

Development of the Music Teachers' Competency to Become a Professional Teacher in Active Learning Management

Natthawat Khositditsayan¹ & Chaloechai Charoenkiatkan¹

¹ Faculty of Education, Buriram Rajabhat University, Buriram, Thailand

Correspondence: Chaloechai Charoenkiatkan, Faculty of Education, Buriram Rajabhat University, Buriram, Thailand.

Received: September 22, 2023

Accepted: November 17, 2023

Online Published: December 18, 2023

doi:10.5539/jel.v13n1p63

URL: <https://doi.org/10.5539/jel.v13n1p63>

Abstract

This research paper aimed to develop a training curriculum to enhance the competency of music teachers in Buriram Province who graduated from Rajabhat University and became professional teachers in active learning management. The study involved 50 music teachers who participated in workshops and academic exchange forums. The training curriculum consisted of eight components, including the development of active learning unit plans and lesson plans. The research instruments used were the training curriculum, the active learning unit plan assessment form, and the active learning lesson plan assessment form. The use of the curriculum resulted in positive outcomes, with most of the active learning unit plans receiving high assessment scores, and the academic exchange forums effectively showcased best practices. This study provides insights into the development of a training curriculum aimed at enhancing the competencies of music teachers in active learning management, which can be adapted to other teaching fields.

Keywords: curriculum, active learning, unit plan, lesson plan, competency

1. Introduction

Competency is a crucial concept in personnel management and human resources that involves the development of skills and knowledge through training, performance assessment, and other methods. It is widely acknowledged that human beings are a fundamental component of organizational competency as they play a crucial role in enhancing the overall performance of an organization (Saenthong, 2004; Phuwitthayaphan, 2008; Mohamed, 2019). The five key competencies that contribute to organizational success are knowledge, skills, self-perspectives, personality, motivation, and attitude, as identified by Rassameethammachot (2005). Therefore, competency is an indispensable aspect of organizational development, especially for educators who utilize it to promote effective learning management (Pablos et al., 2022).

Effective learning management requires teachers to possess a high level of professionalism, which involves a combination of various skills and attributes. Being a professional teacher involves having a thorough understanding of the subject matter, the ability to manage teaching and learning systematically, continuous self-development, effective classroom management skills, creating a conducive learning environment, and the ability to create knowledge themselves (Khantitharangkun, 2008; Alhaji et al., 2023). The importance of being a professional teacher for effective learning management and student success cannot be overstated. Teachers are responsible for curriculum development and effective learning management, which underscores the need for continuous development (Ministry of Education, 2010). One key element of professionalism is active learning management, which is an approach that emphasizes the role of learners in the learning process and requires teachers to be lively and alert at all times (Royal Institute, 2012). Active learning provides learners with opportunities to engage in activities such as listening, speaking, reading, writing, expressing opinions, and using higher thinking processes (Dechakup & Yindeesuk, 2018). To encourage learners to discover knowledge, teachers can utilize group work, discussions, and other active learning techniques (Lorenzen, 2001; Freeman, 2014). Active learning is a student-centered approach that enables learners to think critically, research, discuss, summarize, and practice (Jaitiang, 2010). This approach helps students develop various skills, cultivate virtues, and good attitudes, collaboration, and focus on learning (Dechakup & Yindeesuk, 2018). Five components of active learning management include creating an environment that stimulates curiosity, taking action to create understanding and planning in learning, drawing conclusions on learning outcomes and creating a body of

knowledge for organizing learning activities, expanding knowledge to innovation, and assessing for learning (Duangphummate & Kaewurai, 2017; Sitthiworachart et al., 2022; Wetzel & Farrow, 2023).

The professional development of teachers with active learning management skills is crucial for enhancing the quality of education. To ensure efficient and appropriate development, various methods must be implemented. The National Institute for Development of Teachers, Faculty Staff, and Educational Personnel (2007) emphasized the significance of teacher development through different approaches. The Office of the Basic Education Commission (2009) proposed a comprehensive teacher development framework that encompasses various techniques such as assignments, needs assessment, systematic short-term and long-term development, seminars, and training curriculum. These methods aim to utilize appropriate development strategies, particularly through training curriculum, to provide systematic development for the participants and enable them to gain extensive experience in their chosen subject. Overall, these efforts ensure that teachers are equipped with the necessary skills and knowledge to excel in their profession and contribute to the growth and development of the education sector (Capone, 2022; Børte et al., 2023).

