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RECEIVED 20 November 2025

REVISED 24 December 2025

ACCEPTED 19 January 2026

PUBLISHED 04 March 2026

## CITATION

Tiaotrakul A, Savegpan P and  
Onthanee A (2026) Teachers' perceptions  
about active learning in lifelong learning and  
health literacy as a challenge for health  
education in Thailand's education system.  
*Front. Educ.* 11:1750903.  
doi: 10.3389/feduc.2026.1750903

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# Teachers' perceptions about active learning in lifelong learning and health literacy as a challenge for health education in Thailand's education system

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Health literacy is widely known in the healthcare system and defined as the relationship between an individual's level of education and their ability to maintain and improve health or participate in health treatment. The interconnected concepts of lifelong learning and health literacy significantly influence students' health outcomes and educational experiences. The aim of this research is to explore how health education teachers in Thailand perceive active learning, lifelong learning, and health literacy, and to understand the challenges they encounter in integrating these concepts into their teaching practice. This qualitative research design was conducted with nine teachers, purposively selected from nine provinces in northern Thailand. The material for data collection was a semi-structured interview guide. The method of data collection consisted of individual, in-depth interviews. Data were analyzed using thematic analysis to identify and interpret themes from key patterns in participants' perceptions relevant to the research questions. This study reports on the topical status of active learning in lifelong learning and health literacy among teachers in Thailand's education system. We conducted qualitative descriptive research through in-depth interviews to explore teachers' perceptions of active learning in lifelong learning and health literacy. The respondents were nine teachers, each representing a different province in Thailand. We applied a thematic analysis method to investigate the participants' perceptions of active learning in lifelong learning and health literacy. The results showed teachers had employed various active learning methods, such as group activities, learning games, and simulations, with a focus on student-centered approaches. However, they faced issues related to insufficient resources, the student diversity, other work commitments, and a lack of continuity in professional development. The promotion of lifelong learning skills and health literacy remains unsystematic due to teachers' unclear understanding. They need stronger academic support and innovative media to enhance teaching effectiveness. The demand for professional development emphasizes the importance of workshops and the creation of teacher networks. This leads to the conclusion that improving health literacy and lifelong learning skills requires more effective development of support systems and professional development enabling adoption of active learning in classrooms.

## KEYWORDS

active learning, health education, health literacy, lifelong learning, quality education

## Introduction

Health literacy (HL) has emerged as a critical component of Sustainable Development Goal 4 (SDG 4), which aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (United Nations, 2015). SDG 4 recognizes that lifelong learning extends throughout all stages of life and requires students to develop knowledge and skills for personal and social development, particularly in health decision-making (Hanemann, 2019; Ydo, 2022). An infodemic as an overabundance of both accurate and inaccurate information during health emergencies, creating significant challenges for students and teachers to identify trustworthy health sources (Cooks et al., 2022; Saleem and Jan, 2024). In the Thai school context, health literacy presents distinctive challenges shaped by socioeconomic diversity and traditional cultural beliefs. In the Thai sociocultural landscape, entrenched taboos surrounding human sexuality often relegate sexual health to the private sphere. This cultural sensitivity creates a ‘silence’ that impedes the implementation of comprehensive sexuality education (CSE), subsequently limiting the population’s health literacy regarding reproductive rights, safe practices, and disease prevention (Srikwan et al., 2024). Narkarat et al. (2021) demonstrated that rural secondary school female students initially showed inadequate sexual and reproductive health literacy, though mobile health education interventions significantly improved their outcomes. The intersection of traditional Thai medical practices with modern evidence-based health education creates complexity for Thai school systems. This multifaceted context requires Thai educators to bridge indigenous knowledge systems with contemporary health science curricula to foster lifelong health literacy and support SDG 4 implementation across diverse student populations. In the context of Thailand’s rich ethnobotanical history, promoting health literacy involves equipping learners with the analytical tools to scrutinize the scientific validity of traditional herbs. This pedagogical shift ensures that the preservation of cultural heritage does not come at the expense of patient safety or informed decision-making.

However, developing sustainable health literacy is not a simple matter of information transmission. Achieving this goal requires a sophisticated pedagogical approach that recognizes health literacy as a complex outcome, built and sustained by interconnected mechanisms. We argue that sustainable health literacy (HL) relies on an integrated triad: Active Learning (AL) as the pedagogical vehicle, Lifelong Learning (LLL) as the enabling disposition, and Health Literacy (HL) as the desired functional outcome (Nutbeam, 2000; Devraj et al., 2010; Kickbusch et al., 2013).

This conceptual integration faces profound challenges in the unique context of Thailand. Thailand’s health education system confronts critical barriers exacerbated by deep socioeconomic and cultural complexities (Prohmmo, 1995; Ratnasari, 2023). The Thai Health Literacy Survey (2019) revealed accessing reliable information is the most difficult health literacy competency for 48% of respondents (Khamtang et al., 2022). This deficit is not uniformly distributed; it reflects stark inequalities across geographical regions, educational attainment, and demographic vulnerabilities, particularly affecting rural populations.

