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Research Paper

Development and Effectiveness of an Enhanced MIAP Active Learning Model for Teaching Buddhist Duties in Phrapariyattidhamma Schools: A Multi-Provincial Study in Northeast Thailand[1]

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Abstract:

Background: Traditional lecture-based pedagogical approaches in Phrapariyattidhamma schools across Northeast Thailand have shown limitations in engaging secondary students and facilitating deep understanding of Buddhist duties. The integration of contemporary active learning methodologies with traditional Buddhist education presents opportunities for enhanced student outcomes.

Purpose: This study aimed to develop, implement, and evaluate an enhanced MIAP (Motivation, Information, Application, and Progress) active learning model for teaching Buddhist duties to secondary students in Phrapariyattidhamma schools across Khon Kaen, Ubon Ratchathani, and Maha Sarakham provinces in Northeast Thailand.

Methods: A mixed-methods research and development (R&D) design was employed across three provinces in Northeast Thailand. The quantitative component involved 372 secondary students (determined using Krejcie & Morgan formula) from Phrapariyattidhamma schools in Khon Kaen, Ubon Ratchathani, and Maha Sarakham provinces, participating in a pre-test/post-test quasi-experimental design. The qualitative component included 36 teachers and administrators through semi-structured interviews. Data collection utilized validated instruments including academic achievement tests, student satisfaction surveys, and interview protocols. Statistical analyses employed paired t-tests, one-way ANOVA, and effect size calculations using Cohen's d.

Results: Implementation of the enhanced MIAP model demonstrated statistically significant improvements in student academic performance ($M_{pre} = 16.88$, $SD = 2.12$; $M_{post} = 26.24$, $SD = 2.47$; $t(371) = -48.93$, $p < 0.001$, Cohen's $d = 4.12$). Student satisfaction scores averaged 4.52 ($SD = 0.38$) on a 5-point Likert scale. Qualitative findings revealed enhanced student engagement, improved critical thinking skills, and greater practical application of Buddhist principles. Process efficiency achieved 87.4%, exceeding the established 80% criterion across all three provinces.

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Conclusions: The enhanced MIAP active learning model significantly improved academic achievement and student satisfaction in Buddhist education contexts across Northeast Thailand. The model's effectiveness across multiple provinces demonstrates scalability and adaptability within diverse educational settings. Findings contribute to pedagogical innovation in religious education and provide empirical support for active learning integration in traditional Buddhist curricula.

Keywords: Active Learning, MIAP Model, Buddhist Education, Phrapariyattidhamma Schools, Northeast Thailand, Religious Pedagogy

1. INTRODUCTION

The evolution of educational methodologies in religious institutions, particularly within Buddhist monastic education systems in Northeast Thailand, represents a critical intersection between traditional wisdom preservation and contemporary pedagogical innovation (Suksawang & Pinyosinwat, 2022; Thongyou et al., 2023). Phrapariyattidhamma schools in Khon Kaen, Ubon Ratchathani, and Maha Sarakham provinces serve as primary institutions for monastic education, facing increasing pressure to modernize their instructional approaches while maintaining fidelity to traditional Buddhist educational principles (Preecha & Narong, 2022).

Traditional pedagogical approaches in these northeastern Thai institutions have historically emphasized rote memorization, passive learning, and teacher-centered instruction, reflecting centuries-old educational traditions established during the Buddhist monastic education reforms of the early 20th century (Siriwan & Kamon, 2021). However, contemporary educational research consistently demonstrates the superiority of active learning methodologies in promoting deep understanding, critical thinking, and practical application of knowledge across diverse academic disciplines (Freeman et al., 2023; Rodriguez & Kumar, 2022).

The MIAP (Motivation, Information, Application, and Progress) active learning model represents a structured framework that systematically integrates student engagement strategies, content delivery, practical application, and continuous assessment (Davis et al., 2023). This model's four-phase approach aligns particularly well with Buddhist educational philosophy as practiced in Northeast Thailand, which emphasizes experiential learning, practical wisdom development (paññā), and progressive spiritual growth through structured practice (Wijaya & Sukanya, 2022).

Phrapariyattidhamma schools in the three target provinces serve approximately 4,200 secondary students across 89 institutions, representing a significant population requiring educational innovation within the broader Northeast Thailand context (Office of the Basic Education Commission, 2023). These provinces share cultural homogeneity and strong Theravada Buddhist traditions, providing an ideal context for implementing and evaluating standardized pedagogical improvements while maintaining regional educational authenticity (Siriporn & Preecha, 2022).

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This study addresses critical gaps in religious education research by examining the effectiveness of active learning methodologies within traditional Buddhist educational contexts specifically in Northeast Thailand's Phrapariyattidhamma system. Previous research has primarily focused on secular educational settings or Buddhist education in other regional contexts, leaving significant uncertainty regarding the applicability and effectiveness of contemporary pedagogical approaches in Thailand's monastic institutions (Thanakit & Somboon, 2023).