A training curriculum is a structured program designed to provide individuals with specific learning opportunities. The objectives and learning experiences are comprehensively defined to impart knowledge, skills, attitudes, and abilities that align with the set goals (Petchalanon, 1999; Hemtasilp, 2010). The primary objective of training is to enhance knowledge, and understanding of principles, theories, and concepts that can be interpreted, expanded, explained, and applied to work practices, including the improvement of work skills (Bangmo, 2016). The development of the training curriculum must cover nine essential elements, which are: 1) education objectives and policies that align with the National Economic and Social Development Plan in educational matters; 2) curriculum objectives that define the desired results that students should achieve upon completion of the course; 3) curriculum form and structure that illustrate the distribution of subjects, subject groups, or experience groups; 4) course purpose that defines the intended effect on the learners after completing the course; 5) content that covers the skills, abilities, and experience that learners want to acquire; 6) learning objectives that specify the skills and abilities learners should acquire upon completing the designated content; 7) instructional strategies that align with the learning objectives and ensure effective teaching and learning; 8) assessment that evaluates the learning outcomes and aids in improving teaching, learning, and the curriculum; and 9) curriculum materials and teaching aids that include documents, publications, pictures, etc., to promote the quality and efficiency of learning management (Buasri, 1999; McMahon et al., 2022; Stone et al., 2023).

In summary, effective learning management is crucial for the success of students and educators, with active learning management being a key component of professionalism in teaching. Active learning management requires teachers to utilize student-centered approaches, emphasizing critical thinking and encouraging learners to engage in various activities that promote learning. The professional development of teachers with active learning management skills is essential for enhancing the quality of education. Various approaches, including training curriculum, have been proposed to achieve this goal. The training curriculum must include essential elements that define the desired results that students should achieve, cover the skills, abilities, and experiences learners want to acquire, specify the skills and abilities learners should acquire, and ensure effective teaching and learning. The proposed research on the development of music teachers' competency to become professional teachers in active learning management will contribute to the growth and development of the education sector by providing insights into the most effective approaches to teacher development in this area.

2. Method

This academic R&D research aims to develop a training curriculum using stratified random sampling to enhance the competency of music teachers in Buriram Province. The curriculum is intended to improve their skills and establish an academic forum for knowledge exchange. The sampling group comprises 50 music teachers who work as music teachers and graduated from Rajabhat University in Buriram Province. The study variables include the training curriculum, professional teachers' engagement in active learning management, and academic exchanges. The research was conducted in three phases as follows.

Phase 1 involves the development of a training curriculum to enhance the competency of music teachers in Buriram Province who graduated from Rajabhat University, enabling them to become professional teachers in active learning management. To assess the quality of the curriculum, a purposive selection was made of 5 experts in curriculum, teaching, and educational research. Data collection instruments consisted of the training curriculum, which comprised 8 components including background, principles, objectives, contents, structure, organization of activities, training materials, and curriculum evaluation (Jeon et al., 2022). Additionally, a manual was created to guide the use of the curriculum, consisting of three parts: curriculum, content, and

worksheets with assessment forms for active learning unit plans and lesson plans. Training activities were organized over two days, covering four topics: teacher competency, active learning management, development of active learning unit plans, and preparation of an active learning lesson plan (Winder et al., 2022). Assessment forms were developed to evaluate both the active learning unit plans and lesson plans of music teachers in Buriram Province who graduated from Rajabhat University. The construction and quality inspection of the instruments involved analyzing important issues related to active learning management competency, competency development concepts, active learning management, active learning unit plans, and active learning lesson plans (Sharma, 2022). The synthesis of these elements led to the creation of the training curriculum and manual. The curriculum's appropriateness and consistency were assessed by presenting it to the 5 experts, who rated its overall appropriateness as high with an average score of 4.47 and a consistency ranging from 0.66 to 1.00.