The implementation gap in educational policy represents a critical disconnect between policy intentions and actual practices, with teachers serving as pivotal “frontline implementers” whose perceptions

and agency fundamentally shape policy outcomes (Lipsky, 1980; Oliveira and Peixoto, 2021). Drawing from Lipsky’s street-level bureaucracy theory, teachers function not merely as passive recipients of educational directives, but as active policy interpreters who exercise significant discretionary power in translating abstract policies into concrete classroom practices (Lipsky, 1980; Oliveira and Peixoto, 2021). This conceptualization is further enhanced by Ball, Maguire, and Braun’s policy enactment framework, which emphasizes that teachers do not simply “implement” policies but rather “enact” them through complex processes of interpretation, translation, and creative adaptation within their specific institutional contexts (Ball et al., 2012). These theoretical perspectives collectively underscore that teachers’ perceptions about educational innovations—such as active learning approaches in health literacy—are not peripheral concerns but central determinants of policy success, as their interpretive work at the classroom level ultimately determines whether policy aspirations translate into meaningful educational change (Ball et al., 2012; Oliveira and Peixoto, 2021). The implementation gap thus emerges not from deficient policy design alone, but from the complex interplay between policy intentions and teachers’ situated understanding, highlighting the critical importance of examining educator perceptions as a lens for understanding educational policy effectiveness (Lipsky, 1980; Oliveira and Peixoto, 2021).

To understand this implementation bottleneck, one must first deconstruct the integrated triad (AL-LLL-HL) that policies implicitly seek to foster.

First, Health Literacy (HL), the desired outcome, extends far beyond basic reading skills. It encompasses the complex cognitive and social competencies that determine an individual’s ability to access, understand, appraise, and apply information to maintain and promote health (Nutbeam, 2000). Nutbeam’s (2000) seminal framework identifies three hierarchical levels: (1) functional health literacy (basic reading/writing skills), (2) interactive health literacy (advanced cognitive skills to extract and apply information), and (3) critical health literacy (the ability to critically analyze information and address social determinants of health). Contemporary models reinforce this, identifying core components of knowledge (of health systems), processing skills (access, appraisal, synthesis), and self-management abilities (Liu et al., 2020; Sørensen et al., 2012; Smith et al., 2025).

Second, Active Learning (AL) is the pedagogical vehicle essential for building these complex HL competencies. Rooted in constructivist theory (Piaget, 1926; Vygotsky, 1978), AL describes processes where students actively participate in classroom activities and discussions, focusing on higher-order thinking rather than passively receiving information (Bonwell and Eison, 1991; Freeman et al., 2014). This contrasts sharply with didactic teaching (Bligh, 2000). Key AL approaches, such as Problem-based Learning (PBL) (Barrows, 1996) and Inquiry-based Learning (Dewey, 1986), are mechanisms that directly develop HL. They do so by forcing students to engage in problem-solving, collaborative inquiry, and peer discussions, thereby strengthening critical appraisal, communication, and the ability to apply information in authentic scenarios (Uemura et al., 2018; Gibson et al., 2022). Large-scale meta-analyses confirm AL’s efficacy, showing significant increases in academic achievement and reductions in failure rates compared to traditional lectures (Freeman et al., 2014).

Third, Lifelong Learning (LLL) is the enabling disposition that sustains health literacy across the lifespan. LLL refers to the ongoing, self-directed process of acquiring knowledge and skills, which is

essential in a health context where information constantly changes (Kickbusch et al., 2013). LLL is the foundational “internal driver” (Maindal and Aagaard-Hansen, 2020) that cultivates the necessary precursor capacities for HL: self-awareness (recognizing one’s own knowledge gaps) and intrinsic motivation (the autonomous drive to seek and evaluate information) (Kickbusch et al., 2013; van der Burgt et al., 2019). Without this internal, self-sustaining drive, HL skills remain dormant. Thus, LLL is the prerequisite foundation that enables HL to be developed and sustained (Nutbeam and Lloyd, 2021).

These three constructs operate synergistically: Active Learning (the pedagogy) is the mechanism that cultivates Lifelong Learning (the disposition), which in turn is necessary to sustain Health Literacy (the outcome) in a complex, evolving information landscape.

This leads directly to the critical research gap. Despite the interconnected nature of this triad, existing research remains fragmented across separate domains. Previous studies have predominantly focused on student outcomes of AL (Freeman et al., 2014) or systemic challenges of health-promoting schools (Langford et al., 2014). Research examining teachers’ perceptions has investigated these concepts only *in isolation*. For example, some studies explore teachers’ understanding of AL pedagogies (Freeman et al., 2014), while others directly examine teacher experiences or perceptions in health contexts (Otten et al., 2023), or their perceptions of LLL as professional development (Kasworm and Hemmingsen, 2007).

Critically, no research has examined teachers’ perceptions of the integrative relationship among active learning, lifelong learning, and health literacy as interconnected educational constructs. This gap is profoundly problematic because educational policies often implicitly *assume* that teachers will inherently recognize and enact these conceptual linkages autonomously. If this assumption proves incorrect—and teachers instead hold fragmented understandings of these pedagogically interdependent concepts—it creates the genuine implementation bottleneck. This misalignment prevents policy aspirations for holistic health education from translating into coherent classroom practice, ultimately undermining the transformative potential of integrated health reforms (Ball et al., 2012; Lipsky, 1980).

Therefore, this research aims to explore health education teachers’ perceptions of active learning, lifelong learning, and health literacy as interconnected challenges within Thailand’s education system. By examining teachers’ perceptions—an issue frequently overlooked in policy discourse—this study seeks to provide strategic recommendations for professional development and context-appropriate support mechanisms. This study is guided by the following research questions:

*Research Question 1:* How do health education teachers in Thailand perceive and interpret the concepts of active learning, lifelong learning, and health literacy?

*Research Question 2:* How do teachers perceive the interconnections and challenges in integrating these three concepts into their actual teaching practice?

