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Evaluating a Professional and Quality of Life Development Program for Beginning Rural Teachers in Thailand by Kirkpatrick's Model

Waraporn Erawan

Faculty of Education Mahasarakham University

Manit Asanok

Faculty of Education, Mahasarakham University

Prawit Erawan

Office of the Education Council, Thailand

Abstract

Educational inequality in rural contexts requires professional development programs that address both teaching competencies and teachers' quality of life. This study evaluated the *Khruwattanawithi* program for beginning rural teachers in Thailand using Kirkpatrick's model. An explanatory sequential mixed-methods evaluation design was employed with 67 participants who completed surveys and semi-structured interviews. Quantitative results indicated consistently high ratings across all levels, with Reaction receiving the highest scores and Learning slightly lower, while Behaviour and Results showed strong evidence of training transfer and school-level impact. No significant differences were found across gender, field of study, school type, teaching assignment, or debt level, confirming the program's broad applicability. Correlation analysis revealed significant positive associations among all levels, with the strongest link between Behaviour and Results, supporting the theoretical transfer chain. Qualitative evidence further demonstrated gains in digital literacy, classroom research, reflective practice, and systems thinking, which contributed to enhanced student engagement, school innovation, and professional advancement. The findings suggest that holistic, practice-oriented professional development integrating pedagogical competence and well-being support can promote teacher sustainability and educational equity in disadvantaged rural areas, offering insights for scaling similar initiatives in comparable contexts.

Keywords: *Kirkpatrick's Model, professional development, teacher quality of life, beginning teachers, rural education Thailand*

Introduction

Educational inequality between urban and rural areas remains a persistent global challenge. Teachers in remote schools often face limited resources, professional isolation, and multiple community responsibilities that undermine both student learning and career sustainability (Harris et al., 2024; Rogers et al., 2024). International evidence suggests that teacher recruitment alone is insufficient; what sustains teachers in rural settings is high-quality professional development (PD), supportive professional networks, and attention to teachers' quality of life (QoL) (Darling-Hammond et al., 2017; Lampropoulou, 2024; Mydin et al., 2024).

In Thailand, the *Khruwattanawithi* project, established under the Royal Patronage of Her Royal Highness Princess Maha Chakri Sirindhorn, was designed to strengthen both professional development and quality of life for beginning rural teachers (Erawan, 2022). Building on earlier initiatives such as *Kru Rak Thin* (Erawan et al., 2025), which promoted strong ethics and self-efficacy but revealed gaps in digital competence, multi-grade pedagogy, and English proficiency, the *Khruwattanawithi* program explicitly integrates two training

modules, Module 1: Self and Professional Development (reflective practice, goal-setting, financial literacy, peer collaboration, digital literacy, and ongoing evaluation). Module 2: School and Work Development (systems thinking, competency-based pedagogy, student well-being, and professional learning communities).

In addition to these professional challenges, teacher indebtedness has emerged as a critical socio-economic issue in Thailand. Reports indicate that teachers collectively owe approximately 1.1 trillion baht—around 16% of the nation's public debt—with an average debt of about 3 million baht per person (Bangkok Post, 2020; Kenan Foundation Asia, 2023). This financial burden has been shown to cause psychological stress and diminish teachers' professional motivation and engagement in development programs (Peungposopa et al., 2023). Consequently, understanding the influence of debt on teachers' participation and performance provides an important contextual lens for interpreting professional development outcomes.

The study involved beginning teachers from rural schools across Thailand, who worked in resource-limited, multi-grade settings and came from diverse school types and academic backgrounds, with varying levels of personal debt that shaped their professional development needs. To evaluate the effectiveness of such programs systematically, this study applied Kirkpatrick's model (Kirkpatrick & Kirkpatrick, 2009; Sahni, 2020). The model examines outcomes at four levels: (1) Reaction—participants' satisfaction, (2) Learning—knowledge, skills, and attitudes gained, (3) Behaviour—transfer and application in teaching practice, and (4) Results—broader organizational or school-level impact. Accordingly, this study aimed to: 1) Assess program outcomes across Kirkpatrick's four levels, 2) Examine subgroup differences in outcomes based on teachers' characteristics, including gender, field of study, school type, teaching roles, and debt levels, and 3) Analysis of the relationships among the four levels of Kirkpatrick's evaluation.

Evaluation Hypotheses

We offer two hypotheses:

1. There are no significant differences in program evaluation outcomes across Kirkpatrick's four levels when analyzed by gender, field of study, school type, teaching assignment, or debt level.
2. Reaction, Learning, Behaviour, and Results levels are positively correlated, with Behaviour strongly predicting Results, confirming the theoretical transfer chain of Kirkpatrick's model.

Literature Review

Rural Thai Teachers and the Khruwattanawithi Context

Since 1988, Her Royal Highness Princess Maha Chakri Sirindhorn has advanced educational equity through the *Students under the Royal Patronage* project, providing scholarships for disadvantaged youth from lower secondary to the bachelor's level, and fostering graduates with both academic and moral development (Erawan, 2019, cited in Erawan, 2022). Many recipients pursued education degrees and returned to serve as government teachers in rural schools, directly addressing shortages and contributing to sustainable community development. Building on this vision, the *Khruwattanawithi* project was later established under Royal Patronage to enhance the professional and personal capacities of beginning rural teachers. By integrating pedagogical growth with quality-of-life support, the initiative aims to strengthen teacher effectiveness, career sustainability, and student learning outcomes in rural areas where resources and professional development opportunities remain limited (Erawan, 2019, cited in Erawan, 2022).

Teacher Professional Development and Quality of Life

Contemporary scholarship underscores that teacher professional development must encompass both professional competence and quality of life. Teachers reporting higher professional quality of life, particularly compassion satisfaction, also demonstrate stronger self-efficacy and lower burnout, with life satisfaction moderating these relationships (Lampropoulou, 2024). In contrast, accountability-driven systems erode well-being by burdening teachers with excessive documentation (Rogers et al., 2024).