Phase 2 focuses on implementing a training curriculum to enhance the competency of music teachers in Buriram Province who graduated from Rajabhat University and aspire to become professional teachers in active learning management. The target group comprises 50 music teachers in active learning management who graduated from Rajabhat University in Buriram Province. Volunteer music teachers were invited to participate in the training curriculum aimed at developing their competency. The training process involves several steps. First, the researchers contacted and coordinated with the target group, requesting 50 volunteer music teachers to take part in the training activities. They also liaised with the building department of Buriram Rajabhat University to secure a suitable training location. Additionally, speakers specialized in teacher competency, active learning management, active learning unit plan development, and the preparation of active learning lesson plans for music teachers were contacted and scheduled for specific dates, times, and venues. The necessary media, materials, and documents related to the training were also prepared. The training itself spans two days, from 8:00 AM to 5:00 PM, and begins with an opening ceremony. During that time, the workshop speakers spent a total of 16 hours covering various topics related to teacher competency and active learning management. After the training, the researchers collected and checked the completed active learning unit plans and music teachers' active learning lesson plans. These materials were then assessed by the speakers and the research team, with the results presented in a research report. Data analysis involved evaluating the active learning unit plans and lesson plans, calculating percentages (%), means (\bar{x}), and standard deviations (S.D.) (Balakrishnan, 2022). The criteria for the assessment were based on five levels: very low, low, moderate, high, and highest (Srisaard, 2007).

Phase 3 involves the opening of an Academic Learning Exchange Forum on the Development of Competency for Music Teachers in Buriram Province. The forum aims to include 50 professional teachers from Buriram Province who actively manage learning and were also part of the same group in Phase 2 (Training Curriculum Implementation). Prior to the event, the researchers contacted and coordinated with the target group, requesting their support and participation in the forum. Additionally, the researchers liaised with the building department of Buriram Rajabhat University to secure a location for the training and prepared media, materials, documents, and other training resources. During the event, three music teachers with exemplary practices (best practices) presented their active learning unit plans and active learning lesson plans, while knowledge-sharing sessions were held on active learning management for music teachers. After the event, the researchers evaluated the completeness of the active learning unit plans and active learning lesson plans with exemplary practices and presented the evaluation results in a research report. The event was held for one day, from 8:00 AM to 5:00 PM. The data analysis process included evaluating the active learning unit plans and lesson plans by calculating percentages (%), means (\bar{x}), and standard deviations (S.D.) (Balakrishnan, 2022). The assessment criteria were categorized into five levels: very low, low, moderate, high, and the highest (Srisaard, 2007).

3. Results

3.1 The Development of a Training Curriculum

The research focused on the development of a training curriculum for enhancing the competency of music teachers in Buriram Province who graduated from Rajabhat University and aspired to become professional teachers in active learning management. The curriculum consisted of the following components:

- a) The background of the training program emphasized the significance of competence in fostering high-quality individuals. It highlighted the importance of knowledge, skills, and attitudes for music teachers, as their competency in learning management directly impacts the quality of education and student learning outcomes. The development of competency among music teachers was achieved through a practical training curriculum that systematically integrated relevant experiences.
- b) The training curriculum adhered to the principle of focusing on the development of music teachers in Buriram Province who graduated from Rajabhat University and aspired to become professional teachers in active learning

management.

- c) The objectives of the training curriculum were to equip music teachers with the knowledge, understanding, skills, and competencies necessary to excel as professional teachers in active learning management. This included their ability to create active learning unit plans and active learning lesson plans.
- d) The content of the training curriculum encompassed teacher competency, active learning management, development of active learning unit plans, and the preparation of active learning lesson plans.
- e) The curriculum structure included a two-day workshop with a total training time of 16 hours.
- f) The organization of training activities within the curriculum involved various methods, including lectures, discussions, knowledge exchange, case studies, examples, collaborative learning, and practical exercises.
- g) The training materials included the curriculum itself, a curriculum use manual, content materials, training slides, and worksheets.
- h) Measurement and evaluation methods involved an active assessment of the learning unit plans and active learning lesson plans developed by music teachers.

3.2 The Implementation of The Training Curriculum

The implementation of the training curriculum to enhance the competency of music teachers in Buriram Province, who graduated from Rajabhat University and aimed to become professional teachers in active learning management, revealed the following findings: After participating in the workshop, music teachers were required to develop active learning unit plans and active learning lesson plans, divided into five groups. The evaluation results showed that the majority of the active learning unit plans were assessed at a high level, while the active learning lesson plans across all groups were evaluated at a moderate level.

3.3 The Opening of an Academic Learning Exchange Forum

An academic learning exchange forum was organized to promote the development of competency among music teachers in Buriram Province who are already professionals in active learning management. The forum included presentations of active learning unit plans and active learning lesson plans by three music teachers who exemplified best practices, as well as knowledge-sharing sessions. The evaluation of the forum revealed that all three music teachers had effectively developed active learning unit plans and active learning lesson plans, which were assessed at a high level.