Ultimately, this study aims to unlock the implementation bottlenecks that impede policy enactment and to meaningfully advance the development of sustainable health literacy in Thailand.

## Materials and methods

This study was a descriptive qualitative study using thematic analysis. The participants involved in the research were nine health education teachers from different provinces in the lower northern region of Thailand, which are the service areas of the university to which the researchers are affiliated. The sample were selected using purposive expert sampling approach to gain in-depth insights into ‘best practices’ within health education pedagogy. The research focused on highly accomplished teachers to reveal the intricate instructional strategies and decision-making processes that lead to successful student outcomes—insights that may not be as apparent in typical teaching scenarios. The expert practitioners (for demographic information of participants, see Table 1) were recruited based on a set of rigorous inclusion criteria: (1) holding a specialized educational degree in physical education or health education; (2) possessing a minimum of 5 years of professional teaching experience within the HPE domain; and (3) demonstrating ‘outstanding performance’ in health education instruction, as formally recommended by regional educational supervisors. Furthermore, institutional access was secured through official permission from school principals, and all participants provided written informed consent, affirming their voluntary participation in the study.

## Data collection tool and technique

According to Punch (2013), an interview is a very good way to access people’s perceptions. One of the advantages of the interview is that interviewers can collect more information in greater depth. Therefore, the semi-structured interview with seven questions (see Appendix) helped provide more proof of the challenge the nine teachers faced when implementing active learning in lifelong learning and health literacy for health education at their schools. An interview session took between 30 to 60 min.

To ensure the methodological rigor and trustworthiness of the study, we adopted the criteria proposed by Lincoln and Guba (1985): credibility, transferability, dependability, and confirmability.

Credibility was established through investigator triangulation and rigorous data engagement. Although the interview guide was initially developed based on literature, its relevance was refined through a peer debriefing process where the research team—comprising experts in health education and pedagogy—critically reviewed the questions to

TABLE 1 Demographic characteristics of participant teachers (N = 9).

Teacher code	Gender	Teaching experience (years)
1	Female	30
2	Female	11
3	Male	7
4	Male	6
5	Male	17
6	Female	12
7	Male	9
8	Female	5
9	Female	20

ensure they effectively elicited perceptions regarding the triad of active learning, lifelong learning, and health literacy. During data analysis, the “Themes Review” stage involved revisiting the original transcripts multiple times to verify that the identified themes accurately reflected the participants’ narratives rather than the researchers’ pre-conceived assumptions.

Transferability was achieved by providing a thick description of the research context and participants. By detailing the selection criteria of “outstanding health education instructors” and describing the specific school contexts—ranging from resource-constrained environments to those with administrative support—we enable future readers to determine the applicability of these findings to other educational settings with similar socioeconomic and cultural dynamics.

To ensure Dependability and Confirmability, a systematic audit trail was maintained throughout the Thematic Analysis process guided by Braun and Clarke (2021). This included documenting the evolution of codes from “Initial Codes Generation” to the final “Thematic Map.” The coding process was not solitary; the research team engaged in collaborative coding meetings to resolve discrepancies in interpretation, ensuring that the themes were derived consistently from the data. Finally, Reflexivity was maintained by the researchers, who are university-affiliated educators, by consciously “bracketing” their academic expectations of active learning to remain open to the teachers’ actual lived experiences and implementation challenges.

Data collection was conducted through in-depth interviews with each teacher to gain detailed insights into their experiences and teaching practices in health education. Interviews were continued until empirical redundancy was reached, whereby subsequent interviews yielded recurring themes and no substantively new issues relevant to the research questions emerged.

## Data analysis

To analyze qualitative data, all the responses were recorded and transcribed. All transcripts of interviews were analyzed using thematic analysis techniques to identify themes related to active learning, lifelong learning skills, and health literacy.

Thematic analysis, according to Braun and Clarke, which is a popular qualitative data analysis method in psychology and social sciences (Braun and Clarke, 2021), involves identifying patterns and key issues that emerge in the dataset to gain a deep understanding of the phenomenon being studied. It consists of the following main steps:

### 1. Data familiarization

Interview data of all nine teachers were reviewed in detail to identify the main issues and the context of each response. The initial review allowed for the initial identification of key issues related to active learning, lifelong learning skills development, health literacy development, and various problems and challenges in health education. The information obtained from the teachers’ interviews consists of narratives about learning management experiences, school context, policies, teaching methods, challenges, and needs.

### 2. Initial codes generation

Collected data were broken down into smaller parts and codes were assigned to the important messages. Keywords or

repeated messages were identified in the data. Assigning codes helped organize the information and makes it easier to find connections between different issues.

### 3. Themes search

In the third phase, candidate themes were developed by collating codes that shared a central organizing concept. This process involved iterative thematic mapping to visualize the interconnectedness between individual codes and broader patterns. Adopting an abductive analytic approach, the researchers moved between the inductive insights from the participants’ voices and the deductive constraints of policy enactment (Ball et al., 2012) and street-level Bureaucracy (Lipsky, 1980). The synthesis aimed not only to describe the data but to critically extend existing literature on Teachers’ Perceptions by identifying the socio-ecological barriers that hinder lifelong learning and health literacy. Constant comparison was maintained throughout to ensure the internal homogeneity and external heterogeneity of the final themes.

### 4. Themes review

The candidate themes were refined through a recursive process at two levels. At the first level, all coded extracts for each theme were re-read to ensure they formed a coherent pattern, following Patton’s (1990) criteria of internal homogeneity. Any data segments that did not fit the theme were either recoded or the theme boundaries were redefined. At the second level, the validity of individual themes was checked against the entire dataset to ensure they accurately reflected the ‘policy enactment’ experiences of the teachers (Ball et al., 2012). This phase also involved checking for external heterogeneity to ensure that each theme was distinct and did not significantly overlap with others. Discrepancies were resolved through peer debriefing and repeated reading until a stable thematic map was achieved.

