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School Learning Ecosystems Influencing Teachers’ Work Happiness: A Structural Equation Modeling Study in Thailand

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Abstract	Author Affiliation
Background: Teachers’ work happiness is important for effective teaching and student learning. In Thailand, teachers have faced increasing professional demands due to ongoing educational reform and the integration of digital technologies in schools. However, research remains fragmented, and few studies in Thailand have examined whether these influences vary by school size. Objective: This study aimed to (1) develop and test a causal model of the school learning ecosystem influencing teachers’ work happiness; and (2) examine differences by school size using multi-group SEM. Design and Methodology: Data were collected from 913 teachers and school administrators in Thailand using a five-point Likert-scale questionnaire through multistage stratified random sampling. Analyses in Mplus included CFA, SEM, and multi-group SEM. Results: The measurement model showed excellent fit [χ^2 (199) = 517.39, CFI = .97, TLI = .96, RMSEA = .04, SRMR = .04]. The SEM results indicated that learning and collaborative culture and stability and professional development significantly influenced teachers’ work happiness. The multi-group model also showed acceptable fit [χ^2 (898) = 1495.87, CFI = .95, TLI = .94, RMSEA = .05, SRMR = .08]. Stability and professional development had a significant effect across all school sizes, while the effect of learning and collaborative culture varied by school size. Conclusion and Implications: The school learning ecosystem provides an integrated explanation of teachers’ work happiness. Strengthening teachers’ stability, professional growth, and collaborative learning culture may help sustain teachers’ work happiness, enhance teacher well-being, and inform school development and teacher support policies in Thailand.	¹ Faculty of Education, Chulalongkorn University, Thailand. *Corresponding author e-mail: 6681023127@student.chula.ac.th https://orcid.org/0009-0005-1238-0818 Article Information Received: 04.03.26 Revised: 15.03.26 Accepted for Review: 16.03.26 Keywords Multi-group analysis, school learning ecosystem, structural equation modeling, teachers’ work happiness

Rapid and far-reaching changes in the economy and technology now shape nearly every aspect of daily life. As a result, the present era is often described as a “world of fragility,” characterized by uncertainty and constant pressure to adapt (Cascio, 2019, p. 341). In education, teachers, as one of the most critical professional groups in any education system, are directly affected by these shifts. In the Thai context, teachers have faced increasing expectations and professional demands in recent years due to continuing education reform and the integration of digital technologies in schools (Ministry of Education, 2024). These pressures may affect teachers’ well-being, job satisfaction, and overall work happiness. When teachers’ work happiness is low, the quality of teaching and learning is likely to suffer, with direct consequences for students. Enhancing teachers’ work happiness, therefore, is closely connected to improving a country’s overall education quality, because teachers’ well-being influences the quality of teaching, professional engagement, and student learning. However, teachers’ work happiness cannot be strengthened through a

single dimension alone. It requires a broader view of the school learning ecosystem, that is, the surrounding conditions and supports that shape teachers' daily work, so that improvement and sustainable development can be achieved more effectively.

A high-quality, well-managed school learning ecosystem helps create an environment in which teachers can develop effectively. This includes access to up-to-date technology and learning tools, strong support for professional development, and a climate that fosters collaboration and positive relationships with colleagues (Nguyen & Tuamsuk, 2022; OECD, 2025). Such conditions help create a more balanced and supportive working environment, which is important for sustaining teachers' work happiness and effectiveness (Hargreaves & Fullan, 2012; Stoll et al., 2006).

Most prior research has examined teachers' work happiness through isolated factors, such as career stability or school leadership, rather than through an integrated perspective (Ma & Marion, 2025). In contrast, the concept of a school learning ecosystem captures the broader set of conditions surrounding teachers in their daily work, including organizational support, resources, and collaborative structures (Nguyen & Tuamsuk, 2022). In the Thai context, research that models this ecosystem as a whole using structural equation modeling and examines whether the relationships differ by school size remains scarce, and existing studies have mainly focused on specific aspects of teachers' work happiness, such as workplace happiness factors (Damsawang et al., 2022), school communication (Donsri & Mahasinpaisan, 2024), or organizational climate (Sriyotha & Sawangmek, 2024), rather than modeling the ecosystem as a whole. The limited availability of an integrated model also constrains evidence-based policy formulation and school development efforts. This study addresses this gap by developing and testing a structural model of the school learning ecosystem influencing teachers' work happiness and examining structural differences across school sizes. The results are expected to provide an empirical model that highlights key factors and offers practical directions for school development and policy formulation.

Literature Review

This section presents the conceptual framework and theoretical foundations of the study, together with a review of the literature related to its main variables. The study adopts a holistic perspective of the school learning ecosystem to explain the conditions that foster teachers' work happiness in Thai schools. These variables include learning and collaborative culture (CULT), supportive leadership and management (LEAD), resources and learning technology (RES), networks and community engagement (NET), and stability and professional development (STAB).

