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Volume 1, Issue 1 (January – June 2026)

Objectives and Scope of the Journal:

Article submissions could pertain to the following areas integral to Quality Assurance in Education's mission:

- Standards, reforms, accountability, accreditation, and audits in education
- School efficiency assessments
- Effective tools for organizational or program development
- Critical element, challenges, impact and good practices in QA
- Tools, criteria and methods for examining or assuring quality

Types of works published in the journal:

1) Academic Articles
2) Research Articles

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Editorial

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Welcome to Volume 1, Issue 1 (January–June 2026) of the **ONIJEd JOURNAL (ONESQA International Journal of Education Quality and Innovation)**.

To ensure the highest standards prior to publication, the editorial board has rigorously managed the manuscript review process by engaging esteemed peer reviewers for comprehensive evaluation and refinement. Through this meticulous selection and double-blind screening process, we strive to achieve the utmost quality and completeness, ensuring that the published articles are of exceptional merit. This endeavor not only maximizes academic impact but also fosters the continued development of scholarly excellence.

The editorial board wishes to express its profound gratitude to all peer reviewers who graciously dedicated their time and effort to provide constructive feedback. Their invaluable guidance has refined each manuscript, ensuring academic rigor, readability, and substantial contributions to the scholarly community. Finally, we extend our sincere appreciation to the authors and all stakeholders whose collaborative efforts have imbued this inaugural issue with profound academic value—value that bridges theory and widespread practical application.

We invite you to look forward to our forthcoming issues.

Preface

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ONIJEd Journal
(ONESQA International Journal of Education Quality and Innovation)
Volume 1, Issue 1, (January – June 2026)

This journal was formerly published as the *ONESQA Quality Assurance in Education Journal (OEJ)* and has since been renamed the *ONESQA International Journal of Education Quality and Innovation (ONIJEd Journal)*, preserving continuity with its predecessor while reflecting an expanding international scope.

This inaugural issue of Volume 1, Issue 1 (January–June 2026) presents six studies examining how external quality assurance (EQA) in Thai education can be rendered more responsive to institutional context, more equitable in outcome, and more effectively supported by emerging technologies. The contributions converge around three interrelated themes.

The first theme concerns the role of artificial intelligence in transforming quality assurance practice, from AI-enabled self-assessment analysis and predictive monitoring to persistent barriers such as infrastructure disparities, data-privacy concerns, and evaluators' AI-literacy gaps. A related study finds that the readiness of school-level learning ecosystems for AI-era instruction in highland primary schools tracks geographic location more closely than institutional size, favoring place-based over uniformly scaled policy support.

The second theme concerns accountability and outcomes-based frameworks. Drawing on mixed-methods research with basic-education stakeholders, one contribution proposes a four-component model-spanning policy, management, monitoring, and outcomes- for strengthening results-based accountability within EQA systems.

The third theme addresses equity and the tailoring of standards to underserved populations, arguing that special education schools serving children with intellectual disabilities require standards distinct from mainstream frameworks-emphasizing individualized learning management and family-inclusive support and proposing an EQA model calibrated to the human-resource constraints of Border Patrol Police Schools to narrow the educational gap in remote areas.

The issue concludes with an analysis of external quality assessors in Thai vocational education, revealing an "assurance-empathy asymmetry" in which stakeholders express confidence in assessors' technical competence while relational, context-sensitive practice remains comparatively underdeveloped-underscoring feedback design as a link between accountability and continuous improvement.

Taken together, these studies demonstrate that effective quality assurance is neither uniform nor purely technical, but requires continual calibration to the specific contexts of learners and institutions while remaining anchored in the shared principles of accountability, equity, and continuous improvement. It is hoped that the perspectives assembled here will inform scholarship and practice as Thailand's quality assurance system continues to evolve.

The Editorial Board

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AI-Powered Strategies for Enhancing Educational Quality Assurance: International Perspectives and Applications in Thailand

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Abstract

This study examines the integration of Artificial Intelligence (AI) into External Quality Assurance (EQA) systems in education, focusing on international practices and its current application in Thailand. The study pursues two main objectives: 1) to investigate AI-powered strategies in international EQA and analyze current EQA practices in Thailand, and 2) to propose actionable, strategic directions for leveraging AI to enhance Thailand's EQA framework. Utilizing a qualitative research methodology based on literature analysis and five representative Thai institutional case studies, the findings reveal that while AI offers transformative potential—such as automating Self-Assessment Report (SAR) analysis, enabling real-time predictive monitoring, and reducing administrative burdens—Thailand's implementation remains fragmented. Major hurdles include infrastructure disparities (the digital divide), data privacy concerns, AI literacy gaps among evaluators, and algorithmic bias. To address the second objective, this paper proposes three strategic pillars to revitalize Thailand's EQA system: 1) Institutional and Governance Infrastructure: Establishing a centralized, PDPA-compliant EQA Data Cloud and allocating targeted AI infrastructure grants to under-resourced schools; 2) Human Capital Empowerment: Implementing a mandatory "AI-Assisted Evaluator Certification" program to train external evaluators in detecting AI-generated content, mitigating bias, and combining AI data analytics with human judgment; and 3) A Phased Integration Roadmap: Transitioning from short-term pilot predictive analytics in SAR screening to mid-term hybrid EQA evaluations, ultimately achieving long-term automated compliance verification. These actionable recommendations provide a clear blueprint for policymakers, particularly ONESQA and the Ministry of Education, to build an ethical, equitable, and technology-driven quality assurance ecosystem tailored to the Thai educational landscape.

Keywords: Artificial Intelligence (AI), External Quality Assurance (EQA), Thailand Education, Educational Policy, ONESQA, AI Strategy

Introduction

In an era defined by unprecedented technological advancement, Artificial Intelligence (AI) has emerged as a transformative force, reshaping industries and societal structures across the globe. Its profound impact is particularly evident within the educational landscape, where AI's analytical capabilities, automation potential, and capacity for personalization are revolutionizing teaching, learning, and administrative processes (Baker, 2020; Bodiako et al., 2021; Aad & Hardey, 2025; Sposato, 2025). Amidst this global paradigm shift, the concept of Educational Quality Assurance (EQA) gains renewed significance. EQA, traditionally a multifaceted and often laborious endeavor involving meticulous data collection, extensive manual evaluation, and intermittent reviews, is the bedrock upon which trust in educational systems is built. It ensures that learning institutions meet established standards, foster effective pedagogical practices, and ultimately equip students with the competencies necessary for a rapidly evolving world (Phangphol & Phakamach, 2021; Panjarattanakorn et al., 2024; Hardaker & Glenn, 2025).

However, conventional EQA mechanisms frequently encounter challenges such as information overload, inconsistencies in evaluation, the reactive nature of interventions, and the sheer volume of data that can overwhelm human capacity. These limitations can hinder the timely identification of critical issues, impede proactive corrective measures, and make it difficult to ascertain the true impact of educational initiatives (Tahiru, 2021; Wood & Moss, 2024; Dzidziguri, 2024; Sirirattanchit, 2025; Carvalho et al., 2025). The inherent complexity of assessing quality across diverse educational settings, from primary schools to higher education institutions, necessitates innovative solutions that can process, interpret, and leverage data more effectively than ever before. It is within this intricate context that AI presents a compelling solution, offering the promise of transitioning EQA from a predominantly compliance-driven exercise to a dynamic, predictive, and continuously improving framework, thereby ensuring that educational systems not only meet but consistently exceed expectations (Boardofinnovation, 2024; Baca & Zhushi, 2025; López-Acosta et al., 2026; Jafari & Keykha, 2026).

Against this backdrop of global technological evolution, Thailand stands at a pivotal juncture, actively pursuing its ambitious "Thailand 4.0" vision—a national strategy aimed at transforming the economy from one reliant on manufacturing to one driven by innovation, technology, and creativity. A cornerstone of this vision is the cultivation of a high-quality, future-ready workforce, which is inextricably linked to a robust and responsive education system (Phakamach et al., 2024; Jansawang et al., 2025). The Thai government has unequivocally recognized the pivotal role of AI in achieving these national aspirations, embedding AI development and integration into its core strategies. Initiatives overseen by the National AI Committee and driven by ministries like the Ministry of Education (MOE) and the Ministry of Higher Education, Science, Research and Innovation (MHESI) underscore a concerted effort to harness AI's potential. These efforts are not merely theoretical; they involve tangible collaborations with global technology leaders, such as Microsoft, aimed at developing an integrated AI ecosystem by 2030 (Phakamach, 2023; Panjarattanakorn et al., 2024). This includes ambitious targets for training AI specialists and enhancing AI literacy among millions of citizens, demonstrating a holistic approach to technological adoption (Zhai et al., 2021; Payadnya et al., 2025). However, Thailand's educational landscape, while striving for excellence, still grapples with persistent challenges, including regional disparities in educational access and quality, a historical reliance on traditional teaching methodologies, and the urgent need to bridge skill gaps to meet the demands of a competitive global economy (Phakamach et al., 2024). AI, therefore, is not just a tool for optimization but a strategic imperative that can empower Thailand to overcome these long-standing obstacles, foster equitable learning opportunities across urban and rural divides, and prepare a generation of learners equipped with the critical thinking and digital competencies essential for thriving in the 21st century (Davis, 2024; Sirirattanchit, 2025).

Within this framework of national ambition and persistent challenges, the strategic integration of AI into Thailand's EQA mechanisms promises to usher in a new era of efficiency, insight, and responsiveness. The subsequent discussion will delve into specific AI-powered strategies designed to elevate EQA practices within the Thai context (Phangphol & Phakamach, 2021; Phakamach, 2023; Panjarattanakorn et al., 2024). These strategies are broadly categorized to illustrate how AI can revolutionize various facets of quality assurance, from the systematic analysis of educational data to the provision of personalized feedback, the streamlining of administrative workflows, and the enhancement of transparency and engagement across all stakeholders (Dzidziguri, 2024; Ellikkal & Rajamohan, 2025; Jafari & Keykha, 2026; Saha et al., 2026). By moving beyond traditional, often time-consuming, and resource-intensive assessment methods, AI offers the capability to generate real-time insights, predict potential areas of concern, and provide actionable recommendations, enabling educational institutions and quality assurance bodies to transition from reactive problem-solving to proactive, continuous improvement (Katalon, 2024; Warren et al., 2026). Furthermore, AI can

contribute to greater objectivity and consistency in evaluation, fostering a culture of evidence-based decision-making. While the potential benefits are substantial, successful implementation will necessitate a careful consideration of the inherent complexities, including addressing infrastructural limitations, building robust human capacity through comprehensive AI literacy programs for educators and administrators, and navigating critical ethical considerations surrounding data privacy, security, and algorithmic bias (Hur, 2025; Chen et al., 2025; Zlotnikova et al., 2025). Ultimately, by strategically leveraging AI, Thailand has a unique opportunity to fortify its educational system, ensuring that it is not only globally competitive but also profoundly impactful in nurturing the potential of every learner across the nation (Wood & Moss, 2024; Sposato, 2025). To address these gaps and provide a strategic path forward, this study pursues two main objectives: 1) to investigate international AI-powered strategies in External Quality Assurance (EQA) and analyze current EQA implementation and challenges within the Thai context; and 2) to propose actionable, context-specific directions and a strategic roadmap for leveraging AI to enhance Thailand's national EQA system. By synthesizing global best practices with institutional case studies in Thailand, this paper aims to offer policymakers and quality assurance agencies, such as ONESQA, practical insights for building a tech-driven, ethical, and sustainable educational evaluation ecosystem.

Literature Review

The burgeoning integration of Artificial Intelligence (AI) across diverse sectors has undeniably extended its influence to the realm of education, prompting a critical re-evaluation of traditional Educational Quality Assurance (EQA) frameworks. Global literature highlights AI's potential to significantly enhance EQA through automated data collection and analysis, intelligent accreditation processes, and continuous monitoring (Boardofinnovation, 2024; Jafari & Keykha, 2024). Studies emphasize AI's capability to process vast datasets of student performance metrics, faculty evaluations, and administrative reports, offering real-time insights into institutional effectiveness and compliance with evolving academic benchmarks (Tahiru, 2021; Marengo et al., 2024). Furthermore, AI-driven analytics can identify patterns to predict dropout rates, pinpoint areas for pedagogical improvement, and suggest curriculum enhancements, thereby shifting EQA from a reactive to a more proactive and predictive paradigm (Katalon, 2024; Mariyono & Nur Alif Hd, 2025; Warren et al., 2026). Beyond mere data processing, AI tools, including Natural Language Processing (NLP) algorithms, can streamline accreditation by automating document verification and compliance checks, reducing administrative burdens on evaluators and accelerating decision-making processes. The literature also points to AI's role in facilitating peer reviews and institutional benchmarking by comparing performance against similar institutions globally, fostering the identification and adoption of best practices (Jafari & Keykha, 2024; Saha et al., 2025; López-Acosta et al., 2026). Such advancements underscore a global trend towards leveraging AI to foster a culture of continuous improvement within educational institutions, ensuring that quality standards are consistently maintained rather than merely met during periodic evaluations.

In the context of Thailand, the imperative to integrate AI into education aligns seamlessly with the nation's "Thailand 4.0" vision, emphasizing innovation and technology-driven development. Recent reports and academic discussions underscore Thailand's concerted efforts to embrace AI across its educational landscape, with initiatives spearheaded by government bodies like the MOE and the MHESI, often in collaboration with private sector entities such as Microsoft (Phangphol & Phakamach, 2021; Phakamach, 2023; Panjarattanakorn et al., 2024; Phakamach et al., 2024). These collaborations aim to revolutionize the education system by laying the groundwork for equitable access to future-ready skills, including equipping over 10 million citizens with AI literacy by 2030 (Hur, 2025). Specific applications of AI in Thai education, as documented in various studies, include personalized learning platforms that adapt content to individual student needs, intelligent

tutoring systems providing immediate feedback, and AI-powered tools for automated assessment and grading (Hardaker & Glenn, 2025). For instance, research from Chulalongkorn University and other institutions highlights the use of Generative AI, such as ChatGPT, for preparing teaching materials, designing research plans, and managing administrative tasks, significantly reducing preparation time and improving work quality (Ahmed et al., 2023; Phakamach, 2023; Isiaku et al., 2024; Lytras & Ordonez De Pablos, 2024; López-Acosta et al., 2026). These applications inherently contribute to EQA by enhancing learning outcomes, improving pedagogical efficiency, and streamlining administrative processes that indirectly support quality maintenance.

However, the literature also delineates significant challenges and considerations pertinent to AI implementation for EQA within Thailand. A prominent concern is the existing digital divide, where uneven access to reliable internet and digital devices, particularly in rural areas, could exacerbate educational inequalities rather than bridge them (Cook & Cook, 2024). Furthermore, the level of AI literacy among Thai teachers remains moderate, with many demonstrating awareness of AI's benefits but lacking proficiency in practical application, necessitating targeted training and professional development programs (Tahiru, 2021; Jafari & Keykha, 2024; Mariyono & Nur Alif Hd, 2025). Ethical considerations, including data privacy, security, and algorithmic bias, are also frequently cited as critical impediments. Thailand has initiated steps to align with international ethical standards and has introduced AI ethics guidelines, but robust frameworks and continuous monitoring are essential to prevent misuse and ensure fairness (Katalon, 2024; Luckin, 2025; Zlotnikova et al., 2025). The cost associated with developing and deploying sophisticated AI systems, along with the complexities of integrating new AI tools with existing legacy educational systems, represent practical hurdles. Despite these challenges, the prevailing sentiment in the literature suggests that with strategic planning, robust infrastructure development, comprehensive capacity building, and a strong emphasis on ethical AI governance, Thailand can successfully leverage AI to transform its EQA, ensuring a more efficient, equitable, and higher-quality education system for its future generations (Cook & Cook, 2024; Payadnya et al., 2025; Jafari & Keykha, 2026).

Global literature indicates that AI and NLP are increasingly transforming Educational Quality Assurance (EQA) by enabling big data analytics, risk prediction, automated document verification, and continuous monitoring, thereby shifting EQA from a reactive to a proactive paradigm. In Thailand, AI integration aligns with the "Thailand 4.0" vision and policy initiatives from authorities like OBEC and MHESI, collaborating with the private sector to foster digital literacy. Applications such as Generative AI and adaptive learning platforms enhance personalized learning, intelligent tutoring, and administrative efficiency. However, Thailand faces notable implementation hurdles, including the digital divide, moderate teacher AI literacy, ethical and data privacy concerns, algorithmic bias, high deployment costs, and legacy system integration. Overcoming these challenges requires strategic planning, robust infrastructure, capacity building, and ethical governance.

Research Methodology

This study employs a qualitative documentary research design, a specialized approach suitable for systematically gathering, synthesizing, and analyzing secondary data related to educational administrative structures, quality assurance frameworks, and policy-driven theoretical concepts. The methodology is structured into three main phases:

1. Data Sources and Selection Criteria

The materials investigated are categorized into three primary data groups:

1) Academic Literature: National and international peer-reviewed journals, research articles, and dissertations focusing on AI applications in Educational Quality Assurance (EQA).

2) Policy and Strategic Documents: Educational policies, national strategic plans, and annual reports from central governing authorities (e.g., Office of the Basic Education Commission [OBEC], Ministry of Higher Education, Science, Research and Innovation [MHESI], and Office for National Education Standards and Quality Assessment [ONESQA]).

3) Institutional Reports: Operational handbooks, institutional performance reports, and Self-Assessment Reports (SAR) from diverse educational settings.

Document retrieval was conducted through recognized academic databases (e.g., Scopus, Google Scholar, ThaiJo). Selection was guided by explicit inclusion criteria: publications within the past 5–10 years, high source credibility, and direct relevance to AI strategies and EQA implementation.

2. Data Analysis and Synthesis

All collected qualitative data underwent rigorous verification for content validity and contextual relevance. The synthesis process integrated content analysis with systematic thinking analysis to categorize, cross-examine, and interconnect key patterns across global benchmarks and Thailand's local context.

3. Framework for Results Presentation

To systematically answer the research objectives and provide a clear analytical flow, the findings in the Results section are categorized and structured into four key themes:

Section 1: The Core Roles of AI Tools in EQA: Presentation of functional AI applications in quality assurance, focusing on automated data collection, NLP-based document verification, continuous KPI tracking, and administrative streamlining.

Section 2: AI-Powered Strategies for Elevating EQA to International Standards: Detailed breakdown of four core strategic pillars:

1) Data-Driven Insights & Predictive Analytics (early warning systems and performance forecasting).

2) Administrative & Resource Optimization (automated compliance reporting and resource allocation).

3) Personalized Feedback & Adaptive Learning (ITS, automated grading, and targeted teacher upskilling).

4) Stakeholder Engagement & Transparency (sentiment analysis and public reporting dashboards).

Section 3: Contextual Application & Case Studies in Thailand: Examination of five diverse, real-world descriptive case studies across Thai educational contexts (e.g., higher education, vocational colleges, basic education districts, international schools, and remote pilot projects) to evaluate practical feasibility and impact.

Section 4: Implementation Challenges and Operational Governance: Identification of key structural hurdles in Thailand (the digital divide, AI literacy gaps, data privacy/PDPA concerns, and algorithmic bias) paired with actionable strategies for capacity building, ethical governance, and system integration.

In summary, this study employs a qualitative documentary research design to systematically gather, synthesize, and analyze secondary data regarding educational administration, quality assurance frameworks, and policy-driven concepts. Materials were retrieved from academic journals, strategic plans from authorities like OBEC, MHESI, and ONESQA, and institutional SAR via databases including Scopus, Google Scholar, and ThaiJo. Selection criteria prioritized source credibility, publication within the past 5–10 years, and direct relevance to AI applications in EQA. The collected data underwent rigorous validity verification, utilizing content analysis combined with systematic thinking analysis to cross-examine global benchmarks against Thailand's context. The synthesis establishes a structured framework for the Results section, organized into four key dimensions: the core roles of AI in

EQA, four international AI-powered strategies, practical feasibility across five Thai case studies, and structural implementation challenges alongside policy governance frameworks.

Results

Based on the systematic analysis of academic literature, policy frameworks, and operational reports, the findings are categorized into four core sections to evaluate the integration, strategic application, contextual feasibility, and structural challenges of AI-powered EQA in Thailand.

1. The Role of AI Tools in EQA

The integration of AI into the education sector has revolutionized traditional EQA frameworks. Particularly in the context of Thailand, AI plays a crucial role in making these processes more efficient and proactive. Relevant literature highlights AI's potential to significantly enhance EQA across several key dimensions (Boardofinnovation, 2024; Dzidziguri, 2024; Warren et al., 2026). Firstly, AI can assist in automated data collection and analysis. AI systems can rapidly and accurately process large datasets, including student performance data, teacher evaluations, administrative reports, and facility information – all crucial data points that previously required significant time and resources to manage. AI can provide real-time insights into institutional effectiveness and compliance with various accreditation standards (Jafari & Keykha, 2024; Marengo et al., 2024). Furthermore, AI-driven data analysis can identify patterns and trends to predict student dropout rates or pinpoint areas needing improvement in teaching methodologies and curriculum development, enabling quality assurance bodies to take proactive measures (Katalon, 2024; Mariyono & Nur Alif Hd, 2025; Jafari & Keykha, 2026).

Chedrawi, Kazoun, and Kokkinaki (2024) and Saha et al. (2025) have given that another significant role of AI is to streamline accreditation processes, especially those involving document verification and compliance checks. Utilizing NLP technology, AI can review accreditation applications, identify inconsistencies, and provide preliminary feedback, thereby reducing administrative burdens and accelerating decision-making. Moreover, AI contributes to continuous oversight and monitoring. Instead of relying solely on periodic evaluations, AI models can track Key Performance Indicators (KPIs) in real-time, alerting accreditation bodies to deviations from standards. This proactive approach helps institutions consistently maintain quality levels.

In the Thai context, the application of AI for educational quality assurance aligns perfectly with the nation's "Thailand 4.0" vision, which emphasizes innovation and technology-driven development. Literature from various studies and reports indicates that AI tools, particularly Generative AI like ChatGPT, contribute significantly to improving operational efficiency and management (Phakamach, 2023; Phakamach et al., 2024; Kaizo, 2025; Ronaghi & Ronaghi, 2025). For instance, research from Chulalongkorn University and other institutions has shown that AI can assist in preparing teaching materials, designing research plans, and managing administrative tasks, substantially reducing preparation time and enhancing the quality of work. Additionally, AI supports personalized learning and instant feedback through adaptive learning platforms and intelligent tutoring systems, directly leading to higher learning outcomes, which is a core aspect of quality assurance. Therefore, the strategic integration of AI into educational quality assurance processes is essential for elevating Thailand's educational standards to international levels and preparing students for a rapidly changing world.

