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Development Of A Competency-Enhancement Curriculum For Active Learning Management Using Participatory Action Research And Professional Learning Communities For Basic Education Teachers In The Mae Sot Special Economic Zone Tak Province

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Abstract

This study aimed to develop, implement, and evaluate a competency-enhancement curriculum for active learning management for basic education teachers in the Mae Sot Special Economic Zone, Tak Province, integrating Participatory Action Research (PAR) and Professional Learning Communities (PLCs). Guided by a research and development (R&D) design, the study proceeded through four sequential phases: needs assessment and foundational data collection, curriculum construction, curriculum implementation, and curriculum evaluation. Baseline data collected from 50 teachers revealed substantial gaps in competencies related to designing and facilitating learner-centered, collaborative, and authentic active learning experiences, highlighting the need for structured professional development. Based on these findings, a competency-enhancement curriculum was developed encompassing seven knowledge domains, five core competencies, and six major components, operationalized through a five-step PAR-PLC cycle and supported by the SCCER-U professional learning framework. Implementation with 30 volunteer teachers demonstrated significant improvements across all measured domains, including lesson plan design, active learning implementation, instructional media utilization, classroom management, and assessment of learning outcomes. Posttest results exceeded the 75% performance criterion, confirming the curriculum's effectiveness in enhancing teachers' instructional competencies. Evaluation using the CIPP model indicated that participants rated all aspects inputs, processes, and outcomes at the highest level, reflecting satisfaction with the curriculum's relevance, practicality, and applicability. The integration of PAR and PLC frameworks fostered reflective practice, collaborative problem-solving, and continuous professional growth, demonstrating the transformative potential of participatory, contextually tailored professional development. These findings suggest that structured, iterative, and collaborative competency-enhancement programs can meaningfully improve teacher effectiveness in active learning management, with implications for educational practice, policy, and future research in teacher professional development.

Keywords: Active Learning, Teacher Competency, Participatory Action Research, Professional Learning Communities, Curriculum Development.

Introduction

Thailand's national development agenda under the Thailand 4.0 policy framework positions research, innovation, and human capital development as central mechanisms for strengthening the country's long-term competitiveness. A critical component of this transformation is the strengthening of the education system, particularly the competencies of teachers responsible for developing learners who are capable of meeting the demands of a rapidly changing society and global economy. The Ministry of Education's 2024–2027 policy directions emphasize enhancing teacher capacity, promoting advanced pedagogical skills, and supporting schools in becoming learning organizations that cultivate professional learning cultures (OECD, 2021). Within this framework, teachers are encouraged to adopt instructional approaches that foster experiential learning, higher-order thinking, creativity, and learner agency elements fundamental to active learning pedagogy. The Ministry further highlights the need to enhance teachers' technological, cognitive, and soft-skill competencies to respond effectively to future societal and economic changes (Ministry of Education, 2023).

Evidence from the Office of the Education Council of Thailand shows that students demonstrate significantly higher engagement and improved learning outcomes when instruction emphasizes hands-on activities rather than passive lecture-based formats (Office of the Education Council, 2020, 2021). Active learning environments allow students to construct meaning through interaction, problem-solving, collaboration, and reflection, which in turn supports the development of advanced competencies such as critical thinking, creativity, communication, and self-regulated learning. In addition, assessment practices aligned with authentic assessment principles such as formative feedback, performance-based assessments, and developmental reports are shown to enhance student progress by providing meaningful evidence of learning growth across established criteria (Office of the Education Council, 2020). These findings align with global evidence that suggests active learning significantly increases student achievement across multiple subject areas, especially when teachers receive sustained, structured professional development.

Active learning management requires teachers not only to understand constructivist pedagogies but also to design and implement lesson plans that meaningfully integrate student interests, abilities, and contextual realities. A field study conducted in the northern provinces of Thailand reported that although teachers demonstrated willingness to adopt active learning, many still lacked confidence in lesson design, the development of learning activities, and the use of innovative instructional media. Many lesson plans were found to be incomplete, misaligned with learning standards, or insufficiently contextualized to real-world school environments. These findings indicate that, despite policy support, teachers continue to require structured capacity-building interventions to strengthen their active learning competencies and pedagogical design skills (Marut, 2011; Pasin, 2011).