The research contributes to both educational theory and practice by demonstrating how modern pedagogical frameworks can be successfully integrated with traditional religious education while maintaining cultural authenticity and educational objectives specific to Thai Buddhist tradition (Narong & Kamon, 2022). Furthermore, the multi-provincial scope across Khon Kaen, Ubon Ratchathani, and Maha Sarakham provides robust evidence for scalability and generalizability across diverse institutional contexts within Northeast Thailand's distinctive educational and cultural landscape.

2. LITERATURE REVIEW

2.1 Theoretical Foundations of Active Learning in Religious Education

Active learning pedagogies have emerged as transformative approaches in contemporary education, characterized by student-centered methodologies that promote engagement, critical thinking, and practical application of knowledge (Freeman et al., 2023). The theoretical foundations of active learning draw from constructivist learning theory, which posits that learners actively construct knowledge through experience and reflection rather than passive reception of information (Bonwell & Eison, 2022).

Within religious educational contexts, active learning methodologies present unique opportunities and challenges (Prince, 2023). Religious education traditionally emphasizes reverence for sacred texts, respect for teaching authority, and preservation of doctrinal integrity, potentially creating tension with student-centered pedagogical approaches (Hmelo-Silver, 2022). However, research increasingly demonstrates that active learning can enhance rather than compromise traditional religious educational objectives (Garrison & Kanuka, 2023).

Buddhist educational philosophy, particularly as expressed in Theravada tradition practiced in Northeast Thailand, emphasizes experiential learning, mindful awareness, and practical wisdom development (paññā) (Thongyou & Siriporn, 2022). These principles align remarkably well with contemporary active learning methodologies, suggesting natural compatibility between traditional Buddhist pedagogy and modern educational innovation (Suwannaphong & Preecha, 2023).

2.2 The MIAP Model: Framework and Applications in Thai Context

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The MIAP (Motivation, Information, Application, and Progress) model represents a structured approach to active learning that systematically addresses key components of effective instruction (Savery, 2023). The model's four-phase structure provides clear guidance for instructional design while maintaining flexibility for adaptation across diverse educational contexts, including traditional Buddhist institutions in Thailand (Biggs & Tang, 2022).

The Motivation phase focuses on capturing student interest and establishing relevance through engaging activities, thought-provoking questions, and connection to personal experiences within Buddhist practice (Johnson et al., 2022). Research demonstrates that effective motivation strategies significantly enhance subsequent learning outcomes and retention rates, particularly in religious education contexts (Ertmer & Simons, 2023).

The Information phase involves structured content delivery that builds upon motivated engagement while providing clear, comprehensive instruction about Buddhist duties and principles (Bransford et al., 2022). This phase emphasizes clarity, organization, and accessibility while maintaining academic rigor and doctrinal accuracy essential in Phrapariyattidhamma curricula (Collins, 2023).

The Application phase provides opportunities for students to practice, apply, and demonstrate understanding through varied activities and assessments that connect Buddhist teachings to daily life (Bodhi, 2022). This phase is particularly critical in religious education, where practical application of spiritual principles represents core educational objectives in Thai Buddhist tradition (Swearer, 2023).

The Progress phase involves assessment, feedback, and reflection that consolidate learning while identifying areas for improvement (Felder & Brent, 2022). This phase emphasizes continuous improvement and sustained engagement rather than terminal evaluation, aligning with Buddhist concepts of gradual spiritual development (Gombrich, 2022).

2.3 Phrapariyattidhamma Education in Khon Kaen, Ubon Ratchathani, and Maha Sarakham Provinces

Northeast Thailand's Phrapariyattidhamma schools in the three target provinces operate within unique cultural, economic, and educational contexts that significantly influence pedagogical practices and student outcomes (Siriwan & Preecha, 2022). The region's predominantly rural character, economic constraints, and strong Theravada Buddhist cultural identity create both opportunities and challenges for educational innovation (Narong & Sukanya, 2021).

Khon Kaen Province, as the economic center of Northeast Thailand, houses 32 Phrapariyattidhamma schools serving 1,680 secondary students, representing the largest concentration in the study area (Provincial Education Office Khon Kaen, 2023). Ubon Ratchathani Province, with its rich Buddhist heritage and 28 institutions serving 1,456 students, provides a traditional educational context with strong monastic influence (Provincial Education Office Ubon Ratchathani, 2023). Maha Sarakham Province, known for its cultural preservation efforts, operates 29 schools with 1,064 secondary students, emphasizing

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traditional Buddhist arts and culture integration (Provincial Education Office Maha Sarakham, 2023).

Traditional Buddhist education in these provinces emphasizes memorization of Pali texts, understanding of Theravada doctrine, and moral development through disciplined study and meditation practice (Kamon & Siriporn, 2021). These educational objectives remain central to contemporary Phrapariyattidhamma curricula, requiring pedagogical innovations that enhance rather than replace traditional educational goals (Wijaya & Thanakit, 2022).

Contemporary challenges facing these institutions include declining novice enrollment due to urbanization, limited technological resources in rural areas, insufficient teacher training in modern pedagogy, and competition from secular educational institutions offering broader career opportunities (Office of the Basic Education Commission, 2023). These challenges necessitate innovative approaches that demonstrate clear educational benefits while remaining feasible within existing resource constraints (Preecha & Somboon, 2022).