### 5. Define and name themes

The thematic landscape emerged from a recursive analysis, revealing a complex interplay between teacher cognition and systemic constraints. The analysis suggests that while teachers hold a positive disposition toward active learning (Theme 1), their effectiveness is fundamentally undermined by conceptual ambiguity regarding health literacy and lifelong learning (Theme 2). This gap is not merely an individual failure but is exacerbated by systemic friction within the Thai educational hierarchy (Theme 3), where rigid structures suppress pedagogical innovation.

To address these challenges, the findings interrelate Theme 4 and Theme 5 as the ‘pathway to transformation.’ The support systems identified in Theme 4 provide the necessary ‘ecological safety net,’ which enables the professional development described in Theme 5 to shift from passive training to transformative agency. Collectively, these five themes illustrate that the ‘challenge’ in Thailand’s Health Education is not just a lack of technique but a multi-dimensional tension between traditional educational paradigms and the emerging demands of 21st-century health competencies.

Accordingly, the findings are presented through five interrelated themes, outlined below.

### Theme 1: perceptions and implementation of active learning

This theme captures how health education teachers in Thailand understand and put active learning into practice. It reflects both their beliefs about the purpose of active learning (e.g., developing life skills, promoting behavior change, encouraging student agency) and the concrete strategies, activities, and media they use to make learning more engaging and student-centered in real classrooms.

### Theme 2: conceptual gaps in lifelong learning and health literacy

This theme highlights the gap between the curricular emphasis on lifelong learning and health literacy and teachers' actual conceptual understanding of these constructs. While teachers recognize that these ideas are important, many are unfamiliar with formal definitions, key components, and theoretical foundations. As a result, their teaching often relies on intuitive or partial understandings, and the integration of lifelong learning and health literacy into classroom practice is fragmented rather than systematic.

### Theme 3: barriers and challenges in implementation

This theme encompasses the practical obstacles that hinder teachers from fully implementing active learning in health education. These challenges operate at multiple levels: inadequate resources and facilities, student characteristics and classroom dynamics, and heavy time and workload demands. Together, they limit what teachers are realistically able to do, even when they have strong intentions and ideas for active learning.

### Theme 4: enablers and support systems

This theme identifies the conditions and supports that make it easier for teachers to implement active learning and health education initiatives. It includes supportive school leadership and policies, as well as collaborative structures among teachers. These enablers help offset some of the barriers described in Theme 3 and create a more favorable environment for pedagogical innovation.

### Theme 5: professional development needs

This theme describes what teachers themselves say they need in order to improve their teaching of health education, active learning, lifelong learning, and health literacy. It emphasizes their desire for more academically rigorous, content-specific training and for opportunities to learn within supportive professional networks. These needs point to concrete directions for policy and program development.

### Theme 6: reporting

Writing an analysis report by presenting the main themes along with evidence and examples from interview data to support each theme. The report emphasizes clearly describing the substance of each theme, along with quoting the informants' words to support the analysis.

## Results

According to the analysis of the data using thematic analysis, five main themes and eleven sub-themes identified from the interviews can be summarized as seen in [Figure 1](#).

### Theme 1: perceptions and implementation of active learning

The majority of participants understood and consistently implement active learning in their classrooms; they view it as a process that emphasizes "hands-on practice" through various activities. They use learner-centered strategies, such as problem-based learning, simulations, group discussions, and case studies, to stimulate analytical thinking and participation. Additionally, they incorporate technology and media familiar to students, such as interactive activities (Kahoot, board games), Youtube and Tiktok videos, and current news, as tools to create an engaging and enjoyable learning atmosphere. This theme covers the methods and techniques that teachers use in active learning, including the use of media and innovations in teaching. Most participating teachers employ active learning methods in various forms. They demonstrated various techniques used to promote student participation (see [Table 2](#)).

These methods reflect the concept of constructivism, which focuses on students constructing knowledge through real experiences. However, some participants indicated that they cannot always implement active learning because lectures remain necessary for some lessons. Hence, the participant's perception on giving lecture can limit a full integration of active learning approach.

### Theme 2: conceptual gaps in lifelong learning and health literacy

The key issue identified is that most teachers still lack a clear understanding of the definitions and components of "lifelong learning skills" and "health literacy." However, after getting education of the concepts, they were able to connect their teaching activities with both ideas. For example, having students research and evaluate the credibility of information reflects the promotion of these skills, even though the teachers may not have systematically intended to do so. Even without full understanding of the concepts, or systematic integration into lessons, elements of lifelong learning and health literacy are unsystematically present in their teaching approach (see [Table 3](#)).

The findings in [Table 2](#) illuminate a distinct disconnect between theoretical definitions and practical understanding. While participants struggled to articulate formal definitions of lifelong learning and health literacy, viewing them as ambiguous concepts, their narratives reveal a pragmatic adaptation. Teachers intuitively associated these concepts with functional survival skills, such as verifying online information or safe consumer practices. However, because this integration relies on individual interpretation rather than a systematic pedagogical framework, the promotion of these critical skills remains incidental rather than intentional. This suggests that without clear conceptual clarity, teachers exercise their discretion to "enact" a simplified version of policy that aligns with their immediate classroom realities.