4. Discussion

The researchers bring research findings that are important issues to discuss the results. The details of the discussion are as follows:

The research focuses on the development of a training curriculum designed to enhance the competency of music teachers who graduated from Rajabhat University in Buriram Province to become professional teachers in active learning management. The investigation revealed that the curriculum for competency development comprised eight essential components, namely the background of the training curriculum, principles, objectives, content, curriculum structure, activity organization, media and training materials, and measurement and evaluation. The primary goal of the developed curriculum is to foster learning management competencies pertaining to the creation of an active learning unit plan and an active learning lesson plan for music teachers. To ensure the production of high-quality music teachers, the curriculum development process must incorporate elements covering the curriculum's history, as well as curriculum measurement and evaluation, as specified by academic experts. A thorough examination of the curriculum's quality affirmed its appropriateness and consistency, consequently facilitating the effective development of music teacher competencies in alignment with the curriculum's objectives.

The researcher employed Utranan's (1989) curriculum development process to formulate a comprehensive training curriculum consisting of eight key elements. The development process initiated with an analysis of fundamental data to comprehend societal problems and needs. Subsequently, the curriculum's purpose was established, content was organized, and training activities were scheduled. A trial of the curriculum was then conducted, followed by evaluation and revisions of the curriculum. Expert assessment was sought to evaluate the suitability and consistency of the developed curriculum, in accordance with the framework proposed by Kunanukorn (2007). While Kunanukorn's framework consists of four curriculum components, this study presents a detailed examination of the curriculum's objectives, content, and measurement and evaluation, providing a comprehensive perspective. The four components are as follows: 1) Objective, which serves as a guiding principle for teaching and learning, encompassing teaching purposes, content, target audience, reasons

for teaching, and methodology. 2) Content, refers to the core knowledge and experiential aspects of knowledge acquisition, incorporating scientific knowledge and experiences from various disciplines. 3) Curriculum implementation, involving the effective translation of objectives and content into teaching practices specified by the curriculum, utilizing diverse teaching methods to ensure the attainment of desired learning outcomes. 4) Evaluation, encompassing the assessment and improvement of teaching and learning processes, evaluating learners' knowledge, skills, attitudes, and attributes aligned with the course objectives. This evaluation is guided by the course's purpose, as proposed by Supanyabutr (2019). Additionally, the findings align with Chomhongpipat (2021). research on the development of a training curriculum to enhance proactive learning management capabilities of primary school teachers under the Office of Ubon Ratchathani Primary Educational Service Area. The outcome of the training curriculum development comprises various components, principles, objectives, structure, content, training processes, media and learning resources, and measurement and evaluation.

The objective of the developed training curriculum is to enhance the competency of music teachers in active learning management. The curriculum aims to provide music teachers with the necessary knowledge, abilities, skills, and positive attitudes required for the effective implementation of active learning unit plans and lesson plans. While music teachers may already demonstrate an active approach to classroom learning, further expanding their knowledge and understanding of active learning can facilitate the development of innovative learning management strategies, thereby benefiting their students. By incorporating active learning unit plans and lesson plans, the curriculum encompasses various aspects of learning management and the relevant body of knowledge. These efforts are aligned with the concept of active learning as defined by Dechakup and Yindeesuk (2018), emphasizing student engagement through listening, speaking, reading, writing, and expressing opinions, while also incorporating advanced thinking skills such as analysis, synthesis, and evaluation. These ideas are consistent with the concepts put forth by Duangphummate and Kaewurai (2017), who propose five elements of active learning: stimulating curiosity in problem-solving, planning for learning, summarizing learning outcomes, expanding knowledge through innovation, and utilizing assessment for learning.