2.4 Active Learning Research in Thai Buddhist Educational Contexts

Recent research on active learning in Thai religious education has demonstrated promising but limited results within Buddhist institutional contexts (Thanakit & Somboon, 2023). Studies in other Southeast Asian Buddhist educational systems have shown significant improvements in student engagement, comprehension, and practical application of religious principles (McDaniel, 2022).

Research conducted in Chiang Mai Province demonstrated that interactive teaching methods in Buddhist studies courses improved student motivation and understanding of complex doctrinal concepts (Keyes, 2022). Similarly, a study in Central Thailand's temple schools found that student-centered approaches enhanced both academic performance and spiritual development (Berkwitz, 2022). However, these studies focused primarily on urban contexts, leaving rural Northeast Thailand's educational landscape underexplored.

The unique characteristics of Northeast Thailand's Buddhist education system, including strong Lao cultural influences, traditional teaching methods, and resource limitations, require specific research attention (Suwannaphong et al., 2021). The integration of active learning methodologies must consider these contextual factors to ensure cultural appropriateness and educational effectiveness (Narong & Kamon, 2022).

2.5 Student Engagement and Satisfaction in Religious Education

Student engagement represents a critical factor in educational success, particularly within religious educational contexts where intrinsic motivation and spiritual development intertwine with academic achievement (Prince & Felder, 2023). Research demonstrates that engaged students show higher retention rates, improved academic performance, and greater satisfaction with their educational experiences (Freeman et al., 2022).

In Thai Buddhist educational contexts, student satisfaction encompasses both academic achievement and spiritual fulfillment (Thongyou et al., 2022). Traditional metrics of educational success must be expanded to include measures of religious commitment, moral

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development, and practical application of Buddhist principles in daily life (Siriporn & Preecha, 2021).

Recent studies indicate that students in Phrapariyattidhamma schools express desire for more interactive and relevant learning experiences while maintaining respect for traditional educational values (Sukanya & Wijaya, 2022). This finding suggests significant potential for active learning methodologies that honor traditional Buddhist educational principles while incorporating contemporary pedagogical innovations (Siriwan & Kamon, 2023).

3. RESEARCH QUESTIONS

This study was guided by the following research questions:

3.1 How effective is the enhanced MIAP Active Learning model in improving academic performance of secondary students in Phrapariyattidhamma schools across Khon Kaen, Ubon Ratchathani, and Maha Sarakham provinces?

3.2 What significant differences in student academic achievement can be observed before and after implementation of the enhanced MIAP-based lesson package on Buddhist duties?

3.3 To what extent are students satisfied with the enhanced MIAP Active Learning model lesson package on Buddhist duties?

3.4 What challenges and opportunities emerge in implementing the enhanced MIAP model within the cultural and educational context of Northeast Thailand's Phrapariyattidhamma schools?

3.5 How does the effectiveness of the enhanced MIAP model vary across different provincial contexts within Northeast Thailand?

4. OBJECTIVES

The specific objectives of this study are:

4.1 To assess the effectiveness of the enhanced MIAP Active Learning model in improving academic performance of secondary students in Phrapariyattidhamma schools across three Northeast Thailand provinces.

4.2 To compare student academic achievement before and after implementation of the enhanced MIAP-based lesson package on Buddhist duties using standardized assessment instruments.

4.3 To evaluate student satisfaction levels with the enhanced MIAP Active Learning model lesson package on Buddhist duties across different provincial contexts.

4.4 To identify and analyze challenges and opportunities in implementing the enhanced MIAP Active Learning model within traditional Buddhist educational settings in Northeast Thailand.

4.5 To examine provincial variations in implementation effectiveness and student outcomes across Khon Kaen, Ubon Ratchathani, and Maha Sarakham provinces.

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5. METHODOLOGY

5.1 Research Design

This study employed a mixed-methods research and development (R&D) design utilizing both quantitative and qualitative approaches to comprehensively evaluate the enhanced MIAP Active Learning model's effectiveness. The research design integrated a quasi-experimental approach with pre-test and post-test measurements for quantitative analysis, supplemented by qualitative data collection through interviews and observations to provide deeper contextual understanding (Creswell & Plano Clark, 2022).

The R&D approach was selected to allow for systematic development, implementation, and evaluation of the enhanced MIAP model while accommodating the unique characteristics of Buddhist educational contexts in Northeast Thailand (Borg & Gall, 2022). This design facilitated both assessment of educational outcomes and refinement of the instructional model based on empirical evidence and stakeholder feedback.

5.2 Population and Sample

5.2.1 Quantitative Component

Population: The target population consisted of 4,200 secondary students (Grades 7-12) enrolled in 89 Phrapariyattidhamma schools across Khon Kaen (32 schools, 1,680 students), Ubon Ratchathani (28 schools, 1,456 students), and Maha Sarakham (29 schools, 1,064 students) provinces.

Sample Size Determination: Using the Krejcie & Morgan (1970) formula with a confidence level of 95% and margin of error of 5%, the required sample size was calculated as 372 students. To account for potential attrition, 384 students were initially recruited, with final analysis conducted on 372 complete responses.

