professional cross-cultural communication and activity management skills. Nimprang, Vajarintaragoon, & Boonkanan (2019) found that managing Muay Thai activities in basic education schools requires a systematic approach and multi-party participation to enhance the quality of teaching and learning. Srimaca & Muneenam (2021) confirmed that the adaptability of teachers and gym owners to situations like COVID-19 must involve flexibility, resource management, and the appropriate application of technology. These studies reflect that factors related to personnel, management, resources, and environment are mutually supportive components, enabling Muay Thai teachers to effectively and sustainably develop higher competencies in educational, athletic, and socio-economic dimensions.

An analysis of the components for developing the higher competency of Muay Thai teachers. An analysis of the components for developing the higher competency of Muay Thai teachers, based on the KPA-ADRIC framework, revealed that Muay Thai teachers must possess all eight competencies. These include knowledge, skills, morals and ethics, active learning management, the use of technology and AI, adaptability, innovative thinking, and global Thai citizenship. These components are interconnected and mutually supportive, aiming to elevate the quality of instruction and respond to the changes of the modern world.

This is because each competency within the KPA-ADRIC model plays a crucial role in enhancing the quality of Muay Thai teachers, enabling them to teach effectively in the 21st century. Knowledge provides teachers with a correct and up-to-date academic foundation, while Practice Skills enable them to convey correct and safe practical methods. Attitude, Morality, and Ethics build credibility and professionalism. Active Learning stimulates learners to engage and learn deeply. Digital Literacy & AI Literacy allows teachers to appropriately apply digital tools and AI technology in their teaching. Resilience enables them to cope effectively with changes and crises. Innovative Skills open up opportunities for creating new learning formats. Finally, Thai Citizen with a Global Perspective allows teachers to appropriately communicate and transmit Muay Thai to a global audience. The integration of these eight components establishes a foundation for Muay Thai teachers to be well-prepared academically, practically, and spiritually for their profession.

This aligns with the work of Sudto, Steannoppakao, & Chalakbang (2023), which emphasizes 21st century teacher competency components covering knowledge, skills, and attitudes. This reflects the integration of knowledge and skills that are consistent with KPA-ADRIC, as is the case with Pruettipuranee (2021), who points out that teacher competency development must respond to the national strategy and technological changes, with an emphasis on Digital Literacy and AI Literacy. Additionally, Chuensangjan (2020) describes active learning management that helps enhance learner participation and develop higher-order thinking, which corresponds to the Active Learning component in KPA-ADRIC. Meanwhile, Kumsree, Tongchai, Jamrern, & Sawangpai (2024) have proposed standard competencies for Muay Thai teachers that cover specific skills, academics, and morals and ethics, reinforcing the importance of Attitude Morality and Ethics and Practice Skills. Finally, Pramann, Kawjaratwilail, & Tanphanich (2022) have emphasized physical education teacher competencies that are consistent with fostering innovation and design thinking (Innovative Skill) to elevate the quality of sports instruction. All of these demonstrate that KPA-ADRIC is not merely a theoretical framework but also aligns with diverse empirical research findings and can be practically applied to develop Muay Thai teachers to be well-rounded in academic knowledge, skill transfer, inspiration, technology use, and the preservation of Muay Thai identity coupled with embracing a global dimension, which are crucial factors for the sustainable inheritance and elevation of Muay Thai to a global level.

The research on the development and validation of a higher competency model for Muay Thai teachers in 21st century learning management. The development and validation of a higher competency model for Muay Thai teachers for 21st century learning management found that the THAI-GLOBAL Model is accurate, appropriate, and applicable in various contexts. It encompasses key components related to skills, knowledge, ethics, morality, active learning management, digital and AI literacy, adaptability to change, creativity, and global citizenship. The validation by experts indicates that this model can sustainably enhance the potential of Muay Thai teachers and effectively respond to current educational and social challenges.

The THAI-GLOBAL Model's confirmed accuracy and appropriateness stem from a comprehensive development process that integrates both theoretical and empirical data. This began with a study of the actual conditions of Muay Thai teachers, learners, administrators, and the educational context. This led to the design of 10 key components that address higher competencies in professional skills, technology use, adaptability, and global engagement. Validation by experts and academics allowed for the refinement of the model's details, ensuring they aligned with the needs and potential of actual users. The significance of this process lies in its ability to transform the model from a purely academic framework into a practical tool

that can be immediately applied in teacher training curricula, instructional activities, and the development of cultural and sports education policies. As a result, Muay Thai teachers are empowered to design high-quality learning experiences and create a social and economic impact.