Effective teacher professional development is characterized by sufficient duration, coherence, alignment with teacher needs, and active learning principles (Darling-Hammond et al., 2017). Professional learning communities provide the collaborative infrastructure for reflective dialogue and sustained improvement (Mydin et al., 2024; Liu, 2024; Christensen & Jerrim, 2025; Nguyen et al., 2024). Digital competence has also become essential, with evidence showing that structured digital-literacy programs supported by mentoring increase teacher confidence and transfer into classroom practice (Amemasor et al., 2025; Temirkhanova et al., 2024). Moreover, reflective practice and teacher intuition are recognized as tacit forms of knowledge crucial for adaptive instruction and identity formation (Darling-Hammond & Oakes, 2019; Sun, 2024), while resilience is vital for coping with rural teaching demands (Erawan, 2022). These perspectives support a whole-teacher approach to teacher professional development that integrates professional knowledge, well-being, collaboration, digital skills, and reflective growth.

Designed Training Modules for Khruwattanawithi Teachers

The design of the two-module training program for Khruwattanawithi teachers was proposed by Erawan (2019 cited in Erawan et al., 2025), the two-module training program was designed to address both self-development and school improvement. Module 1 focused on reflective practice, goal-setting, financial literacy, peer collaboration, digital literacy, and evaluation, while Module 2 emphasized systems thinking, competency-based pedagogy, student well-being, professional learning communities (PLCs). This design is consistent with international perspectives on teacher professional development. Eighty beginning recruited teachers under the Khruwattanawithi project who voluntarily participated in the onsite training held in Bangkok, a central and easily accessible location for participants from all regions of Thailand. Distinguished scholars and experts in each subject area were invited to serve as lecturers

Module 1 emphasized self and professional development, incorporating reflective practice, goal setting, life skills, collaborative peer learning, and digital literacy. Reflective practice remains central to effective teacher professional development, enabling teachers to critically evaluate their teaching and sustain professional growth (Darling-Hammond & Oakes, 2019). Integrating life skills such as financial literacy and health into professional learning further promotes sustainability in teaching careers (Pan & Cheng, 2023). Collaborative learning through professional learning communities (PLCs) has been reinforced by recent studies as a mechanism for accountability, professional motivation, and continuous improvement across diverse contexts (Mydin et al., 2024; Liu, 2024; Christensen & Jerrim, 2025; Nguyen et al., 2024). Complementing these areas, digital literacy training builds teachers' confidence in technology integration (Amemasor et al., 2025), while continuous evaluation embedded in professional learning ensures meaningful outcomes (Creswell & Creswell, 2018; Amemasor et al., 2025).

Module 2 addressed school and work development through systems thinking, competency-based pedagogy, student well-being, and professional learning communities. Systems thinking has been identified as essential for fostering innovation and sustainability in educational reform (Amemasor et al., 2025), while competency-based pedagogy strengthens instructional quality and responsiveness to learners' diverse needs (Darling-Hammond et al., 2017; OECD, 2020). Effective teacher professional development has also been shown to support holistic student outcomes and well-being (Pan & Cheng, 2023; Guerra et al., 2024). Strengthening PLCs—both in traditional and online forms—promotes collaboration, digital pedagogy, and collective school improvement (Temirkhanova et al., 2024). Moreover, metacognitive strategies encourage adaptive teaching practices while maintaining quality (Pan & Cheng, 2023). Finally, Kirkpatrick-based evaluation and reflective assessment provide a robust framework to ensure the effectiveness and sustainability of professional development programs (Dorri et al., 2016; Creswell & Creswell, 2018; Mydin et al., 2024).

Kirkpatrick Model as the Evaluation Framework

The Kirkpatrick Model is one of the most widely used frameworks for evaluating training, consisting of four levels—Reaction, Learning, Behaviour, and Results (Kirkpatrick & Kirkpatrick, 2009; Nawaz et al., 2022). It has been refined over time to better align with contemporary training contexts, leading to the development of the

New World Kirkpatrick Model. The updated approach emphasises outcome-driven planning—beginning with the desired organisational results and working backward—while also allowing the four levels to be evaluated concurrently rather than in a rigid sequence. These adaptations demonstrate the model's flexibility and its responsiveness to evolving learning environments and performance demands. (Kirkpatrick & Kirkpatrick, 2016, p.11). It connects participants' immediate satisfaction to actual behavioural changes and organizational outcomes, and has been applied in fields such as education, medicine, tourism, and management.