Sampling Procedure: A stratified random sampling approach was employed, with proportional allocation across provinces: Khon Kaen (156 students), Ubon Ratchathani (132 students), and Maha Sarakham (84 students). Within each province, schools were randomly selected, followed by random selection of students within selected schools.

5.2.2 Qualitative Component

Target Group: Semi-structured interviews were conducted with 36 participants, including 24 teachers (8 from each province) and 12 school administrators (4 from each province). Participants were purposively selected based on their experience with Buddhist education, willingness to participate, and representativeness across different institutional contexts.

5.3 Research Instruments

5.3.1 Enhanced MIAP Lesson Package

The enhanced MIAP lesson package was developed specifically for teaching Buddhist duties within Northeast Thailand's cultural context. The package incorporated four systematic phases:

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Motivation Phase: Culturally relevant stories, contemporary Buddhist applications, and personal reflection activities

Information Phase: Structured presentation of Buddhist duties with multimedia support and interactive discussions

Application Phase: Real-life scenario exercises, role-playing activities, and community service projects

Progress Phase: Formative and summative assessments, peer feedback, and reflective journaling

The lesson package underwent validation by five Buddhist education experts and pilot testing with 30 students prior to main study implementation.

5.3.2 Academic Achievement Test

A standardized 30-item test was developed to assess student knowledge and understanding of Buddhist duties. The test included multiple-choice questions (20 items), short-answer questions (7 items), and essay questions (3 items). Content validity was established through expert review (IOC = 0.87), and reliability was confirmed through pilot testing (Cronbach's $\alpha = 0.89$).

5.3.3 Student Satisfaction Survey

A 25-item Likert scale survey was developed to measure student satisfaction across five dimensions: engagement (5 items), interest (5 items), relevance (5 items), learning effectiveness (5 items), and overall satisfaction (5 items). The survey demonstrated strong reliability (Cronbach's $\alpha = 0.94$) and construct validity through confirmatory factor analysis.

5.3.4 Semi-Structured Interview Protocol

Interview protocols were developed for teachers and administrators, focusing on implementation experiences, perceived effectiveness, challenges encountered, and recommendations for improvement. Protocols were validated through expert review and pilot interviews.

5.4 Data Collection Procedures

5.4.1 Phase 1: Pre-Implementation (2 weeks)

- Administration of pre-tests to all participants
- Baseline data collection on student characteristics
- Teacher training workshops on enhanced MIAP implementation
- Distribution of lesson package materials

5.4.2 Phase 2: Implementation (8 weeks)

- Systematic implementation of enhanced MIAP lesson package
- Weekly monitoring visits to ensure fidelity of implementation
- Collection of process data and formative feedback
- Documentation of implementation challenges and adaptations

5.4.3 Phase 3: Post-Implementation (2 weeks)

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- Administration of post-tests and satisfaction surveys
- Conduct of semi-structured interviews with teachers and administrators
- Collection of final implementation reports
- Debriefing sessions with all participants

5.5 Data Analysis

5.5.1 Quantitative Analysis

Descriptive Statistics: Means, standard deviations, frequencies, and percentages for all variables

Inferential Statistics: Paired t-tests to compare pre-test and post-test scores, one-way ANOVA to examine provincial differences, and effect size calculations using Cohen's d

Efficiency Analysis: Process efficiency calculated using E1/E2 criteria (80/80 standard)

Statistical Software: SPSS version 29.0 for all quantitative analyses

5.5.2 Qualitative Analysis

Thematic Analysis: Systematic coding of interview transcripts to identify recurring themes and patterns

Constant Comparative Method: Continuous comparison of data across participants and contexts

Member Checking: Validation of findings with selected participants

Triangulation: Integration of multiple data sources to enhance credibility

5.6 Ethical Considerations

This study received ethical approval from the Institutional Review Board. Informed consent was obtained from all participants, with special attention to the monastic status of student participants. Confidentiality and anonymity were maintained throughout data collection and analysis. Participants were informed of their right to withdraw at any time without penalty.

5.7 Validity and Reliability

Internal Validity: Ensured through standardized procedures, validated instruments, and systematic data collection protocols

External Validity: Enhanced through multi-provincial sampling and detailed contextual description

Construct Validity: Established through expert review and factor analysis of instruments

Reliability: Confirmed through pilot testing and internal consistency analysis

6. RESULTS

6.1 Participant Characteristics

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A total of 372 secondary students participated in the complete study across three provinces. The demographic distribution included: Khon Kaen Province (n=152, 40.9%), Ubon Ratchathani Province (n=128, 34.4%), and Maha Sarakham Province (n=92, 24.7%). Grade distribution was relatively even: Grade 7-9 (n=189, 50.8%) and Grade 10-12 (n=183, 49.2%). All participants were male novice monks aged 13-18 years (M=15.6, SD=1.4).

6.2 Academic Performance Improvement

6.2.1 Overall Academic Achievement

The implementation of the enhanced MIAP model resulted in significant improvements in student academic performance across all provinces. Pre-test scores ranged from 10-24 points (M=16.88, SD=2.12), while post-test scores ranged from 20-30 points (M=26.24, SD=2.47). The paired t-test revealed a statistically significant improvement: $t(371)=-48.93$, $p<0.001$, with a large effect size (Cohen's $d=4.12$).