Professional development research consistently highlights that effective teacher learning involves long-term, collaborative, practice-based, and context-specific approaches rather than short, one-time training workshops. Participatory Action Research (PAR) and Professional Learning Communities (PLCs) are two frameworks that align strongly with these principles. PAR promotes iterative cycles of planning, action, reflection, and improvement, allowing teachers to collaboratively identify problems, test solutions, analyze outcomes, and refine instructional strategies based on real evidence from their own classrooms. Mertler (2018) emphasizes that PAR empowers teachers as researchers and reflective practitioners, enabling sustained professional growth and data-driven instructional improvement. Likewise, PLCs provide a collaborative structure in which teachers engage in shared inquiry, collective problem-solving, and peer support to enhance teaching and learning (DuFour & Fullan, 2013). Sagor (2010) argues that PLCs, when combined with action research, foster school cultures grounded in teamwork, collective responsibility, and continuous learning conditions necessary for sustainable school improvement.

Integrating PAR with PLCs offers a powerful mechanism for strengthening teacher competencies, particularly in active learning management. This integrated approach creates a cyclical and collaborative

professional learning environment that benefits schools and teachers in several ways: (1) it establishes a continuous development process to address learners' needs; (2) it strengthens collaboration between teachers and school administrators; (3) it nurtures a teamwork-oriented culture; (4) it contributes to building sustainable learning organizations; (5) it elevates overall education quality; and (6) it generates context-specific instructional innovations through collaborative action research (Sagor, 2010; Prasat, 2018). Such outcomes are especially relevant for schools located in complex social and economic environments, including border regions and special economic zones.

The Mae Sot Special Economic Zone in Tak Province represents a unique educational landscape shaped by cultural diversity, socioeconomic disparities, and labor mobility across the Thai-Myanmar border. Schools in this region face challenges related to multilingual classrooms, varied student readiness levels, limited instructional resources, and rapidly changing community contexts. These conditions demand that teachers possess strong adaptive competencies, especially in designing active learning environments that respond to students' diverse needs. Strengthening teacher capacity in such contexts requires professional development strategies that are flexible, collaborative, and grounded in real-world school practice. Recognizing these needs, the research team seeks to develop a competency-enhancement curriculum for active learning management using integrated Participatory Action Research and Professional Learning Community processes for basic education teachers in the Mae Sot Special Economic Zone. The aim is to equip teachers with the capabilities to design, implement, and reflect upon active learning lesson plans that align with school contexts and national educational standards. This curriculum is intended to address gaps in teachers' understanding of active learning design, strengthen pedagogical decision-making, and enhance teachers' ability to create meaningful learning experiences that improve student outcomes.

Through structured cycles of collaborative inquiry, practice-based training modules, classroom implementation, and reflective evaluation, the proposed curriculum will support teachers in developing actionable competencies and innovations that respond to real challenges in their instructional environments. In addition, by embedding professional learning within PLCs, the curriculum aims to establish sustainable structures for continuous teacher development, promoting long-term capacity building beyond the duration of the program. Ultimately, the curriculum contributes to improving instructional quality, supporting student learning, and advancing national educational reforms toward Thailand 4.0 goals.

Objectives of Research

1. To develop a competency-enhancement curriculum for active learning management through the integration of Participatory Action Research (PAR) and Professional Learning Communities (PLCs) for basic education teachers.
2. To implement and examine the effectiveness of the developed competency-enhancement curriculum in strengthening teachers' abilities to design and facilitate active learning within real school contexts.
3. To evaluate the quality, applicability, and outcomes of the competency-enhancement curriculum based on teacher performance, instructional improvement, and alignment with professional standards.

Research Methods

This study employed a research and development (R&D) design to develop, implement, and evaluate a competency-enhancement curriculum for active learning management using Participatory Action Research (PAR) in conjunction with Professional Learning Communities (PLCs) for basic education teachers in the Mae Sot Special Economic Zone, Tak Province. The methodological framework followed four major phases: (1) needs assessment and foundational data collection, (2) curriculum construction, (3) curriculum implementation, and (4) curriculum evaluation. Each phase incorporated both qualitative and quantitative techniques to ensure methodological rigor and to strengthen the validity of the findings, consistent with established approaches recommended in educational R&D studies (Gall et al., 2018; Mertler, 2019).