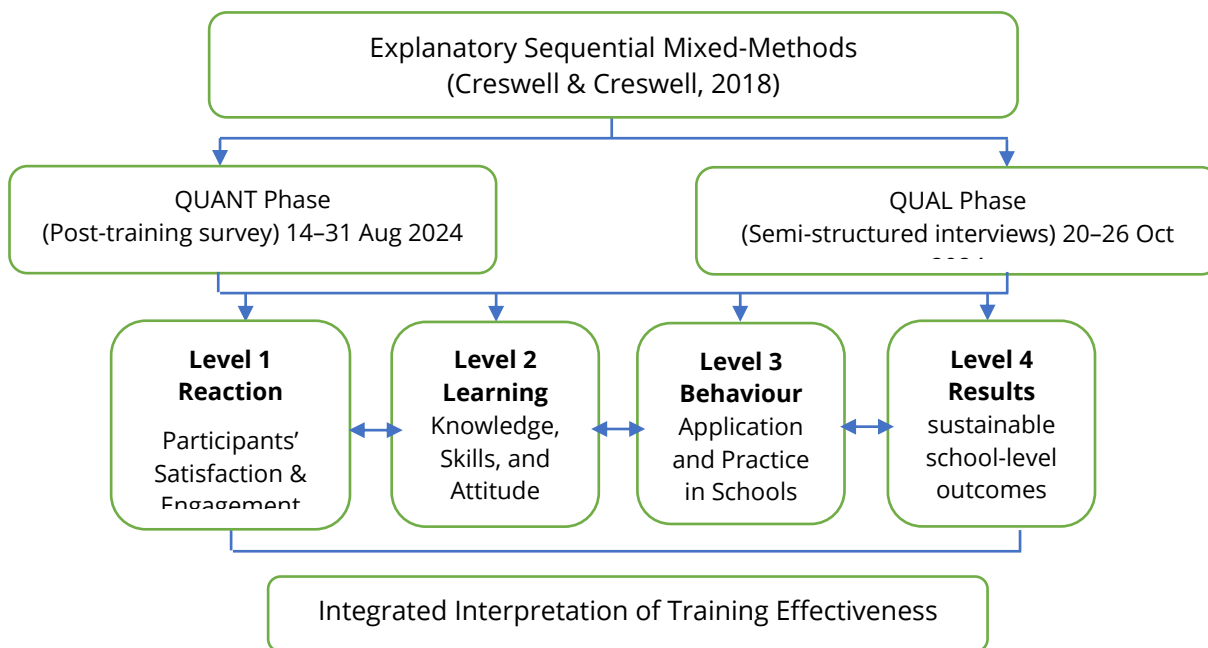
In education, the model has been valuable for evaluating teacher and leadership development programs. Studies show consistently high levels of satisfaction and learning, though the transfer to classroom practice often remains limited (Mahmoodi et al., 2019; Dewi & Kartowagiran, 2018). Research during the COVID-19 pandemic (Dwikurnaningsih & Waruwu, 2022) confirmed high satisfaction and improved knowledge, but only moderate behavioural application, echoing broader concerns that learning does not easily translate into sustained practice (Paull et al., 2016). In addition, Shakya et al. (2024) applied the first three levels of the model to evaluate a pre-medical foundation course in Nepal and found that students were satisfied, demonstrated learning gains, and were able to apply their knowledge in real contexts. Puripunyanich (2025) employed the first two levels to assess an online English teacher training program and reported that participants showed high satisfaction, enhanced knowledge, and positive attitudes. Jaworski et al. (2025) used the model to evaluate technology-enhanced learning in optometric education, revealing positive results in reaction, learning, and behavioural levels, although the study lacked assessment at the organizational impact level. Lau et al. (2025) applied all four levels to assess a faculty development program in Health Systems Improvement and found clear outcomes ranging from participant satisfaction to organizational impact. Alsalamah & Callinan (2021) adapted Kirkpatrick's model to evaluate training for female head teachers in Saudi Arabia and found it highly effective in assessing outcomes and identifying program strengths and weaknesses.

Methods

Evaluation Design

This study employed an explanatory sequential mixed-methods design. (Creswell & Creswell, 2018): a post-training survey (14–31 August 2024) was followed by semi-structured interviews (20–26 October 2024) to explain and elaborate the quantitative results, Data were collected concurrently using a questionnaire based on Kirkpatrick's model and semi-structured interviews with participating teachers. Quantitative data (means and standard deviations) provided overall patterns, while qualitative data (coding and thematic analysis) offered in-depth insights. The two data strands were analyzed separately and then merged to yield comprehensive interpretations of the training program's effectiveness. (see Figure 1).

Figure 1. Evaluation Design of the Training Program for Khruwattanawithi Teachers



Participants

Volunteer sampling was used to collect data from a total of 80 beginning teachers from rural schools across Thailand (Khruwattanawithi teachers Cohort 4 and 5). Khruwattanawithi teachers had 67 valid responses (Cohort 4: 38, 56.7%; Cohort 5:29, 43.3%). They included teachers from the North (64.2%), Central/Eastern region (16.4%), South (4.5%), and Northeast (14.9%). The participants' demographic information is presented in Table 1.

Table 1: Demographic Information of the Beginning Teachers

Variable	North		Central/East		South		Northeast		Total	
	N	%	N	%	N	%	N	%	N	%
Khruwattanawithi										
Cohort 4	23	60.5	6	15.8	3	7.9	6	15.8	38	56.7
Cohort 5	20	69.0	5	17.2	0	0.0	4	13.8	29	43.3
Gender										
Male	12	80.0	1	6.7	0	0.0	2	13.3	15	22.4
Female	31	59.6	10	19.2	3	5.8	8	15.4	52	77.6
Field of Study										
Sciences	8	50.0	2	12.5	1	6.2	5	31.2	16	23.9
Social Sciences	35	68.6	9	17.6	2	3.9	5	9.8	51	76.1
School Type										
Primary School	25	71.4	6	17.1	1	2.9	3	8.6	35	52.2
Educational Opportunity Expansion School*	18	64.3	3	10.7	2	7.1	5	17.9	28	41.8
Secondary School	0	0.0	2	50.0	0	0.0	2	50.0	4	6.0
Teaching Assignment										
Class Teaching	15	62.5	5	20.8	0	0.0	4	16.7	24	35.8
Subject Teaching	15	68.2	3	13.6	1	4.5	3	13.6	22	32.8
Multi-grade Teaching	13	61.9	3	14.3	2	9.5	3	14.3	21	31.3
Debt Level (Baht)										
None	4	57.1	2	28.6	0	0.0	1	14.3	7	10.4
≤ 100,000	2	100.0	0	0.0	0	0.0	0	0.0	2	3.0
100,001–300,000	7	87.5	1	12.5	0	0.0	0	0.0	8	11.9
300,001–500,000	2	40.0	1	20.0	1	20.0	1	20.0	5	7.5
≥ 500,001	28	62.2	7	15.6	2	4.4	8	17.8	45	67.2
Total	43	64.2	11	16.4	3	4.5	10	14.9	67	100

*Educational Opportunity Expansion School (EOES) in Thailand is a type of lower secondary school (grades 7-9) established to improve access to secondary education, particularly for students from economically disadvantaged or rural backgrounds.

Evaluation Instruments

Two instruments were used in this study.