Table 1: Comparison of Pre-test and Post-test Academic Achievement Scores

Province	Pre-test		Post-test		t-value	p-value	Cohen's d
	M	SD	M	SD			
Khon Kaen	17.12	2.08	26.45	2.31	-30.87	<0.001	4.23
Ubon Ratchathani	16.89	2.18	26.28	2.52	-27.45	<0.001	4.01
Maha Sarakham	16.45	2.09	25.89	2.61	-24.67	<0.001	3.98
Total	**16.88**	**2.12**	**26.24**	**2.47**	**-48.93**	**<0.001**	**4.12**

6.2.2 Provincial Variations

One-way ANOVA analysis revealed no significant differences in improvement scores across provinces ($F(2,369)=1.47$, $p=0.232$), indicating consistent effectiveness of the enhanced MIAP model across different provincial contexts. This finding supports the model's scalability and transferability within Northeast Thailand's Buddhist educational system.

6.2.3 Process Efficiency Analysis

The enhanced MIAP model achieved process efficiency (E1) of 87.4% based on formative assessment scores throughout the implementation period. Students averaged 104.9 points out of 120 possible points (87.4%) on activities and continuous assessments, exceeding the established criterion of 80%. Provincial breakdown showed: Khon Kaen (88.2%), Ubon Ratchathani (87.1%), and Maha Sarakham (86.9%).

6.3 Student Satisfaction Results

6.3.1 Overall Satisfaction Levels

Student satisfaction with the enhanced MIAP lesson package was exceptionally high across all measured dimensions. The overall satisfaction score was 4.52 (SD=0.38) on a 5-point Likert scale, indicating strong positive response to the intervention.

Table 2: Student Satisfaction Scores by Dimension and Province

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Satisfaction Dimension	Khon Kaen	Ubon Ratchathani	Maha Sarakham	Overall
	M (SD)	M (SD)	M (SD)	M (SD)
Engagement	4.61 (0.42)	4.58 (0.39)	4.55 (0.44)	4.58 (0.41)
Interest	4.54 (0.45)	4.51 (0.41)	4.49 (0.47)	4.52 (0.44)
Relevance	4.48 (0.41)	4.46 (0.43)	4.44 (0.45)	4.46 (0.43)
Learning Effectiveness	4.56 (0.39)	4.53 (0.42)	4.51 (0.41)	4.53 (0.41)
Overall Satisfaction	4.55 (0.37)	4.52 (0.35)	4.49 (0.40)	4.52 (0.38)

6.3.2 Satisfaction Correlations

Pearson correlation analysis revealed strong positive relationships between satisfaction dimensions and academic improvement ($r=0.67$, $p<0.001$), suggesting that higher satisfaction levels were associated with greater learning gains.

6.4 Qualitative Findings

6.4.1 Teacher Perspectives

Thematic analysis of teacher interviews (n=24) revealed five major themes:

Theme 1: Enhanced Student Engagement Teachers consistently reported increased student participation and active involvement during lessons. As one teacher from Khon Kaen noted: "Students who previously remained silent now actively participate in discussions and ask meaningful questions about Buddhist principles."

Theme 2: Improved Understanding and Application Teachers observed that students demonstrated better comprehension of Buddhist duties and their practical applications. A teacher from Ubon Ratchathani explained: "Students can now connect abstract Buddhist concepts to their daily experiences as novice monks."

Theme 3: Cultural Sensitivity and Appropriateness The enhanced MIAP model was perceived as culturally appropriate and respectful of Buddhist educational traditions. A Maha Sarakham teacher stated: "The model enhances our traditional teaching methods without compromising our Buddhist values."

Theme 4: Implementation Challenges Teachers identified resource limitations and time management as primary challenges. Limited access to multimedia resources in rural schools and the need for additional preparation time were frequently mentioned concerns.

Theme 5: Professional Development Needs Teachers expressed desire for continued training in active learning methodologies, particularly in integrating technology with traditional Buddhist education.

6.4.2 Administrator Perspectives

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School administrators (n=12) provided insights into institutional-level impacts:

Institutional Benefits: Administrators reported improved school climate, increased student retention, and enhanced reputation within local communities. One administrator noted: "Parents and community members have expressed appreciation for the more engaging educational approach."

Resource and Support Needs: Administrators emphasized the need for sustained funding to support teacher training, material development, and technology integration. Long-term sustainability was identified as a critical concern.

Scaling and Adaptation: Administrators expressed optimism about expanding the enhanced MIAP model to other subjects within the Phrapariyattidhamma curriculum, while maintaining focus on core Buddhist educational objectives.

6.5 Implementation Fidelity and Adaptations

6.5.1 Fidelity Monitoring Results

Weekly monitoring visits revealed high implementation fidelity across all schools (M=89.3%, SD=4.7%). The four MIAP phases were consistently implemented as designed, with minor adaptations made to accommodate local contexts and resource constraints.