2. AI-Powered Strategies for Elevating EQA to International Standards

In an era transformed by AI, the application of AI in Thailand's education sector has become a critical strategy for elevating EQA. Moving beyond traditional, periodic inspection

and evaluation processes, AI introduces a new, data-driven approach that offers predictive capabilities and rapid responsiveness (Boardofinnovation, 2024; Katalon, 2024; Zawacki-Richter et al., 2024; Mariyono & Nur Alif Hd, 2025; Jafari & Keykha, 2026). This helps Thailand's education not only meet standards but also consistently strive for excellence, and, importantly, align with international benchmarks. AI-Powered Strategies were as follows:

2.1 Data-Driven Insights and Predictive Analytics for International Standards

AI plays a vital role in shifting EQA from reactive inspection to proactive management. With its ability to process massive amounts of data from various sources, such as student performance, teacher evaluations, curricular, and facility information, AI can:

1) Automated Data Collection and Analysis: AI systems can quickly and accurately collect and process vast amounts of data, which was previously time-consuming and resource-intensive to manage. This processing enables institutions to immediately compare internal data against international accreditation standards.

2) Performance Prediction and Early Warning Systems: AI models can analyze historical data to predict student outcomes, identify at-risk students, or forecast potential quality issues at an institutional level, enabling timely intervention and support. This ensures student learning outcomes align with international criteria.

3) Identify Strengths and Weaknesses: AI algorithms can pinpoint patterns and trends in data, highlighting areas of strength and weakness within the educational system, whether by subject, grade level, or overall institutional performance. This helps quality assurance bodies focus their efforts effectively and align improvements with global quality standards.

2.2 Streamlining Administrative Processes and Resource Allocation

AI not only improves teaching and learning but also enhances administrative efficiency, which significantly impacts the overall quality of institutions in meeting international standards (Wood & Moss, 2024; Bilal et al., 2025):

1) Automated Reporting and Documentation: AI can automatically generate compliance reports for quality assurance agencies, reducing the manual burden of documentation and increasing accuracy. This is essential for auditing and accreditation by international organizations.

2) Optimized Resource Allocation: AI can analyze data on resource utilization, such as classroom space or laboratory equipment, to optimize allocation and ensure efficient use, which is crucial for delivering high-quality education according to international criteria.

2.3 Personalized Feedback and Adaptive Learning

While AI is primarily used for learning, it also plays a direct role in educational quality and helps elevate it to international standards (Hardaker & Glenn, 2025):

1) Intelligent Tutoring Systems (ITS) and Adaptive Learning Platforms: These systems can provide real-time, personalized feedback to students, identify learning gaps, and recommend appropriate resources, directly leading to improved learning outcomes. This ensures student progress and achievement of internationally recognized competencies.

2) Automated Assessment and Grading: AI tools can assist in grading exams and assignments, particularly for objective assessments, and can even provide preliminary feedback on written work, reducing teacher workload and increasing grading consistency. This ensures assessment processes are fair and meet internationally accepted standards (Saha et al., 2025).

3) Personalized Professional Development for Educators: AI can analyze teacher performance data and student feedback to recommend targeted professional development programs, helping educators improve their teaching methodologies and develop in areas

needed. This ensures staff capabilities and teaching skills are comparable to international levels (Marengo et al., 2024).

2.4 Enhanced Stakeholder Engagement and Transparency

AI can increase transparency and foster greater participation from all parties involved in the quality assurance process, which is a key principle of international quality assurance (Ellikkal & Rajamohan, 2025; Saha et al., 2026):

1) Sentiment Analysis: AI can analyze qualitative data from surveys, forums, and social media to gauge the sentiment of students, parents, and teachers regarding educational quality, providing valuable insights beyond traditional surveys. This information can then be used to align improvements with international expectations.

2) Transparent Reporting Dashboards: AI can power interactive dashboards that present quality assurance data in an easily understandable format for all stakeholders, promoting transparency and accountability. This is essential for building international trust and recognition (Dzidziguri, 2024).

Challenges and Considerations in Thailand for International Standards

Despite its enormous potential, implementing AI in EQA in Thailand to achieve international standards still faces several challenges:

1) Digital Divide and Infrastructure: Unequal access to reliable internet and digital devices, especially in rural areas, could hinder the widespread adoption and effectiveness of AI solutions, creating gaps in access to quality education comparable to international standards.

2) AI Literacy and Training for Teachers: Many Thai teachers may still lack the necessary AI literacy and skills to effectively use AI tools and understand their implications for quality assurance. Comprehensive training programs are needed to elevate the capabilities of personnel to global levels.

3) Data Privacy and Security: The collection and use of large amounts of student data raise concerns about privacy and security, necessitating robust ethical guidelines and clear legal frameworks aligned with international standards (Zlotnikova et al., 2025).

4) Algorithmic Bias: AI models can perpetuate or even amplify existing biases in data if not carefully designed and monitored. Ensuring fairness and inclusivity in AI-driven EQA systems is crucial to align with international principles of justice and equality.

5) Implementation Costs: Developing and deploying complex AI systems can be expensive, requiring significant investment in technology, infrastructure, and human capital. This might be a limitation for smaller institutions or under-resourced regions.

6) Integration with Existing Systems: Seamless integration of new AI tools with existing legacy systems in Thai educational institutions can be complex and requires careful planning for smooth operation.

7. Clear Policies and Regulatory Frameworks: Despite ongoing efforts, clear and comprehensive policies and regulations for AI use in education are still under development in Thailand. Acceleration is needed to align with international practices and standards.

In summary, having understood AI-powered strategies for EQA, the next section will present case studies where AI tools have been successfully implemented as mechanisms for EQA in some educational institutions in Thailand.

3. Case Studies of AI- Powered Strategies to Elevate EQA to International Standards

The adoption of AI strategies in EQA is significantly transforming Thailand, shifting from traditional assessment approaches to data-driven, predictive, and responsive methodologies (Boardofinnovation, 2024; Mudkanna Gavhane & Pagare, 2024). This aims to

elevate educational standards to an international level. Here are 5 illustrative case studies demonstrating the application of these strategies (Katalon, 2024; Jafari & Keykha, 2026; Warren et al., 2026):

Case Study 1: Smart University and Curriculum Performance Analysis
Institution: A technology university in Bangkok
AI Strategy: Data-Driven Insights and Predictive Analytics for International Standards
Implementation: The university adopted an AI system utilizing Machine Learning to analyze vast amounts of student performance data, from individual course levels to overall curriculum performance. This data is compared against international accreditation standards (e.g., ABET for engineering or AACSB for business administration). The AI system can identify trends in average scores across curricular, track student progress in essential courses, and predict students likely to face challenges in core subjects.
Role in EQA: AI enables the university to accurately identify strengths and weaknesses in its curricular and compare them with international benchmarks instantly. If learning outcomes in certain areas do not meet international standards, the AI system issues an alert, allowing the curriculum committee to quickly and proactively revise teaching content, assessment methods, or learning resources, rather than waiting for annual evaluation results.

Case Study 2: Educational District and Automated Reporting and Auditing
Institution: An educational district in Northeastern Thailand
AI Strategy: Streamlining Administrative Processes and Resource Allocation
Implementation: The educational district implemented an AI system to process data from its schools to generate reports on compliance with internal and external quality assurance standards. The AI system collects data from school reports, such as student-to-teacher ratios, quantity of learning materials, budget utilization per activity, and teacher training documents. The AI then verifies the accuracy, completeness, and consistency with the requirements of the Office of the Basic Education Commission (OBEC) and regionally comparable standards.
Role in EQA: AI significantly reduces the administrative workload for personnel in the educational district and schools. The AI-generated reports are accurate and standardized, making the quality auditing process faster and more efficient. This allows the educational district to focus on providing guidance and support to schools for continuous quality development.

Case Study 3: Vocational College and Personalized Teacher Professional Development
Institution: A vocational college in Northern Thailand
AI Strategy: Personalized Feedback and Adaptive Learning
Implementation: The college adopted an AI platform to analyze data on individual teacher performance, including student achievement in taught subjects and feedback from students and parents. The AI processes this data to create a knowledge and skill profile for each teacher, then recommends professional development courses or learning resources tailored to each teacher's strengths and weaknesses. For example, if the AI finds that students in a particular subject struggle with practical concepts, it might recommend a teacher training course on Project-Based Learning techniques.
Role in EQA: AI makes teacher professional development more effective and targeted, elevating teachers' capabilities and teaching skills to international levels, which directly impacts the quality of teaching and learning outcomes.

Case Study 4: International School and Stakeholder Sentiment Analysis
Institution: An international school in Central Thailand
AI Strategy: Enhanced Stakeholder Engagement and Transparency

Implementation: The school implemented an AI system with Sentiment Analysis functionality to process data from annual satisfaction surveys completed by students, parents, and teachers, as well as comments posted on the school's communication platforms. The AI analyzes these texts to identify positive, negative, or neutral sentiment trends and can group common issues, such as communication problems between home and school, quality of extracurricular activities, or satisfaction with various services.

Role in EQA: AI helps the school understand the needs and concerns of its stakeholders deeply and quickly. The insights gained lead to improved policies and services that meet the expectations of the school community, which are often international standards, making quality decisions transparent and data-supported.

Case Study 5: AI-Powered Pilot Project for Reducing Educational Disparities

Institution: A pilot project involving multiple schools in remote areas (under public-private partnership)

AI Strategy: Addressing Digital Divide and Capacity Building

Implementation: This project installed AI-powered adaptive learning systems in small schools in remote areas, along with providing necessary digital devices and internet access. The AI system analyzes each student's learning patterns and presents content tailored to their ability level. It also provides intensive AI Literacy training for local teachers, enabling them to effectively use AI tools for teaching and monitoring student progress. Additionally, an AI system assists in managing devices and network connectivity to ensure continuous technology usage.

Role in EQA: AI helps bridge the quality gap in remote education by providing quality, personalized learning experiences to previously underserved students and by elevating teachers' capabilities to be comparable with those in urban areas. This pilot serves as a model for using AI to create equitable access to high-quality education, aligning with fundamental principles of international educational quality assurance.

These case studies demonstrate that AI can be a powerful tool in driving Thailand's educational quality assurance towards international standards. This is achieved by focusing on proactive data utilization, enhancing process efficiency, and promoting continuous learning and professional development. However, successful implementation requires careful planning, continuous investment, and serious attention to addressing challenges such as infrastructure, AI literacy, and data ethics.

4. Implementing AI- Powered Strategies to Enhance EQA for Efficiency and Effectiveness

The practical implementation of AI-powered strategies in EQA is a significant step towards elevating the efficiency and effectiveness of education systems. This transition is not merely about adopting new technology (Abdekhoda & Dehnad, 2024; Boardofinnovation, 2024; Mudkanna Gavhane & Pagare, 2024; Jafari & Keykha, 2026; Warren et al., 2026), it's a paradigm shift emphasizing proactive data utilization, predictive analysis, and rapid response to ensure education achieves excellence and is comparable to international standards.

4.1 Data-Driven Planning and Infrastructure

Implementing AI in EQA begins with robust planning and a ready infrastructure:

1) Assessing Data Readiness: Start by evaluating existing data (e.g., student grades, attendance records, teacher reports) to identify sources that can be leveraged by AI. Determine the types of additional data needed to cover all desired quality dimensions (Baca & Zhushi, 2025).

2) Investing in Digital Infrastructure: Investment in cloud platforms, data lakes, and high-performance computing capabilities is essential to support data flow and AI models.

3) Creating a Centralized Data Platform: Develop a system that can collect and integrate data from various sources into a single platform, allowing AI to access complete and up-to-date information for analysis.

4.2 AI System Development and Integration

Once the infrastructure is ready, developing and integrating AI systems is the next step (Saha et al., 2025):

1) Developing Predictive Analytics Systems: Build AI models capable of forecasting trends, such as student dropout rates or subjects where students frequently struggle. These systems enable institutions to intervene quickly and precisely.

2) Implementing AI Tools for Assessment and Feedback: Utilize AI for automated exam grading, written work analysis, and providing constructive feedback to students. This not only reduces teacher workload but also ensures more consistent and timely feedback.

3) Integrating AI with Learning Management Systems (LMS) and Administrative Systems: Connect AI with existing learning platforms and student information systems to allow AI to access real-time learning data and provide personalized feedback to learners.

4) Using AI to Improve Administrative Processes: Develop AI to assist with administrative tasks, such as scheduling, resource management, or generating compliance reports, enabling staff to dedicate more time to strategic work.

4.3 Capacity Building and Organizational Culture

Successful AI implementation requires preparing personnel and fostering an open-minded culture:

1) AI Literacy Training for Personnel: Organize comprehensive training programs for administrators, teachers, and quality assurance staff to ensure they understand AI and can use AI tools effectively, including interpreting AI-generated results.

2) Promoting a Data-Driven Organizational Culture: Create a culture that supports data-driven decision-making, encouraging staff to ask questions, seek insights from AI, and continuously use results to improve their work.

3) Establishing In-house AI Teams: Form dedicated teams or AI specialists within the institution to lead the AI implementation, develop models, and address any potential issues (Chen et al., 2025).

4.4 Addressing Challenges and Governance

Zlotnikova et al. (2025) have given perspectives on AI implementation must consider challenges and ethical considerations:

1) Data Privacy and Security: Establish strict policies and measures for protecting students' and staff's personal data, in compliance with international regulations (e.g., GDPR) and domestic laws (e.g., PDPA).

2) Managing Algorithmic Bias: Continuously review and correct potential biases in the data used to train AI and within the algorithms themselves, ensuring AI makes fair decisions and does not exacerbate inequalities.

3) Policy and Regulatory Frameworks: Develop clear policy and regulatory frameworks for AI use in education to build trust among stakeholders and promote responsible AI adoption (Chan, 2023).

4.5 Continuous Monitoring and Improvement

AI implementation is an ongoing process that requires continuous monitoring and refinement:

1) Defining Clear KPIs: Establish clear KPIs that can measure the impact of AI implementation, both in terms of efficiency (e.g., reduced time for report generation) and effectiveness (e.g., improved student learning outcomes).

2) Regular Evaluation and Improvement of AI Models: Continuously review and update AI models based on new data and evaluation results to ensure AI remains accurate and maximally effective.

3) Establishing Feedback Mechanisms: Provide channels for users to give feedback on the AI system's performance, which can be used for future improvements and development (Chen et al., 2025).

4) Systematic implementation of these AI strategies will enable Thailand's educational quality assurance to achieve a significant leap in efficiency and effectiveness, allowing Thai education to truly advance towards excellence and gain international recognition.

However, in driving EQA, each educational institution must consider the policies of the Office for National Education Standards and Quality Assessment (ONESQA) and the context of that particular institution. This is to ensure that the implementation of AI tools aligns with objectives and can truly elevate the quality of education at all levels. The next section will present best practices for leveraging AI to support effective and efficient educational management.

5. Best Practices in Using AI Tools to Enhance EQA in Educational Institutions

Successfully implementing AI tools for effective and efficient educational quality assurance depends not solely on technology, but also on best practices for integrating AI into the institution's culture and processes (Boardofinnovation, 2024; Katalon, 2024; Kaizo, 2025; Saha et al., 2025; Jafari & Keykha, 2026; Warren et al., 2026). Here are 10 best practices:

1) Start with Small Pilot Projects: In order to use AI in limited areas, such as analyzing student achievement in a single discipline or assessing teacher performance in specific groups, to learn, refine, and demonstrate value before scaling up.

2) Involve Stakeholders from the Outset: Engage administrators, teachers, and quality assurance personnel in the design and implementation of AI to foster understanding, ownership, and reduce resistance to change.

3) Practical, Hands-on Training: Beyond AI Literacy, provide training that focuses on the practical application of AI tools in quality assurance tasks, such as data input, result interpretation, and using AI for decision-making.

4) Establish High-Quality Data Sources: The quality of AI depends on the quality of its data. Therefore, invest in creating standardized, accurate, complete, and easily accessible data storage systems to ensure AI operates precisely.

5) Define Clear and Measurable KPIs: Before AI implementation, clearly define measurable KPIs for efficiency and effectiveness, allowing for concrete evaluation of AI's impact on EQA.

6) Foster a Culture of Continuous Learning and Improvement: Encourage personnel to embrace new learning and continuously use insights from AI to refine processes and outcomes, viewing AI as an assistant, not a replacement.

7) Develop In-house Expertise: Invest in developing internal personnel into AI and data analysis experts. This enables the institution to maintain, develop, and adapt AI systems independently in the long run.

8) Prioritize Ethics and Transparency: Ensure AI use adheres to ethical principles, especially regarding data privacy, algorithmic bias management, and transparency in AI's decision-making, to build trust among all stakeholders (Zlotnikova et al., 2025).

9) Establish Open Feedback Mechanisms: Provide channels for AI users, including students, teachers, and staff, to offer feedback on the AI system's performance and limitations, to facilitate continuous improvement and development.

10) Learn from International Best Practices: Study and adapt best practices from AI use in EQA from leading institutions and countries worldwide to ensure that implemented strategies are modern and can truly elevate quality to international standards.

Systematic implementation of these AI strategies will enable Thailand's EQA to achieve a significant leap in efficiency and effectiveness, allowing Thai education to truly advance towards excellence and gain international recognition (Phangphol & Phakamach, 2021; Panjarattanakorn et al., 2024; Hardaker & Glenn, 2025). The following section will present suitable AI tools for effective implementation in EQA and future trends. To ensure that AI tools are implemented to support EQA effectively, the next section will present suitable AI tools for driving and serving as key mechanisms in EQA.

6. AI Tools Suitable for Driving EQA and Trends

Marengo et al. (2024), Carvalho et al. (2025), Jafari & Keykha (2026), and Warren et al., 2026) have reported research results from finding the integration of AI into EQA is becoming essential to elevate educational standards and effectiveness. Selecting the right AI tools and understanding future trends will help educational institutions achieve their quality goals efficiently.

6.1 Suitable AI Tools for Driving EQA

AI tools suitable for enhancing EQA can be categorized by their primary roles and functionalities:

1) Data Analytics & Predictive AI Tools:

1.1) Machine Learning (ML) and Deep Learning (DL) Platforms: Used for analyzing large datasets from student performance, attendance records, and teacher evaluations to identify trends, predict student achievement, or pinpoint potential quality issues. Examples include systems that can forecast students at risk of dropping out or curricular that may not meet labor market demands (Ahmed et al., 2023).

1.2) AI-Powered Business Intelligence (BI) Systems: These platforms provide insights through user-friendly dashboards, helping administrators and quality assurance personnel track KPIs and make data-driven decisions in real-time.

2) Assessment & Feedback AI Tools:

2.1) Automated Exam and Assignment Grading Systems: Such as Gradescope or tools using Natural Language Processing (NLP) to analyze and score written work. These reduce teacher workload, provide more consistent and timely feedback, and are crucial for measuring learning quality.

2.2) Adaptive Learning Platforms: While primarily focused on learning, data from student interactions with these platforms (e.g., DreamBox, Smart Sparrow) can be fed back to evaluate curriculum effectiveness and identify areas for quality improvement (Luckin, 2025).

3) Natural Language Processing (NLP) Tools:

3.1) Sentiment Analysis Tools: Used to analyze text from satisfaction surveys, feedback, or online platform comments to understand the sentiments of stakeholders (students, teachers, parents) regarding educational quality and institutional services.

3.2) Generative AI (e.g., ChatGPT or other LLMs): Can assist in summarizing self-assessment reports, drafting EQA documents, answering questions about quality policies, or helping create standardized learning materials. This saves time and increases efficiency in document and content creation (Lytras & Ordonez De Pablos, 2024).

4) Resource Management & Operational AI Tools:

ERP/MIS Systems Integrated with AI: These assist in scheduling classes, managing space, budget planning, and forecasting resource needs, which collectively contribute to the overall efficiency of the institution and the quality of its services.

6.2 Trends of AI in EQA

The future of AI in EQA reveals several significant trends (Katalon, 2024):

1) Holistic and Seamless AI Integration: AI will be integrated more deeply into all dimensions of EQA systems and processes. It won't just be a supplementary tool but an integral part of the institution's quality infrastructure, allowing data to flow and be utilized across the entire organization.

2) Focus on Excellence and More Accurate Predictive Outcomes: AI will be developed to provide more accurate and sophisticated predictions of learning outcomes and educational quality. This will enable institutions to proactively pursue excellence, anticipating problems and opportunities before they arise.

3) Human-AI Collaboration: The role of quality assurance personnel will evolve from data collectors and auditors to intelligent assistants working collaboratively with AI. AI will handle data processing, analysis, and presentation, while humans will apply ethical judgment, critical thinking, and empathy to implement insights.

4) AI Ethics & Transparency: Concerns regarding data privacy, algorithmic bias, and transparency in AI's decision-making will gain increasing importance. Explainable AI (XAI) will be developed to allow AI to explain its reasoning, which is essential for building trust in EQA systems.

5) Using AI for Equity and Bridging Gaps: AI will play a crucial role in reducing educational disparities, especially in remote areas, by offering personalized learning and high-quality resources, ensuring everyone has equal access to quality education.

6) Development of International Standards and Frameworks: National regulatory bodies and international organizations will collaborate to develop standards and frameworks for AI use in EQA, ensuring that AI implementation is responsible and aligns with global best practices.

In summary, to address the second research objective regarding actionable directions for Thailand's EQA system, the findings synthesize international practices and local realities into three strategic pillars for leveraging AI effectively:

1) Institutional and Governance Infrastructure: Establishing a centralized, PDPA-compliant EQA Data Cloud to streamline inter-agency data integration, accompanied by target infrastructure grants for under-resourced schools to narrow the digital divide.

2) Human Capital Empowerment: Implementing a mandatory "AI-Assisted Evaluator Certification" program to train ONESQA external evaluators in verifying AI-generated reports, detecting algorithmic bias, and blending data analytics with human judgment.

3) Phased Integration Roadmap: Executing a structured implementation path transitioning from short-term pilot predictive analytics in SAR screening, to mid-term hybrid EQA evaluations, and ultimately toward long-term automated compliance verification. By establishing these explicit strategic directions, Thailand's EQA system can effectively transition from reactive compliance to a predictive, continuous, and globally competitive quality assurance framework.

Conclusion

This study concludes that integrating AI into External Quality Assurance (EQA) represents not merely a technological upgrade, but a paradigm shift from traditional, reactive compliance to a predictive, continuous, and dynamic quality enhancement framework. Grounded in global best practices and local empirical context, the findings address the two main objectives as follows:

First, regarding Objective 1, the investigation reveals that global AI applications—ranging from Big Data predictive analytics, Natural Language Processing (NLP) document verification, and automated KPI tracking—can significantly optimize EQA workflows. However, the analysis of Thai EQA practices across five institutional contexts demonstrates a

fragmented adoption pattern. Thailand faces persistent structural challenges, notably severe infrastructure disparities (the digital divide between urban and remote schools), variable AI literacy among evaluators and educators, data privacy risks under the PDPA, potential algorithmic bias, and legacy system incompatibilities.