1. A 25-item questionnaire was developed based on Kirkpatrick's model, with items distributed as follows: Reaction (8 items), Learning (5 items), Behaviour (8 items), and Results (4 items). All items utilized a 6-point Likert scale ranging from 0 (not at all) to 5 (to the greatest extent). Researchers can potentially reduce central tendency bias by using even-numbered scales (4, 6, 8, or 10 points) to guide respondents toward a specific side of the scale (Kusmaryono et al., 2022), and the 6-point scale might appear to measure traits more accurately (Chang, 1994). Content validity was reviewed by three experts, with the Index of Item-Objective Congruence (IOC) values ranging from 0.67 to 1.00, and Cronbach alphas for this questionnaire were .98. The scoring criteria are presented in Appendix 1.

2. Semi-structured interviews were conducted with 30 teachers. The interview protocol included guiding questions mapped to each Kirkpatrick level, Content validity was reviewed by three experts, with the Index of Item-Objective Congruence (IOC) values ranging from 0.67 to 1.00, exceeding the acceptance threshold of 0.50.

Data Collection

The data collection was conducted during the first semester of the 2024 academic year, with Khruwattanawithi teachers as participants. Formal collaboration was secured through the Faculty of Education, Mahasarakham University. For the quantitative phase, data were gathered through a Google Form survey administered between 14 and 31 August 2024, immediately after the completion of Module 2 (the training for 67 beginning teachers was organized from 5–10 February 2024 (Module 1) and 9–13 August 2024 (Module 2)). Respondents were required to register and were limited to a single submission. For the qualitative phase, semi-structured telephone interviews were conducted with 30 Khruwattanawithi teachers (five teachers per region) by 6 interviewers, from 20 to 26 October 2024, approximately two months after they had returned to their schools. All 6 interviewers were experienced members of the research team who had conducted multiple interviews previously and shared the same teaching background as the interviewees. Prior to data collection, the team held preparatory meetings to ensure conceptual alignment and conducted pilot interviews to enhance consistency and reliability. It is also noteworthy that the interviewers and interviewees had no prior acquaintance, thereby minimizing potential bias in the data collection process. The interviews addressed four domains derived from Kirkpatrick's model. Data from both phases were analysed in line with the research objectives.

Ethical approval was obtained from the Mahasarakham University Research Ethics Committee (Approval No. 587-593/2567). Informed consent was collected from all participants.

Data Analysis

Quantitative data was conducted using descriptive statistics, including number, percentage, mean, and standard deviation, for fundamental data analysis of the sample and the rating scale questionnaire. The normality test findings indicate that the data does not follow a normal distribution ($p < 0.05$). Consequently, the hypothesis was examined using nonparametric statistics with the Mann-Whitney U Test for the difference between Kirkpatrick's four levels based on gender (male/female) and field of study (Sciences/Social Sciences). The Kruskal-Wallis Test was used based on school type (Primary School, Educational Opportunity Expansion School, Secondary School), teaching assignment (Class Teaching, Subject Teaching, Multi-grade Teaching), and debt level. The Spearman's rho for analysis of the relationships among the four levels of Kirkpatrick's model. Although Kirkpatrick's model was originally designed as a sequential framework progressing from reaction to results (Kirkpatrick & Kirkpatrick, 2006), recent studies have recognized its flexibility for concurrent use in comprehensive evaluations. Following Puripunyanich (2025), this study employed the four levels as interrelated dimensions within a single questionnaire to capture participants' perceptions of satisfaction, learning, behaviour, and results simultaneously. This cross-sectional design provides a holistic understanding

of training effectiveness rather than a temporal progression, consistent with contemporary applications of the model in educational evaluation (Jaworski et al., 2025). Moreover, Kirkpatrick and Kirkpatrick (2016) themselves note that once the training has been implemented and evaluation is underway, the four levels may be examined in accordance with their numerical order of 1–4, but do not need to be assessed in a strictly linear or sequenced manner. Therefore, assessing all four levels at the same time is both theoretically legitimate and methodologically appropriate for the purposes of this study.

Qualitative data were analysed using Braun and Clarke’s (2006 cited in Braun & Clarke, 2024) six-phase thematic analysis, applied deductively through Kirkpatrick’s model (Reaction, Learning, Behaviour, Results) while also allowing inductive insights from participants’ narratives. With 30 interviews, coding was conducted manually using tabular matrices to ensure systematic consistency. Trustworthiness was enhanced through peer debriefing and independent review, as well as member checking with selected participants. The analysis produced four overarching themes aligned with Kirkpatrick’s models, together with nuanced sub-themes reflecting the lived experiences of rural teachers in the *Khruwattanawithi* program. These findings not only validate the model’s relevance in this context but also provide rich qualitative evidence that triangulates with the quantitative results, thereby strengthening the overall rigor of the study.