Phase 1: Needs Assessment and Foundational Data Collection. The first phase focused on identifying essential information necessary for designing the competency-enhancement curriculum. Five procedures were used. **Step 1: Survey of Teachers' Needs.** A needs assessment survey was conducted with 50 basic education teachers from eight schools located within the Mae Sot Special Economic Zone. Simple random

sampling was used to ensure representativeness of teachers across different school contexts. The research instrument was a structured needs-assessment questionnaire designed to examine (a) teachers' current competencies in active learning management, (b) perceived challenges, and (c) areas requiring professional support. The instrument underwent content validation by three experts in curriculum and instruction following the Item Objective Congruence (IOC) method (Rovinelli & Hambleton, 1977), yielding acceptable values. **Step 2: Documentary Analysis.** A systematic review of academic and policy documents was conducted to derive conceptual foundations for curriculum development. The review included (a) theories of curriculum design, (b) principles of PAR, (c) PLC frameworks, (d) teacher competency development models, (e) theories of active learning, and (f) related empirical studies. A documentary analysis form was used to synthesize conceptual elements and evidence-based practices aligned with international recommendations such as OECD (2021) and Thailand's Ministry of Education reform priorities (Ministry of Education, 2023). **Step 3: Interviews with Key Informants.** Five key informants three educational supervisors and two school administrators were selected through purposive sampling due to their direct experience with teacher development in the region. Data were collected using a semi-structured interview protocol focusing on contextual factors affecting curriculum feasibility, teacher readiness, and current instructional challenges. Interviews were audio recorded, transcribed verbatim, and thematically analyzed. **Step 4: Expert Interviews.** Five experts in curriculum studies and educational administration were interviewed to identify foundational components appropriate for building the curriculum framework. These experts were chosen based on criteria including holding doctoral degrees and possessing at least ten years of professional or academic experience. A semi-structured interview guide was used to explore recommendations regarding curriculum structure, content domains, learning activities, and assessment strategies. Data were analyzed through inductive content analysis (Elo & Kyngäs, 2008). **Step 5: Synthesis of Foundational Data.**Findings from surveys, documentary analyses, and interviews were integrated to form a set of essential elements for curriculum development. This synthesis provided the basis for drafting the competency framework, learning modules, and implementation guidelines.

Phase 2: Curriculum Construction. The second phase involved developing and refining the competency-enhancement curriculum through four sequential steps. **Step 1: Drafting of the Curriculum and Manual.** Based on Phase 1 findings, a preliminary curriculum prototype and its accompanying user manual were drafted. The draft included: (1) rationale and goals, (2) competency standards for active learning management, (3) learning modules, (4) learning processes integrating PAR and PLC cycles, and (5) assessment methods. **Step 2: Expert Validation.** Five experts in teacher education and curriculum design from higher education institutions evaluated the draft for relevance, clarity, feasibility, and alignment with contemporary teacher competency frameworks. Experts held doctoral degrees and had a minimum of ten years of experience in curriculum development. The evaluation used a curriculum validation checklist rated on a five-point scale. Qualitative suggestions were also collected to improve conceptual coherence and practical usability. **Step 3: Pilot Tryout.** A pilot implementation was conducted during Semester 1 of the 2024 academic year with nine volunteer teachers from Mae Sot schools who were not included in the main intervention group. Simple random sampling was applied to ensure variation among teacher participants. The pilot tested feasibility, clarity of instructions, practicality of module activities, and time allocation. Observations, teacher reflections, and facilitator logs were analyzed to revise structural and procedural components of the curriculum. **Step 4: Revision of the Curriculum.** Data from the pilot phase were incorporated into the final revision. Adjustments focused on simplifying activity sequencing, refining PLC collaborative tasks, clarifying PAR cycle instructions, and improving assessment rubrics.

Phase 3: Curriculum Implementation. The third phase involved full implementation of the developed curriculum with 30 volunteer teachers from basic education schools in the Mae Sot Special Economic Zone during Semester 2 of the 2024 academic year. The study employed a **one-group posttest-only design**, appropriate for R&D studies aimed at initial evaluation of new educational programs (Campbell & Stanley, 1963). **Participants and Intervention,** Participants were selected through voluntary sampling, ensuring

that all teachers had willingness to engage in PLC activities and PAR cycles. The curriculum consisted of seven learning modules covering core competencies of active learning design, student-centered pedagogy, authentic assessment, and reflective instructional practices. The intervention also included three cycles of supervision, follow-up, and performance evaluation. **Instruments,** five assessment instruments were used: (1) teacher competency evaluation form, (2) active learning lesson plan rubric, (3) classroom observation protocol, (4) teacher reflection logs, and (5) PLC participation assessment form. All instruments underwent expert validation and reliability testing using Cronbach's alpha for internal consistency. **Implementation Procedures,** the implementation followed the five-step PAR process (Mertler, 2018), 1) Problem exploration and needs analysis, 2) Planning of instructional changes, 3) Action and classroom implementation, 4) Observation of instructional outcomes and 5) Reflection and collaborative dialogue within PLC groups. This iterative process enabled teachers to progressively refine their instructional practices while building shared professional knowledge.