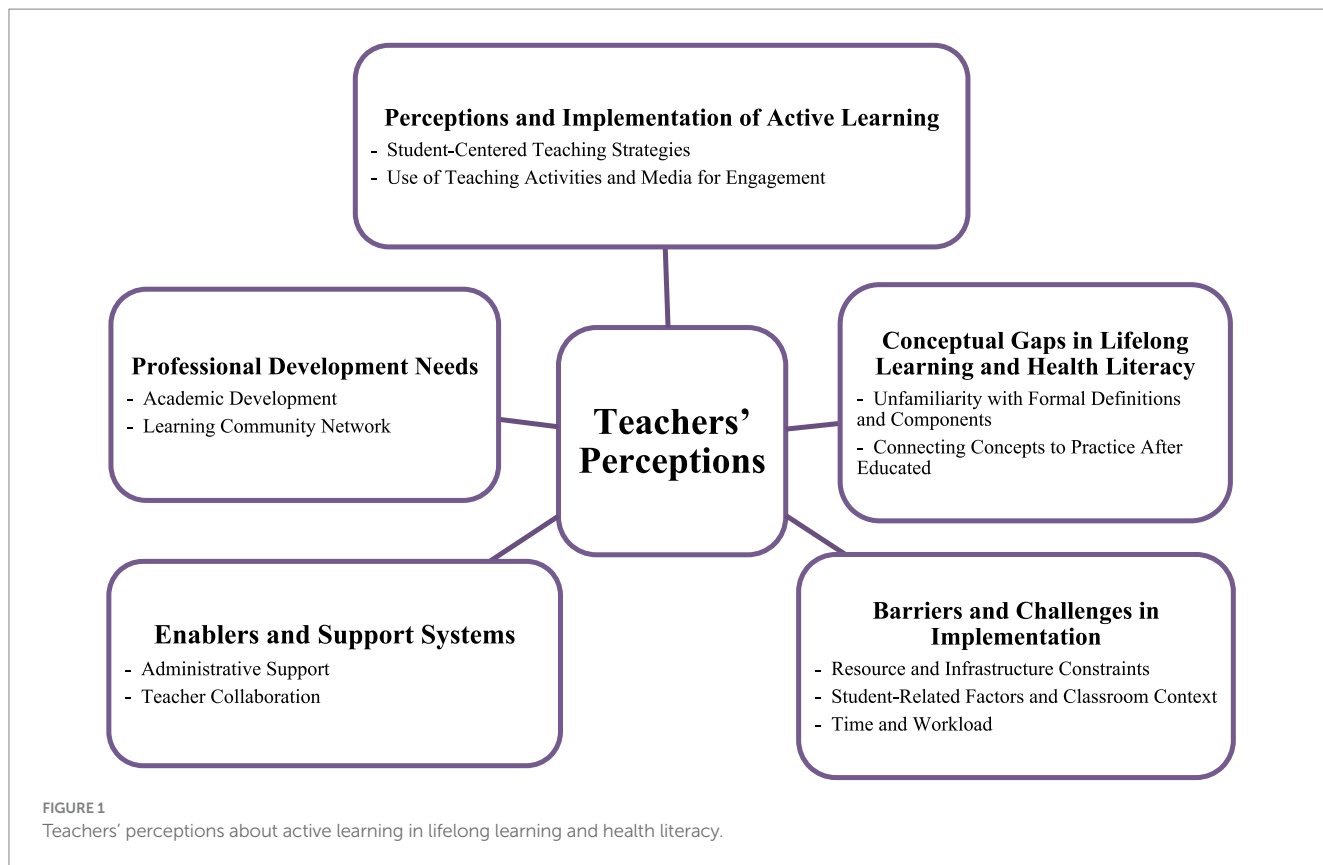


TABLE 2 Perceptions and implementation of active learning.

Sub-themes	Quotes
Student-centered teaching strategies	“Methods or models of active learning management using life skills development activities, community-based, [is] for behavior change. [This is] especially true in health education. ... Children change their behavior and can apply it to themselves and their families.” [Teacher 1]
	“The lesson plans integrate active learning in every step, from setting learning objectives to measurement and evaluation. We mainly use Game-Based Learning.” [Teacher 8]
Use of teaching activities and media for engagement	<i>Use of group activities, scenarios, and thought-provoking questions</i>
	“One of the activities that the children enjoy is simulation activities. Each group is presented with different simulations. For example, regarding consumer rights, we create a scenario and encourage students to think about what consumer rights they would exercise. Then, the students will come up with the answers.” [Teacher 1]
	“In teaching using PBL [problem-based learning], problems are used as a basis for children to analyze on their own. According to past teaching experiences, the approach increases student interaction or engagement. After some time, students naturally become more interactive.” [Teacher 4]
	<i>Use of media, technology and interactive activities</i>
	“The school has LED TV screens for teachers to produce and choose their own media; video clips from the internet and games may be used to introduce lessons, and online tests may be conducted.” [Teacher 1]
	“Kahoot, TikTok, and video clips are used to engage students and help them review lessons before the session, as well as promote analytical thinking.” [Teacher 6, 8]
	“Game-based learning is used to create a fun and stimulating learning atmosphere for students, especially in classrooms with a large number of students and limited space.” [Teacher 8]

### Theme 3: barriers and challenges in implementation

Teachers face multi-dimensional obstacles. A significant limitation is the lack of modern and sufficient teaching resources and

materials, such as CPR mannequins, sports equipment, and specialized classrooms. Additionally, there are infrastructure issues like unstable internet signals and small classroom sizes. Moreover, student-related factors such as excessive student-to-class ratios, differences among students, and lack of interest in certain subjects

TABLE 3 Conceptual gaps in lifelong learning and health literacy.