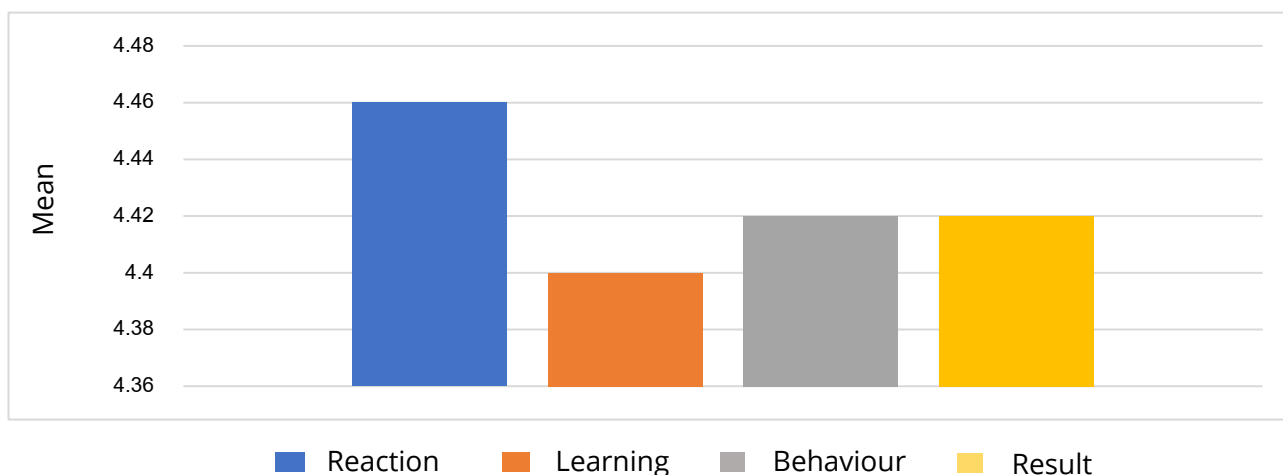
Results

Quantitative Findings

The descriptive Statistics of 67 beginning teachers’ evaluations across Kirkpatrick’s models are shown at Figure 2. The overall mean score was high ($M = 4.43$, $SD = 0.66$), with ‘Reaction’ rated highest ($M = 4.46$) and ‘Learning’ lowest ($M = 4.40$), although all dimensions remained within the ‘High’ to ‘Highest’ range. Most items were rated at the highest level, while six items—including program duration (item 6), workload management (item 11), teaching reflection (item 12), feedback from colleagues (item 18), networking opportunities (item 19), and knowledge sharing (item 25)—were rated at the high level rather than the highest. These interpretations were based on established criteria for Likert-scale mean scores, where values between 3.50–4.49 indicate a high level and values above 4.50 indicate the highest level (Best & Kahn, 2006).

Regarding distributional properties, all skewness values were negative, indicating that responses clustered at the higher end of the scale, with particularly strong left skew for Reaction ($SK = -2.11$). Kurtosis values were positive across dimensions, with the overall value exceeding 5.0, reflecting a leptokurtic distribution in which scores were concentrated around the mean. These patterns demonstrate that teachers’ evaluations were consistently favourable with limited variability, confirming the program’s broadly positive reception across dimensions. Details are presented in the Table 5. (Appendix 2)

Figure 2. Descriptive Statistics of Kirkpatrick’s Model



A comparison of Kirkpatrick's model among beginning teachers, looking at differences based on gender, and field of study, using the Mann-Whitney U test showed that (as shown in Table 2):

Kirkpatrick' model (reaction, learning, behaviour, and results) of beginning teachers of both males and females were not different. (Asymp. Sig. = 0.442, 0.855, 0.820, and 0.316, respectively).

Kirkpatrick's models (reaction, learning, behaviour, and results) of beginning teachers of both field of study, Sciences and Social Sciences, were not different (Asymp. Sig. = 0.430, 0.339, 0.790 and 0.365, respectively).

Table 2. Testing Differences in Kirkpatrick's model Among Beginning Teachers by Gender and Field of Study Using Man - Whitney U Test

Variables	Reaction		Learning		Behaviour		Results		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Gender										
N	15	52	15	52	15	52	15	52	15	52
Mean Rank	37.37	33.03	33.20	34.23	33.00	34.29	29.67	35.25	32.67	34.38
Sum of Ranks	560.5	1717.5	498.0	1780.0	495.0	1783.0	445.0	1833.0	490.0	1788.0
Mann-Whitney U	339.5		378.0		375.0		325.0		370.0	
Sig.	0.442		0.855		0.820		0.316		0.763	
Field of Study	Sciences	Social Sciences	Sciences	Social Sciences	Sciences	Social Sciences	Sciences	Social Sciences	Sciences	Social Sciences
N	16	51	16	51	16	51	16	51	16	51
Mean Rank	30.69	35.04	30.00	35.25	32.88	34.35	31.72	34.72	30.16	35.21
Sum of Ranks	491.0	1787.0	480.0	1798.0	526.0	1752.0	507.5	1770.5	482.5	1795.5
Mann-Whitney U	355.0		344.0		390.0		371.5		346.5	
Sig.	0.430		0.339		0.790		0.582		0.365	

The Kruskal-Wallis test showed no statistically significant differences ($p > .05$) across Kirkpatrick's model—Reaction, Learning, Behaviour, and Results—when comparing teachers by school type (primary school, educational opportunity expansion school, secondary school), teaching assignment (class teaching, subject teaching, multi-grade teaching), or debt level. This indicates that program outcomes were consistent across groups, with teachers reporting similar responses, learning, behavioural changes, and results. (As shown in Table 3)

Table 3. Testing Differences in Kirkpatrick's Model Among Beginning Teachers by School Type, Teaching Assignment, and Debt Level Using Kruskal Wallis Test

Variables		N	Mean Rank	Kruskal-Wallis H	df	Asymp. Sig.
School Type						
Reaction	Primary School	35	34.21	0.037	2	0.981
	Educational Opportunity Expansion School	28	33.98			
	Secondary School	4	32.25			
	Total	67				
Learning	Primary School	35	34.16	.809	2	0.667
	Educational Opportunity Expansion School	28	32.68			
	Secondary School	4	41.88			
	Total	67				
Behaviour	Primary School	35	31.59	1.209	2	0.546
	Educational Opportunity Expansion School	28	36.30			
	Secondary School	4	39.00			
	Total	67				
Results	Primary School	35	35.29	0.484	2	0.783
	Educational Opportunity Expansion School	28	33.09			
	Secondary School	4	29.13			
	Total	67				
Teaching Assignment						
Reaction	Class Teaching	24	31.06	0.878	2	0.645
	Subject Teaching	22	35.39			
	Multi-grade Teaching	21	35.90			
	Total	67				
Learning	Class Teaching	24	29.92	1.947	2	0.378
	Subject Teaching	22	34.84			
	Multi-grade Teaching	21	37.79			
	Total	67				
Behaviour	Class Teaching	24	30.27	2.581	2	0.275
	Subject Teaching	22	39.23			
	Multi-grade Teaching	21	32.79			
	Total	67				