Phase 4: Curriculum Evaluation. The final phase evaluated the curriculum using the CIPP (Context, Input, Process, Product) evaluation model, widely recognized for assessing educational programs (Stufflebeam & Coryn, 2014). **Evaluation Participants,** Data were collected from the same 30 teachers who completed the curriculum implementation. Their experiential feedback and performance outcomes were used to evaluate curriculum quality. **Evaluation Components, Context Evaluation:** Assessed the curriculum's relevance to local educational needs, policy directions, and school contexts. 1) Input Evaluation: Examined curriculum structure, content validity, resources, and facilitator support. 2) Process Evaluation: Evaluated the fidelity of implementation, teacher engagement in PLC and PAR cycles, and quality of learning activities and 3) Product Evaluation: Measured outcomes including teacher competency improvement, instructional performance, and perceived applicability of the curriculum. **Instruments and Data Analysis.** A validated evaluation form was used. Quantitative data were analyzed using descriptive statistics (mean, standard deviation), while qualitative data from reflection logs and open-ended responses were thematically analyzed. Triangulation strengthened data credibility.
The study progressed through four structured phases, 1) Needs assessment and foundational study → identified essential elements for curriculum design. 2) Curriculum construction → produced a validated and refined curriculum. 3) Curriculum implementation → examined teacher competency outcomes through PAR and PLC activities and 4) Curriculum evaluation → determined curriculum quality and overall effectiveness. This systematic R&D process yielded a comprehensive competency-enhancement curriculum that integrates active learning, collaborative inquiry, and professional reflection, tailored to the needs of basic education teachers in the Mae Sot Special Economic Zone.

Research Results

The development of the competency-enhancement curriculum for active learning management, using a combined approach of participatory action research (PAR) and professional learning communities (PLCs), yielded four major findings. The results provide empirical evidence supporting the need for such a curriculum, the appropriateness of its structure and components, its effectiveness in improving teachers' instructional competencies, and users' positive evaluations following implementation.

1. Findings from the Analysis of Foundational Data for Curriculum Development

1.1 Current Conditions and Needs for Active Learning Management. Analysis of baseline data gathered from 50 basic education teachers revealed substantial needs related to active learning management. Teachers emphasized the necessity for capacity-building in writing comprehensive active learning lesson plans that fully reflect principles of learner-centered pedagogy. Many teachers reported limited confidence in designing diverse activities that promote active engagement, higher-order thinking skills, collaborative learning, and student-generated knowledge. They also expressed a need for practical examples of well-constructed lesson plans that could serve as models for their own instructional design. Teachers further reported challenges in implementing contemporary active learning techniques that stimulate participation,

creativity, and motivation. Concerns were raised about insufficient instructional media, limited access to modern learning resources, and classroom environments that were not adequately supportive of active learning practices. The data also indicated a need for training in creating engaging classroom climates, facilitating peer collaboration, and supporting student autonomy in learning. In terms of assessment, teachers indicated a need for clearer guidelines on authentic assessment procedures aligned with active learning. Many expressed uncertainty regarding how to use varied tools that measure both learning processes and conceptual understanding, particularly in ways that are developmentally appropriate. Collectively, these findings underscore the need for a structured, research-based curriculum designed specifically to enhance teachers' competencies in active learning management.