Teachers' Work Happiness

Discussing teachers' work happiness requires an understanding of teachers' vital role in the education system. Teachers are not only responsible for delivering knowledge to students, but also influence learners' intellectual and moral development. Prior studies generally describe work happiness as a positive psychological state arising from meaningful and fulfilling work experiences (Goestjahjanti et al., 2020). Across these perspectives, work happiness is understood as a multidimensional response to various aspects of one's job rather than to a single condition alone. This suggests that teachers' work happiness should be viewed as a broad and multifaceted construct. Moreover, because work happiness is closely linked to motivation, work effectiveness, and workplace functioning, it is also relevant to educational quality and school performance (Dziuba et al., 2020).

Based on a review of studies in the Thai teacher context, the concept of teachers' work happiness is commonly framed as holistic, encompassing physical, psychological, intellectual, and social dimensions. Phaet-udom et al. (2024) proposed that teachers' work happiness can be described through eight domains under the happy workplace concept, and reported that teachers placed the greatest emphasis on happy heart, reflecting kindness, generosity, and warm interpersonal relationships within schools. They also highlighted happy soul, which relates to working with morality, faith, and a sense of professional meaning, along with happy society and happy brain, which point to social participation and ongoing opportunities for learning

and self-development. Similarly, Butket and Onsamphan (2020) outlined comparable components, reflecting health care, positive relationships, learning and self-development, morality and spirituality, financial and family stability, and organizational commitment.

However, some studies suggest that when the happiness concept is applied to teachers' real work settings, the components can be consolidated into clearer core dimensions that better reflect teachers' day-to-day experiences in schools. For example, Damsawang et al. (2022) proposed four key dimensions: interpersonal interaction, love of work, work accomplishment, and recognition. Likewise, Thongbaion and Charoenkul (2022) proposed three main dimensions: life satisfaction, job satisfaction, and attitudes toward colleagues and supervisors. Taken together, these findings suggest that the "core" of teachers' work happiness can be synthesized into six dimensions: (1) emotional support; (2) relationships and recognition within the organization; (3) positive attitudes and professional spirit; (4) professional accomplishment; (5) life and financial stability; and (6) physical, psychological, and social well-being. This synthesized framework supports a more parsimonious and structurally meaningful conceptualization, which is appropriate for measurement and structural model using confirmatory factor analysis (CFA) and structural equation modeling (SEM) in the present study.

School Learning Ecosystem

A school learning ecosystem can be understood as an interconnected system in which people, resources, technologies, and the surrounding context work together to shape learning processes and influence one another (Walcutt & Schatz, 2019). Rooted in ecological thinking, this perspective emphasizes interactions between living and non-living elements within a shared environment: when one component changes, it can affect the others, and people naturally form groups and interactions to support learning (Hannon et al., 2011). This view aligns with contemporary approaches to learning that connect formal and informal learning and highlight linkages among teachers, learners, support units, and relevant environments (Civís Zaragoza & Díaz-Gibson, 2024). Walcutt and Schatz (2019), in contrast, emphasize the importance of designing and organizing a coherent and sustainable system to support lifelong learning by connecting technologies, platforms, and learning resources to create effective learning experiences that can adapt to learners' needs. Våljataga et al. (2020) similarly describe learning ecosystems in educational institutions as intentionally designed environments that support the development of skills and knowledge through appropriate resource management and support, with a particular emphasis on teacher–student participation to achieve effective learning outcomes.

International frameworks further suggest that high-quality learning ecosystems typically include components that provide direction, support, and systematic integration. Economist Impact (2022) presented a learning ecosystems framework that encompasses learning outcomes; learning environments at home, in schools, and in communities; and governance and coordination. OECD (2025) highlighted system-level elements that directly support teachers' work, such as professional learning communities (PLCs), school leadership, school–family–community collaboration, multidisciplinary support, the development of teacher agency, and links to welfare and health policies. In the digital domain, Nguyen and Tuamsuk (2022) identified core elements of a digital learning ecosystem, including technological infrastructure, learning content, a learning community, assessment, and user experience.

Building on these conceptual bases, the present study synthesizes the school learning ecosystem into five key variables: learning and collaborative culture, supportive leadership and management, resources and learning technology, networks and community engagement, and stability and professional development. Together, these variables represent the structural conditions surrounding teachers' work and learning environment within schools.