Following a workshop conducted for music teachers, it was observed that the majority of the groups exhibited a high level of proficiency in developing active learning unit plans. However, the implementation of active learning lesson plans across all groups was at a moderate level. Classroom activities primarily emphasized music practice over theoretical aspects, potentially accounting for the notable performance in active learning unit plans. The evaluation of active learning lesson plans also indicated a moderate level of implementation. Another significant outcome of the music teacher workshop was the opportunity it afforded for the development of active learning unit plans and lesson plans during the training period. Despite potential constraints in terms of time limitations, the workshops served as catalysts for action, enabling music teachers to create active learning unit plans and lesson plans that aligned with the predefined objectives. These findings are consistent with Chueaphohak's (2009) concept of training as a systematic developmental process aimed at equipping individuals with the necessary knowledge, skills, and attitudes to bring about changes in their work behavior. Moreover, training aims to empower individuals to effectively apply new knowledge, concepts, and skills to achieve organizational objectives, aligning with Kityanyong's (2009) understanding of training as a teaching and learning process that fosters continuous improvement in skills, attitudes, and behavioral changes. Smithikrai's (2015) notion of training as a systematic learning process that enhances knowledge, skills, abilities, and attitudes to improve performance efficiency further supports these findings. Additionally, Beach's (1980) concept of training as a means of acquiring specific skills and inducing desired behavioral changes corroborates the effectiveness of the workshop training course in equipping participants with the requisite knowledge, understanding, and skills for developing active learning unit plans and lesson plans. Despite the potential limitations in organizing learning activities due to time constraints, the workshop training effectively addressed these challenges, facilitating the acquisition of knowledge and competencies necessary for effective active learning management.

The findings derived from the implementation of the training curriculum are in accordance with the investigation conducted by Phosrithong (2016), which centered on the design of a teacher training curriculum aimed at augmenting the proficiency of music learning management in the contemporary era. This curriculum has demonstrated its efficacy and pertinence by catering to the specific requirements of the participants and being well-suited to the present age, thereby facilitating the practical resolution of issues. These results align with the research conducted by Niemi and Nevgi (2014), who focused on the practice of active learning management and the cultivation of professional competence within the domain of Finnish education. Their research emphasized the importance of prospective teachers gaining practical research experience, advancing their professional competencies, and nurturing practical skills in the context of Finnish education in the 21st century. The

integration of active learning experiences has been shown to yield positive outcomes.

During the dissemination of active learning unit plans and lesson plans by three exemplary music teachers, a collaborative knowledge-sharing and exchange process took place. The evaluation outcomes revealed that all three teachers exhibited a high level of competence in developing and implementing active learning unit plans and lesson plans. This accomplishment can be attributed to their active participation in workshops specifically designed to enhance their proficiency in creating and adapting such plans. By employing practical training methodologies to construct active learning unit plans and lesson plans, or by modifying their existing plans to foster more active learning experiences, the teachers demonstrated exceptional effectiveness in managing classroom instruction. The collaborative learning environment, where they shared their self-developed active learning unit plans and lesson plans, consistently yielded high levels of competence in the assessments. These findings are consistent with the viewpoint of Kityanyong (2009), who perceives training as a mechanism for augmenting efficiency and knowledge among personnel. Furthermore, Chueaphohak (2009) contends that training is a systematic process aimed at cultivating the knowledge, skills, and attitudes required to bring about behavioral changes in individuals who have received training. In addition, training empowers individuals to effectively apply newfound knowledge, concepts, and skills in real-world scenarios, ultimately enabling the achievement of organizational objectives. From the perspective of Kityanyong (2009), training entails an ongoing process of learning, skill enhancement, and the exchange of attitudes based on predefined aspirations, with the ultimate goal of transforming behavior through the acquisition of knowledge.

The findings of this study align with the research conducted by Chomhongpipat (2021), which focused on the development of a training curriculum aimed at enhancing the active learning skills of primary school teachers under the Ubon Ratchathani Primary Educational Service Area Office. The research revealed that participating early childhood teachers demonstrated a higher level of competence in active learning management following their engagement in the workshop. Similarly, the study conducted by Malisorn (2020) on teacher competency development in active learning management in schools under the Office of Mahasarakham Primary Educational Service Area 2 found that the targeted group exhibited knowledge, understanding, and proficiency in active learning management. Furthermore, they showcased the ability to create active learning lesson plans, both individually and collaboratively, at a high level of appropriateness subsequent to the workshop-based development process.

5. Conclusion

This research has focused on the development of a training curriculum to enhance the competency of music teachers in Buriram Province who aim to become professional teachers in active learning management. The findings emphasize the significance of effective learning management and the role of active learning in promoting student success. Active learning management requires teachers to adopt student-centered approaches, foster critical thinking, and engage learners in various activities. The proposed comprehensive training curriculum equips music teachers with the necessary knowledge, skills, and competencies through workshops, lectures, discussions, case studies, collaborative learning, and practical exercises. The implementation of the curriculum has shown positive outcomes, with participating teachers demonstrating a high level of competency in developing active learning unit plans and lesson plans. An academic learning exchange forum further facilitated knowledge sharing and showcased exemplary plans, highlighting the competence of music teachers in active learning management. Overall, the development of teachers' competency in active learning management is crucial for educational advancement, and this research provides an effective training curriculum that enhances their professional development and contributes to improving education quality and student success.