1.2 Guidelines for Developing the Competency-Enhancement Curriculum. The analysis of document sources, expert interviews, and needs assessment findings led to the establishment of seven essential knowledge domains required for curriculum development: (1) strategies for active learning, (2) techniques for active learning, (3) designing active learning processes, (4) writing active learning lesson plans, (5) instructional media and learning resources, (6) classroom environment management, and (7) assessment of learning outcomes in active learning contexts. These knowledge domains were aligned with five core competencies expected of teachers, the ability to design and write active learning lesson plans, the ability to implement active learning in classroom settings, the ability to use instructional innovations and learning resources, the ability to manage conducive classroom environments, and the ability to evaluate learning outcomes using authentic methods. The curriculum design was framed by the PAR-PLC model, consisting of five cyclical processes: problem analysis, planning, implementation, observation, and reflection. In accordance with PAR principals, teachers were treated as co-researchers while the PLC structure supported collaborative improvement, peer coaching, and shared professional dialogue. To ensure both theoretical and practical rigor, two core activities were embedded: (1) intensive workshops transferring knowledge and modeling active learning pedagogy, and (2) continuous supervision, coaching, and formative evaluation of teachers' classroom applications, conducted approximately three times per semester. These processes ensured that the curriculum was not only content-rich but also grounded in iterative reflection and professional collaboration.

2. Structure and Components of the Developed Curriculum. The finalized curriculum consisted of six major components: **1) Rationale and Philosophy**. The curriculum was grounded in principles of learner-centered education, constructivism, and active engagement. **2) Objectives**. To enhance teachers' professional competencies necessary for effective active learning management. **3) Curriculum Structure and Content**. Covering seven modules aligned with the knowledge domains identified. **4) Learning Processes.** Implemented through the five-step PAR-PLC cycle: Situation Analysis, Planning, Acting, Observing and Reflecting. This cycle was supported by a professional learning framework known as SCCER-U, which facilitated systematic collaboration and continuous improvement. 1) Learning Media and Resources. Including sample lesson plans, instructional materials, digital tools, and activity templates. 2) Assessment and Evaluation Procedures. Employing both formative and summative approaches, with tools designed to measure teachers' competencies across all domains. Collectively, these components ensured a comprehensive system that guided teachers from foundational knowledge acquisition to practical classroom application.

3. Results of the Curriculum Implementation. The curriculum was implemented with 30 volunteer basic education teachers. Their competencies were assessed using a one-group posttest design. Results indicated significant competency gains across all five domains.

Table 1. Teachers' Active Learning Competency Scores Compared with the 75% Performance Criterion.

Competency Area	Full Score	75% Criterion	Mean ($\bar{x}$)	S.D.	t	p
1. Designing and Writing Active Learning Lesson Plans	40	30	36.50	1.19	29.861*	.000

Competency Area	Full Score	75% Criterion	Mean ($\bar{x}$)	S.D.	t	p
2. Implementing Active Learning in Classroom Settings	40	30	35.97	1.29	25.321*	.000
3. Using Instructional Media and Learning Resources	24	18	20.59	0.83	17.100*	.000
4. Managing Classroom Environments	24	18	21.14	0.68	25.459*	.000
5. Assessing Learning Outcomes from Active Learning	20	15	18.34	0.67	27.344*	.000
Total	**148**	**111**	**132.54**	**3.90**	**30.294***	**.000**

Significant at $p < .05$

The results demonstrate that the mean scores for all five competency domains significantly exceeded the performance standard of 75%. This finding confirms the effectiveness of the curriculum in strengthening teachers' capacities for designing and implementing active learning approaches. Teachers particularly improved in their ability to design comprehensive lesson plans, apply diverse instructional techniques, integrate media and resources, create supportive classroom environments, and conduct assessments aligned with active learning principles. The high t-values indicate strong, consistent improvement across the sample, suggesting that the participatory and collaborative nature of the curriculum effectively supported teachers' professional growth.

4. Evaluation of the Curriculum. The curriculum was evaluated using the CIPP model (Context, Input, Process, Product), with perceptions gathered from the 30 participating teachers.

Table 2. Teachers' Perceptions of the Curriculum (n = 30)

Evaluation Aspect	Mean	S.D.	Interpretation
Input Factors	4.56	0.27	Highest
Process	4.60	0.28	Highest
Product (Outcomes)	4.53	0.37	Highest
Overall	**4.56**	**0.22**	**Highest**

Overall, teachers evaluated the curriculum at the highest level ($\bar{x} = 4.56$). All three aspects inputs, processes, and products received equally high ratings. Teachers reported that the curriculum content was relevant and up-to-date, the learning processes were well-structured and practical, and the outcomes were directly applicable to classroom practice.

Participants further noted that the PAR-PLC integration allowed them to collaboratively solve instructional problems, share successful practices, and receive continuous feedback. They also highlighted that the training workshops were engaging and useful, while the follow-up supervision helped solidify new skills through real-world application. The results affirm that the curriculum was well-designed, feasible to implement, and beneficial in improving teaching competencies.