The ecosystem perspective is theoretically aligned with Bronfenbrenner's ecological systems theory (1979), which explains learning and development as outcomes of interactions across multiple, interconnected environmental levels. These range from the immediate setting (microsystem) to linkages

between contexts (mesosystem), broader structures and policy-related influences that operate indirectly (exosystem), societal values and culture (macrosystem), and changes over time (chronosystem) (Bronfenbrenner, 1979). In the present study, learning and collaborative culture (CULT) and supportive leadership and management (LEAD) primarily reflect the microsystem and mesosystem because they relate to teachers' immediate school environment and interactions within the organization. Resources and learning technology (RES) also operate mainly at the microsystem level through teachers' direct access to tools and instructional support. Networks and community engagement (NET) correspond more closely to the mesosystem and exosystem because they connect schools with families, communities, and external organizations. The variable of stability and professional development (STAB) reflects the exosystem influences, as it is shaped by broader organizational structures, welfare arrangements, and career-related support. This ecological perspective therefore provides a theoretical basis for examining how different levels of the school learning ecosystem shape teachers' work happiness in a holistic way.

Although these ecosystem components are interrelated, they represent conceptually distinct dimensions of the school learning ecosystem. Learning and collaborative culture refers to the shared norms, collegial interaction, and collaborative practices within the school. Supportive leadership and management, by contrast, refers to the actions of school leaders in creating trust, enabling participation, and providing organizational support. Resources and learning technology concern teachers' access to instructional tools, technology, and material support for their work. Networks and community engagement focus on the school's connections with parents, communities, and external organizations. Stability and professional development refer to the structural conditions that support teachers' long-term well-being, including career security, welfare, and opportunities for professional growth. Together, these dimensions provide a more integrated explanation of teachers' work happiness while remaining analytically distinguishable.

Learning and Collaborative Culture and Teachers' Work Happiness

Research suggests that schools with a strong learning and collaborative culture, such as sharing effective practices, providing mutual support, and working as a team, help teachers feel supported rather than isolated, which in turn enhances their work happiness (Stoll et al., 2006). In addition, collaboration through professional learning communities (PLCs) can strengthen teachers' motivation, reduce stress, and increase job satisfaction (Vescio et al., 2008).

Supportive Leadership and Management and Teachers' Work Happiness

Supportive leadership plays an important role in teachers' work happiness. School leaders who build a climate of trust, create opportunities for teacher participation, and provide systematic support for teachers' work can reduce tension and enhance job satisfaction (Ma & Marion, 2025). Evidence from TALIS 2018 also indicates that distributed leadership can significantly reduce teachers' work-related stress and increase their work happiness (Li et al., 2024). In the present study's framework, a collaborative culture may serve as a foundation that enables supportive leadership; therefore, an indirect pathway is plausible in which learning and collaborative culture influences teachers' work happiness through supportive leadership and management (Day & Sammons, 2016).

Resources and Learning Technology and Teachers' Work Happiness

Adequate resources and readily available learning technology can make teachers' work more manageable, reduce workload, and increase job satisfaction. However, when support is insufficient, technology use may create technostress and ultimately diminish teachers' work happiness (Tu et al., 2025). Research also suggests that the positive effects of technology become more evident when teachers receive ongoing training, technical support, and sustained encouragement from school leaders (Tank et al., 2021). Moreover, a collaborative culture facilitates knowledge sharing and more efficient use of resources, which can strengthen the effectiveness of technology use. This suggests a plausible indirect pathway in which

learning and collaborative culture influences teachers' work happiness through resources and learning technology (Hargreaves & Fullan, 2012).

Networks and Community Engagement and Teachers' Work Happiness

Collaborative networks with parents, communities, and external organizations can expand resources and emotional support, reduce feelings of isolation, and strengthen teachers' sense of belonging, thereby enhancing job satisfaction and teachers' work happiness (Li et al., 2024). At the same time, engagement with the community has been associated with teachers' motivation and professional commitment (Xu et al., 2025).

Stability and Professional Development and Teachers' Work Happiness

Stability and professional development, including compensation, welfare benefits, career advancement, and continuous professional learning, provide an essential foundation that enables teachers to work with greater peace of mind by reducing worry and strengthening motivation (Day & Gu, 2010). Research also indicates that teachers' perceptions of organizational support and job stability are associated with higher job satisfaction and stronger professional commitment (Canrinus et al., 2012).

Research Variables

This study operationalized the research variables as latent constructs within the school learning ecosystem framework. The dependent variable was teachers' work happiness, and the independent variables were learning and collaborative culture, supportive leadership and management, resources and learning technology, networks and community engagement, and stability and professional development. School size was used as the grouping variable for multi-group SEM.

Based on the reviewed literature and conceptual framework, the hypotheses assume that teachers' work happiness is shaped by multiple and interconnected dimensions of the school learning ecosystem. Learning and collaborative culture is expected to contribute directly to teachers' work happiness and to support other ecosystem components, while supportive leadership and management, resources and learning technology, networks and community engagement, and stability and professional development are expected to influence teachers' work happiness through related mechanisms within the school context.

Research Hypotheses

Based on the proposed conceptual framework, which specifies the causal relationships between components of the school learning ecosystem and teachers' work happiness, this study formulated research hypotheses to test the structural relationships among the latent variables along the pathways specified in the model, as follows:

H1: Learning and collaborative culture has a positive effect on supportive leadership and management.