Acknowledgments

Not applicable.

Authors' contributions

Not applicable.

Funding

This study received financial support from the Rajabhat University Strategic Project for Local Development, Fiscal Year 2023, and the Faculty of Education, Buriram Rajabhat University, Thailand. The author gratefully acknowledges the funding provided by Buriram Rajabhat University, which was instrumental in the successful completion of this research project.

Competing interests

Not applicable.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

References

- Alhaji, M. M., Megat, A. Z. M. Z., Noraffandy, Y., Hassan, A., Babakura, M., Alhaji, M. I., & Muhammad, A. K. (2023). Students' Motivation and Effective Use of Self-regulated Learning on Learning Management System Moodle Environment in Higher Learning Institution in Nigeria. *International Journal of Information and Education Technology*, 13(1), 85–94. <https://doi.org/10.18178/ijiet.2023.13.1.1796>
- Balakrishnan, N., Rychtář, J., Taylor, D., & Walter, S. D. (2022). A Unified approach to optimal estimation of mean and standard deviation from sample summaries. *Statistical Methods in Medical Research*, 31(11), 2087–2103. <https://doi.org/10.1177/09622802221111546>
- Bangmo, S. (2016). *Training and meeting techniques* (5th ed.). Witthayapat.
- Beach, D. S. (1980). *Personnel: The management of People at Work*. Macmillan College.
- Børte, K., Nesje, K., & Lillejord, S. (2023). Barriers to student active learning in higher education. *Teaching in Higher Education*, 28(3), 597–615. <https://doi.org/10.1080/13562517.2020.1839746>
- Buasri, T. (1999). *Curriculum Theory: Design and Development* (2nd ed.). Thanatatch Printing.
- Capone, R. (2022). Blended Learning and Student-centered Active Learning Environment: A Case Study with STEM Undergraduate Students. *Can. J. Sci. Math. Techn. Educ.*, 22, 210–236. <https://doi.org/10.1007/s42330-022-00195-5>
- Chomhongpipat, P. (2021). The Development of a Training Curriculum to Enhance the Ability of Active Learning Management of Primary School Teachers Under the Office of Ubon Ratchathani Primary Educational Service Area. *Journal of Buddhist Social Sciences and Anthropology*, 6(7), 334–349.
- Chueaphohak, W. (2009). *Personnel Development and Training*. Odeon Store.
- Dechakup, P., & Yindeesuk, P. (2018). *PLC-based Learning Management for Development*. Chulalongkorn University.
- Duangphummate, W., & Kaewurai, W. (2017). Learning Management in The Thailand 4.0 Era with Active Learning. *Humanities and Social Sciences* (Journal Graduate School, Pibulsongkram Rajabhat University), 11(2), 1–4.
- Freeman, S. E. A. (2014). Active Learning Increases Student Performance in Science, Engineering, And Mathematics. *Proceedings of the National Academy of Sciences USA*, 111, 8410–8415. <https://doi.org/10.1073/pnas.1319030111>
- Hemtasilp, S. (2010). *Teacher professional training documents: Standard 2 curriculum development*. Thaksin University.
- Jaitiang, A. (2010). *Principles of Teaching* (3rd ed.). O.S.
- Jeon, H., Hur, J., Chun, J., & Kim, J. (2022). A study on the development of job training curriculum for operation of electric propulsion ships. *Journal of International Maritime Safety, Environmental Affairs*,