To directly address Objective 2 and bridge the gap between AI's transformative potential and Thailand's operational realities, this study synthesizes its findings into three sharp, actionable strategic pillars designed to provide a targeted blueprint for national educational authorities, particularly the ONESQA and the Ministry of Education:

1) Governance & Infrastructure Standardization (The EQA Data Cloud & Inclusive Tech Access): Thailand must establish a centralized, secure, and PDPA-compliant EQA Data Cloud to integrate disparate institutional management information systems into unified, real-time analytics dashboards. To ensure equity, targeted "AI Infrastructure & Connectivity Grants" must be mandated for under-resourced and remote schools, mitigating the digital divide and preventing technological marginalization in quality evaluation.

2) Human Capital & Ethical Evaluation Framework ("AI-Assisted Evaluator Certification"): Tech-driven EQA cannot succeed without trusted human oversight. A mandatory certification program for ONESQA external evaluators should be established, focusing on: (a) verifying AI-synthesized Self-Assessment Reports (SARs), (b) detecting algorithmic bias and AI-generated fabrications, and (c) balancing algorithmic recommendations with qualitative, context-sensitive human judgment.

3) A Phased National Integration Roadmap: Implementation should follow a strategic three-tier timeline to ensure operational feasibility:

3.1) Short-Term Phase (Years 1–2): Deployment of AI tools for automated screening and anomaly detection in SAR submissions to relieve administrative burdens.

3.2) Medium-Term Phase (Years 3–4): Implementation of hybrid evaluation models combining predictive student-risk analytics with targeted onsite human peer reviews.

3.3) Long-Term Phase (Years 5+): Transition toward fully integrated, continuous compliance monitoring and predictive quality forecasting across all educational levels.

In summary, by executing these strategic directions, Thailand can overcome its structural bottlenecks and build an ethical, equitable, and globally competitive educational quality assurance ecosystem tailored to the demands of the 21st century.

Discussion

The results of this study reaffirm that AI-powered strategies can fundamentally transform EQA in Thailand, aligning with international standards and global best practices. The role of AI in shifting EQA from reactive compliance to proactive and predictive improvement is strongly supported by prior research. Baker (2020) and Bodiako et al. (2021) emphasized AI's analytical and automation capabilities in reshaping educational processes, while Aad & Hardey (2025) and Sposato (2025) highlighted its potential for personalization and adaptive learning. These findings resonate with the present study's identification of predictive analytics and adaptive feedback as core strategies.

The application of AI in accreditation and compliance processes is consistent with Jafari & Keykha (2024) and Saha et al. (2025), who demonstrated how Natural Language Processing (NLP) can streamline document verification and accelerate decision-making. Similarly, Marengo et al. (2024) and Mariyono & Nur Alif Hd (2025) showed that AI-driven analytics can predict dropout risks and inform curriculum redesign, supporting the proactive dimension of EQA identified here. Dzidziguri (2024), Carvalho et al. (2025), López-Acosta et al. (2026), and Warren et al. (2026) also noted that AI enables continuous monitoring of institutional performance, which aligns with this study's emphasis on real-time KPI tracking.

In the Thai context, Phangphol & Phakamach (2021), Phakamach (2023), and Panjarattanakorn et al. (2024) documented the government's strategic push for AI integration

under the "Thailand 4.0" vision, while Phakamach et al. (2024) and Jansawang et al. (2025) emphasized AI's role in workforce readiness. Ahmed et al. (2023), Isiaku et al. (2024), and Lytras & Ordonez De Pablos (2024) further illustrated how generative AI tools like ChatGPT can reduce preparation time and improve teaching quality, echoing the case studies presented in this paper. Hardaker & Glenn (2025) also confirmed that AI-powered adaptive learning platforms enhance pedagogical efficiency and student outcomes, consistent with this study's findings.

Challenges identified here—such as the digital divide, moderate AI literacy, and ethical concerns—are widely acknowledged in the literature. Tahiru (2021) and Cook & Cook (2024) noted infrastructural disparities, while Luckin (2025) and Zlotnikova et al. (2025) emphasized the importance of ethical governance and fairness in AI systems. Hur (2025) and Chen et al. (2025) also discussed data privacy and security as critical barriers, reinforcing the need for robust frameworks. Boardofinnovation (2024), Ellikkal & Rajamohan (2025), and Saha et al. (2026) highlighted stakeholder engagement and transparency, which align with this study's recommendation for AI-powered dashboards and sentiment analysis.

Overall, the discussion demonstrates strong alignment between this study's findings and existing scholarship across global and Thai contexts. By synthesizing insights from at least 15–20 prior works, the study underscores that AI-powered EQA is both feasible and essential for advancing educational quality. However, sustainable implementation requires robust policy governance, infrastructure development, capacity building, and ethical frameworks to ensure that Thailand's education system achieves excellence and global competitiveness.

Recommendations

From the preceding discussion, it can be concluded that the integration of AI-driven strategies plays a pivotal role in enhancing EQA, both at the international level and within the Thai context. The findings and case studies presented highlight AI's potential to generate data-driven insights, predictive analytics, improved administrative efficiency, and greater transparency in stakeholder engagement. Nevertheless, practical implementation continues to face structural challenges, including infrastructure limitations, varying levels of teacher and staff literacy, and ethical concerns surrounding data privacy and security. Therefore, to ensure that AI applications in EQA achieve sustainable outcomes and align with global standards, it is essential to provide clear policy-oriented and practice-based recommendations. These recommendations will serve as actionable guidelines for policymakers, administrators, and educators, enabling Thailand to strengthen its educational system and move toward excellence in quality assurance.

1. Policy Recommendations

The practical implementation of AI-driven strategies in EQA is a crucial step towards significantly enhancing the efficiency and effectiveness of the education system. This transition is not merely about adopting new technology; it's a paradigm shift emphasizing proactive data utilization, predictive analysis, and rapid response to ensure education achieves excellence and is comparable to international standards.

1) Policy for Supporting Pilot Projects and Scaling: The government or regulatory bodies should establish policies that encourage and support educational institutions in initiating small-scale AI pilot projects within EQA. These pilots will serve as models for learning and demonstrating value before broader scaling is supported.

2) Policy for Holistic Stakeholder Engagement: Policies should be in place to actively encourage administrators, teachers, and quality assurance personnel to participate vigorously in all stages of AI design and implementation. These fosters understanding and ownership, while reducing resistance to change.

3) Policy for AI Capacity Building for Personnel: Develop policies and allocate budgets to organize comprehensive and practical AI Literacy training programs for all levels of personnel involved in EQA. This ensures they can effectively utilize and interpret results from AI tools.

4) Policy for High-Quality Data Management and Data Governance: The government should issue strict policies and standards for the storage, management, and access to educational data. This ensures that data used for AI is high-quality, accurate, and complete, while also establishing a clear data governance framework, including personal data protection (e.g., PDPA compliance).

5) Policy for Defining Clear and Measurable Performance and Effectiveness Indicators: Encourage educational institutions to define clear and measurable KPIs for AI implementation in EQA. This allows for tangible evaluation of AI's impact on efficiency and effectiveness, and the use of this data to refine policies.

6) Policy for Promoting a Data-Driven Organizational Culture and Continuous Learning: Develop policies that support the creation of a culture within educational institutions emphasizing decision-making based on AI-driven insights, and encouraging personnel to continuously learn and improve their work.

7) Policy for Investing in Developing In-Country AI Specialists: Establish policies that promote investment in developing local personnel into AI and data science experts within the education sector. This reduces reliance on external expertise and fosters sustainable development.

8) Policy on AI Ethics and Transparency: Issue strict policies and guidelines regarding the ethical use of AI, particularly concerning algorithmic bias management and transparency in AI's decision-making. This builds trust and accountability within the system.

9) Policy for Establishing Open Feedback Mechanisms: Promote clear and accessible channels for collecting feedback from AI users, including students, teachers, and staff. This feedback should be utilized for continuous improvement and development of AI systems.

10) Policy for Learning from and Adapting International Best Practices: Establish policies that encourage educational institutions and regulatory bodies to study, analyze, and adapt international best practices in AI for EQA from leading institutions and countries worldwide. This ensures that adopted strategies are cutting-edge and can truly elevate quality to international standards.

2. Practical Recommendations

Translating policy recommendations into actionable steps is crucial for successful AI implementation in educational quality assurance. These practical recommendations provide concrete actions institutions can take:

1) Initiate Phased Pilot Programs: Begin by launching small, manageable AI pilot projects within specific departments or programs (e.g., using AI for grading in one subject, or for student progress tracking in a particular grade level). Document successes and challenges to inform subsequent scaling.

2) Form Cross-Functional AI Task Forces: Create working groups comprising administrators, teachers, quality assurance staff, and IT personnel to collaboratively design, implement, and evaluate AI solutions. This ensures diverse perspectives are integrated and fosters collective ownership.

3) Implement Targeted AI Upskilling Programs: Develop and deliver practical, hands-on training sessions focused on using specific AI tools relevant to EQA tasks (e.g., interpreting AI-generated analytics reports, using AI for curriculum review, leveraging AI for feedback on student work).

4) Develop a Robust Data Strategy and Governance Framework: Establish clear internal guidelines and protocols for collecting, storing, managing, and accessing educational

data. Prioritize data quality, accuracy, and completeness, ensuring compliance with privacy regulations (e.g., PDPA) through robust data governance.

5) Define and Track Measurable AI-Driven EQA Metrics: Identify specific KPIs that AI systems will help measure and improve (e.g., reduction in report generation time, increase in personalized feedback frequency, improved student retention rates based on AI predictions). Regularly track and report on these metrics.

6) Cultivate a Data-Informed Decision-Making Culture: Foster an environment where staff are encouraged to actively use AI-driven insights to inform their decisions. Provide regular workshops and case studies showcasing how AI has led to positive changes, promoting a continuous learning mindset.

7) Invest in Internal AI Talent Development: Provide opportunities for existing staff to specialize in AI and data science relevant to education (e.g., scholarships for advanced training, internal mentorship programs, dedicated time for skill development). This builds sustainable in-house capacity.

8) Establish Clear AI Ethical Guidelines and Transparency Protocols: Develop internal policies that specifically address the ethical use of AI in education, including guidelines for managing algorithmic bias, ensuring data privacy, and promoting transparency in how AI's decisions are made and explained to stakeholders.

9) Create User-Friendly Feedback Channels for AI Tools: Implement accessible mechanisms (e.g., online forms, dedicated email addresses, regular forums) for students, teachers, and staff to provide feedback on their experiences with AI systems. Regularly review this feedback to identify areas for improvement and iteration.

Actively Benchmark Against International EQA Practices: Systematically research and analyze how leading international institutions and regulatory bodies are using AI in EQA. Adapt successful strategies and models to fit the local context, ensuring that Thailand's EQA practices remain cutting-edge and globally competitive.

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Development of an Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools

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Abstract

This research aimed to examine the conceptual framework of external quality assurance outcomes and to develop a model for strengthening accountability for results in basic education schools. Using a mixed-methods, exploratory sequential design, the study proceeded in three phases: synthesizing the conceptual framework through document analysis; examining current conditions, desired conditions, and priority needs among school administrators, quality-assurance teachers, and school board members via questionnaire; and constructing a model validated by experts and evaluated by stakeholders for its accuracy, feasibility, propriety, and utility. The resulting Accountability Enhancement Model for Student Quality (SQAP Model) comprises four components: an accountability policy for student-quality outcomes, a management system, a monitoring and evaluation system, and outcomes of accountability development. Overall, the model was rated at the highest level of appropriateness, offering schools and supervisory agencies a practical, results-based framework for strengthening external quality assurance.

Keywords : Accountability Enhancement Model, External Quality Assurance Outcomes, Basic Education School

1. Introduction

Education is a fundamental foundation for national development; therefore, systematic mechanisms for supervision, monitoring, and quality enhancement are essential. The National Education Act B.E. 2542 (1999) and its amendments mandate that educational institutions implement both internal quality assurance systems and external quality assessment as key instruments for controlling, auditing, and accrediting educational standards. The Office for National Education Standards and Quality Assessment (Public Organization) serves as the principal agency responsible for conducting External Quality Assurance, with an emphasis on developmental evaluation, transparency, and fairness rather than judgment or sanctioning of institutions (Office for National Education Standards and Quality Assessment (Public Organization), 2024).

At the level of Basic Education Schools, educational outcomes constitute a critical indicator reflecting the effectiveness of educational management. Learning outcomes extend beyond academic achievement to encompass the application of knowledge, life skills development, and learners' readiness to adapt to future changes. In this regard, educational outcomes are viewed as a linkage between educational processes and the actual value generated for learners and society. Consequently, educational management must shift its focus toward "outcomes" rather than merely procedural implementation (Kanjanawasee, 2021).

However, within the context of contemporary educational management, the application of accountability concepts remains problematic in many countries. Key challenges include an overemphasis on quantitative indicators, inequalities in resource allocation, misinterpretations of evaluation systems, and increasing administrative complexity. These issues often lead institutions and personnel to engage in accountability practices merely to "meet criteria" rather than to achieve genuine improvement. Such conditions reflect inherent limitations of accountability systems that lack a balanced integration of monitoring, development, and contextual considerations (Hillman, Tandberg, & Gross, 2014; Perryman, 2009).

Despite growing scholarly attention to accountability in education, existing studies have tended to treat policy, management, and monitoring mechanisms in isolation, offering limited guidance on how these elements can be integrated into a single, actionable framework for basic education schools operating under Thailand's external quality assurance system. Moreover, much of the literature on educational accountability originates from higher-education or Western contexts, leaving a gap in context-specific models that address the priority needs of Thai basic education schools as identified by their own administrators, teachers, and school board members. This study addresses that gap by grounding model development in empirical data on current conditions, desired conditions, and priority needs, thereby contributing a context-appropriate, integrated model rather than a set of disconnected recommendations.

Therefore, enhancing accountability for outcomes has become a critical issue requiring systematic development. This involves fostering an accountability culture, promoting stakeholder engagement, and utilizing empirical data for continuous quality improvement. These principles are aligned with the concept of good governance, which emphasizes responsibility, transparency, and public responsiveness. Accordingly, the Development of an Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools is imperative to sustainably improve educational quality and strengthen long-term confidence in the education system (Fullan, 2010).

2. Objectives

This study aimed to develop the Development of an Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools. The specific objectives were as follows:

1. To examine the conceptual framework of External Quality Assurance Outcomes and accountability for outcomes.

2. To investigate the current conditions, desirable conditions, and needs for developing accountability for outcomes in External Quality Assurance Outcomes of Basic Education Schools.

3. To develop an Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools.

3. Conceptual Framework

1) Concept of Accountability for Results

Accountability for Results is a key concept in modern management that links authority, decision-making, and operations to actual outcomes. It emphasizes responsibility for both positive and negative consequences at the individual, organizational, and societal levels. Scholars have categorized accountability into multiple dimensions, including personal accountability, social accountability, organizational accountability, and ethical and legal accountability, reflecting the diverse roles and responsibilities of stakeholders. Enhancing accountability for results, therefore, refers to a systematic process that promotes awareness, participation, and the use of empirical data to improve performance, rather than focusing solely on control or sanctions (Good, 1973; Chumphol, 2011; OECD, 2010).

2) Concept of Accountability Enhancement

Enhancing accountability for results within organizations requires several key components, including clear policies, supportive management systems, data-driven monitoring and evaluation systems, and the utilization of outcomes for continuous improvement. Research at both national and international levels indicates that accountability systems focusing primarily on quantitative indicators or short-term performance may lead to superficial practices and increased pressure on practitioners. Therefore, effective accountability enhancement should integrate regulatory oversight, professional support, and the development of an open and

transparent organizational culture (Hillman, Tandberg, & Gross, 2014; Perryman, 2009; Fullan, 2010).

3) Concept of Developing an Accountability Enhancement Model

The development of an Accountability Enhancement Model is an academic process that requires the integration of theories, concepts, and contextual data. It typically involves key stages, including the review of relevant conceptual frameworks and theories, the analysis of current conditions, desirable conditions, and needs of the target organization, and the design of a context-appropriate model. Validation of the model by experts and practitioners is essential to ensure its accuracy, feasibility, and practical applicability (Office of the Education Council, 2018; Maulid, 2017).

4) Concept of External Quality Assurance Outcomes

External Quality Assurance Outcomes serve as critical indicators reflecting the quality and effectiveness of educational management at the institutional level. They play a significant role in building public confidence and stakeholder trust. The core principles of External Quality Assurance emphasize developmental evaluation, validity, fairness, and the use of outcomes for continuous quality improvement. However, several studies indicate limitations in the utilization of these outcomes when accountability systems fail to effectively link evaluation results with decision-making and practical development. Therefore, enhancing accountability for outcomes is a crucial mechanism to ensure that External Quality Assurance Outcomes lead to meaningful and sustainable quality improvement (Office for National Education Standards and Quality Assessment (Public Organization), 2024; OECD, 2010).

Taken together, these bodies of literature reveal both convergence and tension. Scholars broadly agree that accountability should extend beyond compliance to genuine improvement (Fullan, 2010; OECD, 2010), yet they diverge on how this is best achieved: performance-based approaches emphasize measurable indicators and incentives (Hillman, Tandberg, & Gross, 2014), whereas developmental and professional-support perspectives caution that an overreliance on quantitative indicators can produce superficial compliance and undermine trust (Perryman, 2009). Similarly, while classical definitions of accountability (Good, 1973) emphasize auditability and sanction, more recent frameworks such as Results-Based Accountability (Friedman, 2005) reframe accountability as a collaborative, data-driven process. A limitation shared across much of this literature, however, is its limited attention to how these competing emphases can be reconciled and operationalized within a single institutional model, particularly at the basic education level. The present study addresses this tension by integrating policy, management, and monitoring and evaluation into one model, drawing on the strengths of both compliance-oriented and developmental perspectives while mitigating their respective limitations.

Based on the aforementioned concepts, the researcher synthesized and developed the research conceptual framework as illustrated in the following figure 1



4. Methodology

This study, Development of an Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools, employed a multi-method approach (multi-Method) using an Exploratory Sequential Design, integrating both qualitative methods and quantitative methods. The research procedures were conducted in three phases, as follows:

Phase 1: Conceptual Framework Study of External Quality Assurance Outcomes and Accountability for Results

1) Population and Sample

The population consisted of documents, concepts, theories, and research studies related to Accountability for Results, organizational management, and educational quality assurance, both domestic and international. Relevant and academically credible sources were purposively selected.

2) Research Instrument

A Document Analysis Form was employed.

3) Data Analysis

Data were analyzed using content analysis and conceptual synthesis to establish the conceptual framework, key components, and research variables.

Phase 2: Study of Current Conditions, Desired Conditions, and Priority Needs for Developing Accountability for Results in External Quality Assurance of Basic Education Schools

1) Population and Sample

The population included school administrators, teachers responsible for quality assurance, and basic education school committee members from basic education institutions. The sample comprised 444 participants from 148 schools, selected through multi-stage random sampling. The multi-stage sampling procedure proceeded in three stages: first, schools were stratified by size (small, medium, large, and extra-large) and by educational inspection region to ensure geographic representation; second, schools within each stratum were selected using simple random sampling in proportion to the number of schools in that stratum; and third, within each selected school, one school administrator, one teacher responsible for quality assurance, and, where available, one school board member were purposively selected based on their direct involvement in the school's external quality assurance process. This procedure ensured both statistical representativeness and relevance of respondents' experience to the research questions.

2) Research Instrument

A questionnaire assessing current conditions, desired conditions, and priority needs for developing Accountability for Results.

3) Data Analysis

Data were analyzed using descriptive statistics, including mean and standard deviation, and the Priority Needs Index (PNI) to identify development priorities.

Phase 3: Development of the Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools

1) Population and Sample

Key informants included 9 experts in educational administration and quality assurance for model validation, and 12 stakeholders (educational administrators, supervisors, school administrators, and teachers responsible for quality assurance) for model evaluation.

2) Research Instrument

A model evaluation form assessing accuracy, feasibility, propriety, utility, and accountability.

3) Data Analysis

Data were analyzed using descriptive statistics (mean and standard deviation), along with qualitative analysis of expert recommendations to refine and finalize the model.

Ethical Considerations

This study was conducted in accordance with established research ethics principles. Prior to data collection, the research protocol and instruments were reviewed and approved by the Institutional Review Board of the researchers' affiliated institution. All participants were informed of the study's purpose and procedures and of their right to withdraw at any time without consequence, and written informed consent was obtained from each participant prior to their involvement. Data collected through questionnaires and expert validation forms were kept confidential, reported only in aggregate form, and used exclusively for the purposes of this research.

5. Results

Part 1: Results of the Conceptual Framework Study on External Quality Assurance Outcomes and Accountability for Results

The findings from the study of the conceptual framework on External Quality Assurance Outcomes and Accountability for Results, derived through document synthesis, are summarized in Table 1 as follows:

Table 1: Synthesis of the Conceptual Framework on External Quality Assurance Outcomes and Accountability for Results

Synthesis Issues	Key Summarized Points
1) Definition of External Quality Assurance Outcomes	The results derived from the evaluation of educational institutions based on standards set by accredited external agencies, reflecting changes in learner quality, school management, instructional practices, and stakeholder satisfaction.
2) Goals of External Quality Assurance Outcomes	The clearly defined and measurable levels of quality or success that educational institutions aim to achieve, aligned with educational standards to reflect genuine progress and development.

Table 1 (Continued): Synthesis of the Conceptual Framework on External Quality Assurance Outcomes and Accountability for Results

Synthesis Issues	Key Summarized Points
3) Components of External Quality Assurance Outcomes	Comprising three main dimensions: (1) learner outcomes (achievement, competencies, and desirable characteristics), (2) school management outcomes (vision, personnel, organizational culture, innovation, leadership, and networks), and (3) teacher instructional outcomes (teacher competencies, quality of learning management, support systems, and impact on learners).
4) Definition of Accountability for Results	The responsibility of individuals or organizations for their decisions and actions, involving transparency, acceptance of both positive and negative outcomes, adherence to standards, and auditability.
5) Types of Accountability for Results	Classified into four types: (1) personal accountability, (2) social accountability, (3) organizational accountability, and (4) ethical and legal accountability.

Table 1 (Continued): Synthesis of the Conceptual Framework on External Quality Assurance Outcomes and Accountability for Results

Synthesis Issues	Key Summarized Points
6) Definition of Accountability Enhancement	A systematic development process aimed at enabling individuals and organizations to demonstrate accountability for performance transparently, with auditability, and through the use of empirical data for continuous quality improvement.
7) Objectives of Accountability Enhancement	(1) To promote shared accountability among stakeholders at all levels, and (2) to develop a sustainable system for accountability enhancement within educational institutions.
8) Supporting Factors for Accountability Enhancement	Including (1) positive leadership and shared awareness, (2) professional support and personnel competency development, (3) clarity of structure and roles, and (4) adequate and efficient resource management.
9) System-Based Accountability	Encompassing three core systems: (1) accountability policy (data-driven, transparency, participation,

Synthesis Issues	Key Summarized Points
Enhancement Concept	positive incentives, and continuous improvement), (2) results-based management system, and (3) monitoring and evaluation system for outcomes.
10) Outcomes of Accountability Development	Divided into two dimensions: Population Accountability and Performance Accountability, covering learner quality, management, and instructional outcomes.
11) Concept of Developing an Accountability Enhancement Model	A systematic process structure that includes conceptual framework study, needs analysis, model development, validation, and evaluation of propriety, feasibility, and accountability.
12) Quality Standards of the Model	Comprising five standards: accuracy, feasibility, propriety, utility, and accountability.