Sub-themes	Quotes
Unfamiliarity with formal definitions and components	<p>"Um, I'm not very familiar with this term, but in my opinion, it should be something that equips students with skills they can use throughout their lives. From the explanation, it will be included in the learning management plan we have prepared, allowing children to learn and research on their own. Most of it will be in the form of homework to be brought into the next lesson." [Teacher 3]</p> <p>"Skills for lifelong learning, if I understand correctly, would be the kind of learning that does not take place in the classroom, right? For example, they can research on the internet or other sources, is that correct?" [Teacher 6]</p> <p>"Lifelong learning, since university, means [learning has] no age limit. Whether you are old or young, if you want to learn, you go learn. What you learn can be used in real life." [Teacher 7]</p>
Connecting concepts to practice after educated	<p>"Teaching and learning are somewhat related but not entirely. Mainly, students are already expected to find knowledge. There are times we verify information. I try to teach students about data continuously because they tend to take the easy way; they always click the first link when searching. So I tell them to find information from multiple sources before making a decision." [Teacher 4]</p> <p>"For students to [consume] media safely, as in, online shopping, could this be related? Sometimes we teach about consumer protection, having students compare products or look for trustworthy websites." [Teacher 6]</p>

are also major challenges, alongside time constraints affected by other work responsibilities (see Table 4).

These issues remain challenges in the Thai education system, indicating the need to improve infrastructure and support for teachers to enhance the effectiveness of active learning.

### Theme 4: enablers and support systems

Despite the obstacles, the teachers still received significant support, especially from the school administrators, who were understanding and provided support through budget allocation and policy. The process of knowledge exchange through Professional Learning Communities (PLC) at both the subject group and school levels is a crucial mechanism for developing teaching and solving problems collaboratively. Additionally, the personal commitment of the teachers, demonstrated through creating their own teaching materials or even using their personal budget, is an important factor driving the implementation of learning (see Table 5).

As evidenced in Table 5, successful implementation of active learning is contingent upon a supportive ecosystem rather than individual teacher effort alone. Administrative endorsement emerged as a foundational enabler, where tangible support in budget and policy provided the necessary legitimacy for pedagogical innovation. Furthermore, the data highlights the pivotal role of PLCs as a mechanism for collective enactment. By exchanging knowledge and collaborative problem-solving within subject groups, teachers were able to overcome isolation and resource constraints. This peer-driven support system functions not merely as a platform for sharing techniques, but as a crucial emotional and professional scaffold that sustains teacher motivation amidst structural challenges.

### Theme 5: professional development needs

Teachers have a strong desire to enhance their skills, particularly through training that directly addresses health education and physical education, as opposed to broad, irrelevant training. They seek practical workshops where they can engage hands-on and build professional networks to exchange knowledge with fellow teachers from different schools, which will help reduce feelings of isolation at work and create effective practices together. Additionally, there is a need to develop skills in new teaching technologies and innovations (see Table 6).

These demands emphasize the importance of continuous professional development for teachers to respond to changes in education and highlight the significance of teacher development to adapt to educational changes and the needs of learners.

## Discussion

This study aimed to explore how Thai health education teachers perceive and integrate Active Learning (AL), Lifelong Learning (LLL), and Health Literacy (HL). The findings reveal a complex "implementation gap" where the pedagogical *form* is present, but the *function* is compromised. By viewing these findings through the lens of Lipsky's (1980) *Street-Level Bureaucracy* and Ball et al.'s (2012)

TABLE 4 Barriers and challenges in implementation.

Sub-themes	Quotes
Resource and infrastructure constraints	“For health education, our school still lacks CPR manikins. We have to adapt, using pillows as substitutes.” [Teacher 5]
	“Most sports equipment is already insufficient, such as futsal balls and volleyballs. They are consumable because they wear out quickly. For health education, our school still lacks a CPR dummy, so we have to improvise by using a pillow as a substitute.” [Teacher 7]
	“Our entire Health and PE department does not have its classroom. We have to teach in the cafeteria. There is no media. We send YouTube links to student groups for them to watch on their personal mobile phones. We do not have TVs, screens, or projectors.” [Teacher 9]
Student-related factors and classroom context	<i>Creating motivation for class participation</i>
	“This activity, sometimes I think I’ve created it really well, but when I use it in this class, it flops. I lose confidence and have to start over. Some students just do not like interactive activities like games or Q&A.” [Teacher 1]
	“Physical education, they do not really want to study it much. For example, in Grade 12, they are already grown up, becoming young men and women. They do not really want to study it; they would rather not play.” [Teacher 9]
	<i>Media literacy of students</i>
	“The issue we need to address regarding digital literacy in the use of social media arose when one of our students could not continue to university because he’s leaked his personal data, which was then used to open a fake account involving criminal activities.” [Teacher 1]
	“Some children still lack the skills to seek knowledge on their own. Teachers are still thinking about how to help children develop skills in filtering reliable sources of information and determining whether the knowledge there is trustworthy.” [Teacher 1]
	<i>Student diversity</i>
“Health education will have students who learn slowly. Some of them learn slowly, and we might have to wait.” [Teacher 3]	
“Out of 7 classes, the first 3 classes showed results, while the rest did not. We need to use different teaching techniques. We still have not found a method that works for every class, which is a problem. In some units, if the students are not interested, we have to incorporate game activities.” [Teacher 4]	
Time and workload	<p>“It’s also about my time. Since it’s a small school, there are quite a few special activities. So sometimes when I go on an official business trip, I have to leave the classroom, which disrupts my teaching process and makes it discontinuous.” [Teacher 1]</p> <p>“Regarding the workload or paperwork, sometimes it might take up teaching time. There are also school activities to consider. We might need to adjust our plans to ensure we cover the curriculum indicators.” [Teacher 6]</p>

TABLE 5 Enablers and support systems.