- and Shipping*, 6(1), 91–98. <https://doi.org/10.1080/25725084.2021.2006465>
- Khantitharangkun, S. (2008). Classroom Management of Professional Teachers. *Journal of Education Rajabhat University*, 1(2), 1–9.
- Kityanyong, S. (2009). *Effective Training Techniques*. H.N. Group.
- Kunanukorn, S. (2007). *Curriculum and Teaching* (3rd ed.). Chuan Chom.
- Lorenzen, M. (2001). Active Learning and Library Instruction. *Illinois Libraries*, 83(2), 19–24.
- Malisorn, Y. (2020). *The Development of Teacher Competencies in Active Learning Management in Schools Under the Mahasarakham Primary Educational Service Area Office 2*. Master thesis. Mahasarakham University.
- McMahon, C. J., Tretter, J. T., Redington, A. N., Bu'Lock, F., Zühlke, L., Heying, R., ... Windram, J. D. (2022). Medical education and training within congenital cardiology: current global status and future directions in a post COVID-19 world. *Cardiology in the Young*, 32(2), 185–197. <https://doi.org/10.1017/S1047951121001645>
- Ministry of Education. (2010). *Mixed-level Learning Lesson Plan for Grades 4–5 According to The Basic Education Core Curriculum* (B.E. 2551). Wattana Panich.
- Mohamed, A. (2019, April). Competency profile of the digital and online teacher in future education. *International Review of Research in Open and Distributed Learning*. <https://doi.org/10.19173/irrodl.v20i2.4206>
- Niemi, H., & Nevgi, A. (2014). Research Studies and Active Learning Promoting Professional Competences in Finnish Teacher Education. *Teaching and Teacher Education*, 43, 131–142. <https://doi.org/10.1037/t63649-000>
- Pablos, V. B. G., Matarranz, M., Aranda, L. A. C., & Otto, A. (2022). Teachers' digital competencies in higher education: a systematic literature review. *International Journal of Educational Technology in Higher Education*, 19(1), 1–16. <https://doi.org/10.1186/s41239-021-00312-8>
- Petchalanon, S. (1999). *Workshop techniques and meetings*. Songkhla Rajabhat Institute.
- Phosrithong, A. (2016). The Development of Teacher Training Curriculum for Enhancement of Music Learning Management Competencies in the 21st Century. *Institute of Culture and Arts, Srinakharinwirot University*, 17(2), 37–48.
- Phuwitthayaphan, A. (2008). *Human Resource Development Strategies*. HR Center.
- Rassameethammachot, S. (2005). *Guidelines for Human Potential Development with Competency*. Siri Wattana Inter Print.
- Royal Institute. (2012). *Education Terminology Dictionary* (Royal Institute Edition). Arun Printing.
- Saenthong, N. (2004). *Let's get to know COMPETENCY*. HR Center.
- Sharma, N. K. (2022). Instruments Used in the Collection of Data in Research. *Poonam Shodh Rachna*, 1(1). <https://doi.org/10.2139/ssrn.4138751>
- Sitthiworachart, J., Joy, M., King, E., Sinclair, J., & Foss, J. (2022). Technology-Supported Active Learning in a Flexible Teaching Space. *Education Sciences*, 12(9), 634. <https://doi.org/10.3390/educsci12090634>
- Smithikrai, C. (2015). *Personnel Training in The Organization* (9th ed.). Chulalongkorn University.
- Srisaard, B. (2007). *Introduction to Research* (10th ed.). Suwiriyaart.
- Stone, R., Campbell, J. K., Halim, N., Kinney, D., & Rothman, E. F. (2023). Design and Pilot Evaluation of a Cross-Training Curriculum for Intimate Partner Violence Advocates and Peer Recovery Coaches. *Victims & Offenders*, 18(2), 298–318. <https://doi.org/10.1080/15564886.2022.2026544>
- Supanyabutr, C. (2019). *The Development of a Teacher Competency Building Program for Active Learning Management Under the Office of Secondary Education Service Area 24*. Master thesis. Mahasarakham University.
- The National Institute for Development of Teachers, Faculty Staff and Educational Personnel (NIDTEP). (2007). *An Experimental Research of An Area-Based Teacher Development Model and Recommendations for Policy and Teacher Development Strategies*. Institute.

- The Office of the Basic Education Commission. (2009). *Indicators and learning content in social studies, religion, and culture according to the basic education core curriculum*. Agricultural Cooperative Printing House of Thailand.
- Utranan, S. (1989). *Fundamentals and Principles of Curriculum Development*. Chulalongkorn University.
- Wetzel, E. M., & Farrow, C. B. (2023). Active learning in construction management education: faculty perceptions of engagement and learning. *Int. J. Constr. Manage.*, 23(8), 1417–1425. <https://doi.org/10.1080/15623599.2021.1974684>
- Winder, C. L., Witting, M., Tugizimana, F., Dunn, W. B., & Reinke, S. N. (2022). Providing metabolomics education and training: pedagogy and considerations. *Metabolomics*, 18(106). <https://doi.org/10.1007/s11306-022-01957-w>

Copyrights

Copyright for this article is retained by the author, with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).