Variables		N	Mean Rank	Kruskal-Wallis H	df	Asymp. Sig.
Results	Class Teaching	24	31.65	0.488	2	0.783
	Subject Teaching	22	35.91			
	Multi-grade Teaching	21	29.13			
	Total	67				
Debt Level (Baht)						
Reaction	None	7	42.50	1.715	4	0.788
	≤ 100,000	2	33.00			
	100,001–300,000	8	30.75			
	300,001–500,000	5	31.30			
	≥ 500,001	45	33.60			
	Total	67				
Learning	None	7	35.50	3.069	4	0.546
	≤ 100,000	2	33.75			
	100,001–300,000	8	42.75			
	300,001–500,000	5	24.20			
	≥ 500,001	45	33.31			
	Total	67				
Behaviour	None	7	44.50	5.646	4	0.227
	≤ 100,000	2	56.50			
	100,001–300,000	8	33.31			
	300,001–500,000	5	28.20			
	≥ 500,001	45	32.13			
	Total	67				
Results	None	7	41.71	1.942	4	0.746
	≤ 100,000	2	39.00			
	100,001–300,000	8	36.19			
	300,001–500,000	5	29.00			
	≥ 500,001	45	32.74			
	Total	67				

The correlation analysis of Kirkpatrick's model revealed that all variables were positively and significantly correlated at the .01 level (two-tailed), as shown in Table 1. Reaction was correlated with Learning ($r = .689$), Behaviour ($r = .694$), and Result ($r = .671$). Learning was correlated with Behaviour ($r = .652$) and Result ($r = .734$). Behaviour demonstrated the strongest correlation with Result ($r = .762$). Overall, the findings indicate that the four levels of Kirkpatrick's model are interrelated, with positive and significant correlations observed across all dimensions, thereby confirming the coherence of the model within this study context. (As shown in Table 4)

Table 4. Correlations Among Kirkpatrick's Four Levels Model

	Reaction	Learning	Behaviour	Result
Reaction	1.000	.689**	.694**	.671**
Learning		1.000	.652**	.734**
Behaviour			1.000	.762**
Result				1.000

** Correlation is significant at the 0.01 level (2-tailed).

Qualitative Findings

The findings from the interviews are as follows:

Reaction Level. Most participating teachers expressed satisfaction with the training in all dimensions, including content, activities, and the learning atmosphere. Many described the program as “*high quality*” and “*inspiring*,” particularly sessions on technology use and classroom research, which directly matched the needs of rural teachers. For example, one teacher from the North stated, “*This training gave me inspiration and positive energy to continue my work.*” Similarly, a teacher from the South reflected, “*The content matched my expectations and, in many aspects, exceeded them.*”

Learning Level. The interviews revealed that teachers gained new knowledge and skills in both professional and personal development. Several noted that they became more proficient in using AI and digital tools such as Canva, and developed a clearer understanding of classroom research methods. One teacher from the North explained, “*I learned how to use new digital tools to create teaching materials.*” Another commented, “*This training helped me better understand how to conduct classroom research.*” Some also mentioned improvements in communication skills and personal presentation, which enhanced their roles within the community.

Behaviour Level. Upon returning to their schools, many teachers reported applying what they had learned in practice. One teacher from the North affirmed, “*I used systems thinking from the training to analyse problems in my school and design new activities that better meet students' needs.*” A teacher from the Central region added, “*After the training, I began using AI to design materials and created a network with other teachers to exchange teaching methods.*”

Results Level. The program's impact was evident at multiple levels. Many teachers reported that their students showed “*greater interest in learning*” and that their schools developed new approaches to student development. One teacher remarked, “*The training provided my school with new strategies for improving student learning.*” Others pointed to professional benefits, such as enhanced research capacity supporting academic outputs and career progression. As a teacher from the North explained, “*What I gained from the training helped me advance in my professional rank.*”

The integration of quantitative and qualitative evidence enhances the study's credibility. High ratings of Reaction and Behaviour were corroborated by teachers' accounts of program relevance and classroom application. Slightly lower Learning scores were explained by the emphasis on practical rather than theoretical knowledge, while high Results scores were substantiated by reports of student and school-level benefits. This convergence and complementarity demonstrate that the program's practice-oriented design not only fostered satisfaction but also enabled authentic transfer and systemic change.

Discussion

The study demonstrated that beginning teachers in the Khruwattanawithi program reported consistently high outcomes across Kirkpatrick's four levels. At the Reaction level, participants expressed strong satisfaction, aligning with Kirkpatrick's model (1994) view that satisfaction is a foundation for deeper engagement. High

ratings converged with qualitative accounts describing the training as “*inspiring*” and “*exceeding expectations*,” especially regarding AI and classroom research components (Dwikurnaningsih & Waruwu, 2022; Suparno et al., 2023; Pinpitak, 2022). However, consistent with Wartenberg et al. (2023), high satisfaction alone does not guarantee enduring outcomes.

At the Learning level, gains were rated slightly lower than other dimensions, a divergence from prior studies reporting strong knowledge increases (Nawaz et al., 2022; Dewi & Kartowagiran, 2018; Dorri et al., 2016). Qualitative insights clarified this discrepancy: teachers emphasized practical competencies (AI tools, Canva, classroom research methods) over theoretical knowledge. This pattern reflects wider arguments that satisfaction and wellbeing do not automatically yield deep cognitive change (Wartenberg et al., 2023; Dreer et al., 2023).

At the Behaviour level, evidence indicated substantial classroom transfer, including lesson redesign, AI-assisted instruction, and participation in PLCs. These findings contrast with earlier reports that behaviour change often lags perceived learning (Dwikurnaningsih & Waruwu, 2022) and instead support Suparno et al. (2023), who found that even modest learning gains can drive meaningful practice change when content is directly applicable. This underscores the importance of practice-oriented tasks in accelerating transfer (Nguyen et al., 2024).

At the Results level, the program’s impact extended to organizational outcomes, such as enhanced student engagement, school-level innovation, and career advancement opportunities. These findings echo Lampropoulou’s (2024) argument that teacher well-being and self-efficacy are essential for long-term sustainability. The alignment of individual behaviour with systemic outcomes also addresses gaps noted in Nawaz et al. (2022), providing rare empirical evidence of such convergence in rural schools.