Sub-themes	Quotes
Administrative support	“The school has an active learning policy and a comprehensive health promotion policy, with teamwork among all the teachers.” [Teacher 1]
	“There are executives who understand our work and help drive it forward. So, it has allowed our work to progress. We have been doing it for a long time, but the results did not show. When the new executives came in, they helped us a lot and made our work easier.” [Teacher 1]
	“For health education, the school’s budget is considered to be among the top priorities in the school.” [Teacher 1]
	Administrators’ support plays a crucial role in success of operations. Support in terms of budget from the school is also a crucial factor, including equipment, technology, and teaching materials.
Teacher collaboration	“Teachers exchange knowledge by alternating supervision of teaching and learning.” [Teacher 1]
	“The PLC of the subject group sometimes runs out of ideas, but we exchange knowledge with senior teachers who provide suggestions for learning management.” [Teacher 2]
	“The group of lead teachers on sex education goes to the Secondary Educational Service Area Office (SPEA) for training and experience sharing, including teaching methods, teaching problems, and constantly learning new things.” [Teacher 4]
	“We have a discussion within the subject group what teaching techniques and methods are being used, what the formats are like, what problems arise during teaching, and how to solve them. Managing students, engaging students in learning—sometimes this game is good; we will look at the content to see what we can adapt from it.” [Teacher 5, 6, 7, 8]

TABLE 6 Professional development needs.

Sub-themes	Quotes
Academic development	“I would like something academic that the university can provide to help teachers develop skills or intellectual tools to use in organizing teaching activities with students. This would be very beneficial.” [Teacher 1]
	“I want content specific to health education, broken down into topics, like sex education. But these are missing. Most training is broad, not specific to subject content.” [Teacher 7]
Learning community network	“I want to attend training, learn, and then apply it to teaching students. I prefer it face-to-face to build a network.” [Teacher 2]

*Policy Enactment*, we argue that this disconnect represents a structural adaptation by teachers acting as pragmatic policy interpreters.

## The paradox of form vs. function: discretionary modification of policy

The first major finding indicates a paradox where teachers actively employ learner-centered strategies but fail to link them to the deeper objectives of HL and LLL. This aligns with Kane’s (2004) assertion that a methodology’s efficacy relies on the dialectical interplay between the method, the learner, and the educator. In our study, teachers exercised what Lipsky terms “simplification,” modifying abstract policies into manageable tasks (e.g., games) while filtering out complex outcomes due to a lack of conceptual clarity. This was demonstrated through the teachers’ emphasis on rote memorization, which only addresses functional health literacy. However, authentic health literacy entails the ability to access, analyze, evaluate, and apply information in real-life contexts. This gap is further reflected in pedagogical practices, as many educators mistakenly equate active learning with mere physical activity, such as playing games or participating in group work. In contrast, authentic active learning necessitates cognitive engagement through higher-order thinking processes. Students must be challenged to analyze, engage in reflection, and synthesize their actions with fundamental health principles. Despite this need, instruction remains fragmented and disconnected from reality; health education is often taught chapter-by-chapter without considering social contexts or encouraging critical analysis of exaggerated advertisements on social

media. The finding echoes Stars (2018), who identified the shift from passive to empowering learning as a primary challenge in health education. Furthermore, the observed conceptual confusion supports Paakkari and Okan’s (2019) argument that misconceptions regarding health literacy often stem from inadequate teacher training. Consequently, teachers prioritize information dissemination over the cultivation of critical competencies required to access and appraise health data—the core of Nutbeam’s (2000) health literacy definition. This “hybrid” enactment fails to alleviate health anxiety or build resilience as suggested by recent studies (Tavassoli et al., 2025), confirming that without specialized training to design activities aligning with intricate objectives (Szucs et al., 2021), active learning remains superficial.

## Resource constraints as drivers of coping mechanisms

Our analysis of barriers—specifically resource limitations and excessive workload—illustrates Lipsky’s concept of “coping mechanisms.” The teachers’ reversion to traditional lectures or the use of substitutes constitutes a necessary strategy to survive professional demands. This result is consistent with Nunez and Monsivais (2020), who highlighted that practical barriers like time constraints significantly impede the “flipping” of classrooms. However, our theoretical lens suggests these are not just logistical issues but are exacerbated by the aforementioned conceptual deficiencies; teachers perceive the high effort of planning active learning as not worth it when the long-term benefits of HL are not fully understood.

## From isolation to collective enactment: the role of support systems

Finally, the study underscores that administrative support and collaboration are critical enablers, transforming individual “coping” into “collective enactment.” This reinforces previous findings by [Henderson \(2018\)](#) and [Tomlin \(2022\)](#), which demonstrated the benefits of strong administrative backing and teacher collaboration. Our data extends [Trimble and Peterson’s \(1999\)](#) conclusion that a collaborative culture encourages critical thinking by showing that Professional Learning Communities (PLCs) act as a mechanism to standardize discretionary judgment, reducing the isolation that Lipsky identifies as a source of policy failure.