H2: Learning and collaborative culture has a positive effect on resources and learning technology.

H3: Learning and collaborative culture has a positive effect on teachers' work happiness.

H4: Supportive leadership and management has a positive effect on teachers' work happiness.

H5: Resources and learning technology has a positive effect on teachers' work happiness.

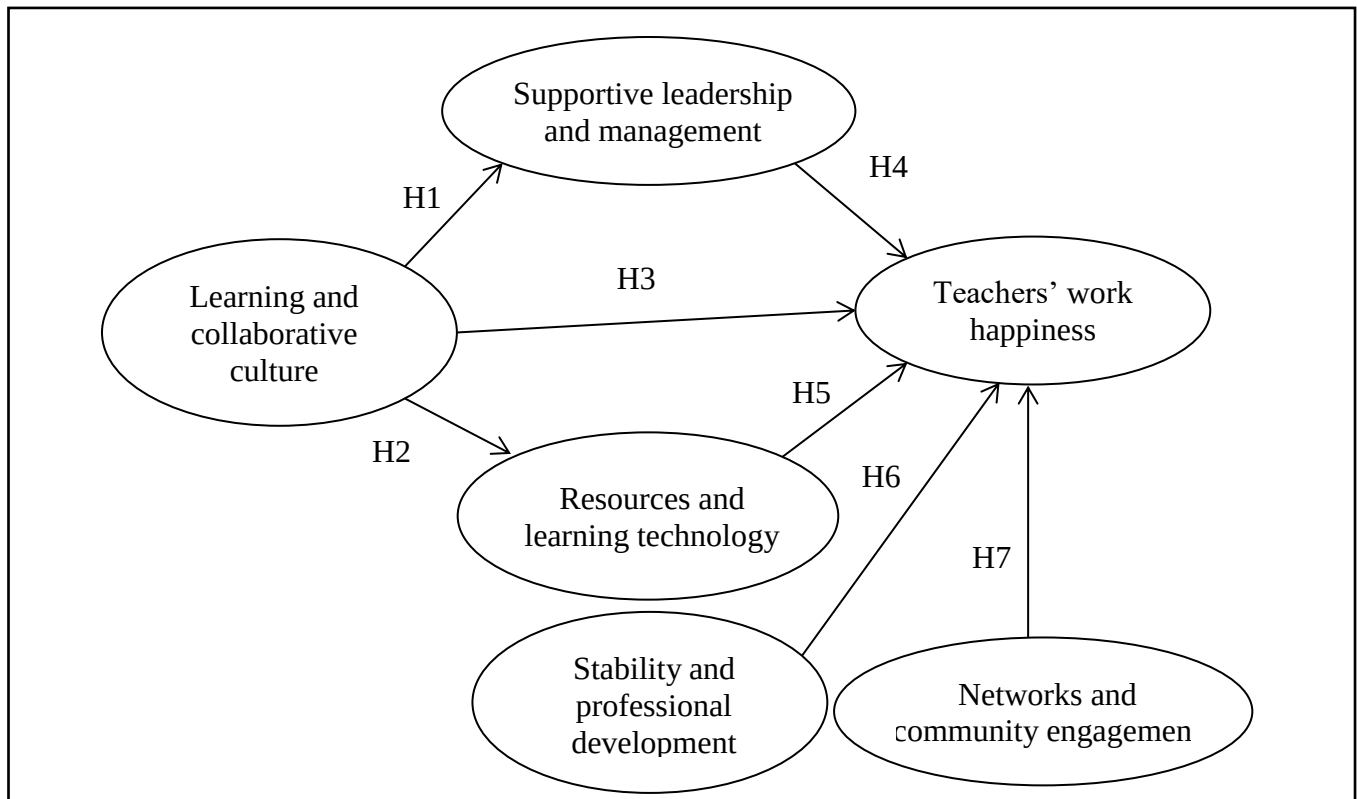
H6: Stability and professional development has a positive effect on teachers' work happiness.

H7: Networks and community engagement has a positive effect on teachers' work happiness.

Conceptual Framework

Based on an overview of the key theories and the proposed hypotheses regarding the relationships among the school learning ecosystem components and teachers' work happiness, the conceptual research model is presented in Figure 1.

Figure 1
Proposed Conceptual Framework



Method

Research Design

This study employed a quantitative cross-sectional survey design to develop and test a causal model of the school learning ecosystem influencing teachers' work happiness. Data were collected through a questionnaire administered to teachers from schools of different sizes, and the proposed model was tested using a latent variable modeling approach.

Research Setting

The study was conducted in secondary schools under the 62 secondary educational service area offices (SESAs) of the Ministry of Education in Thailand (Ministry of Education, 2021) during January–February 2026. Data collection covered six regions, Northern, Northeastern, Central (including Bangkok), Eastern, Western, and Southern Thailand, to ensure broad coverage and reflect diverse regional contexts. In this study, school size was used as the primary grouping variable to examine differences in the model.