Subgroup analyses further reinforced the program’s generalizability. No significant differences emerged by gender, consistent with findings that well-designed PD benefits both male and female teachers (Diomar & Ernie, 2025; Alastor et al., 2025). While cultural dynamics may shape specific experiences (Nguyen et al., 2024), gender is not a fixed determinant. Likewise, teachers from both Sciences and Social Sciences reported comparable benefits, supporting meta-analytic evidence that structural features of PD (active learning, collaboration, coaching, sufficient duration) outweigh subject-area affiliation (Sims et al., 2024; Lindvall et al., 2025; Sims et al., 2021). The lack of variation by school type, teaching assignment, or debt level further suggests that strong design can mitigate contextual disparities (Darling-Hammond et al., 2017; Lampropoulou, 2024).

The findings revealed significant positive correlations among all four levels of Kirkpatrick’s model, with the strongest relationship observed between behaviour and results ($r = .762$). This outcome reinforces the theoretical transfer chain, suggesting that behavioural changes are a key driver of tangible results. Similar patterns have been reported in recent evaluations, where training transfer was identified as the crucial mechanism linking learning to organizational outcomes (Kauffeld et al., 2025; O’Neill, 2025). The moderate-to-strong correlations between learning and both behaviour ($r = .652$) and results ($r = .734$) indicate that acquired knowledge was effectively applied and contributed to measurable impacts. These findings are consistent with recent studies applying Kirkpatrick’s framework in health and professional education, which found that quality learning experiences predicted sustained behavioural change and improved outcomes (Hoppmann et al., 2025; Allen et al., 2022). Notably, reaction also showed significant associations with learning, behaviour, and results, supporting the view that meaningful engagement and perceived utility, rather than mere satisfaction, can predict deeper learning and transfer (Quinton et al., 2022).

Policy and Practical Implications

The findings confirm that behavioural change is the most consistent driver of tangible outcomes in schools. In the Thai context, recent reforms already point in this direction: case-study evidence from the Healthy School Empowerment Project shows that school-based, practice-oriented professional development—built around

collaborative inquiry and ongoing classroom application—leads to sustained improvements in teaching quality and whole-school performance (Erawan & Erawan, 2024). National initiatives led by the Teachers' Council of Thailand to promote Professional Learning Communities (PLCs) likewise indicate that on-the-job, collegial learning can change teachers' instructional practices and enhance students' achievement when teachers perceive the activities as relevant and useful (Meesuk et al., 2021). Policy frameworks linked to programmes such as the Teacher–School Quality Programme and the Equitable Education Fund's whole-school development model further underscore the need to prioritise continuous, school-embedded professional learning, supported by mentoring and networks, rather than short, one-off workshops (Equitable Education Fund, 2023; Office of the Education Council, 2021).

In rural and resource-constrained contexts, the implications extend beyond professional learning to workforce sustainability. Teacher development should integrate both professional competencies and teachers' well-being, as living conditions and professional security directly influence motivation and retention (Guenther & Relf, 2025; Delahunty, 2022). Governments and educational authorities should therefore support flexible, low-cost training through digital platforms and professional learning communities, complemented by long-term incentives such as housing, financial support, and clear career pathways (Bahl et al., 2024).

Furthermore, rural teacher development should adopt community-led and place-based approaches that leverage local social and cultural capital, alongside 'grow-your-own teachers' strategies to strengthen the pipeline of local educators. This reduces dependence on urban teacher supply and enhances workforce sustainability (Guenther & Cuervo, 2025; Halsey, 2018; Louth, 2025; Stone et al., 2022). Partnerships between universities, schools, communities, and industry are also critical to aligning teacher preparation with regional needs.

Finally, teacher development initiatives in rural settings should be co-designed with communities to ensure contextual relevance and responsiveness. Collaborative networks that mobilize resources across sectors can reduce structural barriers and expand access (Death & Weller, 2025). Holistic support systems—covering professional development, mentoring, housing, and financial incentives—are vital to foster belonging and ensure long-term retention (Ashenden & Millington, 2025). Importantly, reframing rurality as an asset for innovation and sustainability, rather than a limitation, should underpin all policy approaches.

Conclusion

This study demonstrates that a well-designed professional development program can generate positive outcomes across all four levels of Kirkpatrick's framework—ranging from teacher satisfaction to organizational improvement—without significant variation by gender, school type, teaching assignment, or socioeconomic background. The findings highlight that program design elements, particularly relevance, collaboration, and sustained practice, are the primary determinants of effectiveness. By integrating pedagogical development with quality-of-life support, such initiatives can foster not only immediate professional growth but also long-term sustainability in teaching. These results affirm the potential for scalable and equitable professional development models, while underscoring the importance of continuous refinement and future research to ensure lasting impact for teachers and students alike.

Limitations

This study has several limitations that should be acknowledged. First, the evaluation of the Khruwattanawithi development program was based primarily on teachers' self-reported data collected through questionnaires and interviews. While such data provide valuable insights into participants' perceptions, they may not fully capture actual changes in practice or objective outcomes at the school or student level. Second, the reliance on perception-based measures may introduce response biases, such as social desirability or overestimation of positive outcomes, particularly given the prestige of the program under royal patronage. Third, the study design did not include pretest and post-tests, classroom observations, or longitudinal follow-up, which could have provided stronger evidence of causal impacts on teachers' professional practice and quality of life.

Finally, the findings are context-specific to Khruwattanawithi teachers in rural Thailand, which may limit the generalizability of the results to other teacher development programs or educational contexts. Despite these limitations, the study contributes valuable evidence on how the Kirkpatrick model can be applied to evaluate professional and quality of life development initiatives for teachers in disadvantaged rural settings.