The study's findings indicate that the developed competency-enhancement curriculum effectively addressed teachers' needs and significantly improved their active learning management competencies. The integration of participatory action research with professional learning communities created a dynamic, reflective, and collaborative environment that supported meaningful professional growth. Furthermore, teachers' high satisfaction ratings validated the curriculum's relevance, practicality, and impact.

Conclusion & Discussion

This study aimed to develop, implement, and evaluate a competency-enhancement curriculum for active learning management, utilizing participatory action research (PAR) and professional learning communities (PLCs) for basic education teachers in the Mae Sot Special Economic Zone, Tak Province. The findings provide compelling evidence that the curriculum successfully addressed teachers' instructional needs, improved their competencies in active learning management, and fostered high satisfaction and engagement among participants. The discussion below synthesizes the research results, interprets their significance in the context of current literature, and highlights implications for practice, policy, and future research.

The first key finding emerged from the analysis of foundational data necessary for curriculum development. Baseline assessments of 50 teachers indicated substantial gaps in their ability to design, implement, and evaluate active learning activities. Teachers expressed a strong need for capacity-building in writing comprehensive lesson plans, designing student-centered and collaborative activities, employing modern instructional techniques, and managing supportive classroom environments. Furthermore, they reported challenges in integrating innovative learning resources and conducting authentic assessments aligned with active learning principles. These findings align with prior research demonstrating that teachers in many contexts struggle with active learning pedagogy due to limited exposure to instructional innovations and insufficient professional development opportunities (Darling-Hammond et al., 2017; Hattie, 2009; Mertler, 2019). The identified needs provided a clear rationale for constructing a structured, research-based curriculum explicitly targeting the development of active learning competencies.

Based on the needs assessment, document analysis, and expert interviews, seven knowledge domains were identified as essential for curriculum development: (1) strategies for active learning, (2) techniques for active learning, (3) designing active learning processes, (4) writing active learning lesson plans, (5) instructional media and learning resources, (6) classroom environment management, and (7) assessment of learning outcomes. These domains were intentionally aligned with five core competencies for teachers, reflecting both theoretical knowledge and practical application. The integration of PAR and PLC frameworks provided a cyclical, reflective structure in which teachers functioned as co-researchers, collaborating to plan, implement, observe, and reflect on their teaching practices. This approach is consistent with contemporary professional development research, which emphasizes teacher collaboration, reflective practice, and iterative improvement as essential mechanisms for effective competency growth (DuFour & Fullan, 2013; Timperley, 2011; Vescio et al., 2008).

The curriculum itself was designed to encompass six major components: rationale and philosophy, objectives, curriculum structure and content, learning processes, learning media and resources, and assessment procedures. The learning processes were operationalized through a five-step PAR-PLC cycle, supported by the SCCER-U framework for professional collaboration. This comprehensive design ensured coherence between theory, content knowledge, and practical classroom application. The use of workshops and ongoing supervision allowed teachers to internalize active learning concepts and immediately apply them to classroom practice, consistent with the principles of situated learning and constructivist pedagogy (Lave & Wenger, 1991; Biggs & Tang, 2011). Such alignment between curriculum design and implementation processes is widely recognized as critical to ensuring meaningful professional development outcomes.

Effectiveness of the Curriculum. Implementation of the curriculum with 30 volunteer teachers revealed significant gains across all five measured domains of active learning competency. Posttest results indicated mean scores exceeding the 75% performance criterion, with substantial t-values confirming statistical significance. Teachers demonstrated notable improvements in designing and writing lesson plans, implementing active learning strategies in the classroom, employing instructional media and resources, managing classroom environments, and assessing student outcomes. These outcomes corroborate the effectiveness of integrating PAR and PLC methodologies into professional development programs, as suggested by prior studies (Guskey, 2002; Mertler, 2019). The high level of improvement observed reflects the dual focus of the curriculum: building both conceptual understanding and practical skills in active learning management. It is particularly noteworthy that participants reported enhanced confidence and

autonomy in designing and executing learner-centered activities, highlighting the transformative potential of participatory, collaborative professional learning.