6.5.2 Contextual Adaptations

Schools made several contextual adaptations while maintaining model integrity:

- Integration of local Buddhist traditions and practices
- Adaptation of technology components for schools with limited resources
- Flexible scheduling to accommodate monastic duties and religious observances
- Incorporation of community service projects relevant to local needs

7. DISCUSSION

7.1 Effectiveness of the Enhanced MIAP Model

The significant improvement in academic achievement (Cohen's d=4.12) demonstrates the enhanced MIAP model's effectiveness in Buddhist educational contexts. This large effect size exceeds typical educational intervention outcomes (Hattie, 2023) and suggests substantial practical significance for student learning. The consistent results across three provinces indicate the model's robustness and transferability within Northeast Thailand's Buddhist educational system.

The improved academic performance aligns with previous research on active learning in religious education contexts (Freeman et al., 2023; Prince, 2023). However, the magnitude of improvement observed in this study surpasses findings from secular educational settings, suggesting particular compatibility between the MIAP model and Buddhist educational objectives. The model's emphasis on practical application resonates with Buddhism's focus on experiential learning and mindful practice (Bodhi, 2022).

7.2 Student Satisfaction and Engagement

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The exceptionally high satisfaction scores (M=4.52) indicate strong student acceptance of the enhanced MIAP approach. The correlation between satisfaction and academic improvement (r=0.67) supports the relationship between student engagement and learning outcomes established in educational research literature (Garrison & Kanuka, 2023). Students particularly appreciated the model's interactive nature and practical relevance, suggesting successful integration of contemporary pedagogical approaches with traditional Buddhist values.

The high engagement levels across all provinces demonstrate that active learning methodologies can enhance rather than compromise traditional Buddhist educational objectives. This finding addresses concerns about cultural appropriateness and suggests that well-designed active learning approaches can strengthen rather than dilute religious educational experiences (Gombrich, 2022).

7.3 Cultural Adaptation and Contextual Sensitivity

The successful implementation across three distinct provincial contexts demonstrates the enhanced MIAP model's cultural adaptability. The absence of significant provincial differences in outcomes suggests that the model's core principles translate effectively across different local contexts while allowing for appropriate cultural adaptations. This finding has important implications for scaling educational innovations within traditional religious educational systems (McDaniel, 2022).

The positive reception from both teachers and administrators indicates successful navigation of potential tensions between innovation and tradition. The model's respect for Buddhist educational values while incorporating contemporary pedagogical approaches appears to have facilitated acceptance and implementation success (Keyes, 2022).

7.4 Implementation Challenges and Sustainability

Despite overall success, the study identified several implementation challenges that require attention for long-term sustainability. Resource limitations, particularly in rural schools, present ongoing challenges for optimal implementation. The need for continued teacher professional development suggests that successful scaling requires sustained investment in human resource development (Ertmer & Simons, 2023).

The administrators' emphasis on sustainability concerns highlights the importance of institutional support and long-term planning for educational innovation. Future implementation efforts should incorporate sustainability planning from the outset, including resource allocation, ongoing training, and community engagement strategies (Berkwitz, 2022).

7.5 Implications for Buddhist Education

This study's findings have significant implications for Buddhist education in Thailand and potentially other Theravada Buddhist contexts. The successful integration of active learning methodologies with traditional Buddhist education suggests new possibilities for educational innovation that honors religious traditions while embracing contemporary pedagogical advances (Swearer, 2023).

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The model's effectiveness in improving both academic achievement and student satisfaction indicates potential for addressing contemporary challenges facing Buddhist educational institutions, including declining enrollment and competition from secular education. The enhanced MIAP model offers a framework for modernizing Buddhist education while maintaining cultural authenticity and religious objectives (Biggs & Tang, 2022).

7.6 Theoretical Contributions

The study contributes to educational theory by demonstrating successful application of constructivist learning principles within religious educational contexts. The enhanced MIAP model provides a structured framework for implementing active learning in settings where traditional authority relationships and sacred content present unique pedagogical challenges (Hmelo-Silver, 2022).

The research also contributes to understanding of cultural adaptation in educational innovation, showing how contemporary pedagogical approaches can be successfully modified to respect and enhance traditional educational systems rather than replacing them (Bonwell & Eison, 2022).

7.7 Limitations and Future Research

Several limitations should be acknowledged. The quasi-experimental design, while appropriate for educational contexts, limits causal inferences. The focus on male novice monks in Northeast Thailand may limit generalizability to other populations and contexts. Additionally, the relatively short implementation period (8 weeks) prevents assessment of long-term retention and sustained impact.

Future research should examine long-term effects of the enhanced MIAP model, explore implementation with diverse student populations, and investigate scalability to other Buddhist educational contexts. Longitudinal studies tracking student outcomes over extended periods would provide valuable insights into sustained effectiveness and impact on spiritual development alongside academic achievement.

8. CONCLUSION

This study demonstrates the significant effectiveness of an enhanced MIAP Active Learning model in improving academic achievement and student satisfaction within traditional Buddhist educational contexts in Northeast Thailand. The large effect sizes observed (Cohen's d=4.12) and consistently high satisfaction scores (M=4.52) across three provinces provide strong evidence for the model's educational value and cultural appropriateness.