Participants

Participants included teachers and school administrators (principals and deputy principals) from secondary schools under the SESAs, as these groups are directly involved in school-level learning conditions, leadership processes, and professional support systems relevant to teachers' work happiness (Ministry of Education, 2024). A total of 913 respondents took part in the study, comprising 615 teachers and 298 administrators. The participants were drawn from schools of different sizes to support multi-group analysis (multi-group SEM) by school size.

Sampling and Sample Procedures

The minimum required sample size was estimated using G*Power with an effect size of .05, a significance level (α) of .05, and statistical power of .80, yielding a minimum sample size of 400. To ensure

an adequate final sample, 1,100 questionnaires were distributed. A total of 913 completed questionnaires were returned and used for analysis, representing a response rate of 83.0%. The actual sample obtained ($N = 913$) exceeded this requirement and was therefore considered sufficient and appropriate for confirmatory factor analysis (CFA), structural equation modeling (SEM), and multi-group SEM. For MG-SEM, the same dataset was divided into four groups: small ($n = 208$), medium ($n = 239$), large ($n = 242$), and extra-large ($n = 224$).

The inclusion criteria were: (1) being a teacher or school administrator working in a school under the SESAs during the data collection period; (2) voluntarily participating and providing informed consent to complete the questionnaire; and (3) returning a questionnaire that met the minimum completeness requirements. The exclusion criteria were: (1) questionnaires without consent to participate; (2) questionnaires with substantial missing data or otherwise unusable for analysis; and (3) respondents who did not belong to the target population (i.e., not teachers or administrators under the SESAs).

Instruments

The research instrument was a five-point Likert-scale questionnaire consisting of three parts. Part 1 collected respondents' demographic information, including gender, position, years of work experience, province, educational level, affiliation with the SESAs, and school size. Part 2 measured the school learning ecosystem using 52 items across five dimensions: learning and collaborative culture (13 items), supportive leadership and management (12 items), resources and learning technology (6 items), networks and community engagement (9 items), and stability and professional development (12 items). Part 3 measured teachers' work happiness using 24 items across six dimensions: physical, psychological, and social well-being (4 items), relationships and organizational acceptance (4 items), positive attitudes and professional spirit (4 items), professional accomplishment (4 items), life stability and financial management (4 items), and emotional support (4 items).

The questionnaire items were developed from the theoretical frameworks and empirical studies reviewed in the literature. Each construct was operationalized according to key concepts identified in prior research.

All items in Parts 2 and 3 were rated on a five-point Likert scale ranging from 1 (lowest level of agreement) to 5 (highest level of agreement). Content validity was evaluated by five experts using the index of item-objective congruence (IOC), and only items with IOC values of at least 0.60 were retained. The overall reliability of the questionnaire was high, with Cronbach's alpha (α) = .96 across 76 items. Reliability coefficients for the latent constructs were also satisfactory: learning and collaborative culture ($\alpha = .92$), supportive leadership and management ($\alpha = .95$), resources and learning technology ($\alpha = .86$), networks and community engagement ($\alpha = .92$), stability and professional development ($\alpha = .93$), and teachers' work happiness ($\alpha = .94$). The questionnaire items were developed by adapting and synthesizing concepts from prior literature rather than adopting a single validated scale.

Procedure

A multistage stratified random sampling procedure was employed. In the first stage, one secondary educational service area office (SESA) was randomly selected from each of the six regions of Thailand. In the second stage, schools within each selected SESA were stratified by school size (small, medium, large, and extra-large), and target schools were then randomly selected from each stratum. Official request letters and questionnaires were sent to the selected SESAs to coordinate distribution to schools under their supervision. For schools preferring paper-based administration, paper questionnaires and a QR code linking to the online version were provided. Data were collected during January–February 2026, after which the returned questionnaires were checked, coded, and prepared for analysis. To reduce potential common method bias, participation was voluntary, responses were anonymous and confidential, and the questionnaire used separate sections and neutrally worded items.

Results

Sample Characteristics

Table 1 summarizes the respondents' background characteristics. The sample comprised 913 participants, including 615 teachers (67.4 percent) and 298 school administrators (32.6 percent). Most respondents were female (62.7 percent) and held a master's degree (52.1 percent). The largest proportion was from the central region (29.8 percent), and the distribution across school sizes was relatively balanced, with large schools representing the highest proportion (26.5 percent). Full details are presented in Table 1.