The study also demonstrated that a structured, iterative model of curriculum delivery including workshops, classroom practice, observation, and reflection effectively supports teachers' development. The PAR approach fostered critical reflective practice, enabling teachers to identify gaps in their instruction, experiment with solutions, and assess outcomes systematically. Concurrently, the PLC framework promoted peer collaboration, knowledge sharing, and continuous feedback. This dual approach aligns with research advocating collaborative, reflective professional learning as a powerful mechanism for enhancing teacher competencies and student outcomes (Vescio et al., 2008; Darling-Hammond et al., 2017; Timperley, 2011). Moreover, the structured sequence of workshops, supervised application, and reflection cycles allowed teachers to translate theory into practice, thereby bridging the often-cited gap between professional development and classroom implementation (Desimone, 2009).

Teacher Perceptions and Evaluation. Evaluation of the curriculum using the CIPP model revealed that participants rated all three aspects inputs, processes, and products at the highest levels. Teachers perceived the curriculum content as relevant and current, the learning processes as well-structured and actionable, and the outcomes as directly beneficial to their instructional practice. The positive feedback underscores the importance of designing professional development programs that are contextually grounded and responsive to teachers' expressed needs (Darling-Hammond et al., 2017). Furthermore, the high satisfaction ratings reflect the curriculum's capacity to create an engaging, collaborative, and reflective professional environment, essential for sustainable improvements in teaching practice. These findings are consistent with previous studies demonstrating that teacher engagement, relevance of content, and opportunities for practical application are critical predictors of professional development effectiveness (Joyce & Showers, 2002; Guskey, 2002).

The qualitative feedback further emphasized that the PAR-PLC model facilitated collaborative problem-solving, peer mentoring, and the sharing of best practices, enhancing teachers' professional learning beyond the individual level. Teachers highlighted the value of structured follow-up supervision and coaching, which helped consolidate new skills through direct application in classroom settings. This evidence supports the assertion that reflective, collaborative, and iterative professional development processes are more effective than traditional, one-off workshops in producing meaningful changes in teacher practice (Darling-Hammond et al., 2017; Timperley, 2011).

Implications for Practice. The study has significant implications for educational practice. First, integrating participatory and collaborative approaches in professional development programs enhances teachers' practical competencies while simultaneously promoting reflective, evidence-based instructional decision-making. School leaders and professional development designers should consider adopting PAR-PLC frameworks to create sustained, contextually relevant learning communities that encourage shared responsibility and continuous improvement. Second, the curriculum provides a structured model for improving teachers' active learning management skills, including lesson planning, classroom management, instructional innovation, and assessment practices. Schools and educational authorities could adopt this model as part of ongoing teacher training initiatives, especially in contexts where active learning approaches are underutilized. Third, the curriculum demonstrates that professional development is most effective when teachers are actively involved in co-constructing knowledge and reflecting on practice, rather than being passive recipients of information (Desimone, 2009; Darling-Hammond et al., 2017).

Implications for Policy. At a policy level, the study underscores the importance of contextually responsive teacher training programs that integrate participatory, collaborative, and reflective approaches. Education policymakers and administrators in Thailand's Special Economic Zones may benefit from scaling similar competency-enhancement curricula across other schools to strengthen teaching quality and student learning outcomes. Investment in professional learning communities and structured PAR cycles should be considered a key component of teacher development policies. Furthermore, the study highlights the need

for sustained support mechanisms, including ongoing coaching, access to instructional resources, and systematic evaluation, to ensure the long-term efficacy and sustainability of teacher training programs (Timperley, 2011; Guskey, 2002).

Limitations and Future Research. Despite the study's contributions, several limitations should be acknowledged. First, the sample consisted of 30 volunteer teachers from a specific region, limiting generalizability to other contexts. Future research should replicate the study with larger, more diverse samples across different regions and school types to enhance external validity. Second, the study employed a one-group posttest-only design, which does not allow for causal inferences or comparison with a control group. Subsequent studies could adopt quasi-experimental or randomized controlled designs to strengthen evidence regarding curriculum effectiveness. Third, the study primarily measured teachers' competencies through post-intervention assessments and self-reported evaluations. Future research should incorporate student learning outcomes and classroom observation metrics to assess the impact of enhanced teacher competencies on student achievement. Finally, longitudinal studies could examine the sustainability of competency gains over multiple academic years and investigate factors that influence the durability of professional development outcomes.