These synthesized findings matter because they establish a shared conceptual vocabulary linking External Quality Assurance Outcomes with Accountability for Results, two areas often discussed separately in the literature. By identifying the four types of accountability, the supporting factors, and the three core systems of policy, management, and monitoring and evaluation, this synthesis provides the theoretical scaffolding on which the Accountability Enhancement Model presented in Part 3 was built. A limitation of this phase, however, is that the synthesis relied primarily on documentary sources and may not fully capture context-specific nuances that later emerged from the empirical data in Part 2.

Part 2: Results of the Study on Current Conditions, Desired Conditions, and Priority Needs for Developing Accountability for Results in External Quality Assurance of Basic Education Schools

The findings on the current and desired conditions for developing Accountability for Results in External Quality Assurance Outcomes of Basic Education Schools are summarized in Tables 2 and 3 as follows:

Table 2 Frequency and Percentage of Respondents on Current and Desired Conditions for Developing Accountability for Results in External Quality Assurance Outcomes of Basic Education Schools

Basic information		Frequency (N = 444)	Percentage
Gender	Male	276	62.2
	Female	168	37.8
Age	Below 40 years	104	23.4
	40–49 years	121	27.3
	50 years and above	219	49.3
Position	School Administrators	303	68.9
	Teachers responsible for Quality Assurance	75	16.9
	Basic Education School Committee	66	14.9
School Size	Small	165	37.2
	Medium	158	35.6
	Large	74	16.7
	Extra-large	47	10.6

From the table, it was found that the majority of respondents were male (62.2%). Most were aged 50 years and above (49.3%). The largest group held positions as school administrators (68.9%), and most were from small-sized schools (37.2%).

Table 3 Overall Analysis of Current Conditions, Desired Conditions, and Priority Needs for Developing Accountability for Results in External Quality Assurance of Basic Education Schools

Issue	Level of Agreement						Priority Needs	
	Current Condition			Desired Condition				
	$\bar{x}$	S.D.	Meaning	$\bar{x}$	S.D.	Meaning	$PNI_{Modifide}$	Order
1) Accountability Policy for Results	4.13	0.66	High	4.43	0.52	High	0.079	1
2) Management System for Accountability for Results	4.15	0.68	High	4.46	0.61	High	0.076	2
3) Monitoring and Evaluation System for Results	4.19	0.62	High	4.48	0.50	High	0.069	3
4) Outcomes of Accountability Development	4.24	0.67	High	4.49	0.55	Highest	0.060	4
Overall	**4.17**	**0.65**	**High**	**4.47**	**0.52**	**High**		

From Table 3, the analysis of the current conditions in developing accountability for results in external quality assurance of basic education schools indicates that, overall, the mean score was at a high level ($\bar{x}$ = 4.17). When considered by item, the highest mean was found in performance outcomes of accountability development ($\bar{x}$ = 4.24), followed by monitoring and evaluation systems ($\bar{x}$ = 4.19), results-based management systems ($\bar{x}$= 4.15), and accountability policy ($\bar{x}$ = 4.13), respectively.

For the desired conditions, the overall mean was also at a high level ($\bar{x}$ = 4.47). The highest mean was observed in performance outcomes of accountability development ($\bar{x}$ = 4.49), followed by monitoring and evaluation systems ($\bar{x}$ = 4.48), results-based management systems ($\bar{x}$ = 4.46), and accountability policy ($\bar{x}$ = 4.43), respectively.

Regarding the priority needs analysis, the findings revealed that the highest Priority Needs Index (PNI) was accountability policy (PNI = 0.079), followed by results-based management systems (PNI = 0.076), and monitoring and evaluation systems (PNI = 0.069), respectively.

These findings imply that while schools already perceive their accountability practices as relatively strong, stakeholders see meaningful room for further development across all four dimensions, particularly at the policy level. The comparatively lower mean score and highest PNI for accountability policy suggest that schools may be implementing accountability-related activities without a clearly articulated policy framework to guide and unify them, a gap that has direct implications for the design of the model, which accordingly places accountability policy at its foundation. It should be noted, however, that these results reflect self-reported perceptions of administrators, teachers, and board members, which may be subject to social desirability bias, and that variation across school sizes and regions was not examined in detail; this represents a nuance for future research to explore.

Part 3 : Results of the Development of the Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools

The development of the Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools was derived from document synthesis and the analysis of current conditions, desired conditions, and priority needs of stakeholders. The resulting model demonstrates appropriateness, contextual relevance to educational institutions, and practical applicability. The details are presented in Figure 2 and Table 4.

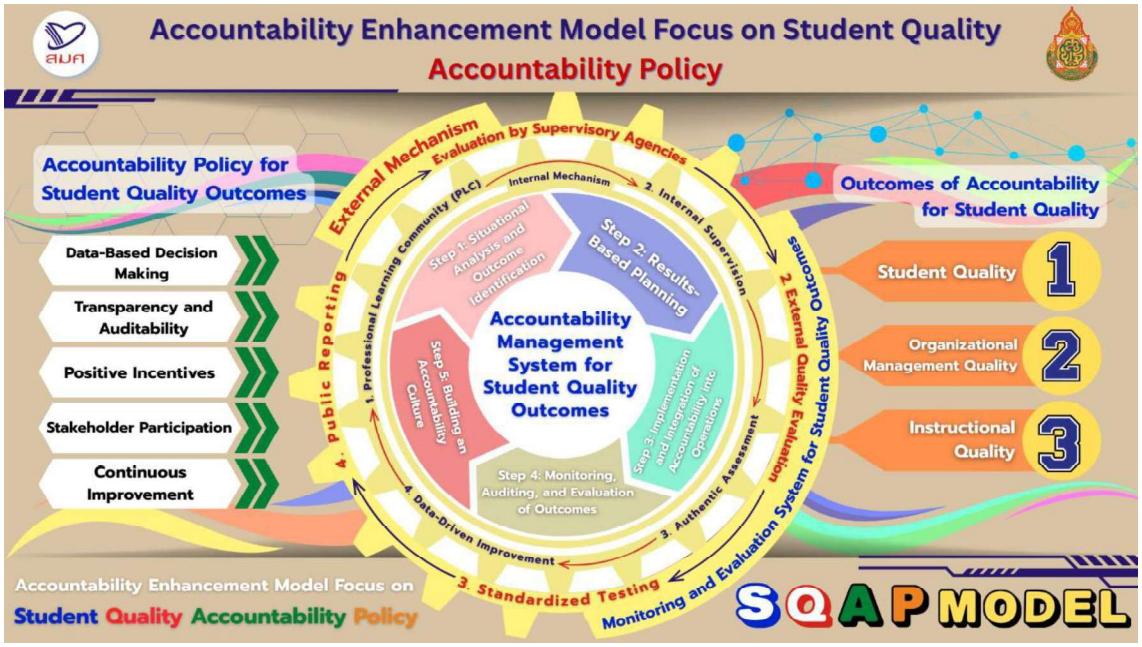


Figure 2 The Accountability Enhancement Model emphasizing accountability policy for Student Quality (SQAP Model: S = Student, Q = Quality, A = Accountability, P = Policy)

Model Components:

1) Accountability Policy for Student Quality Outcomes

This component establishes the policy framework and fundamental principles for accountability aligned with external quality assurance standards. It emphasizes the use of empirical data, transparency, stakeholder participation, positive incentives, and continuous improvement to define direction and shared commitment for sustainably enhancing student quality.

2) Management System for Accountability of Student Quality Outcomes

This system translates policy into practice through a structured, step-by-step process grounded in transparency, participation, and accountability. It drives the development of External Quality Assurance (EQA) outcomes through five key stages: (1) situation analysis and outcome identification, (2) outcome-based planning, (3) implementation and integration of accountability into operational systems, (4) monitoring, auditing, and evaluation of outcomes, and (5) fostering a culture of accountability. The system ensures systematic, results-oriented, and verifiable management.

3) Monitoring and Evaluation System for Student Quality Outcomes

This system employs both internal and external evaluation mechanisms to reflect progress and achievement levels in a transparent and continuous manner. It focuses on three core dimensions: student learning outcomes, school management outcomes, and instructional outcomes of teachers. The data obtained are utilized for systematic quality improvement.

4) Outcomes of Accountability Development for Student Quality

This component represents the actual outcomes resulting from the implementation of the model, reflecting success in enhancing educational quality in alignment with external quality assurance. It encompasses three domains: student quality, school management quality, and instructional quality. The outcomes demonstrate both population-level development and performance accountability in terms of teacher effectiveness and system efficiency.

Table 4 Evaluation results of the model based on the standards of accuracy, feasibility, propriety, and utility of the Accountability Enhancement Model emphasizing accountability policy for student quality outcomes.

Evaluation Standards	Level of Opinion		
	$\bar{x}$	S.D.	Meaning
1) Accuracy	4.50	0.50	Highest Level
2) Feasibility	4.71	0.46	Highest Level
3) Propriety	4.63	0.60	Highest Level
4) Utility	4.43	0.67	High Level
Overall	**4.57**	**0.56**	**Highest Level**

From Table 4, the overall evaluation was at the highest level ($\bar{x}$ = 4.57). When considered by individual standards, feasibility obtained the highest mean score ($\bar{x}$ = 4.71), followed by propriety ($\bar{x}$ = 4.63) and accuracy ($\bar{x}$ = 4.50), respectively.

The consistently high ratings across all four standards suggest that the SQAP Model is not only theoretically sound but also practically implementable within the constraints of basic education schools, addressing a common criticism that academically developed models often lack feasibility in real-world settings. The relatively lower, though still high, score for utility indicates that while experts and stakeholders view the model favorably, its practical usefulness may depend on how well it is adapted to individual school contexts during implementation. This suggests a need for follow-up studies to examine the model's effectiveness under actual implementation conditions across schools of varying size and readiness, an aspect that was beyond the scope of this validation-stage evaluation.

6. Discussion

Based on the findings of the study on the Development of an Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools, three key issues are discussed as follows:

Issue 1: Conceptual Synthesis of External Quality Assurance Outcomes and Accountability for Results. The synthesis of national and international literature indicates that External Quality Assurance Outcomes should primarily focus on student-centered outcomes, alongside accountability at all levels of the educational institution. Emphasis is placed on the use of empirical data, transparency, and stakeholder participation to systematically link processes with verifiable outcomes.

It is evident that a conceptual framework for external quality assurance outcomes must be explicitly connected with accountability for results, as quality assurance systems that focus solely on processes or documentation cannot truly reflect educational quality without responsibility for actual student outcomes. A results-oriented approach shifts the focus from procedural compliance to the creation of genuine educational value.

This perspective aligns with Friedman (2005), who proposed Results-Based Accountability (RBA), emphasizing that effective accountability systems should begin by asking whether student outcomes have improved rather than whether procedures have been followed. It is also consistent with Hillman, Tandberg, and Gross (2014), who identified

accountability for results as a critical mechanism linking policy to meaningful educational improvement.

Issue 2: Current Conditions, Desired Conditions, and Priority Needs.

The findings reveal that educational institutions demonstrate a relatively strong level of accountability for results, particularly in terms of outcome development, monitoring and evaluation systems, and results-oriented management systems. However, the desired conditions indicate that stakeholders expect all aspects to be strengthened and made more systematic, reflecting a shared recognition that accountability should go beyond compliance and lead to continuous and sustainable quality improvement.

The priority needs analysis identifies accountability policy as the most urgent area for development, due to a lack of clarity in direction-setting and alignment with external quality assurance. This is followed by the need to strengthen management systems and monitoring and evaluation systems to ensure effective data-driven decision-making.

This suggests the necessity of developing a model with clear policy direction and integrated systems to achieve tangible improvements in educational quality. The moderate level of existing accountability can be attributed to past practices that emphasized compliance with evaluation requirements rather than using evaluation results for continuous improvement. Consequently, the use of empirical data, follow-up processes, and public communication remains insufficiently robust.

These findings are consistent with Perryman (2009), who noted that accountability systems disconnected from organizational learning tend to result in "accountability as compliance" rather than "accountability for improvement." They also align with the Office of the Education Council (2018), which emphasizes data utilization and stakeholder participation as key drivers of sustainable educational quality development.

Issue 3: Development and Effectiveness of the SQAP Model. The integration of conceptual synthesis and needs analysis led to the development of the SQAP Model, comprising four key components:

(1) Accountability Policy,
(2) Management System,
(3) Monitoring and Evaluation System, and
(4) Accountability Outcomes for Student Quality.

The model was evaluated at the highest level in terms of accuracy, feasibility, propriety, and utility, indicating strong alignment with the context of basic education institutions and significant potential for sustainable quality improvement.

The effectiveness of the SQAP Model lies in its foundation on both theoretical frameworks and real-world educational contexts. It is not merely conceptual but includes clearly defined operational steps that integrate policy, management, monitoring and evaluation, and measurable outcomes.

This design is consistent with Fullan (2010), who emphasized that sustainable educational change requires the integration of structural systems with a culture of shared accountability. It also aligns with Friedman (2005), who highlighted that accountability for results becomes effective when stakeholders share common goals, utilize data collaboratively, and take collective ownership of outcomes—key strengths reflected in this model.

In terms of theoretical contribution, the SQAP Model extends rather than merely applies existing accountability frameworks. Whereas Results-Based Accountability (Friedman, 2005) and performance-based accountability perspectives (Hillman, Tandberg, & Gross, 2014) primarily address accountability at the system or policy level, the SQAP Model integrates these macro-level principles with school-level management and monitoring mechanisms into a single operational structure. In this sense, the model does not challenge existing frameworks but synthesizes and contextualizes them, translating broad accountability principles into a structure specifically suited to the governance and resource conditions of basic education schools. This

integration represents the study's principal contribution to the accountability literature: a model that bridges policy-level accountability concepts and school-level implementation, an articulation that has remained largely implicit in prior research.

7. Recommendations

Based on the findings of the study on the Development of an Accountability Enhancement Model for External Quality Assurance Outcomes of Basic Education Schools, the researcher proposes recommendations in two parts: (1) implications for practice and (2) recommendations for future research, as follows:

7.1) Implications for Practice

7.1.1) Recommendations for Schools

Given that accountability policy emerged as the most urgent priority need (PNI = 0.079), the key priority recommendation is to establish clear, data-driven accountability policies as the foundation for all other components of the SQAP Model. The recommendations below are organized accordingly, beginning with this key priority and followed by additional recommendations that support its implementation.

Key priority recommendation: The findings indicate that effective external quality assurance should operate as a results-based system encompassing three dimensions: (1) student quality, (2) organizational management, and (3) instructional management. The Accountability Policy was identified as the most critical priority need and must be driven through a management system and a monitoring and evaluation system grounded in empirical data.

Additional recommendations: The SQAP Model, which emphasizes student-centered quality, was found to be highly appropriate and applicable in practice. Therefore, schools should prioritize establishing a strong Accountability Policy, positioning student quality as the ultimate organizational goal, and clearly communicating this policy across all levels to ensure unified implementation.

In terms of management, schools should adopt the SQAP Model as an operational framework that integrates policy, management processes, and monitoring systems, with a focus on data-based decision making. Additionally, internal supervision and Professional Learning Communities (PLC) should be strengthened as key mechanisms for enhancing teacher accountability.

Schools should also foster an accountability culture that encourages stakeholder participation, including parents and communities, in setting goals. The application of Turning the Curve Thinking is recommended to systematically analyze causes, identify trends, and implement strategies to improve outcomes. Furthermore, continuous and transparent monitoring and evaluation systems should be developed to ensure sustainable, outcome-based quality improvement.

7.1.2) Recommendations for Supervisory Agencies

Key priority recommendation: The findings reveal that the most significant gap exists at the policy level, as indicated by the highest Priority Needs Index (PNI). This suggests a lack of clarity in driving accountability from the upstream level, which affects school-level implementation and ultimately student outcomes.

Additional recommendations: Supervisory agencies should address this gap by establishing clear and concrete accountability policies and shifting toward Results-Based Management (RBM) that aligns policy with operational indicators. Support should include resource allocation and the development of educational Big Data systems to enable effective data utilization.

In terms of governance, supervisory approaches should transition from control-oriented inspection to supportive supervision. Capacity building for school leaders and teachers in results-based planning and data utilization should be accelerated.

Additionally, agencies should design positive incentive systems, such as recognition or career advancement based on student outcomes and promote collaborative networks among schools to facilitate knowledge sharing and broader implementation of the SQAP Model.

7.1.3) Recommendations for the ONESQA

Key priority recommendation: The findings indicate that monitoring and evaluation systems should incorporate both internal and external mechanisms. External evaluation plays a key role in ensuring external accountability, emphasizing transparency, data utilization, and authentic outcome reflection.

Additional recommendations: The SQAP Model highlights the importance of placing student quality at the center of evaluation. Therefore, ONESQA should consider shifting toward results-based evaluation, prioritizing student outcomes over processes or documentation. Evaluation criteria should comprehensively cover three dimensions: student quality, organizational management, and instructional management.

Furthermore, evaluation tools should enhance data transparency and traceability to build public trust. The adoption of developmental evaluation is recommended to provide deep feedback that supports meaningful improvement rather than merely judging performance.

ONESQA should also consider using the SQAP Model as a reference framework for external evaluation in ready institutions and improve public reporting systems to ensure clarity, conciseness, and accessibility, thereby strengthening external accountability.

7.2) Recommendations for Future Research

7.2.1) This study focused on developing and validating the Accountability Enhancement Model. Future studies should implement the SQAP Model in schools with diverse contexts (e.g., small, medium, and large schools) to examine its effectiveness comparatively.

7.2.2) Further research should investigate causal factors influencing accountability development, such as leadership, organizational culture, and educational resources.

7.2.3) Measurement tools for accountability should be further developed to achieve higher levels of validity and reliability, serving as standardized instruments.

7.2.4) Policy research should be conducted to explore the linkage between national-level policies and school-level practices regarding accountability.

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Educational Quality Assurance Approaches for Developing Appropriate Educational Standards for Special Education Schools Serving Children with Intellectual Disabilities

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Abstract

Providing education for children with intellectual disabilities is an important mission of the educational system aimed at promoting rights, equity, and the development of students' potential in accordance with individual differences. However, special education schools in Thailand still employ educational standards and quality assurance systems that are shared with mainstream basic education, which may not fully align with the context and unique characteristics of these students. This article aims to examine educational quality assurance approaches for developing appropriate educational standards for special education schools serving students with intellectual disabilities. This study adopted a documentary research approach, drawing upon 14 domestic and international research studies and relevant literature. The data were systematically analyzed and synthesized to formulate proposed guidelines.

The findings reveal that many countries continue to apply general educational standards frameworks to special education schools, while also establishing specific indicators and support systems for students with special educational needs. Greater emphasis is placed on individual potential development, life skills, communication, self-care abilities, and quality of life rather than solely on academic achievement. Furthermore, an appropriate quality assurance system should include individualized learning management, developmental assessment, multidisciplinary support, and the participation of families and communities. The article suggests that Thailand should develop flexible educational standards and quality assurance guidelines that are consistent with the context of special education schools in order to genuinely enhance the quality of life and potential of students with special educational needs.

Keywords: educational quality assurance, educational standards, special education, children with intellectual disabilities

Introduction

The provision of education for individuals with special educational needs is an important mission of the educational system aimed at creating opportunities, promoting equity, and fostering the development of students' potential in an inclusive manner. In particular, children with intellectual disabilities are students who experience limitations in intellectual development, learning, communication, adaptive behavior, and daily living skills. Therefore, educational management for this group of students must take into account individual differences, development according to each learner's potential, and the enhancement of quality of life. Education for these students should not focus solely on academic achievement, but should also emphasize life skills, self-help skills, social integration, and the ability to live with dignity as members of society.

Education serves as a fundamental foundation for national development, particularly at the basic education level, which is a crucial stage for establishing essential knowledge and skills for young people. Educational quality assurance is an important mechanism for enhancing

educational standards in line with societal needs and national development in the 21st century. Thailand has continuously emphasized the educational rights of persons with disabilities through provisions in the Constitution of the Kingdom of Thailand, the National Education Act B.E. 2542 (1999) and its amendments, as well as the Education Provision for Persons with Disabilities Act B.E. 2551 (2008), all of which aim to guarantee equal and inclusive educational opportunities for persons with disabilities. These policies are grounded in the principles of "Education for All" and Inclusive Education, reflecting human rights and educational equity concepts that emphasize access to educational services appropriate to the abilities and individual needs of students.

Regarding educational standards, Thailand has established the National Education Standards B.E. 2561 (2018) and the Basic Education Standards as frameworks for developing student quality, educational management quality, and school administration systems. However, special education schools continue to use the same standards framework as general education schools, despite differences in context, student characteristics, and developmental goals. The educational quality assurance system plays a significant role in supervising, promoting, and improving school quality to ensure compliance with established standards through continuous evaluation, monitoring, and quality development processes. Nevertheless, the use of the same standards and indicators for both general and special education schools may create limitations in reflecting the actual potential and developmental progress of students with intellectual disabilities.

Children with intellectual disabilities have learning characteristics and developmental patterns that differ from those of general students in terms of intellectual abilities, communication, social adaptation, and daily living skills. These students require individualized educational management, multidisciplinary support, and flexible assessment and evaluation processes that correspond to their individual potential. Consequently, educational quality assessment that focuses solely on academic achievement based on standardized criteria may not appropriately reflect students' progress and quality of life.

At the same time, many countries around the world have developed educational standards and quality assurance systems specifically for students with special educational needs. While maintaining a common framework with general education, these countries have established specialized approaches and indicators that emphasize individual potential development, life skills, self-care, communication, and students' quality of life. Examples include the implementation of the Individualized Education Program (IEP), authentic assessment, and developmental progress assessment. These approaches reflect efforts to create educational systems that genuinely respond to student diversity.

Given this context, there is a strong need to study and develop educational quality assurance approaches that are appropriate for the context of special education schools serving children with intellectual disabilities. Such standards should accurately reflect students' potential, developmental progress, and quality of life. This will contribute to improving the quality of special education in Thailand, ensuring alignment with human rights principles, and responding effectively to the actual needs of students in the future.

Objectives of the Article

This article aims to study educational quality assurance approaches for developing appropriate educational standards for special education schools serving children with intellectual disabilities.