Table 1

Sample Characteristics of Participants (n = 913)

Characteristic	Category	n	Percentage
Position	Teacher	615	67.4
	School administrator	298	32.6
Gender	Male	316	34.6
	Female	572	62.7
	LGBTQ+	25	2.7
Education level	Bachelor's degree	401	43.9
	Master's degree	476	52.1
	Doctoral degree	36	3.9
Region	Central	272	29.8
	Northern	64	7.0
	Northeastern	257	28.1
	Eastern	30	3.3
	Western	174	19.1
	Southern	116	12.7
School size	Small	208	22.8
	Medium	239	26.2
	Large	242	26.5
	Extra-large	224	24.5

Descriptive statistics and reliability indices were computed to summarize the study constructs and to evaluate measurement consistency prior to CFA and SEM. Overall, the constructs showed high mean scores and adequate variability, while reliability estimates were strong, indicating that the measures were suitable for subsequent analyses, as shown in Table 2.

Table 2

Descriptive Statistics and Reliability of Study Variables (n = 913)

Variable	M	SD	Cronbach's alpha, α	CR
Learning and collaborative culture	4.35	0.51	.92	.79
Supportive leadership and management	4.54	0.56	.95	.93
Resources and learning technology	4.15	0.67	.86	.77
Networks and community engagement	4.29	0.59	.92	.89
Stability and professional development	4.21	0.64	.93	.88
Teachers' work happiness	4.34	0.47	.94	.87

Note. The overall questionnaire demonstrated excellent internal consistency (Cronbach's alpha = .96). Composite Reliability (CR) was calculated from the CFA results using standardized factor loadings (STDYX) obtained from Mplus.

Pearson product-moment correlation coefficients were computed to examine the associations among the study constructs and to check for potential multicollinearity prior to SEM. Correlation coefficients below .85 were considered acceptable, indicating that multicollinearity was unlikely. The correlation matrix is presented in Table 3.

Table 3
Correlation among Study Variables (n = 913)

Variable	1	2	3	4	5	6
Learning and collaborative culture	1.00					
Supportive leadership and management	.21***	1.00				
Resources and learning technology	.72***	.22***	1.00			
Networks and community engagement	.70***	.37***	.78***	1.00		
Stability and professional development	.66***	.40***	.72***	.72***	1.00	
Teachers' work happiness	.51***	.16***	.43***	.43***	.66***	1.00

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Hypotheses Testing Results

Table 4 presents the structural model estimates and the results of hypothesis testing. The findings show that learning and collaborative culture had a strong positive effect on resources and learning technology ($\beta = .62$, $p < .001$) and a significant positive direct effect on teachers' work happiness ($\beta = .28$, $p < .001$). In addition, stability and professional development had the strongest positive effect on teachers' work happiness ($\beta = .59$, $p < .001$). In contrast, the paths from learning and collaborative culture to supportive leadership and management ($\beta = .02$, $p = .66$), supportive leadership and management to teachers' work happiness ($\beta = .02$, $p = .57$), resources and learning technology to teachers' work happiness ($\beta = -.11$, $p = .22$), and networks and community engagement to teachers' work happiness ($\beta = -.10$, $p = .17$) were not statistically significant. Overall, H2, H3, and H6 were supported, whereas H1, H4, H5, and H7 were not supported (Table 4).

Table 4
SEM Path Estimates (n = 913)

Hypothesis	Path	β	SE	p	Decision
H1	CULT $\rightarrow$ LEAD	.02	.04	.66	Not supported
H2	CULT $\rightarrow$ RES	.62	.04	< .001	Supported
H3	CULT $\rightarrow$ HAP	.28	.09	< .001	Supported
H4	LEAD $\rightarrow$ HAP	.02	.03	.57	Not supported
H5	RES $\rightarrow$ HAP	-.11	.09	.22	Not supported
H6	STAB $\rightarrow$ HAP	.59	.07	< .001	Supported
H7	NET $\rightarrow$ HAP	-.10	.07	.17	Not supported

Note. β = standardized coefficient, SE = standard error, CULT = Learning and collaborative culture, LEAD = Supportive leadership and management, RES = Resources and learning technology, NET = Networks and community engagement, STAB = Stability and professional development, HAP = Teachers' work happiness.

Multi-group CFA supported metric invariance across school-size groups: constraining factor loadings to be equal did not worsen model fit compared with the configural model ($\Delta\text{CFI} = .00$, $\Delta\text{RMSEA} = .00$). This indicates comparable measurement across groups and supports subsequent multi-group comparisons of structural paths (see Table 5).

Table 5
Measurement Invariance Testing across School Size Groups

Model	Constraints	CFI	TLI	RMSEA	SRMR	ΔCFI	ΔRMSEA
Configural	Same factor structure across groups	.95	.94	.05	.08	-	-
Metric	Equal factor loadings across groups	.95	.94	.05	.08	.00	.00

Note. ΔCFI and ΔRMSEA were computed by comparing each constrained model with the configural model. Metric invariance is supported when $\Delta\text{CFI} \leq .010$ and $\Delta\text{RMSEA} \leq .015$. MG-CFA; small $n = 208$, medium $n = 239$, large $n = 242$, extra-large $n = 224$.