This is consistent with the findings of The Subcommittee on Consideration and Study of the National Soft Power Strategic Plan on Sports, Martial Arts, and Tourism (2023), which highlights the necessity of using Muay Thai as an economic and cultural driving force. This requires Muay Thai teachers with comprehensive competencies to preserve and build upon its value. Similarly, Raksat, Yanthong, & Rianwilairat (2021) emphasize the integration of Muay Thai wisdom with international standards to elevate it to the Olympic stage, which aligns with the design of a model that seamlessly blends Thai and global identities. Meanwhile, Ruankum & Suthasinobol (2022) indicate that enhancing teacher competency in the Education 4.0 era must focus on active learning management, the use of technology, and the transformation of the teacher's role into that of a facilitator. These are key components of the THAI-GLOBAL Model. Additionally, Angnoi (2020) proposes a teacher development guideline using the school as a learning organization to foster collaborative and continuous learning, which is consistent with the approach of empowering Muay Thai teachers to be academic leaders and professional network developers. Finally, Chaimalai (2022) emphasizes teacher competency development strategies that consider the specific needs of educational institutions and learners, which aligns with the flexible application of this model in various contexts. Therefore, the development and validation of this model not only addresses a need at the practical level but also creates a body of knowledge that is consistent with contemporary research trends. It can be applied nationally and internationally to elevate Muay Thai as a martial art, a professional sport, and a valuable cultural heritage with economic, social, and cultural significance.

The evaluation of the Muay Thai teachers' higher competency development model for 21st century learning management. The evaluation results of the Muay Thai teachers' higher competency development model for the 21st century indicated that the model has a high level of feasibility, utility, and satisfaction in terms of content, process, and outcomes. Evaluators agreed that the model can be effectively implemented within the context of Muay Thai instruction, supporting the development of skills, knowledge, and attributes that align with active learning and the integration of modern technology.

The development of this model has undergone a systematic research and verification process, focusing on the integration of Muay Thai teaching knowledge with 21st century learning concepts. This includes the use of active learning activities, digital technology and AI to support learning, and Authentic Assessment, all of which align with the needs of modern learners. The model also considers the suitability of the local context, the preservation of cultural identity, and global expansion, making it applicable to various educational institutions and related organizations. Its clear procedures and emphasis on the participation of teachers, students, and administrators have led evaluators to believe in the model's ability to raise the quality of Muay Thai instruction to a higher standard and create a sustainable path for the future professional development of Muay Thai teachers.

This aligns with Sudto (2023), who developed a model for enhancing 21st century teacher competencies, with an emphasis on evaluating its feasibility and practical application in various educational contexts. Similarly, Sangwipark (2021) indicated that adapting Muay Thai courses to align with student standards and needs improves the quality of learning management and student motivation. Meanwhile, Tiengnil (2022) affirmed that active learning management can clearly elevate critical 21st century skills in learners, a key concept within this model. Furthermore, Meaksawan (2020) proposed the development and establishment of a systematic institute for Muay Thai studies with structured processes for teacher development, which is consistent with the structural model created in this research. Saidi, Boonhan, & Thamathes (2019) also highlighted the importance of developing 21st century physical education teacher competencies through the integration of knowledge, skills, and attributes within authentic contexts. The results of this evaluation therefore reinforce the significance of creating a model with comprehensive components—including content, process, and application—to achieve maximum efficiency in the sustainable development of Muay Thai teacher competencies, across professional, heritage, and international standardization dimensions.

5. Conclusion

This research aimed to develop a higher competency model for Muay Thai teachers in the 21st century using a research and development (R&D) methodology. The key steps included a needs assessment, component analysis, model construction and validation, and a final evaluation of its effectiveness. The sample group consisted of experts who provided data at each stage of the study. The findings revealed that Muay Thai teachers have competency gaps that require development in technology use, active learning management, motivation techniques, and foreign languages. Subsequently, eight competency components were synthesized based on the KPA-ADRIC framework, leading to the creation of the "THAI-GLOBAL Model." This model integrates the wisdom of Muay Thai with modern learning innovations and digital technology. The model's validity and appropriateness were confirmed at the highest level by experts, and a separate evaluation indicated its high feasibility and utility for practical implementation in educational institutions and Muay Thai camps.

6. Recommendations

6.1. Recommendations for Research Implementation

The THAI-GLOBAL Model can be integrated into all levels of Muay Thai teacher training curricula to systematically develop higher competencies.

Research findings can be used to guide the development of policies and strategies for the preservation and global dissemination of Muay Thai.

6.2. Recommendations for Future Research

Study the application of the model with Muay Thai teachers in other countries to compare its effectiveness in an international context.

Conduct long-term follow-up research to examine the sustainability and continuous development of Muay Thai teachers' competencies.

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