Scope of the Article

This academic article focuses on studying educational quality assurance approaches for developing appropriate educational standards for special education schools serving children with intellectual disabilities. The scope of the study is divided into four major areas as follows:

1. Study of Concepts Related to Educational Standards and Educational Quality Assurance

This section aims to analyze the concepts, principles, and significance of educational standards as important mechanisms for determining school quality and student quality. The study covers the National Education Standards, Basic Education Standards, and Thailand's educational quality assurance system, including both internal and external quality assurance. It also examines the relationship between educational standards and student quality development, as well as the role of quality assurance systems in promoting school administration, learning management, and institutional development in alignment with educational goals.

2. Study of the Educational Context for Children with Intellectual Disabilities

This section focuses on analyzing the characteristics of children with intellectual disabilities in terms of intellectual development, learning, communication, self-help skills, and social adaptation, all of which influence educational management and student development. It also examines principles of special education, the concept of Inclusive Education, individualized educational management through the Individualized Education Program (IEP), and concepts related to life skills development, quality of life, and independent living in order to gain a comprehensive understanding of the context and specific needs of these students.

3. Analysis of Educational Standards and Quality Assurance Systems in Thailand and Other Countries

This section analyzes educational standards and quality assurance systems for special education schools in Thailand, as well as models, approaches, and indicators used in other countries that provide education for students with special educational needs, such as the United States, Finland, Japan, and the United Kingdom. The comparison focuses on important issues, including the use of common standards with general education schools, the establishment of specialized indicators for special education, assessment based on individual potential, life skills development, quality of life enhancement, and the roles of families, communities, and multidisciplinary teams in supporting students. The study also analyzes the strengths, limitations, and trends of educational quality assurance systems for children with intellectual disabilities.

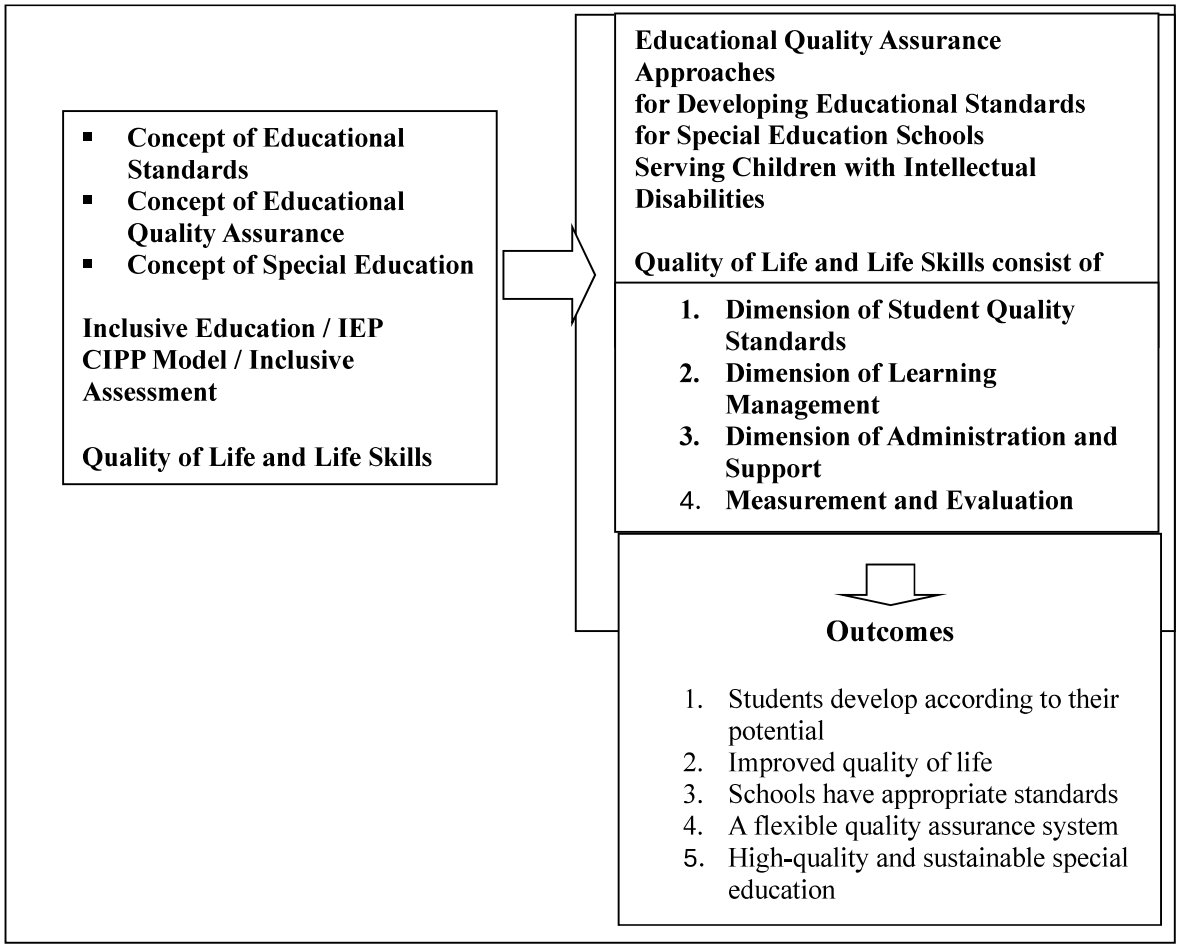
4. Synthesis of Appropriate Educational Quality Assurance Approaches for Special Education Schools

This section aims to synthesize knowledge derived from concepts, theories, academic documents, and analyses of educational standards and quality assurance systems both domestically

and internationally in order to propose educational quality assurance approaches suitable for special education schools serving children with intellectual disabilities.

The proposed approaches include standards for student quality, individualized learning management, administration, multidisciplinary support, family and community participation, as well as measurement and evaluation approaches that emphasize students' development, potential, and quality of life. The goal is to ensure that the quality assurance system appropriately reflects students' progress and achievements in a manner that is truly consistent with the context of special education.

Based on the four major areas of the study scope, the conceptual framework of this article can be summarized as follows:



Content and Analysis

1. Concepts of Educational Standards and Educational Quality Assurance

Educational standards are important mechanisms that determine the direction and quality of educational management. They serve as frameworks for developing students, educational institutions, and educational administration systems in accordance with the goals established by society and the nation. Educational scholars explain that educational standards are "minimum quality criteria" used to supervise, monitor, and improve the quality of educational systems in order to ensure that students receive equitable and high-quality development.

In the context of Thailand, the National Education Standards B.E. 2561 (2018) establish key goals for learners in terms of becoming knowledgeable individuals, innovative co-creators, and active citizens, while the Basic Education Standards focus on student quality, administrative processes, and learning management processes.

Although educational standards are important mechanisms for enhancing educational quality, applying the same standards to all groups of students may create limitations, particularly for students with special educational needs such as children with intellectual disabilities, whose abilities and developmental progress differ from those of general students. Assessment based on the same standardized criteria may fail to reflect students' actual progress.

Educational quality assurance systems therefore play a significant role in supervising and improving school quality. These systems are divided into two major components: internal quality assurance, which refers to continuous quality improvement processes carried out by educational institutions, and external quality assurance, which involves evaluation conducted by external agencies such as the Office for National Education Standards and Quality Assessment (Public Organization) (ONESQA). The key principles of quality assurance include continuous improvement, participation, and quality reflection based on the context of each educational institution.

However, in practice, many special education schools continue to face challenges arising from the use of indicators that mainly emphasize academic achievement. As a result, evaluations often fail to correspond to students' actual development. For example, a special education school in central Thailand found that although students had shown clear improvement in self-help and communication skills, the quality assessment results still reflected a low level of quality because the students could not meet standardized academic indicators. This case demonstrates that quality assurance systems should shift from "comparison with uniform standards" toward "assessment of progress based on individual potential."

2. Concepts of Special Education for Children with Intellectual Disabilities

Children with intellectual disabilities are students who experience limitations in intellectual functioning and adaptive behavior, which affect learning, communication, social interaction, and daily living. Educational management for this group of students must therefore be designed in accordance with their potential, abilities, and individual needs.

The key principle of special education is "education based on students' potential," emphasizing the development of independent living skills, self-help abilities, and social participation rather than focusing solely on academic competition. This concept is consistent with the use of the Individualized Education Program (IEP), which serves as an important tool for determining learning goals, instructional methods, and evaluation approaches suitable for each student.

An interesting case study can be found in special education schools in Japan, where IEPs are implemented alongside practical life skills training such as using public transportation, shopping, and participating in community-based vocational training. As a result, students are able to develop daily living skills and transition into employment more effectively. This approach reflects the idea that special education should be closely connected to "real-life living" rather than focusing only on content-based learning.

In addition, the concepts of Inclusive Education and Universal Design for Learning (UDL) play significant roles in designing flexible learning environments that provide equal

educational access for all students. UDL emphasizes the design of diverse activities, media, and instructional methods to accommodate individual differences. Examples include the use of visual media, tactile materials, and assistive communication technologies for students with language and communication limitations.

3. Analysis of Educational Standards and Quality Assurance Systems for Special Education Schools in Thailand

Thailand applies the same educational standards to both general schools and special education schools, emphasizing student quality, administrative processes, and learning management. Although this approach helps establish common standards for educational quality, several limitations have emerged in practice, particularly the use of the same indicators for students with different developmental characteristics.

The strengths of Thailand's quality assurance system include the promotion of continuous quality improvement, systematic monitoring, and clearly defined standards. However, many special education schools still face challenges in reflecting student outcomes through academic indicators. For example, some students may not achieve literacy standards appropriate to their grade level, yet they may demonstrate significant progress in self-help skills, mobility, and communication in daily life, which are important achievements for children with intellectual disabilities.

A case study from a special education school in northern Thailand found that the use of "individual developmental portfolios" in student assessment enabled teachers to more clearly reflect students' progress in life skills and social behavior. Although such approaches have not yet been fully recognized within the national quality assessment system, they represent examples of assessment practices that are more consistent with the context of students with intellectual disabilities.

4. Analysis of International Educational Quality Assurance and Standards Approaches

Many countries around the world continue to use educational standards shared with general education schools while also establishing specialized measures and indicators for special education to reflect differences among students.

In the United States, the Individuals with Disabilities Education Act (IDEA) serves as an important mechanism for guaranteeing educational rights. The system emphasizes IEP implementation, assessment based on individual potential, and education in the Least Restrictive Environment (LRE). A case study from California found that schools using individualized progress monitoring systems combined with parental involvement were able to effectively improve students' communication and daily living skills.

In Finland, emphasis is placed on a three-tier student support system and the reduction of academic competition, focusing instead on quality of life and happiness in learning. Schools work closely with multidisciplinary teams to develop students comprehensively.

Japan focuses strongly on life skills training and vocational preparation. Many special education schools organize vocational activities in collaboration with community enterprises, enabling students to transition into employment after graduation more successfully.

In the United Kingdom, the Ofsted evaluation system emphasizes personal development, student safety, and quality of life alongside academic achievement. This approach reflects a broader understanding of "student quality" beyond academic success alone.

International Case Studies and Perspectives

Educational quality assurance and educational standards in special education schools for children with intellectual disabilities rely heavily on the establishment of clear and practical educational standards as a foundation for quality assurance and continuous school improvement in both general and special education contexts. Previous international studies have proposed concepts, frameworks, and indicators that can be adapted for special education schools serving children with intellectual disabilities.

Frameworks and Concepts of Educational Quality Assurance and Standards

Studies conducted internationally often apply international standards frameworks while adapting them to local contexts. For example, the development of national standards in medical higher education has applied the WFME framework and modified it to align with national contexts through broad stakeholder participation (Gandomkar et al., 2023; Sjöström et al., 2019; Alharbi, 2024).

In terms of comprehensive quality assessment, the CIPP Model (Context–Input–Process–Product) has been widely used. The application of the CIPP model helps evaluate school quality holistically by considering context, resources, learning processes, and outcomes, thereby enabling systematic improvement of educational systems (Aziz et al., 2018).

Table 1 Examples of Applicable Standard Structures/Frameworks

Concept/Framework	Key Focus	Applications in Special Education	Research Citations
WFME / Professional Standards	Domains – Subdomains – Basic/Developmental Standards	Structure of Standards for Special Education Schools	(Gandomkar et al., 2023; Sjöström et al., 2019)
Inclusive Assessment Framework	Inclusion, Accessibility, and Curriculum Breadth	Assessment Standards for Students with Disabilities	(Douglas et al., 2016)
CIPP Evaluation Model	Context, Input, Process, and Product	Whole-School Quality Assessment System	(Aziz et al., 2018)

From Table 1, it can be seen that examples of applicable standard structures/frameworks can serve as guidelines for developing curriculum standards and content that are "appropriate for children with intellectual disabilities." The curriculum should correspond to students' actual potential and needs. Research conducted in Saudi Arabia found that teachers and families experienced difficulties with the current curriculum, as it did not adequately promote life skills and overall outcomes for students with intellectual disabilities. The studies also criticized the concept of "one curriculum fits all" (Alnahdi et al., 2024; Shraim, 2020). This finding is consistent with the views of teachers in Australia, who stated that secondary school curricula for students with severe disabilities were "insufficient" and proposed that learning outcomes should be meaningful, age-appropriate, and responsive to communication, independence, vocational preparation, and the needs of non-verbal students (Rendoth et al.,

2024). Furthermore, there is a risk that national standards emphasizing literacy and numeracy may narrow the curriculum and overlook skills that are meaningful for students with disabilities, such as daily living skills and social skills (Douglas et al., 2016; Rendoth et al., 2024; Alnahdi et al., 2024).

Assessment and Quality Indicators for Children with Intellectual Disabilities

With regard to the framework of "comprehensive/full curriculum assessment," all students should benefit from accessible assessment approaches that are not limited only to core academic subjects (Douglas et al., 2016). This perspective is reflected in findings from teachers in England, who proposed the use of holistic assessment covering social, emotional, cognitive, and physical dimensions, rather than relying solely on standardized quantitative criteria (Maher et al., 2022).

Regarding indicators related to quality of life and transition to employment, a study conducted in Greece developed instruments to measure "quality of life" and the "quality of vocational education services" in special vocational schools. The study found a strong relationship between service quality and quality of life, emphasizing the use of such tools for evaluating educational quality and outcomes (Georgiadou et al., 2021). In addition, research has developed instruments for measuring the quality of life of students with intellectual and developmental disabilities (IDD) in mainstream schools to support planning and monitoring of quality-of-life outcomes, rather than focusing solely on academic performance (Herás et al., 2021). To respond to technological changes, additional "technology quality indicators" have also been proposed. For example, the use of Augmented Reality (AR) in science instruction for students with intellectual disabilities was found to increase motivation and improve understanding of abstract concepts (Iatraki & Mikropoulos, 2023), which is highly beneficial for learning in special education contexts.

The Role of Leadership and Quality Assurance Systems in Schools

School administrators who apply democratic leadership and governance approaches in educational institutions should connect national educational standards across various dimensions—including curriculum content, learning processes, teachers, administration, and assessment—with management mechanisms such as school review, benchmarking, quality assurance, and quality control in order to improve school quality despite resource limitations (Kaso et al., 2021).

In conclusion, previous studies indicate that quality assurance approaches suitable for special education schools serving children with intellectual disabilities should begin with the establishment of a "set of standards" developed collaboratively with stakeholders. These standards should have a clear structure, be adapted from international frameworks to fit local contexts, and comprehensively address curriculum, assessment, quality-of-life outcomes, and transition-to-work preparation. Quality assessment should adopt a holistic framework that views students as whole persons rather than focusing solely on test scores, while also incorporating indicators related to quality of life and meaningful learning outcomes for children with intellectual disabilities.

Educational Quality Assurance Approaches for Developing Appropriate Educational Standards for Special Education Schools Serving Children with Intellectual Disabilities

1) Student Quality Standards

Student quality standards should emphasize "development according to individual potential" rather than comparison against common benchmarks. These standards should cover life skills, self-help abilities, communication, and social participation. Examples include assessments of students' ability to use money, travel independently, and perform daily routines.

2) Learning Management

Schools should implement individualized learning management through the Individualized Education Program (IEP) and employ practical activities connected to real-life situations. A case study from a school in Finland found that "simulated daily life classrooms" significantly improved students' decision-making skills and sense of responsibility.

3) Administration and Support

Improving the quality of special education requires multidisciplinary teams, including psychologists, occupational therapists, and speech therapists, as well as active participation from families and communities. A case study from Japan found that building networks between schools and local businesses increased employment opportunities for students after graduation.

4) Measurement and Evaluation

Assessment should emphasize Authentic Assessment and Functional Assessment that reflect students' real-life functioning rather than relying solely on standardized examinations. Examples include behavioral observation, portfolio assessment, and collaborative evaluation with parents. Most importantly, assessment should reflect students' "progress" and "quality of life."

Summary of the Synthesis of Knowledge on Educational Quality Assurance Approaches for Developing Appropriate Educational Standards for Special Education Schools Serving Children with Intellectual Disabilities



Figure 1

Conclusion and Recommendations

Conclusion

Educational quality assurance is an important mechanism for supervising, promoting, and improving the quality of educational institutions to ensure that education can be provided effectively and in alignment with educational goals. Educational standards serve as frameworks for defining the desirable characteristics and outcomes of students, as well as important tools for monitoring, evaluating, and continuously improving the quality of educational management.

In the context of Thailand, special education schools serving children with intellectual disabilities continue to apply the same educational standards and quality assurance systems as those used in basic education schools. This reflects efforts to promote educational equity and improve the overall quality of education. However, the analysis reveals significant limitations in applying the same standards and indicators to all groups of students, particularly children with intellectual disabilities who differ in terms of development, learning, communication, and daily living abilities. Assessments that focus solely on academic achievement based on standardized criteria cannot adequately reflect students' actual progress and potential. As a result, achievements related to life skills, self-help abilities, social adaptation, and quality of life—which are central goals of special education—tend to receive less attention within school quality assessment processes.

At the same time, studies of educational quality assurance models and educational standards in countries such as the United States, Finland, Japan, and the United Kingdom indicate that although many countries continue to use common frameworks with general education, they also establish specialized approaches and indicators for students with special educational needs. These systems emphasize development according to individual potential, individualized education through the Individualized Education Program (IEP), authentic assessment, life skills development, and students' quality of life rather than focusing solely on academic achievement.

Therefore, appropriate educational quality assurance approaches for special education schools serving children with intellectual disabilities should emphasize student development according to individual potential, flexible learning management aligned with real-life contexts, multidisciplinary support, participation from families and communities, and assessment approaches that genuinely reflect students' progress, life skills, and quality of life. In this regard, quality assurance systems should function as "tools for development" rather than merely "mechanisms for inspection," enabling special education schools to develop students appropriately and in accordance with principles of human rights and educational equity.

Policy Recommendations

1) Develop Specific Standards or Guidelines for Special Education Schools

Relevant agencies should develop educational standards and quality assurance approaches appropriate to the context of special education schools, particularly schools serving children with intellectual disabilities. These standards do not necessarily need to be completely separated from the main educational standards system; however, there should be "supplementary standards" or "specialized indicators" reflecting the developmental characteristics of these students, such as self-help abilities, communication skills, social adaptation, and independent living. Such approaches would enable schools to improve student quality in ways that are more consistent with students' actual potential and contexts.

2) Adjust Indicators to Reflect Students' Potential and Quality of Life

Quality assessment systems should reduce reliance on standardized academic indicators alone and include indicators reflecting students' quality of life and individual development. Examples include life skills, social interaction, emotional regulation, teamwork, and daily living abilities. Adjusting these indicators would allow school quality assessments to better reflect the actual educational outcomes of children with intellectual disabilities.

3) Promote Individual Development-Based Assessment Systems

Support should be provided for the implementation of individual developmental assessment systems such as Authentic Assessment, portfolio assessment, behavioral observation, and collaborative evaluation involving parents and multidisciplinary professionals. These approaches can continuously reflect students' progress across multiple dimensions. Such methods would reduce the limitations of standardized comparative assessment and better support students' development according to their true potential.

Practical Recommendations

1) Develop Flexible Quality Assurance Systems Based on Student Contexts

Educational institutions should adapt their internal quality assurance systems to be more flexible and aligned with students' characteristics by establishing quality goals that emphasize individual development rather than uniform standards. For example, self-help abilities, communication, and social adaptation could be used as key indicators of success. Schools should also use student developmental data as the basis for continuous planning and quality improvement.

2) Strengthen the Capacity of Teachers and Special Education Personnel

Teachers and educational personnel are key factors in improving student quality. Schools and affiliated agencies should provide continuous professional development in special education, particularly in areas such as IEP development, developmental assessment, assistive technology, and life-skills-oriented instruction. In addition, collaboration among teachers, psychologists, occupational therapists, and other specialists should be promoted to provide comprehensive support for students.

3) Build Collaboration Among Schools, Families, and Communities

The development of students with intellectual disabilities cannot be achieved by schools alone but requires cooperation from families, communities, and external organizations. Schools should establish systems that encourage parental participation in planning student development, monitoring progress, and organizing life-skills activities. They should also create partnerships with communities and workplaces to provide students with opportunities for vocational training and real-life experiences.

Recommendations for Future Studies

1) Development of Specific Indicators for Children with Intellectual Disabilities

Further research should focus on developing student quality indicators appropriate for children with intellectual disabilities, particularly in areas such as life skills, communication, social interaction, and quality of life. These indicators could serve as guidelines for school quality assessment and the development of quality assurance systems suitable for special education contexts.

2) Development of Quality Assurance Models for Thai Special Education Schools

Studies should be conducted to develop quality assurance models specifically designed for special education schools in Thailand by integrating concepts related to human rights,

development according to individual potential, and multidisciplinary participation. Such efforts would contribute to practical quality assurance models suitable for Thai educational contexts.

3) Studies of International Special Education Quality Assurance Systems for Application in Thailand

Further studies should examine educational quality assurance systems and educational standards in countries with advanced special education systems, such as Finland, Japan, and the United States, in order to analyze successful factors and approaches that could be adapted to the Thai context, particularly in areas such as developmental assessment, individualized student support, and the connection between education, quality of life, and future employment opportunities.

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Enhancing Learning Ecosystems to Improve Instructional Management in the Era of Artificial Intelligence in Primary Schools under the Office of the Basic Education Commission in the Highland Areas of Thailand

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Abstract

The research titled Enhancing Learning Ecosystems to Improve Instructional Management in the Era of Artificial Intelligence in Primary Schools under the Office of the Basic Education Commission in the Highland Areas of Thailand aimed to: (1) examine the level of enhancement of learning ecosystems to improve instructional management in the AI era in primary schools, and (2) compare the enhancement of learning ecosystems for instructional improvement in the AI era across schools categorized by size and geographic location. The sample comprised 354 primary schools selected through simple random sampling that were1,062 school administrators and teachers. The research instrument was a questionnaire dealing with enhancement of learning ecosystems, with a reliability coefficient of 0.99. Data analysis involved frequency, percentage, mean, standard deviation, ANOVA, and LSD test.