In conclusion, the competency-enhancement curriculum developed in this study effectively addressed the professional needs of basic education teachers in the Mae Sot Special Economic Zone. By integrating PAR and PLC frameworks, the curriculum promoted active engagement, reflective practice, and collaborative learning, resulting in significant improvements in teachers' competencies in designing, implementing, and evaluating active learning activities. Participants' high satisfaction ratings further validated the relevance, practicality, and impact of the curriculum. The findings provide strong evidence that participatory and collaborative approaches to teacher professional development can meaningfully enhance instructional quality and, by extension, student learning outcomes. This study contributes to the growing body of research supporting reflective, collaborative, and contextually tailored professional development as a key driver of educational improvement. The results also offer practical guidance for school administrators, teacher educators, and policymakers seeking to strengthen active learning practices in classrooms. By adopting structured, iterative, and collaborative professional development frameworks, educational systems can enhance teachers' instructional capabilities, foster a culture of continuous improvement, and ultimately improve educational outcomes. The curriculum developed in this study serves as a model for designing evidence-based, contextually responsive professional development programs that empower teachers as co-creators of knowledge and innovators in pedagogy.

Suggestions

Based on the findings of this study on the development and implementation of a competency-enhancement curriculum for active learning management using participatory action research (PAR) and professional learning communities (PLCs), several practical, policy-oriented, and research-related recommendations are proposed to maximize the impact of the curriculum and inform future educational initiatives.

1. Recommendations for Educational Practice

First, teacher professional development programs should continue to integrate participatory and collaborative frameworks, such as PAR-PLC models, to enhance instructional competencies. The study demonstrated that when teachers actively engage in co-constructing knowledge, reflecting on their practices, and collaborating with peers, they experience significant gains in active learning competencies. Educational institutions should therefore prioritize interactive workshops, classroom-based coaching, and structured reflection cycles that allow teachers to translate theoretical knowledge into practical strategies. Additionally, professional development should include modules on designing learner-centered lesson plans, employing diverse instructional techniques, managing classroom environments conducive to active engagement, and conducting authentic assessment. Such comprehensive approaches ensure that teachers

are equipped with both conceptual understanding and practical skills required for effective classroom implementation.

Second, school leaders and instructional coordinators should support teachers in sustaining these competencies through continuous mentoring, collaborative problem-solving sessions, and peer observation opportunities. Establishing communities of practice within schools can facilitate knowledge sharing, strengthen professional networks, and create a culture of continuous improvement. This approach is particularly critical in regions where teachers have limited prior exposure to active learning pedagogy, as the collaborative framework provides scaffolding for iterative skill development and innovation in instructional practice.

2. Recommendations for Policy

At the policy level, education authorities should recognize the value of structured, contextually tailored professional development programs that integrate PAR and PLC approaches. Policymakers should consider scaling competency-enhancement curricula across schools, especially in Special Economic Zones and other under-resourced regions where active learning practices are not yet widely adopted. Strategic investment in professional learning communities, instructional resources, and ongoing coaching initiatives is essential to ensure the sustainability and effectiveness of teacher development programs.

Additionally, formal policy frameworks should encourage regular monitoring and evaluation of professional development programs, incorporating both teacher performance metrics and student learning outcomes to inform future iterations. Furthermore, policies should provide incentives for teacher participation in collaborative professional development, including recognition of professional growth, opportunities for leadership roles within PLCs, and pathways for career advancement. By institutionalizing reflective and participatory approaches to professional learning, education systems can foster a culture that values innovation, collaboration, and evidence-based instructional practices.

3. Recommendations for Future Research

Future research should focus on expanding the evidence base for competency-enhancement programs in diverse educational contexts. Given that this study employed a one-group posttest-only design with a relatively small sample, subsequent studies should consider employing quasi-experimental or randomized controlled designs to strengthen causal inferences regarding the effectiveness of PAR-PLC-based curricula. Expanding the sample to include teachers from multiple schools and regions would enhance the generalizability of findings and provide insights into context-specific adaptations of the curriculum. Additionally, longitudinal studies are recommended to assess the durability of teacher competency gains over multiple academic years and to identify factors influencing sustained professional growth. Incorporating student learning outcomes as a measure of program impact would also provide a more comprehensive understanding of how enhanced teacher competencies translate into improved classroom performance. Future investigations may also explore the integration of digital learning tools and hybrid professional development models, particularly in regions facing resource constraints, to determine their effectiveness in supporting active learning practices.

Finally, qualitative studies examining teachers' perceptions, classroom experiences, and reflective practices could provide richer contextual insights, allowing curriculum designers to fine-tune content, instructional strategies, and support mechanisms to better meet teachers' needs and maximize program impact.

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