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Appendix 1

The scoring criteria for all tools were calculated by sizing the score range for each step, then it was used to determine the score in each range which the score range size was (highest-lowest score) /6 therefore, the range size was (5-0) /6 that was 0.83. (Sunthornchai, 2021 cited in Erawan, 2010). Therefore, the score for each range size was as follows:

Level	Score Range	Interpretation
1	0.00-0.82	Not having these attributes.
2	0.83-1.65	Having these attributes at the lowest level
3	1.66-2.48	Having these attributes at a low level
4	2.49-3.31	Having these attributes at a moderate level
5	3.32-4.34	Having these attributes at a high level
6	4.35-5.00	Having these attributes at the highest level

Appendix 2

Table 5. Descriptive Statistics of the Kirkpatrick's model (n=67)

Kirkpatrick Level and Items	Mean	Std Dev	Interpreting	Skewness (SE SK)	Confidence Intervals of 95% of SK	Kurtosis (SE KU)	Confidence Intervals of 95% of KU
Reaction Level	4.46	0.70	Highest	-2.11 (0.29)*	-2.69 to - 1.54	4.39 (0.58)	3.26 to 5.52
1. I liked the process and activities.	4.52	0.77	Highest	-1.85 (0.29)*	-2.42 to - 1.28	3.41 (0.58)	2.28 to 4.54
2. The workshop was useful for my work.	4.54	0.72	Highest	-1.73 (0.29)*	-2.31 to - 1.16	3.07 (0.58)	1.94 to 4.20
3. The workshop met my expectations.	4.46	0.78	Highest	-1.62 (0.29)*	-2.19 to - 1.04	2.47 (0.58)	1.34 to 3.61
4. I enjoyed the workshop.	4.40	0.84	Highest	-1.53 (0.29)*	-2.10 to - 0.95	1.97 (0.58)	0.84 to 3.10
5. I gained new knowledge and/or skills.	4.51	0.77	Highest	-1.59 (0.29)*	-2.16 to - 1.01	2.08 (0.58)	0.95 to 3.22
6. The duration of the workshop was appropriate.	4.22	0.92	High	-1.31 (0.29)*	-1.89 to - 0.74	1.72 (0.58)	0.59 to 2.86
7. The budget regulations were flexible.	4.43	0.89	Highest	-1.91 (0.29)*	-2.48 to - 1.33	3.73 (0.58)	2.60 to 4.86
8. Overall, the workshops were of high quality.	4.58	0.82	Highest	-2.49 (0.29)*	-3.06 to - 1.91	6.77 (0.58)	5.64 to 7.91
Learning Level	4.40	0.70	Highest	-1.85 (0.29)*	-2.42 to - 1.27	3.90 (0.58)	2.77 to 5.03
9. My skills improved after the training.	4.43	0.80	Highest	-1.86 (0.29)*	-2.44 to - 1.29	4.70 (0.58)	3.57 to 5.83
10. My knowledge	4.45	0.74	Highest	-1.41 (0.29)*	-1.98 to - 0.83	1.93 (0.58)	0.80 to 3.06

increased after the training.								
11. I could change myself to meet expectations.	4.28	0.83	High	-1.07 (0.29)*	-1.64 to - 0.50	0.65 (0.58)	-0.48 to 1.78	
12. I am confident I can accomplish what I set out to do.	4.30	0.80	High	-1.15 (0.29)*	-1.72 to - 0.58	1.18 (0.58)	0.05 to 2.32	
13. I am motivated to achieve the best for my students.	4.54	0.75	Highest	-1.72 (0.29)*	-2.29 to - 1.14	2.70 (0.58)	1.57 to 3.84	
Behaviour Level	4.42	0.66	Highest	-2.04 (0.29)*	-2.62 to - 1.47	4.70 (0.58)	3.57 to 5.84	
14. I applied the knowledge gained effectively.	4.39	0.80	Highest	-1.75 (0.29)*	-2.32 to - 1.18	4.46 (0.58)	3.32 to 5.59	
15. I planned my work better.	4.36	0.81	Highest	-1.46 (0.29)*	-2.03 to - 0.88	2.10 (0.58)	0.97 to 3.24	
16. My behaviour improved positively.	4.48	0.79	Highest	-1.47 (0.29)*	-2.04 to - 0.90	1.57 (0.58)	0.43 to 2.70	
17. I effectively transferred knowledge to students.	4.36	0.73	Highest	-1.16 (0.29)*	-1.73 to - 0.58	1.55 (0.58)	0.42 to 2.68	
18. I became more self-confident.	4.31	0.84	High	-1.29 (0.29)*	-1.86 to - 0.72	1.36 (0.58)	0.22 to 2.49	
19. I became a role model for others.	4.24	0.78	High	-1.24 (0.29)*	-1.81 to - 0.67	3.04 (0.58)	1.91 to 4.17	
20. I was more dedicated to developing students.	4.60	0.68	Highest	-1.73 (0.29)*	-2.31 to - 1.16	2.81 (0.58)	1.68 to 3.95	

21. I remained committed to doing good even after training.	4.64	0.69	Highest	-2.24 (0.29)*	-2.82 to - 1.67	5.30 (0.58)	4.16 to 6.43
Results Level	4.42	0.70	Highest	-1.88 (0.29)*	-2.46 to - 1.30	4.30 (0.58)	3.17 to 5.44
22. I was satisfied with the outcomes for myself.	4.43	0.80	Highest	-1.50 (0.29)*	-2.07 to - 0.93	1.94 (0.58)	0.81 to 3.08
23. The outcomes were worth the allocated budget.	4.57	0.72	Highest	-1.86 (0.29)*	-2.43 to - 1.28	3.46 (0.58)	2.32 to 4.59
24. My students benefited from my participation.	4.48	0.70	Highest	-1.53 (0.29)*	-2.10 to - 0.96	2.87 (0.58)	1.74 to 4.00
25. I shared my knowledge with colleagues and students.	4.19	0.89	High	-1.32 (0.29)*	-1.90 to - 0.75	2.05 (0.58)	0.91 to 3.18
Overall	4.43	0.66	Highest	-2.19 (0.29)*	-2.77 to - 1.62	5.05 (0.58)	3.92 to 6.19

Note * Significant at $p < 0.05$ level



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