The research findings revealed that: (1) the overall level of enhancement of the learning ecosystem to improve instructional management in the era of artificial intelligence in primary schools, including all specific dimensions, was at a high level; and (2) there were no statistically significant differences in the enhancement of learning ecosystems based on school size. However, statistically significant differences at the 0.05 level were found among schools located in different geographic areas.

The findings suggest that educational policies should prioritize geographically differentiated support rather than school size when promoting AI-enabled learning ecosystems. Greater investment in digital infrastructure, teacher capacity development, and cross-sector partnerships is particularly needed in geographically disadvantaged areas to reduce educational disparities and strengthen equitable AI-supported instructional management

Keywords: Learning ecosystem, Instructional Management, Era of artificial intelligence, Primary education, Highlands of Thaila

Introduction

The learning ecosystem in the present era plays a vital role in shaping the direction and format of educational management, particularly in the digital age where technology and innovation significantly influence both learning processes and school administration. The key findings can be summarized as follows:

1. Integration of Digital Technology in Administration and Instruction
The application of digital technology in academic administration and instructional management has become a crucial trend. A study by Phakdeepong et al. (2023) found that academic administration in schools during the digital era is practiced at a high level, especially in the development of internal quality assurance systems and educational standards. However, the development and use of educational media technologies remain challenging and require further improvement.

2. Strategic Adjustment of School Administration in the New Normal Era
Schools must adapt their administrative strategies to respond to global changes, such as the COVID-19 pandemic and the advancement of information technology. Songpayom (2024) proposed seven strategies for school management in the new normal, including staff development, ICT management, and curriculum and instructional innovation, to enhance resilience and preparedness for emerging challenges.

3. Designing Learning Ecosystems that Support Learner Potential Development Establishing a learning ecosystem that integrates formal, non-formal, and informal learning is a key approach to fostering learner potential in the Thailand 4.0 era. A 2023 report by the Office of the Education Council recommended that the government define the role of education management based on the learning ecosystem concept at both policy and operational levels. This would enable learners to study in accordance with their own contexts and to pursue lifelong learning.

The learning ecosystem is a holistic educational concept that emphasizes the interconnection and interaction among various components that influence student learning. These components include individuals, processes, tools, and environments that support and enhance learning. A well-designed learning ecosystem must take into account both biotic and abiotic factors that dynamically interact with one another (Juicharoen, 2019; Rose, 2018). The learning ecosystem plays several crucial roles. (Sawatdee, Hasin, & Sooknanchana, 2023; Maneehad & Wannapirun, 2019; Panachamnong, Suebnusorn, & Buasuwan, 2023) including:

1. Promoting Lifelong Learning. An effective learning ecosystem enables learners to continuously acquire knowledge throughout their lives, extending beyond the boundaries of the traditional classroom.

2. Adapting to Change. In an era of rapid technological and societal transformation, the learning ecosystem equips learners with the skills and mindset necessary to adapt efficiently and effectively.

3. Fostering Collaboration. A robust learning ecosystem encourages collaboration among teachers, students, parents, and communities, thereby enriching and diversifying the learning experience.

4. Enhancing Educational Quality. A well-structured learning ecosystem can improve the overall quality of education by focusing on the development of learners' competencies to meet the demands of the 21st century.

5. Encouraging Active Learning and 21st-Century Skills. A supportive ecosystem fosters an environment conducive to active learning, promoting critical thinking, teamwork, and digital literacy key competencies for the 21st century.

6. Integrating Digital Technology for Future Learning. The integration of digital technologies within the learning ecosystem enhances learning flexibility. Learners can conveniently access knowledge through online platforms, supporting a hybrid model that combines offline and online learning experiences.

7. Developing Skills for Society 5.0. Building a learning ecosystem that promotes the development of skills aligned with Society 5.0 is essential for preparing students to thrive in a rapidly evolving world

In the context of Thailand, a study by Jaikhong and Kaewkhongthong (2021) explored the development of an appropriate learning ecosystem for basic education and the cultivation of Thai citizens in alignment with the Thailand 4.0 vision. The study identified six key components as follows:

1. Collaboration with Partners and Networks. Establishing partnerships and networks to collaboratively plan and implement learning ecosystems that are tailored to meet specific educational goals and learner needs.

2. Utilization of Technology. Leveraging technology to effectively connect learners with knowledge sources, applications, innovations, and various individuals, thereby enhancing access and learning efficiency.

3. Development of New Curricula and Activities. Designing alternative learning options outside the traditional classroom through innovative content and activities that support learners' self-development in alignment with future education trends, competency-based learning, and assessment methods adapted to match curricular goals.

4. Instructional Methods. Emphasizing continuous and lifelong learning by promoting instructional strategies both inside and outside the formal school setting that encourage sustained learner engagement.

5. Resource Management. Efficiently managing resources such as budget, personnel, and learning tools to ensure the successful implementation of the learning ecosystem according to defined goals.

6. Strategic Implementation Planning. Developing strategic visions, objectives, targets, and implementation methods, while fostering a culture of learning that encourages school leaders, teachers, and students to embrace self-directed learning and a lifelong learning mindset with enthusiasm and intrinsic motivation

A study of the educational management of schools located in provinces bordering neighboring countries in Thailand's highland areas revealed several challenges across multiple dimensions, including students, curriculum and instruction, personnel, school infrastructure and utilities, instructional media and equipment, budget, and overall administration and management. This research focused specifically on issues related to the learning ecosystem, and the findings indicated the following: (1) educational media, instructional materials, technological equipment, and teaching tools were insufficient, outdated, of poor quality, and failed to meet required standards; (2) classroom buildings were generally inadequate to support effective learning, with a lack of dedicated academic spaces, dormitories, and insufficient sanitary facilities; (3) there was a shortage of language laboratories, vocational training rooms, and computer labs capable of supporting modern software; (4) libraries, information resources, and other learning centers were also lacking; and (5) internet connectivity was unstable and unreliable. According to the Border Area Educational Development Plan, specific strategies, indicators, and targets have been established to improve school infrastructure, public utilities, and instructional materials. One of the goals is to increase the number of schools that improve their learning activities and media for environmentally friendly quality-of-life development by 5% annually. This demonstrates increased awareness and prioritization of enhancing the learning ecosystem in alignment with local contexts to reduce educational disparities and improve the quality of education in border regions to be on par with that of other areas in Thailand.

In addition, Suebsai (2021) summarized the educational situation of primary schools in highland areas as follows: (1) limitations in resources and infrastructure highland schools often suffer from a lack of quality teachers, instructional materials, and sufficient budgets, which diminishes the effectiveness of education delivery; (2) educational inequality youth in highland areas face fewer educational opportunities due to socioeconomic and cultural barriers, such as poverty, lack of family support, and limited access to education; and (3) the necessity for community and multi-sectoral participation effective educational management in highland areas requires collaboration among communities, parents, local administrative organizations, and government agencies to build a sustainable learning ecosystem that is appropriate to the local context.

Although previous studies have highlighted the importance of learning ecosystems, digital learning environments, and artificial intelligence (AI) integration in education, most have focused on conceptual frameworks, model development, or educational settings in urban and general school contexts (Holmes et al., 2022; OECD, 2023; UNESCO, 2023). Existing research has primarily examined the components of digital learning ecosystems, technology integration, and educational innovation (Jaikhong & Kaewkongthong, 2021; Prachanban et al., 2024) without providing sufficient empirical evidence from geographically disadvantaged schools, where contextual constraints substantially influence educational management and instructional practices (UNESCO, 2023; World Bank, 2023). Furthermore, previous studies have rarely investigated whether learning ecosystem enhancement differs according to school

characteristics, particularly geographical location and school size, within highland and border regions (OECD, 2023).

Primary schools located in Thailand's highland areas operate under distinctive geographical, socio-economic, and infrastructural conditions that directly affect access to digital technologies, educational resources, teacher professional development, and AI-supported instructional management (Office of the Education Council, 2023; Suebsai, 2021). Although Thailand has introduced national policies promoting educational equity, digital transformation, and AI integration across all educational levels (Ministry of Higher Education, Science, Research and Innovation [MHESI], 2023), empirical evidence regarding the current status of learning ecosystem enhancement in geographically remote schools remains limited. Consequently, policymakers continue to face insufficient evidence for developing context-sensitive educational policies and resource allocation strategies that effectively address geographical disparities in educational opportunities (OECD, 2023; UNESCO, 2023).

To address these gaps, the present study investigates the level of learning ecosystem enhancement for improving instructional management in the era of artificial intelligence among primary schools located in Thailand's highland areas and examines differences according to school size and geographical location. The findings contribute to the literature by extending current knowledge of AI-enabled learning ecosystems within geographically disadvantaged educational contexts. In addition, the study provides empirical evidence to support context-sensitive educational policymaking, equitable resource allocation, and sustainable instructional improvement for schools serving remote and underserved communities.

Research Objectives

1. To examine the level of enhancement of the learning ecosystem aimed at improving instructional management in the era of artificial intelligence in primary schools under the Office of the Basic Education Commission located in Thailand's highland areas.
2. To compare the enhancement of the learning ecosystem aimed at improving instructional management in the era of artificial intelligence among primary schools under the Office of the Basic Education Commission in Thailand's highland areas, categorized by school size and geographical location.

Research Hypotheses

1. Schools of different sizes exhibit significant differences in the enhancement of the learning ecosystem aimed at improving instructional management in the era of artificial intelligence.
2. Schools located in different geographical areas exhibit significant differences in the enhancement of the learning ecosystem aimed at improving instructional management in the era of artificial intelligence.

Literature Review

2.1 Learning Ecosystems in Contemporary Education

The concept of a learning ecosystem has become increasingly important in contemporary education as educational institutions adapt to rapid technological advancement, digital transformation, and the growing demand for lifelong learning. Unlike traditional education systems that emphasize classroom-based instruction, learning ecosystems recognize that learning emerges through dynamic interactions among learners, teachers, technologies, organizations, communities, and learning environments. These interconnected elements collectively create conditions that support continuous learning, collaboration, innovation, and knowledge sharing.

Recent literature conceptualizes learning ecosystems as complex and adaptive systems rather than isolated educational settings. Rose (2018) describes learning ecosystems as networks

of interconnected actors, resources, technologies, and learning processes that continuously interact to promote meaningful learning experiences. Similarly, the Office of the Education Council (2023) emphasizes that learning ecosystems integrate formal, non-formal, and informal learning opportunities, enabling learners to access knowledge across multiple contexts throughout their lives. This perspective aligns with the transition from teacher-centered instruction toward learner-centered and competency-based education.

The rapid advancement of digital technologies has further transformed learning ecosystems into technology-enabled environments. Digital platforms, cloud computing, learning analytics, artificial intelligence, and online collaborative tools have expanded opportunities for personalized learning, flexible instructional management, and data-informed educational decision-making. Consequently, the effectiveness of a learning ecosystem increasingly depends on the integration of technological infrastructure, digital resources, instructional design, stakeholder collaboration, and organizational leadership rather than on physical learning environments alone.

Previous studies have consistently identified several essential components of effective learning ecosystems. Jaikhong and Kaewkongthong (2021) proposed six key dimensions comprising strategic management, curriculum and learning activities, instructional methods, technology utilization, resource management, and collaboration among educational partners. Likewise, Prachanban et al. (2024) developed a digital learning ecosystem model consisting of digital learning communities and digital learning support systems, including teachers, learners, educational technologies, school management, and stakeholder participation. Nguyen et al. (2023) similarly highlighted learning communities, supportive learning environments, active learning, and instructional support as critical determinants of educational quality.

International organizations have also emphasized the strategic role of learning ecosystems in preparing education systems for the future. UNESCO (2023) argues that effective learning ecosystems should foster equity, inclusion, digital competence, and lifelong learning while ensuring that emerging technologies such as artificial intelligence are implemented responsibly and ethically. Rather than replacing teachers, AI should strengthen instructional quality by supporting personalized learning, adaptive assessment, early identification of learning needs, and evidence-based instructional planning.

Collectively, these perspectives indicate that contemporary learning ecosystems extend beyond the provision of educational technology. They represent integrated educational systems in which leadership, curriculum, pedagogy, technological infrastructure, learning resources, and collaborative partnerships function together to enhance educational quality and learner outcomes. Consequently, strengthening learning ecosystems has become a strategic priority for educational institutions seeking to improve instructional management and achieve sustainable educational development in the era of artificial intelligence.

2.2 Artificial Intelligence and Instructional Management

Artificial intelligence (AI) has emerged as a transformative technology that is reshaping educational management and instructional practices worldwide. Rather than functioning solely as an instructional technology, AI has evolved into an intelligent decision-support system that enhances planning, teaching, assessment, learner support, and organizational management (UNESCO, 2023; U.S. Department of Education, 2023). As educational institutions undergo digital transformation, instructional management is increasingly characterized by data-informed decision-making, personalized learning, and continuous improvement supported by artificial intelligence.

Instructional management in the AI era extends beyond classroom teaching to encompass curriculum planning, instructional design, learning resource management, assessment, teacher professional development, and educational quality assurance. AI technologies enable school leaders and teachers to analyze learning data, identify students' learning needs, monitor academic progress, predict learning risks, and provide timely instructional interventions.

Consequently, instructional management has shifted from a standardized approach toward adaptive, learner-centered, and evidence-based educational practices (Luckin, Holmes, Griffiths, & Forcier, 2016; U.S. Department of Education, 2023).

Recent studies suggest that AI contributes to instructional management in several important dimensions. First, AI supports personalized learning by adapting instructional content, learning activities, and assessment according to learners' characteristics, learning preferences, and academic progress (Holmes et al., 2022). Second, AI facilitates data-driven instructional decision-making through learning analytics, enabling educators to evaluate instructional effectiveness and identify areas requiring improvement (Alfredo et al., 2023). Third, AI enhances teacher productivity by assisting in lesson planning, instructional material development, assessment design, automated feedback generation, and administrative tasks, thereby allowing teachers to devote more time to meaningful learning interactions (Łodzikowski, Foltz, & Behrens, 2023). Fourth, AI promotes continuous monitoring of student learning and early identification of learners requiring additional academic support through predictive analytics and adaptive learning systems (UNESCO, 2023).

Despite these opportunities, the successful integration of AI into instructional management depends on more than the availability of AI technologies. Effective implementation requires an enabling learning ecosystem that includes reliable digital infrastructure, accessible technological resources, school leadership, teacher digital competence, organizational support, collaborative learning networks, and clear ethical guidelines for AI use. UNESCO (2023) emphasizes that AI should complement rather than replace teachers, and its implementation must prioritize equity, inclusion, transparency, human agency, data privacy, and responsible governance. Likewise, human-centred AI research highlights that successful AI implementation requires active participation from teachers and learners throughout the design and implementation process to ensure trustworthiness, safety, and educational effectiveness (Alfredo et al., 2023).

These perspectives indicate that AI and instructional management are fundamentally interconnected through the broader concept of the learning ecosystem. Schools with stronger learning ecosystems are more capable of integrating AI into curriculum implementation, instructional innovation, learning assessment, and educational management. Conversely, schools operating under geographical and infrastructural constraints may experience substantial challenges in adopting AI-supported instructional management. Therefore, examining learning ecosystem enhancement provides an important foundation for understanding schools' readiness to improve instructional management in the era of artificial intelligence, particularly within geographically disadvantaged educational contexts.

2.3 Learning Ecosystems in Highland and Border Schools

Learning ecosystems in highland and border schools differ substantially from those in urban educational settings because they operate under complex geographical, socio-economic, cultural, and technological conditions. These schools frequently encounter barriers related to mountainous terrain, dispersed populations, multilingual communities, teacher shortages, limited educational resources, and unequal access to digital infrastructure. Consequently, developing an effective learning ecosystem requires greater collaboration among schools, local communities, government agencies, and external partners to ensure equitable educational opportunities and sustainable school improvement (UNESCO, 2023).

International research consistently demonstrates that geographical context significantly influences the quality of learning ecosystems. Schools located in remote and marginalized areas generally experience lower accessibility to information and communication technologies, fewer opportunities for teacher professional development, and weaker educational support networks than schools in metropolitan regions. These limitations affect instructional quality, learner engagement, and schools' capacity to adopt innovative educational practices, including

artificial intelligence (AI)-supported instructional management. Therefore, strengthening learning ecosystems in geographically disadvantaged areas requires context-sensitive policies that address disparities in infrastructure, digital connectivity, educational resources, and human capacity (UNESCO, 2023).

The Organisation for Economic Co-operation and Development (OECD, 2023) further argues that resilient education systems should provide flexible learning ecosystems capable of adapting to local contexts while ensuring equitable access to quality education. Rather than implementing standardized educational reforms, policymakers should recognize regional differences in technological readiness, community participation, and institutional capacity when designing educational development strategies. Such an approach is particularly important for schools located in remote, mountainous, and border areas where contextual factors substantially influence educational outcomes.

Within the Thai context, the Office of the Education Council (2023) emphasizes that learning ecosystems should integrate formal, non-formal, and informal learning opportunities while strengthening collaboration among schools, families, communities, local administrative organizations, and other stakeholders. This integrated approach is particularly important for schools in highland areas, where local knowledge, community participation, and inter-agency collaboration contribute significantly to improving educational quality despite resource constraints.

Empirical studies in Thailand similarly indicate that schools located in highland and border areas continue to face substantial challenges in developing effective learning ecosystems. Jaikhong and Kaewkongthong (2021) proposed that successful learning ecosystems require six interrelated components: strategic management, curriculum and learning activities, instructional methods, technology utilization, resource management, and collaborative educational networks. Likewise, Prachanban et al. (2024) demonstrated that digital learning ecosystems depend not only on technological infrastructure but also on school leadership, teacher readiness, stakeholder participation, and digital learning support systems. These findings suggest that educational technologies alone are insufficient unless supported by an enabling organizational and community environment.

Previous studies have also reported persistent inequalities in educational resources among schools located in remote border regions of Thailand. Suebsai (2021) found that many highland schools experience shortages of qualified teachers, instructional materials, learning facilities, and digital technologies, while unstable internet connectivity continues to constrain access to online learning opportunities. Similar challenges were identified by the Office of the Education Council (2023), which recommends strengthening learning ecosystems through cross-sector partnerships, community engagement, and equitable investment in educational infrastructure to reduce regional disparities.

Collectively, the literature suggests that learning ecosystems in highland and border schools are shaped not only by internal school management but also by external environmental conditions, including geography, infrastructure, public policy, technological accessibility, and community collaboration. These contextual characteristics directly influence schools' readiness to implement AI-supported instructional management. Consequently, examining learning ecosystem enhancement in Thailand's highland schools provides important empirical evidence for understanding how contextual factors affect educational innovation and for informing policies aimed at promoting educational equity and sustainable school development in geographically disadvantaged areas.

2.4 Research Gap and Research Contribution

A review of the literature indicates several important research gaps regarding learning ecosystems in the era of artificial intelligence. First, previous studies have primarily focused

on conceptual frameworks, digital learning ecosystem models, and technology integration in general educational settings, with limited attention to instructional management in geographically disadvantaged schools. Although studies have identified key components of learning ecosystems, empirical evidence demonstrating how these ecosystems function in remote educational contexts remains scarce.

Second, existing research has largely examined schools in urban or mainstream educational environments. Primary schools located in Thailand's highland areas operate under distinctive geographical, socio-economic, and technological constraints that influence access to digital infrastructure, educational resources, and AI-supported instructional management. However, empirical investigations specifically addressing these contextual differences are still limited.

Third, while national educational policies emphasize equitable access to artificial intelligence and digital technologies, little empirical evidence is available to determine whether learning ecosystem enhancement differs according to school characteristics, particularly geographical location and school size. Consequently, policymakers lack sufficient evidence to formulate context-specific strategies for improving instructional management in remote and highland schools.

To address these gaps, this study investigates the current level of learning ecosystem enhancement for improving instructional management in the era of artificial intelligence among primary schools in Thailand's highland areas and compares differences according to school size and geographical location. The study contributes empirical evidence that extends the existing literature on AI-enabled learning ecosystems while providing practical guidance for educational policy, resource allocation, and school development in geographically disadvantaged contexts.

Research Methodology

This study is a survey research.

The population consists of 3,151 primary schools located in the highland areas of Thailand. The sample includes 354 primary schools in the highland areas of Thailand, selected using the Yamane formula. Simple random sampling was then applied, with one school administrator and two teachers from each school as informants, resulting in a total of 1,062 informants.

The research instrument was a questionnaire designed to measure the enhancement of learning ecosystems for improving instructional management in the era of artificial intelligence. The questionnaire consisted of two sections. The first section collected demographic and institutional information, including school size and geographical location. The second section measured six dimensions of learning ecosystem enhancement: learning ecosystem management strategy, curriculum and learning activity development, learning management methods, application of technology in learning management, support for learning resources, and collaboration with learning networks. The questionnaire employed a five-point Likert scale, ranging from 1 = lowest level to 5 = highest level. The interpretation of mean scores was classified into five levels: very low, low, moderate, high, and very high. The content validity of the questionnaire was examined by experts using the Index of Item-Objective Congruence (IOC), with values ranging from 0.67 to 1.00. The reliability of the questionnaire was tested using Cronbach's alpha coefficient, which yielded a value of .99, indicating a very high level of internal consistency.

Although the original target sample comprised 1,062 respondents from 354 schools, a total of 758 valid responses were received, representing a response rate of 71.37%. This response rate was considered acceptable for survey research and sufficient for statistical analysis. However, potential non-response bias should be acknowledged. Schools or respondents with limited internet access, heavier workloads, or lower readiness in digital

technology may have been less likely to complete the online questionnaire. Consequently, the findings may slightly reflect the perspectives of schools and personnel who were more accessible, more digitally prepared, or more willing to participate in educational research.

Research ethics were carefully considered throughout the study. Participation was voluntary, and respondents were informed about the purpose of the research, the confidentiality of their responses, and their right to withdraw from the study at any time. No personally identifiable information was disclosed in the analysis or reporting of the findings. The data were used solely for academic research purposes and were presented only in aggregate form.

Data analysis involved frequency, percentage, mean, standard deviation, one-way analysis of variance (ANOVA), and post-hoc LSD testing.