Multi-group structural equation modeling (MG-SEM) was conducted to examine whether the structural paths predicting teachers' work happiness differed across school sizes. Standardized path coefficients (β) and p -values for each group are reported in Table 6, along with the group-specific explained variance in teachers' work happiness (R^2).

Table 6

Multi-group Path Estimates by School Size (n = 913)

Path to HAP	Small schools (β , p)	Medium schools (β , p)	Large schools (β , p)	Extra-large schools (β , p)
CULT $\rightarrow$ HAP	.27 (.05)	.28 (.16)	.26 (.02)	.04 (.85)
LEAD $\rightarrow$ HAP	.04 (.54)	-.15 (.24)	.05 (.41)	.01 (.94)
RES $\rightarrow$ HAP	-.06 (.76)	-.61 (.16)	-.06 (.71)	.28 (.37)
NET $\rightarrow$ HAP	-.10 (.48)	-1.00 (.17)	-.00 (.99)	-.30 (.18)
STAB $\rightarrow$ HAP	.56 (< .001)	.83 (.01)	.52 (< .001)	.52 (< .001)

Note. β = standardized coefficient, p = p -value, MG-SEM, small n = 208, medium n = 239, large n = 242, extra-large n = 224, CULT = Learning and collaborative culture, LEAD = Supportive leadership and management, RES = Resources and learning technology, NET = Networks and community engagement, STAB = Stability and professional development, HAP = Teachers' work happiness.

Discussion and Conclusion

Discussion of Main Results

This study aimed to develop and test a structural model of the school learning ecosystem influencing teachers' work happiness and to examine whether the structural relationships differed across school sizes. Overall, the findings showed that the final model fit the empirical data well and explained a substantial proportion of the variance in teachers' work happiness ($R^2 = .41$). Stability and professional development had the strongest and statistically significant direct effect on teachers' work happiness ($\beta = .59$, $p < .001$). Learning and collaborative culture also had a significant direct effect on teachers' work happiness ($\beta = .28$, $p = .001$). In contrast, supportive leadership and management did not directly predict teachers' work happiness ($\beta = .02$, $p = .57$). Likewise, no significant direct effects were found for resources and learning technology ($\beta = -.11$, $p = .22$) or networks and community engagement ($\beta = -.10$, $p = .17$) on teachers' work happiness. Taken together, these findings indicate that school learning ecosystem factors, particularly stability and professional development and learning and collaborative culture, play an important structural role in shaping teachers' work happiness.

The model results indicate that stability and professional development, reflecting a secure employment foundation and opportunities for professional growth, have a meaningful influence on teachers' work happiness. This finding can be understood theoretically in that stable working conditions, welfare support, and opportunities for professional advancement help reduce uncertainty while strengthening teachers' sense of security, motivation, and commitment in their work. This pattern is consistent with evidence from Thailand and international contexts. In Thailand, Prikjumroon (2024) noted that key contributors to teachers' happiness include career stability, salary, and opportunities for advancement. Internationally, Sahito and Väisänen (2019) found that career advancement and compensation were among the strongest factors associated with teachers' job satisfaction and happiness in developing-country settings, while studies in more developed contexts show comparable findings. For example, Abu-Tineh et al. (2023) highlighted the central role of career advancement opportunities in shaping teachers' well-being and retention-related outcomes in Qatari public schools, and Ortan et al. (2021) likewise identified promotion opportunities as a key factor associated with higher levels of teachers' work happiness. Taken together, these findings suggest that stability and professional development contributes to teachers' work happiness because it supports both the security and the professional growth that teachers need to sustain positive engagement in their work.

Learning and collaborative culture is another notable predictor of teachers' work happiness because it is collectively created and sustained by members of the organization. Zhang and Yuan (2020) showed that when teachers voluntarily form groups to share practices, learn from one another, and collaboratively solve classroom problems, this becomes an important predictor of higher job satisfaction. Buonomo et al. (2020) similarly emphasized that, within organizational contexts, opportunities for collaboration and shared decision-making can enhance teachers' work happiness. Evidence from Thailand also supports this relationship. Donsri and Mahasinpaisan (2024) highlighted that collaborative communication at work can contribute to higher levels of teachers' work happiness, while Sriyotha and Sawangmek (2024) found that mutual support within the organization is associated with greater teacher happiness, an association that resonates with the Thai cultural emphasis on helpfulness and interpersonal goodwill. Taken together, these studies reinforce the present finding that learning and collaborative culture exerts a substantive influence on teachers' work happiness.

Although the model confirmed that stability and professional development and learning and collaborative culture had significant effects on teachers' work happiness, no significant direct effects were found for supportive leadership and management, resources and learning technology, or networks and community engagement in the overall model. This pattern suggests that these components may not influence teachers' work happiness in a straightforward direct manner. Instead, their effects may depend on whether they are translated into teachers' everyday experiences, such as perceived fairness, trust, manageable workload, participation in decision-making, and supportive workplace relationships (Liu et al., 2021; OECD, 2025; Singh & Loh, 2024). In this sense, leadership, resources, and external networks may function more as enabling conditions than as direct predictors of work happiness. Moreover, in the Thai school context, resource allocation and opportunities for external collaboration may be shaped by centralized structures and policy arrangements, which could reduce variation in teachers' perceptions and make direct effects less likely to emerge.