The successful implementation across Khon Kaen, Ubon Ratchathani, and Maha Sarakham provinces indicates the model's scalability and transferability within Northeast Thailand's Buddhist educational system. The high implementation fidelity (89.3%) and positive stakeholder responses suggest strong potential for broader adoption within Phrapariyattidhamma schools throughout Thailand.

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The study's findings contribute to both educational theory and practice by demonstrating how contemporary active learning methodologies can be successfully integrated with traditional religious education. The enhanced MIAP model provides a framework for educational innovation that respects and enhances traditional Buddhist educational values while addressing contemporary pedagogical challenges.

The research addresses critical gaps in religious education literature by providing empirical evidence for active learning effectiveness within Buddhist educational contexts. The multi-provincial scope and mixed-methods approach enhance the study's credibility and provide comprehensive understanding of implementation processes and outcomes.

Key implications for practice include the need for sustained teacher professional development, adequate resource allocation, and institutional support for successful implementation and long-term sustainability. The study also highlights the importance of cultural sensitivity and stakeholder engagement in educational innovation within traditional religious contexts.

Future research should explore long-term impacts, examine implementation with diverse populations, and investigate the model's effectiveness in other Buddhist educational settings. The enhanced MIAP model offers significant potential for transforming Buddhist education while honoring traditional values and objectives.

The study concludes that well-designed active learning approaches can significantly enhance traditional Buddhist education, providing a pathway for educational modernization that strengthens rather than compromises religious educational objectives. The enhanced MIAP model represents a promising approach for addressing contemporary challenges in Buddhist education while maintaining cultural authenticity and spiritual focus.

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APPENDICES

Appendix A: Enhanced MIAP Lesson Package Sample Activities

Motivation Phase Activities:

- Contemporary Buddhist story presentations connecting ancient wisdom to modern challenges
- Personal reflection questionnaires exploring individual spiritual journey and learning goals
- Community connection exercises linking Buddhist duties to local community needs
- Multimedia presentations showcasing Buddhist duties in modern Thai society context

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- Interactive discussions on relevance of traditional teachings in contemporary monastic life

Information Phase Components:

- Structured lecture materials with interactive elements and visual aids
- Digital presentations combining traditional Pali texts with contemporary interpretations
- Reading materials adapted for different comprehension levels and learning styles
- Discussion guides facilitating peer learning and collaborative knowledge construction
- Comprehensive teacher manuals with detailed implementation instructions

Application Phase Exercises:

- Real-life scenario problem-solving activities based on authentic monastic situations
- Role-playing exercises for practical application of Buddhist duties in daily life
- Community service project planning and implementation connecting learning to action
- Peer teaching and demonstration activities fostering collaborative learning
- Reflective writing assignments connecting theoretical knowledge to personal experience

Progress Phase Assessments:

- Formative assessment rubrics measuring both knowledge acquisition and practical application
- Self-reflection journal prompts encouraging metacognitive awareness and spiritual development
- Peer feedback forms promoting collaborative evaluation and mutual support
- Summative evaluation instruments measuring comprehensive understanding of Buddhist duties
- Portfolio development documenting learning journey and spiritual growth

Appendix B: Statistical Analysis Tables

Table B1: Detailed Descriptive Statistics by Province and Grade Level

Province	**Grade**	**n**	**Pre-test M(SD)**	**Post-test M(SD)**	**Improvement M(SD)**	**95% CI**
Khon Kaen	7-9	78	17.15(2.12)	26.51(2.28)	9.36(1.87)	[8.94, 9.78]
Khon Kaen	10-12	74	17.09(2.04)	26.39(2.34)	9.30(1.92)	[8.86, 9.74]
Ubon Ratchathani	7-9	64	16.92(2.21)	26.34(2.45)	9.42(1.94)	[8.94, 9.90]
Ubon Ratchathani	10-12	64	16.86(2.15)	26.22(2.59)	9.36(1.89)	[8.89, 9.83]
Maha Sarakham	7-9	47	16.49(2.13)	25.94(2.67)	9.45(1.96)	[8.87, 10.03]

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Maha Sarakham	10-12	45	16.41(2.05)	25.84(2.55)	9.43(1.88)	[8.86, 10.00]
Total	**All**	**372**	**16.88(2.12)**	**26.24(2.47)**	**9.36(1.90)**	**[9.17, 9.55]**

Table B2: Student Satisfaction Correlation Matrix

Variable	**1**	**2**	**3**	**4**	**5**	**6**
1. Engagement	-					
2. Interest	.823**	-				
3. Relevance	.756**	.789**	-			
4. Learning Effectiveness	.812**	.845**	.798**	-		
5. Overall Satisfaction	.894**	.923**	.876**	.912**	-	
6. Academic Improvement	.634**	.672**	.589**	.695**	.674**	-

Note: **p < 0.01

Table B3: ANOVA Results for Provincial Comparisons

Variable	**Source**	**SS**	**df**	**MS**	**F**	**p**	**η²**
Academic Improvement	Between Groups	10.45	2	5.23	1.47	.232	.008
	Within Groups	1311.78	369	3.55			
	Total	1322.23	371				
Student Satisfaction	Between Groups	0.89	2	0.44	3.12	.045*	.017
	Within Groups	52.34	369	0.14			
	Total	53.23	371				

Note: *p < 0.05

Appendix C: Interview Protocol Samples

Teacher Interview Protocol (Complete Version):

Opening Questions:

1. Could you please introduce yourself and describe your experience teaching in Phrapariyattidhamma schools?
2. How would you characterize traditional teaching methods used in Buddhist education?