Research Findings

1.The enhancement of the learning ecosystem for improving instructional management in the era of artificial intelligence was rated at a high level overall (M = 4.31, SD = 0.47). All six dimensions were also evaluated at a high level, with learning management methods receiving the highest mean score, followed by curriculum and learning activity development and the application of technology in learning management. These findings indicate that primary schools in Thailand's highland areas have established favorable conditions for supporting AI-enhanced instructional management. The relatively higher ratings for instructional methods and curriculum development suggest that schools have increasingly incorporated learner-centered pedagogies and technology-supported teaching practices into everyday instruction. Meanwhile, the comparatively lower mean scores for learning ecosystem management strategy and learning resource support imply that organizational planning and resource allocation still require further strengthening to ensure the long-term sustainability of AI implementation in schools (Table 1)

Table 1 Mean and Standard Deviation of the Enhancement of the Learning Ecosystem to Improve Instructional Management in the Era of Artificial Intelligence in Primary Schools under the Office of the Basic Education Commission in the Highland Areas of Thailand (n=758)

Enhancement of the Learning Ecosystem to Improve Instructional Management in the Era of Artificial Intelligence in Primary Schools	***Mean (M)***	**Standard Deviation (SD.)**	**Interpretation**
1. Learning Ecosystem Management Operation Strategy	4.25	0.52	High
2. Curriculum and learning activities development	4.36	0.52	High
3. Methods of learning management	4.38	0.53	High
4. Application of technology in learning management	4.34	0.51	High
5. Support for learning resources	4.26	0.54	High
6. Collaboration with learning networks	4.29	0.58	High
Total average	**4.36**	**0.44**	High

2. The results of the analysis of variance to compare the differences in the enhancement of the learning ecosystem to improve instructional management in the era of artificial intelligence in schools under the Office of the Basic Education Commission in the highland areas of Thailand, classified by school size, revealed that the F value = 1.456 and the sig value = .225. This indicates that schools of different sizes do not significantly differ in their efforts to enhance the learning ecosystem to improve instructional management in the era of artificial intelligence. Therefore, the research hypothesis is rejected. This finding suggests that school

size does not appear to be a determining factor influencing the development of AI-supported learning ecosystems. Regardless of whether schools were small, medium, or large, they demonstrated relatively similar levels of readiness and implementation. This consistency may reflect the influence of national educational policies and standardized support mechanisms that provide comparable opportunities for schools to develop instructional management in the AI era. (Table 2).

Table 2 Results of the Analysis of Variance to Compare the Differences in Enhancing the Learning Ecosystem to Improve Instructional Management in the Era of Artificial Intelligence in Schools under the Office of the Basic Education Commission in the Highland Areas of Thailand, Classified by School Size.

Sources of variability	SS	df	MS	F	Sig
Between Groups	.961	3	.320	1.456	.225
Within Groups	162.959	754	.220		
Total	166.920	757			

*p > .05

3. The results of the analysis of variance (ANOVA) to compare differences in the enhancement of learning ecosystem development for improving instructional management in the era of artificial intelligence among schools under the Office of the Basic Education Commission located in highland areas of Thailand, classified by school location, revealed an F-value of 6.138 and a significance value (sig.) of .002. This indicates that schools situated in different areas significantly differ in their efforts to enhance the learning ecosystem for instructional improvement in the AI era, at the .05 level of statistical significance. Therefore, the research hypothesis was accepted, and a post-hoc comparison using the Least Significant Difference (LSD) method was conducted. This result suggests that geographical context plays a substantial role in shaping schools' capacity to strengthen learning ecosystems. Variations in infrastructure, access to digital technologies, availability of educational resources, and opportunities for collaboration with governmental and international organizations may contribute to these regional differences. The findings indicate that geographical disparities remain an important consideration for educational planning and AI-supported instructional development in remote areas. (Table 3)

Table 3 Results of the Analysis of Variance to Compare the Differences in Enhancing the Learning Ecosystem to Improve Instructional Management in the Era of Artificial Intelligence in Schools under the Office of the Basic Education Commission in the Highland Areas of Thailand, Classified by school geographical location.

Sources of variability	SS	df	MS	F	Sig
Between Groups	2.671	2	1.335	6.138	.002
Within Groups	164.249	755	.218		
Total	166.920	757			

*p > .05

4. Results of the Pairwise Comparison of Means in Enhancing the Learning Ecosystem to Improve Instructional Management in the Era of Artificial Intelligence in Schools under the Office of the Basic Education Commission in the Highland Areas of Thailand, Classified by School Location. The results show differences in two pairs: (1) Schools located near the Republic of the Union of Myanmar have a higher level of enhancement of the learning ecosystem to improve instructional management in the era of artificial intelligence than schools located near the Lao People's Democratic Republic; and (2) Schools located near the Republic of the Union of Myanmar have a higher level of enhancement of the learning

ecosystem to improve instructional management in the era of artificial intelligence than schools located near the Kingdom of Cambodia (Table 4).

Table 4: Results of Pairwise Comparison of Means in Enhancing the Learning Ecosystem to Improve Instructional Management in the Era of Artificial Intelligence in Schools under the Office of the Basic Education Commission in the Highland Areas of Thailand, Classified by School geographical location.

School geographical location		**Lao**	**Myanmar**	**Cambodia**
	M	**4.27**	**4.39**	**4.26**
Lao People's Democratic Republic	4.27	-	.003*	-
Republic of the Union of Myanmar	4.39	.003*	-	.004*
Kingdom of Cambodia	4.26		.004*	-

*p > .05

Discussion

Based on the research findings, the researcher discusses the results according to the following objectives:

1. The research found that the enhancement of the learning ecosystem to elevate teaching and learning management in the era of artificial intelligence (AI) in primary schools in the highland areas of Thailand is at a high level. This outcome aligns with the recent trends in Thailand that focus on the development of digital learning ecosystems to accommodate educational changes in the digital age and AI. This is consistent with the work of Prachanban et al. (2024), who developed and validated a digital learning ecosystem measurement model for primary education institutions in Thailand. The model consists of two main components: the digital learning community and digital learning support, which includes the roles of teachers, students, supporters, stakeholders, as well as supporting technologies, school infrastructure, digital learning content, and school management. This model demonstrates its suitability with empirical data both in urban and rural schools. Furthermore, the study by Nguyen et al. (2023) emphasizes the importance of creating a digital learning ecosystem with four main components: the learning community, the learning atmosphere, active learning, and teaching and learning support, which are key factors in improving the quality of education in Thailand. The use of AI in the Thai education system is also supported by UNESCO, which highlights that AI can tailor learning to meet individual students' needs and help reduce learning gaps in Thai schools. However, challenges remain, such as digital inequality and teachers' ability to use technology. From the research and trends mentioned, it can be concluded that enhancing the learning ecosystem in primary schools in the highland areas of Thailand is crucial for elevating teaching and learning management in the AI era. The development of various components of the digital learning ecosystem and the incorporation of AI in education will help improve the efficiency and equity of access to education for students in remote areas.

2. From hypothesis 1, which suggests that schools of different sizes have differing levels of enhancing the learning ecosystem to elevate teaching and learning in the era of artificial intelligence, the analysis of variance comparing the differences in enhancing the learning ecosystem for primary schools based on school size revealed no significant statistical differences (F = 1.456, sig = .225). This indicates that schools of varying sizes whether small, medium, or large—have similar levels of implementing initiatives related to developing the learning ecosystem. This finding is consistent with the research by Prachanban et al. (2024),

which noted that primary schools in diverse contexts could develop digital learning ecosystems with minimal differences due to comprehensive policy and resource support from central authorities. Additionally, research by Sritong and Chueajaroen (2023) found that teachers' readiness to manage digital learning in both small and large schools did not differ significantly, reflecting that digital or AI-based learning management is equally supported in terms of infrastructure, technological media, and teacher development. This aligns with the Ministry of Education's National AI Strategy report (Ministry of Higher Education, Science, Research and Innovation, 2023), which promotes equitable access to AI and digital learning at all school levels, particularly in remote and special areas, to prevent disparities in educational quality development.

3. From hypothesis 2, which posited that schools located in different areas would have varying levels of enhancing the learning ecosystem to elevate teaching and learning in the era of artificial intelligence, the results of the analysis of variance comparing the differences in enhancing the learning ecosystem for primary schools based on the geographical location of the schools in the highland regions of Thailand revealed a significant statistical difference at the .05 level ($F = 6.138$, sig = .002). This indicates that the geographical location of schools has an influence on the level of enhancement in the learning ecosystem, which may be attributed to factors such as geography, local resources, access to technology, and collaboration with external organizations. These results are consistent with the research by Sunnee et al. (2023), which found that schools located in border areas or areas with collaboration with neighboring countries developed more learning technologies and innovations than schools in remote areas or areas with communication and budget constraints. Similarly, the study by Ratchapak (2023) indicated that developing a learning ecosystem in the era of artificial intelligence requires an enabling environment that facilitates the integration of technology, such as internet connectivity, support from local administrative organizations, and teacher readiness, which often varies depending on the location of the school. Additionally, Punyavee (2024) highlighted that border schools, such as those located near the Republic of the Union of Myanmar, have greater opportunities to participate in international cooperation programs and receive new educational technologies faster than schools in other regions, enabling them to clearly enhance their teaching and learning management. The pairwise comparison of mean scores showed that schools located in areas bordering the Republic of the Union of Myanmar had higher levels of enhancing the learning ecosystem to elevate teaching and learning in the era of artificial intelligence compared to schools located near the Lao People's Democratic Republic and the Kingdom of Cambodia, with significant statistical differences. This reflects that the geographical, economic, social, and cross-border connectivity contexts of these areas have an impact on the ability to develop learning technologies and educational infrastructure. This result aligns with the research by Niphaporn et al. (2023), which found that schools in areas with economic or social connections to neighboring countries, such as the Thailand-Myanmar border, had more access to resources and educational innovations through international cooperation programs than schools in areas without clear international connections. Additionally, Supaporn (2024) pointed out that schools along Thailand's western border tend to receive support from non-governmental organizations (NGOs) and international cooperation agencies, leading to more advanced infrastructure and learning ecosystems than schools located in areas farther from international cooperation hubs, such as those near Laos and Cambodia. A strong learning ecosystem will help sustainably elevate the quality of education in the era of artificial intelligence. Therefore, education development policies in highland areas should prioritize supporting areas that still face limitations in accessing resources and technology.

Several limitations of this study should be acknowledged when interpreting the findings.

First, the study employed a cross-sectional survey design, which captured participants' perceptions at a single point in time. Consequently, the findings cannot establish causal relationships between learning ecosystem enhancement and instructional management in the era of artificial intelligence. Longitudinal studies would provide a more comprehensive understanding of how learning ecosystems evolve over time.

Second, the study relied on self-reported questionnaire data collected from school administrators and teachers. Although self-report measures are appropriate for examining perceptions and organizational practices, responses may have been influenced by social desirability bias or respondents' subjective judgments. Future studies may strengthen the validity of the findings by incorporating multiple data sources, such as classroom observations, document analysis, interviews, or school performance indicators.

Third, although the response rate of 71.37% was considered satisfactory for educational survey research, non-response bias cannot be entirely excluded. Schools with limited internet connectivity, insufficient technological resources, or heavier administrative workloads may have been less likely to participate, potentially resulting in a slight overrepresentation of schools with higher levels of digital readiness.

Finally, the study focused exclusively on primary schools located in Thailand's highland areas under the Office of the Basic Education Commission. Therefore, the findings should be generalized cautiously to schools in other educational sectors or geographical contexts. Future research should examine learning ecosystem enhancement across different educational levels, educational jurisdictions, and regional contexts using mixed-methods or longitudinal research designs to provide a more comprehensive understanding of AI-supported instructional management.

Recommendations

1. Recommendations for Utilizing the Research Findings

Recommendations for utilizing the research findings on the enhancement of the learning ecosystem to elevate teaching and learning in the era of artificial intelligence (AI) in primary schools under the Office of the Basic Education Commission in the highland areas of Thailand are as follows:

1.1) Based on the research findings, it is clear that enhancing the learning ecosystem in the era of AI is crucial for improving teaching and learning in the digital age, especially in remote areas. Supporting the development of educational infrastructure, such as providing high-speed internet connections, supplying digital learning tools, and developing efficient technological systems, will help schools fully leverage AI technology and improve the quality of education in the highland areas.

1.2) Teachers should be trained to acquire skills in using digital technology and AI in teaching and learning. The training should be modern, practical, and include follow-up assessments to ensure that teachers can effectively use AI tools to tailor instruction to meet the individual needs of students.

1.3) Creating a learning ecosystem in the AI era requires support from external organizations, such as government agencies, local authorities, and non-governmental organizations (NGOs). These organizations can help provide the necessary financial resources and technology. In particular, schools in border areas with neighboring countries can take advantage of international cooperation programs to develop educational technologies and innovations, thereby enhancing teaching and learning.

1.4) The development and enhancement of an effective learning ecosystem require collaboration from all sectors, including teachers, parents, and local communities. Raising awareness about the importance of technology and digital learning will foster cooperation in supporting resources and developing schools into effective learning centers.

1.5) Continuous support for research and development regarding digital learning ecosystems in the highland areas is essential. This should include evaluations and monitoring the success of projects that integrate AI technology into education. Such efforts will ensure the ongoing improvement and sustainability of teaching and learning practices in the digital era.

2. Suggestions for Future Research

2.1. Future research should explore strategies for enhancing the learning ecosystem to elevate teaching and learning in the era of artificial intelligence (AI) across all educational levels.

2.2. Future studies should investigate models for strengthening the learning ecosystem to improve teaching and learning in the AI era within educational institutions.

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External Quality Assessor Performance in Thai Vocational Education: A Secondary Mixed-Methods Analysis of the ONESQA 2025 Stakeholder Survey

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Abstract

External quality assurance in vocational education depends on assessors who can combine quality-assurance methodology, knowledge of occupational and institutional contexts, and relational competence. This study examined how those capabilities were perceived in Thailand through a QUAN-dominant secondary mixed-methods analysis of the 2025 ONESQA Service Satisfaction and Development Survey. The parent survey included 6,500 respondents; the present analysis focused on 44 vocational institutions and 102 vocational-education assessors, with cross-sector comparisons to early-childhood and basic-education assessors. Quantitative indicators covered satisfaction, engagement, Net Promoter Score, and confidence. The instrument development process included five-expert content review, pilot testing, and high internal-consistency estimates for the external-assessor scales (Cronbach's $\alpha = .92$–$.98$). Qualitative evidence was drawn from the parent report's pooled institution and assessor focus-group strands and was used to contextualize and expand the vocational quantitative findings rather than to provide a direct vocational-specific convergence test. Because the source report did not state whether qualitative synthesis was conducted blind to the quantitative results, the integrated claims are presented as interpretive propositions rather than independent corroboration. Vocational institutions rated the external-assessor dimension highly (M = 4.67/5), including ethics (M = 4.71), expertise (M = 4.70), and fairness/professional conduct (M = 4.70). Vocational assessors also reported high satisfaction (M = 4.42/5), engagement (M = 9.24/10; NPS = 79.17), and confidence (M = 4.50/5), although each indicator was lower than the corresponding scores in the other two sectors. Concrete examples from the qualitative strand included assigning context-matched assessor teams, using calibration exercises to reduce variation in professional judgment, strengthening listening and developmental communication, providing continuous training, and creating 360-degree feedback from institutions, peers, and quality supervisors. The integrated interpretation is an "assurance-empathy asymmetry": stakeholders trusted assessors' ethics and technical credibility, while relational and context-sensitive practice remained a latent vulnerability. The study contributes a three-part conception of vocational assessor competence and identifies feedback design as a mechanism for linking accountability with continuous improvement.

Keywords: external quality assurance; vocational education and training; assessor competence; SERVQUAL; stakeholder confidence; mixed methods; Thailand

1. Introduction

External quality assurance (EQA) is expected to protect public confidence while also helping education providers improve. These purposes are related but not identical: accountability requires consistent judgments against standards, whereas enhancement requires dialogue, interpretation, and feedback that institutions can use (Danø & Stensaker, 2007; OECD, 2025). The tension is especially visible in vocational education and training (VET), where providers operate across diverse occupational fields, technologies, labour-market relationships, learner populations, and institutional missions.

An assessor may understand an EQA framework yet still produce a weak evaluation if that framework is applied without sufficient occupational context or without communication that enables institutional learning.

Assessor performance should therefore be treated as a multidimensional professional phenomenon rather than as simple compliance with an assessment procedure. Le Deist and Winterton (2005) distinguish cognitive, functional, social, and meta-competence; applied to EQA, this implies knowledge of standards, the ability to conduct evidence-based review, interpersonal and ethical capability, and the capacity to adapt judgment to new contexts. Training research similarly indicates that quality-assurance expertise develops through carefully designed preparation, calibration, practice, and feedback rather than through one-off technical briefings (Greere, 2023).

Thailand's Office for National Education Standards and Quality Assessment (ONESQA) conducts EQA across education sectors and certifies external assessors. Its current vocational framework seeks to support quality development while maintaining credible external judgment (ONESQA, 2023a, 2023b). In 2025, ONESQA commissioned the Thammasat University Research and Consultancy Institute (TRCI) to survey satisfaction, engagement, and confidence among institutions, assessors, parent agencies, quality-assurance supervision units, and the public. The resulting report provides an unusually broad stakeholder dataset, but its original purpose was organizational service improvement rather than theory-building.

The scholarly gap addressed here is not the absence of annual satisfaction data; it is the limited analytical use of such data to explain what competent external assessment means in a specialized technical sector. Previous EQA literature has examined system design, accountability and improvement, and quality culture (Bendermacher et al., 2017; Billing, 2004; Martin & Stella, 2007), while VET frameworks emphasize cyclical review and stakeholder feedback (European Commission, n.d.; Gatt & Faurschou, 2016). Less attention has been given to the intersection between technical assurance, vocational context, and the relational work of assessors in Thailand. Accordingly, this study addressed four research questions:

RQ1. How did vocational institutions rate assessor-related performance in the 2025 survey?
RQ2. How did vocational assessors' satisfaction, engagement, and confidence compare descriptively with those of assessors in early-childhood and basic education?
RQ3. What assessor capabilities and system supports were emphasized in the qualitative findings?
RQ4. Where did the quantitative and qualitative strands converge, diverge, or extend one another?

2. Conceptual Framework

2.1 Assessor competence in specialized education

A competence perspective shifts attention from personal credentials alone to the integration of knowledge, performance, judgment, and social conduct. For vocational EQA, cognitive competence includes understanding standards and evidence; functional competence includes planning visits, triangulating data, and writing defensible findings; social competence includes ethical neutrality, listening, and constructive communication; and meta-competence includes adapting these capabilities to different occupations and institutional conditions (Le Deist & Winterton, 2005). This framing also prevents "sector expertise" from being reduced to years of experience: expertise matters when it improves interpretation, consistency, and the usefulness of feedback.

2.2 Service quality, assurance, and developmental relationships

The parent survey used a SERVQUAL-informed service architecture. The original SERVQUAL model distinguishes reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 1988); the ONESQA survey adapted service-quality assessment into six operational domains, including external assessors, the EQA process, participation, reporting, awareness, and staff service. The present study does not claim to revalidate SERVQUAL. Instead, it uses selected dimensions as interpretive lenses: assurance refers to

knowledge, ethics, fairness, and credible evidence; empathy refers to listening and understanding institutional context; reliability concerns consistency of judgment; and responsiveness concerns feedback that can be acted upon.

These dimensions also connect service experience to the accountability-enhancement balance. High assurance can support legitimacy, but assurance without empathy may produce technically defensible yet developmentally weak feedback. Conversely, collegiality without reliability can undermine confidence in standards. The analytical question is therefore not whether assessors should be strict or supportive, but how independence and developmental engagement can operate together.

3. Methods

3.1 Design and data source

This article used a QUAN-dominant secondary convergent mixed-methods design. Quantitative and qualitative evidence from the TRCI 2025 report were analysed as separate strands and then integrated at the interpretation stage through a joint display (Creswell & Plano Clark, 2018; Fetters et al., 2013).

The design was classified as QUAN-dominant because the quantitative strand contained the vocational-specific samples, descriptive tables, and figures, whereas the available qualitative strand consisted of narrative synthesis preserved in the parent report. Qualitative evidence was therefore used to contextualize and expand the quantitative interpretation, not to carry equal evidentiary weight or to test vocational-specific convergence independently. The parent study collected data from April to June 2025. Its total achieved sample was 6,500: 4,100 institution respondents, 450 parent-agency respondents, 250 respondents from EQA supervision units, 1,067 external assessors, and 633 members of the public. The present analysis focused on the 44 vocational-institution respondents and 102 vocational assessors. Data from early-childhood and basic-education assessors were used only for descriptive cross-sector comparison. Pooled institutional findings were identified as such and were not misrepresented as vocational-specific results.

Table 1. Data sources used in the secondary analysis

Source	Achieved sample	Measures/evidence	Analytic role
Vocational institutions	n = 44	Satisfaction with EQA services and external-assessor items	Direct stakeholder appraisal of assessor performance
Vocational assessors	n = 102	Satisfaction and confidence; engagement subset n = 96; NPS	Professional-environment indicators
Early-childhood assessors	n = 198; engagement n = 185	Same constructs	Descriptive comparator
Basic-education assessors	n = 767; engagement n = 686	Same constructs	Descriptive comparator

Source	Achieved sample	Measures/evidence	Analytic role
Pooled focus-group report sections	Two stakeholder strands: institutions and assessors; the parent report did not present a vocational-only qualitative subset	Synthesised findings and report-preserved phrases from pooled qualitative material	Contextual explanation and expansion only; not direct sector-specific convergence evidence

Note. The parent report did not provide the number of focus-group participants, session duration, moderator characteristics, or a transcript-level sampling frame.

3.2 Sampling and recruitment

The parent project described a multistage process. First, the population was stratified by stakeholder group and education sector. Second, the minimum target specified in the terms of reference (3,594) was expanded to 6,500 to broaden coverage. Third, quota sampling allocated achieved cases across subgroups, including 44 vocational institutions and 102 vocational assessors. Questionnaires were administered primarily through Google Forms, with paper questionnaires available when online access was not feasible. Because the parent report did not state the number of eligible individuals invited in each subgroup, a conventional response rate cannot be calculated. The figures reported here are achieved sample sizes and quota fulfilment, not response rates.

3.3 Instruments and measurement quality

Satisfaction and confidence were measured on five-point scales. The parent report interpreted means of 4.21-5.00 as "very high," 3.41-4.20 as "high," 2.61-3.40 as "moderate," 1.81-2.60 as "low," and 1.00-1.80 as "very low." Engagement was measured on a ten-point scale and accompanied by a Net Promoter Score (NPS), calculated in the parent report as the percentage of promoters minus the percentage of detractors. In this article, categorical labels are always presented with the underlying mean and scale to avoid treating labels as findings.

Instrument development included content review by five research experts. Items with an Index of Item-Objective Congruence of at least .50 were retained, and the revised instruments were piloted with at least 30 respondents. For the external-assessor questionnaire, internal consistency was high: satisfaction, 18 items (alpha = .97); engagement, 10 items (alpha = .92); and confidence, 12 items
(alpha = .98). These estimates support score consistency but do not, by themselves, establish construct validity or cross-sector measurement equivalence.

3.4 Quantitative analysis

The secondary quantitative analysis used means, standard deviations, percentages, and NPS values reported in the parent study. Five-point and ten-point means were converted to a common percentage-of-scale metric only for Figure 1; all tables retain original scales. No significance tests were conducted because respondent-level data and sampling weights were unavailable. Cross-sector differences are therefore descriptive and should not be interpreted as statistically established. Regression analysis mentioned in the parent report was outside the scope of the present research questions and is not claimed as part of this secondary analysis.