Prior research provides support for this interpretation. Liu et al. (2021) found that leadership-related factors influenced teachers' work happiness indirectly through a school's learning culture. Singh and Loh (2024) similarly reported that networks and collaboration did not directly predict happiness but operated through trust in collaborative work. In addition, Yang et al. (2025) highlighted that technology can generate stress and reduce teachers' work happiness, particularly when rapid changes create pressure for continuous adaptation. Taken together, these findings indicate that non-significant direct effects do not necessarily mean that supportive leadership and management, resources and learning technology, and networks and community engagement are unimportant. Rather, they may influence teachers' work happiness indirectly through school culture, trust, professional agency, and the quality of day-to-day work experiences. This interpretation reinforces the value of viewing teachers' work happiness through a systemic perspective rather than expecting all ecosystem components to exert direct effects at the same level.

Finally, when the structural paths were examined by school size, stability and professional development remained a significant predictor of teachers' work happiness across all school-size groups, indicating that it is a robust influence regardless of organizational scale. In contrast, learning and collaborative culture was significant only in large schools. One possible explanation is that large schools tend to be more complex organizations, requiring greater reliance on coordination, teamwork, and structured collaboration. De Jong (2021) noted that as organizational systems become more complex, organizational design and leadership need to shift toward team-based structures and stronger coordination mechanisms. Moreover, collaborative learning and collective work practices inherently involve organizational complexity, which may become more salient in large schools where coordination demands are higher.

By comparison, supportive leadership and management, resources and learning technology, and networks and community engagement did not show clear differences across school sizes. This suggests that, in this dataset, school size did not function as a moderator of the relationships between these factors and teachers' work happiness. A plausible interpretation is that these three factors may not influence

teachers' work happiness primarily through direct effects; instead, they may operate indirectly through key school mechanisms such as collaborative culture, participation in decision-making, and professional agency, processes that shape teachers' sense of role, voice, and ownership in their work. This interpretation is consistent with OECD (2025). The TALIS 2024 report also indicates that teachers' involvement in leadership roles and decision-making processes is associated with job satisfaction across many education systems, suggesting that the influence of these factors often works through participation and agency rather than through straightforward direct effects that vary by school size.

Limitations

This study used a cross-sectional design; therefore, the findings reflect structural relationships at a single point in time and do not allow strong conclusions about temporal causality. In addition, the data were collected through self-report questionnaires, which may have introduced perceptual bias and common method bias, although latent variable modeling was employed to reduce measurement error. Moreover, group comparisons relied primarily on school size, which may not fully capture other contextual conditions, such as workload, local policy environments, or administrative and management approaches that could shape or moderate the relationships in the model.

Implications for Behavioral Science

The findings contribute to behavioral science knowledge on teachers' work happiness by demonstrating that structural components of the school learning ecosystem, particularly stability and professional development, exert a consistently positive influence on teachers' work happiness. At the same time, learning and collaborative culture appears to be more sensitive to school-size context, suggesting that teachers' workplace well-being is shaped by both system-level conditions and the organization's social environment. These findings highlight that teachers' work happiness should be understood not only as an individual psychological outcome but also as a product of organizational conditions, professional security, and social relationships within schools. Future research should therefore test additional mediating mechanisms and moderating factors, such as workload, perceived fairness, and trust, and employ longitudinal designs to confirm the model's dynamics over time. From an applied perspective, policymakers and school leaders should prioritize measures that strengthen teachers' stability, enhance fairness, and provide systematic professional development, while tailoring culture-building strategies to the needs and constraints of schools of different sizes.

Conclusion

In summary, the school learning ecosystem can structurally explain teachers' work happiness in the Thai school context. The most salient influence is stability and professional development, while the role of learning and collaborative culture varies by school size. These findings suggest that efforts to enhance teachers' work happiness in Thai schools should address both structural working conditions and the social environment within schools. In particular, strengthening teachers' stability, welfare, and opportunities for professional growth may be especially important for improving teachers' quality of work life and supporting the long-term quality of teaching and learning.

Declarations

Conflicts of Interest: The authors declare no conflicts of interest.

Ethical Approval Statement: The study was conducted in accordance with the Declaration of Helsinki, the Belmont Report, the CIOMS guidelines, and the ICH-GCP principles, and was approved by the Research Ethics Review Committee for Research Involving Human Subjects: The Second Allied Academic Group in Social Sciences, Humanities and Fine and Applied Arts, Chulalongkorn University (COA No. 508/68; Research Project No. 680459; approval date: 23 December 2025; expiry date: 22 December 2026).

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