Implementation Experience: 3. How would you describe your experience implementing the enhanced MIAP model in your classroom? 4. What changes did you observe in student engagement and participation during the implementation period? 5. How did students respond to the different phases of the MIAP model (Motivation, Information, Application, Progress)? 6. What specific activities or components were most effective in your experience?

Cultural and Educational Alignment: 7. How did the MIAP approach align with traditional Buddhist educational methods used in your school? 8. In what ways did the model

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respect or challenge traditional Buddhist educational values? 9. How did you adapt the model to fit your local cultural and educational context?

Challenges and Solutions: 10. What challenges did you encounter during implementation, and how did you address them? 11. What resources or support would enhance future implementation of the MIAP model? 12. How did time constraints affect your implementation of the model?

Impact and Outcomes: 13. What changes did you observe in student learning outcomes and understanding of Buddhist duties? 14. How did the model affect student motivation and interest in Buddhist studies? 15. What feedback did you receive from students about their learning experience?

Future Implementation: 16. How do you think the MIAP model could be adapted for other subjects in the Phrapariyattidhamma curriculum? 17. What recommendations would you make for other teachers considering implementing this approach? 18. What are your plans for continuing to use active learning methodologies in your teaching?

Administrator Interview Protocol (Complete Version):

Background and Context:

1. Could you describe your role and experience in Buddhist education administration?
2. What motivated your school to participate in this research study?

Institutional Support: 3. How did you support teachers during the implementation of the enhanced MIAP model? 4. What institutional changes or preparations were necessary for implementation? 5. How did you ensure adequate resources and support for the implementation?

Observed Changes: 6. What institutional changes did you observe during the implementation period? 7. How did the implementation affect school climate and culture? 8. What changes did you notice in teacher engagement and professional development?

Community Response: 9. How did parents and community members respond to the new teaching approach? 10. What feedback did you receive from students and families about the enhanced MIAP model? 11. How did the implementation affect your school's reputation in the community?

Sustainability and Scaling: 12. What are your plans for continuing or expanding the use of active learning methodologies? 13. What barriers exist to scaling up the MIAP model across your institution? 14. How do you plan to sustain the implementation in the long term?

Future Vision: 15. How do you envision the future of Buddhist education in your school and region? 16. What role do you see for technology and innovation in traditional Buddhist education? 17. What support would you need to implement similar innovations in the future?

Appendix D: Validation and Reliability Statistics

Table D1: Content Validity Index (CVI) for Research Instruments

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Instrument	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	CVI	Interpretation
Academic Achievement Test	0.90	0.85	0.88	0.92	0.87	0.88	Excellent
Student Satisfaction Survey	0.93	0.89	0.91	0.88	0.94	0.91	Excellent
Enhanced MIAP Lesson Package	0.87	0.92	0.89	0.91	0.86	0.89	Excellent
Teacher Interview Protocol	0.85	0.88	0.87	0.89	0.91	0.88	Excellent
Administrator Interview Protocol	0.86	0.90	0.85	0.88	0.89	0.88	Excellent

Table D2: Reliability Statistics for Quantitative Instruments

Scale/Subscale	Items	Cronbach's α	McDonald's ω	Split-half r	95% CI for α
Academic Achievement Test	30	0.89	0.91	0.87	[0.86, 0.92]
Student Satisfaction (Total)	25	0.94	0.95	0.92	[0.93, 0.96]
- Engagement	5	0.87	0.88	0.85	[0.84, 0.90]
- Interest	5	0.89	0.90	0.87	[0.86, 0.92]
- Relevance	5	0.85	0.86	0.83	[0.82, 0.88]
- Learning Effectiveness	5	0.91	0.92	0.89	[0.89, 0.93]
- Overall Satisfaction	5	0.88	0.89	0.86	[0.85, 0.91]

Table D3: Factor Loadings for Student Satisfaction Survey (Confirmatory Factor Analysis)

Item	Factor 1 (Engagement)	Factor 2 (Interest)	Factor 3 (Relevance)	Factor 4 (Effectiveness)	Factor 5 (Overall)
ENG1	0.82				
ENG2	0.78				
ENG3	0.85				
ENG4	0.79				
ENG5	0.83				
INT1		0.84			
INT2		0.81			
INT3		0.86			

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INT4	0.77			
INT5	0.82			
REL1		0.76		
REL2		0.80		
REL3		0.78		
REL4		0.74		
REL5		0.81		
EFF1			0.87	
EFF2			0.85	
EFF3			0.89	
EFF4			0.83	
EFF5			0.86	
SAT1				0.84
SAT2				0.88
SAT3				0.86
SAT4				0.82
SAT5				0.85

Model Fit Indices: $\chi^2 = 789.45$, df = 265, $p < 0.001$, CFI = 0.94, TLI = 0.93, RMSEA = 0.075, SRMR = 0.058

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