## Implications, limitations, and future directions

### Implications for policy and practice

The findings suggest that bridging the implementation gap requires a systemic shift in professional development. Moving beyond broad methodological training, interventions should focus on creating Professional Learning Communities (PLCs) as situated learning platforms. Based on adult learning principles ([Phillips, 2008](#); [Steyn and Van Niekerk, 2005](#)), these PLCs should facilitate peer mentoring and expert guidance to help teachers “decode” complex concepts like HL and LLL into concrete practices. This aligns with recent evidence by [Basabe and Galigao \(2024\)](#) and [Nasution et al. \(2024\)](#), which emphasizes peer collaboration as a driver for continuous improvement.

### Limitations

The homogeneity of the sample, comprising solely highly successful teachers, limits the transferability of the findings to educators working within different structural, material, and contextual conditions. While criterion sampling was essential for generating information-rich cases regarding Teachers’ Perceptions, it inherently excludes the multiple realities and competing constraints encountered by teachers in general practice—such as large class sizes, limited professional development opportunities, bureaucratic barriers, and resource scarcity. The findings should therefore be understood as analytic generalization concerning the nature of expertise, rather than as prescriptive guidance universally applicable to all teaching contexts.

### Future directions

Future research should employ a mixed-methods approach to triangulate these qualitative perceptions with quantitative measures of student health literacy outcomes. A longitudinal study tracking the impact of a PLC-based intervention on both teacher enactment and student skill development would provide invaluable evidence for policymakers. Additionally, given the challenges of the “infodemic,” further exploration into how teachers can be supported to communicate accurate health information to prevent misinformation—as highlighted by [Zalpour et al. \(2025\)](#)—remains a critical area for investigation.

## Conclusion

This research provides the first empirical examination of the integrated triad—Active Learning (AL), Lifelong Learning (LLL), and Health Literacy (HL)—within the Thai education system. While current policy frameworks implicitly assume these concepts function synergistically, our findings reveal a critical “policy-practice gap.” Through the lens of street-level bureaucracy, we conclude that while teachers successfully enact the form of active learning (through games and technology), the function of developing deep lifelong learning and health literacy competencies is often compromised. This disconnection occurs because teachers, acting as discretionary policymakers, are forced to “simplify” complex educational mandates to cope with conceptual ambiguity and resource constraints.

Therefore, the mere promotion of active learning pedagogies is insufficient to achieve sustainable health literacy. Addressing this challenge requires a systemic shift from individual teacher development to “collective enactment.” Educational policies must move beyond mandating how to teach (methodology) to ensuring teachers possess a precise conceptual understanding of what is being developed (HL and LLL outcomes). We recommend the establishment of targeted Professional Learning Communities (PLCs) that do not just share techniques, but actively decode these complex concepts into actionable classroom practices. Ultimately, bridging this implementation gap is essential not only for pedagogical fidelity but for empowering Thai students with the critical health literacy skills required to navigate an increasingly complex information landscape.

## Data availability statement

The datasets presented in this article are not readily available due to privacy and ethical restrictions. However, anonymized data may be made available from the corresponding author upon reasonable request. Requests to access the datasets should be directed to AT, [arphatt@nu.ac.th](mailto:arphatt@nu.ac.th).

## Ethics statement

The studies involving humans were approved by Naresuan University Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

## Author contributions

AT: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing. PS: Conceptualization, Project administration, Resources, Supervision, Validation, Writing – review & editing. AO: Conceptualization, Funding acquisition, Investigation, Methodology, Supervision, Validation, Writing – review & editing.

## Funding

The author(s) declared that financial support was received for this work and/or its publication. This study was financially supported by Thailand Science Research and Innovation (TSRI).

## Acknowledgments

The authors gratefully acknowledge the contributions and cooperation of all study participants.

## Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Appendix

Guided questions in the individual interview:

1. Active Learning Policy
  - 1.1 How does your institution define and operationalize policies or guidelines regarding the implementation of active learning?
  - 1.2 In what ways do you translate and enact these institutional policies into your actual pedagogical practices?
2. Health Literacy
  - 2.1 How does the integration of active learning for developing health literacy manifest within your classroom environment? Please provide specific examples of instructional activities you employ.
  - 2.2 How do you strategically align active learning pedagogical strategies with the specific dimensions of students' health literacy development?
3. Support and Resources
  - 3.1 What types of institutional support, particularly in terms of teaching materials and instructional resources, does your school offer?
  - 3.2 To what extent do you perceive these resources as sufficient? What specific gaps or additional resource requirements have you identified?
4. Barriers and Challenges
  - 4.1 What primary barriers or systemic constraints do you encounter when implementing active learning strategies?
  - 4.2 What factors contribute to the complexity of integrating health literacy goals within an active learning framework?
  - 4.3 How do you navigate, negotiate, or mitigate these challenges when they arise in your teaching practice?
5. Lifelong Learning
  - 5.1 What are the perceived impediments to the authentic realization of lifelong learning objectives within the health education curriculum?
  - 5.2 How do you adapt your instructional approaches to overcome these barriers to lifelong learning?
6. Support Needs
  - 6.1 What specific dimensions of institutional support or systemic assistance do you require to effectively foster students' health literacy?
  - 6.2 In what modalities do you require this support (e.g., financial allocation, specialized equipment, professional development, or time for collaborative planning)?
7. Professional Development
  - 7.1 Which specific areas of professional competency do you prioritize further development to enhance the efficacy of your active learning instruction?
  - 7.2 What formats of professional development [e.g., hands-on workshops, Professional Learning Communities (PLC), or action research] do you find most conducive to your pedagogical growth?