3.5 Qualitative analysis and mixed-methods integration

The available qualitative source was the parent report's synthesized account of two focus-group strands: educational institutions and external assessors. The parent report did not present these strands as vocational-only focus groups; they were treated in this article as pooled, cross-sector qualitative material. Raw transcripts, participant identifiers, and session metadata were not available. A structured secondary content analysis was therefore undertaken at the level of the report text. First-cycle descriptive codes captured contextual fit, technical knowledge, ethics, consistency, listening, communication, training, feedback, reporting, and follow-up. Second-cycle pattern coding grouped these codes into four themes: contextual competence; calibration and consistency; assurance-empathy balance; and feedback for professional learning. The analysis also searched for disconfirming material, including statements of confidence in assessors and support for existing written feedback, rather than coding all qualitative evidence as deficit. This procedure was informed by directed and conventional content-analysis principles (Hsieh & Shannon, 2005). Because the qualitative source was pooled and narrative-only, the analysis did not claim frequency counts, saturation, or vocational-sector representativeness for qualitative themes.

Integration occurred through comparison of each qualitative theme with the corresponding quantitative signal. The joint display was redesigned to separate vocational-specific quantitative evidence from pooled qualitative contextual evidence. The display classified relationships as contextual alignment, contrast, or expansion rather than as a direct test of convergence. Because the parent report did not state whether qualitative synthesis was written blind to the quantitative results, the present analysis treats the qualitative strand as potentially non-independent of the quantitative strand. This is a validity threat to strong convergence claims; therefore, integrated statements are framed as warranted interpretations rather than independent corroboration. Because the report preserved only selected participant-linked wording, quotations below are translated report-preserved phrases rather than transcript-level quotations; speaker characteristics and frequency cannot be inferred.

3.6 Ethics, positionality, and conflict of interest

The parent report states that permission and research-ethics documentation were prepared to inform and protect participants, but it does not provide a research-ethics committee name or approval number. This secondary analysis used aggregated and de-identified published report data and did not access individual responses. The author is employed by ONESQA, the organisation that commissioned the parent survey. This institutional position is disclosed as a potential source of interpretive bias. To reduce selective interpretation, the analysis retained both favourable scores and critical qualitative findings, distinguished vocational-specific from pooled results, and stated where the source report did not provide required methodological detail.

4. Results

4.1 Vocational institutions rated assessor assurance highly

Vocational institutions reported high overall satisfaction with EQA services ($M = 4.68$, $SD = 0.25$) and with the external-assessor dimension specifically ($M = 4.67$, $SD = 0.32$). The three highest assessor-related items were non-seeking of personal benefit or absence of conflict of interest ($M = 4.71$), knowledge and expertise ($M = 4.70$), and fair, neutral, transparent, responsible, and collegial conduct ($M = 4.70$). All means fell within the parent report's "very high" interval. These values indicate strong perceived assurance, but the small vocational sample and compressed high-end scores limit fine-grained differentiation.

Table 2. Vocational-institution ratings of external assessors (n = 44)

Assessor-related measure	Mean	SD	Percent of scale	Interpretation
External-assessor dimension (overall)	4.67	0.32	93.4%	Very high
Ethics: no benefit-seeking/conflict of interest	4.71	0.42	94.2%	Very high
Knowledge and expertise	4.70	0.57	94.0%	Very high
Fair, neutral, transparent, responsible, and collegial conduct	4.70	0.54	94.0%	Very high

Note *The term rendered as "collegial" is the survey's Thai concept of being kalyanamit with the institution. It is discussed in Section 5.4. The pooled confidence score for external assessors across all institution types was M = 4.51 (SD = 0.62); the parent report did not provide a vocational-only confidence subtotal for this measure.*

4.2 Vocational assessors reported positive but comparatively lower professional-environment scores

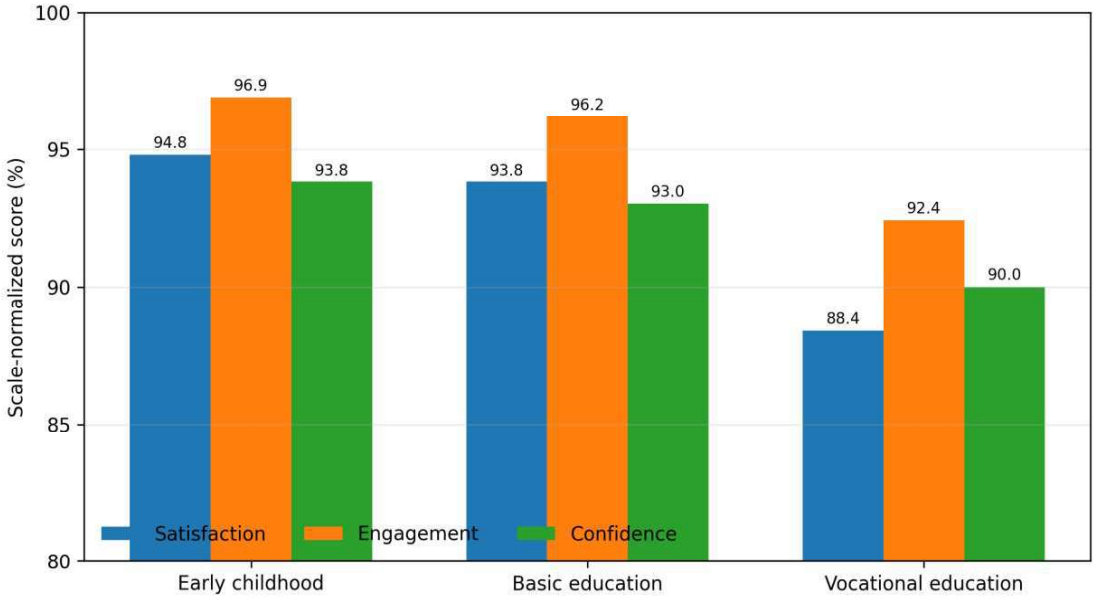
The assessor questionnaire measured respondents' views of ONESQA operations, their engagement with the organisation, and confidence in EQA processes. These are professional-environment indicators, not direct self-ratings of assessor competence. Vocational assessors reported high absolute scores: satisfaction (M = 4.42, SD = 0.48), engagement (M = 9.24/10), NPS (79.17), and confidence (M = 4.50, SD = 0.48). However, vocational scores were consistently below those of the other two assessor groups. The satisfaction difference was 0.32 points relative to early-childhood assessors and 0.27 points relative to basic-education assessors; the corresponding confidence differences were 0.19 and 0.15 points. NPS was 15.97 points below the early-childhood group and 13.54 points below the basic-education group. Without respondent-level data, the precision or statistical significance of these differences cannot be evaluated.

Table 3. Cross-sector comparison of assessor professional-environment indicators

Assessor sector	Satisfaction, 5-point M (SD); n	Engagement, 10-point M; n	NPS	Confidence, 5-point M (SD); n
Early childhood	4.74 (0.35); 198	9.69; 185	95.14	4.69 (0.42); 198
Basic education	4.69 (0.40); 767	9.62; 686	92.71	4.65 (0.46); 767
Vocational education	4.42 (0.48); 102	9.24; 96	79.17	4.50 (0.48); 102

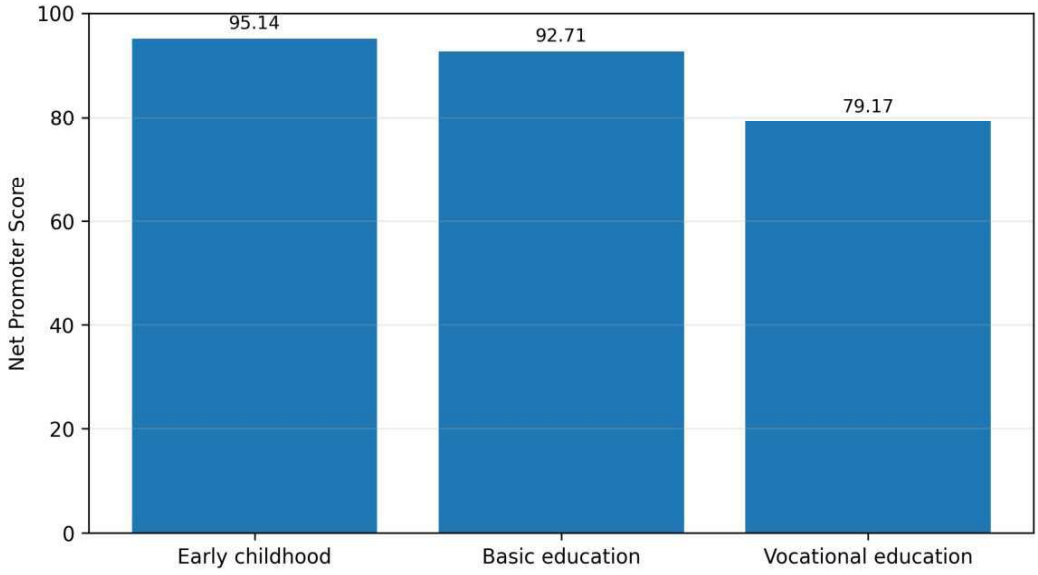
Note. *Satisfaction and confidence were measured on five-point scales; engagement was measured on a ten-point scale. Values are descriptive and are not adjusted for covariates or sampling design.*

Figure 1. Scale-normalized assessor satisfaction, engagement, and confidence by sector



Note. *Five-point means were multiplied by 20 and ten-point means by 10 for visual comparison only. Original-scale values are reported in Table 3.*

Figure 2. Net Promoter Score among external assessors by sector



Note. *NPS values are as calculated in the parent report. The figure is descriptive; subgroup response denominators are shown in Table 3.*

4.3 Pooled qualitative themes from the parent report

Theme 1: Contextual competence and team matching

The following themes are reported as pooled qualitative evidence and are therefore used as system-level context for interpreting vocational quantitative results. Within the pooled institution and assessor strands, credible judgment was linked to understanding the type and circumstances of the institution. The report preserved the expectation that "assessors need to understand the different contexts of each type of institution" (translated from Thai). Assessors similarly recommended teams whose knowledge and experience matched urban, rural, alternative, or specialist settings and proposed multidisciplinary composition where a single professional background would be insufficient. For vocational interpretation, this theme points to occupational fields and industry-linked evidence, but it should not be read as a vocational-only qualitative frequency claim.

Theme 2: Calibration and consistency of professional judgment

Institutions trusted the clarity of the criteria and the selection of assessors, yet they also worried that different assessors across cycles might apply personal judgment differently. This concern did not reject professional judgment; it questioned whether judgment was sufficiently calibrated. Assessors' request for standardised, continuous, preferably onsite training can be read as a proposed consistency mechanism rather than merely a request for more courses.

Theme 3: Assurance was strong, but empathy converted judgment into improvement

The pooled report identified three desired attributes: knowledge, fairness, and empathy. Its most pointed phrase was that "assessors may have expertise but lack listening or communication that supports development" (translated from Thai). Institutions also described a practical process of listening to recommendations and adapting them to their own constraints, acknowledging that an external team may not understand every local condition. The qualitative issue was therefore not friendliness in the abstract; it was whether assessors could elicit context, explain reasoning, and communicate recommendations in a form that strengthened institutional agency.

Theme 4: Feedback should operate as a professional quality loop

Within the pooled assessor strand, assessors proposed a formal mechanism through which both peers and evaluated institutions could comment on performance. The report's action phrase was "360-degree feedback after the assessment." Participants linked this mechanism to accountability, targeted development, and the possibility of changing assessor assignments when recurrent problems were identified. The same report noted that some evaluation reports were perceived as "too long, difficult to understand, and without a sequence for use," showing that assessor performance is experienced not only during the visit but also through the usability of the written product.

4.4 Integrated findings

Table 4. Revised joint display: vocational quantitative signals with pooled qualitative contextual evidence

Vocational-specific quantitative signal	Pooled qualitative/system-level signal	Revised mixed-methods interpretation
Vocational institutions rated ethics, expertise, and fair/professional conduct at M = 4.70-4.71.	Pooled institution and assessor focus-group evidence requested context-matched expertise and team composition.	Contextual alignment only: the qualitative evidence supports the plausibility that technical and ethical assurance must be complemented by context matching, but it does not independently prove this pattern within the vocational subgroup.
Vocational assessor satisfaction, engagement, NPS, and confidence were high but lower than in the other sectors.	Pooled assessor evidence requested standardised training, calibration, contextual team matching, and performance feedback.	Plausible explanatory context: the qualitative strand suggests system supports that may matter for vocational assessors, while the aggregate data cannot establish cause or sector-specific theme prevalence.
Institutional assessor ratings were near the top of the scale.	Pooled qualitative evidence stated that expertise could coexist with weak listening or developmental communication.	Contrast: high global ratings can coexist with specific communication risks. Because the qualitative source was pooled, the contrast is treated as a caution for interpretation rather than as vocational-specific contradiction.
No quantitative item directly measured a post-assessment 360-degree feedback system.	Pooled peer and institution feedback were proposed as mechanisms for accountability and learning.	Expansion: qualitative evidence identifies a system-level review mechanism not captured by the survey scales and suitable for future vocational-specific testing.

Note. The qualitative signals in this table are pooled across the parent report's institution and assessor focus-group strands. The table therefore provides contextual integration rather than a one-to-one vocational convergence test. Integration terms are used as follows: contextual alignment indicates compatibility between strands, contrast indicates a caution or tension, and expansion indicates a dimension introduced by the qualitative evidence.

5. Discussion

5.1 An assurance-empathy asymmetry

The central finding is more specific than the statement that vocational assessors "performed well." Vocational institutions expressed strong assurance: they rated ethics, expertise, and fair professional conduct at or above 4.70 on a five-point scale. At the same time, qualitative evidence located vulnerability in listening, contextual understanding, and developmental communication. Because the qualitative evidence was pooled across sectors and may not have been synthesised independently of the quantitative results, this combination is presented as an interpretive proposition rather than a strict convergence claim. This combination is best interpreted as an assurance-empathy asymmetry. The system appears credible at the level of integrity and technical authority, but the conversion of that authority into institutionally useful learning is less secure.

The vocational quantitative strand and the pooled qualitative strand are not necessarily contradictory. Global rating items often invite an overall judgment, whereas focus groups make it easier to discuss exceptions, difficult encounters, and desired improvements. The high means also suggest a ceiling effect that can conceal variation. The qualitative findings should therefore not be used to negate the quantitative results, nor should the quantitative results be used to dismiss specific risks. The revised interpretation is narrower: legitimacy and developmental usefulness appear related but separable, and this proposition should be tested with vocational-specific qualitative data in future research.

5.2 A three-part model of vocational assessor competence

The findings support a three-part model of vocational assessor competence. First, quality-assurance competence covers standards, evidence, triangulation, and defensible judgment. Second, vocational-context competence covers occupational fields, institutional missions, industry relationships, learner pathways, and resource constraints. Third, relational-developmental competence covers ethical neutrality, listening, explanation, and feedback that institutions can use. This model operationalises the cognitive, functional, social, and adaptive dimensions of competence described by Le Deist and Winterton (2005) while making the VET context explicit.

This interpretation also explains why a general assessor credential may be necessary but insufficient. VET institutions can differ substantially in specialisation and partnership arrangements. Context matching should therefore be treated as a design problem for assessor panels, not as an expectation that every assessor possess expertise in every occupation. Multidisciplinary panels, transparent matching rules, and access to technical specialists can distribute expertise while preserving a common EQA method. This is consistent with international emphasis on context-sensitive but comparable quality assurance (AQRF Committee, 2020; OECD, 2025).

5.3 Understanding the lower vocational assessor-side scores

Vocational assessors' satisfaction, engagement, NPS, and confidence were all high in absolute terms but consistently lower than those of assessors in early-childhood and basic education.

This repeated direction is analytically important, yet it should not be overinterpreted. The indicators describe assessors' relationship with ONESQA and the EQA process, not their own performance, and the aggregated data do not test alternative explanations. The pattern could reflect greater heterogeneity of vocational fields, more complex evidence, assignment matching, workload, training fit, or unmeasured compositional differences. It is a signal for further investigation, not proof of a sector deficit.

The qualitative requests for calibration, onsite training, and context-matched teams make one interpretation more plausible: vocational assessors may need stronger professional

infrastructure to exercise judgment consistently. Greere (2023) argues that effective quality-assurance training requires coherent design and delivery rather than isolated knowledge transfer. In this setting, calibration should include common case vignettes, discussion of borderline evidence, observed practice, and feedback on written judgments. Such activities address both technical reliability and the social process through which a professional community develops shared standards.

5.4 Kalyanamit as a developmental but independent role

The survey item describing assessors as kalyanamit requires cultural clarification. In Thai educational usage, kalyanamit derives from the idea of a constructive or virtuous friend and has been rendered as an "amicable collaborator" (Atagi, 2002). In EQA, the concept should not mean advocacy for the institution or avoidance of difficult judgments. A more precise operational meaning is a developmental critical friend: an assessor who remains independent, states evidence and limitations candidly, listens respectfully, and frames recommendations so that the institution can act. This interpretation preserves accountability while strengthening enhancement, the balance long identified as a central EQA challenge (Danø & Stensaker, 2007).

SERVQUAL helps clarify the mechanism. Assurance supports confidence that the assessor is knowledgeable, ethical, and fair. Empathy supports confidence that evidence and recommendations have been interpreted in relation to the institution rather than mechanically. Reliability ensures that comparable evidence receives comparable judgment, and responsiveness makes the result usable. The present aggregated data cannot demonstrate a causal path from empathy to confidence or engagement, but the qualitative findings make such a relationship a testable hypothesis for future research.

5.5 Feedback as the missing review phase

The proposed 360-degree feedback mechanism has significance beyond personnel appraisal. EQAVET frames quality assurance as a cycle of planning, implementation, evaluation, and review (European Commission, n.d.). An EQA system that evaluates institutions but does not systematically review the performance of its assessors leaves its own quality cycle incomplete. Feedback from institutions, peers, and quality supervisors could close that loop, provided that it is structured, evidence-based, protected from retaliation, and interpreted across multiple assignments rather than as a popularity score.

A defensible feedback architecture would separate developmental and high-stakes uses. Routine feedback could guide coaching and continuing professional development, while repeated patterns supported by multiple sources could trigger calibration, supervised assignments, or reassignment. Narrative comments should be coded alongside standardised indicators because a single global satisfaction item may not reveal whether a problem concerns technical accuracy, conduct, communication, or report usability. In this way, feedback becomes a professional learning system rather than a customer-rating exercise.

5.6 Implications for EQA design

Four design principles follow from the integrated findings. Selection should assess evidence-based reasoning and communication in addition to credentials. Assignment should match panels to vocational clusters and institutional contexts while maintaining a shared EQA core. Development should combine technical updates, calibration, observed practice, ethics, listening, and report writing. Finally, performance management should triangulate institutional, peer, supervisor, and documentary evidence over time. These principles are mutually reinforcing: better matching without calibration may increase inconsistency, while feedback without clear competence standards may reward interpersonal ease rather than rigorous assessment.

The broader theoretical contribution is to position assessor performance between service quality and professional judgment. Institutions experience EQA as a service encounter, but assessors are not merely service providers; they exercise delegated public judgment. A robust model must therefore combine responsiveness to stakeholders with independence from stakeholder pressure. The three-part competence model and assurance-empathy asymmetry offer concepts that can be examined in other specialised education sectors.

5.7 Limitations

Several limitations constrain interpretation. First, the study is a secondary analysis of aggregated results, so it cannot estimate sampling error, test group differences, model predictors, or examine interactions. Second, the study is QUAN-dominant; conclusions rely primarily on descriptive quantitative patterns, while qualitative evidence is contextual and illustrative. Third, the vocational-institution sample was small (n = 44) and allocated through quota sampling; representativeness cannot be assumed. Fourth, the invitation denominator was not reported, preventing response-rate calculation and assessment of non-response bias. Fifth, satisfaction, engagement, and confidence are perceptions, not direct observations of assessor accuracy or inter-rater reliability. Sixth, high means may reflect ceiling effects or social-desirability pressures.

The qualitative strand is also limited. The parent report documented two stakeholder focus-group strands but omitted participant numbers, duration, protocol, moderator characteristics, transcription procedures, and subgroup composition. Raw transcripts were unavailable, so the present analysis could not verify quotations, saturation, or theme prevalence and relied on report-preserved wording.

Most importantly for integration validity, the parent report did not state whether the qualitative synthesis was written with prior knowledge of the quantitative results. If such prior knowledge was present, the qualitative themes may partly reflect an a priori interpretation of the survey pattern, reducing their value as independent evidence for convergence. The focus-group strands were also treated as pooled cross-sector evidence; therefore, they cannot be used to make vocational-specific qualitative prevalence claims. Parent-agency and supervision-unit results were not available as vocational-specific appraisals of assessors. Finally, the author's employment by ONESQA creates a potential institutional conflict despite the use of an independently produced source report and explicit attention to negative evidence.

Future studies should collect respondent-level data, document recruitment and response rates, and combine stakeholder perceptions with observed assessment practice, blinded ratings of report quality, inter-rater agreement exercises, and longitudinal feedback. Future qualitative work should also collect vocational-specific focus-group or interview data, document whether qualitative coding is conducted blind to quantitative results, and report frequency or prevalence indicators when appropriate. Qualitative sampling should identify vocational clusters and include transcript-level quotations so that differences among institutions, assessors, and occupational fields can be examined rather than averaged.

6. Conclusion

The 2025 stakeholder evidence supports confidence in the ethics, expertise, and fairness of external assessors in Thai vocational education. It also shows why high satisfaction alone is an incomplete account of performance. The qualitative strand, interpreted as pooled contextual evidence rather than vocational-only corroboration, exposed a latent gap between technical assurance and the relational, contextual work required for assessment to produce improvement. Vocational assessors' comparatively lower satisfaction, engagement, NPS, and confidence reinforce the need to study the professional conditions under which they work, without treating those differences as proof of lower competence.

The study contributes two analytical propositions. First, vocational assessor competence comprises quality-assurance, vocational-context, and relational-developmental competence. Second, EQA quality depends on balancing assurance with empathy: rigorous independent judgment must be accompanied by context-sensitive listening and usable feedback. These propositions should be tested in future research using vocational-specific qualitative data and a design that either blinds qualitative synthesis to quantitative findings or explicitly models the dependence between strands. A structured feedback and calibration system can connect these propositions to the review phase of the quality cycle. In this sense, improving assessors is not an ancillary administrative task; it is part of assuring the quality of external quality assurance itself.

Declarations

Conflict of interest and positionality. The author is employed by ONESQA, which commissioned the parent survey. This relationship is disclosed as a potential institutional conflict of interest.

Ethics statement. The parent report states that participant-permission and research-ethics documentation were prepared, but no committee name or approval number was reported. This secondary analysis used aggregated, de-identified report data.

Data availability. The analysed aggregate data are reported in the 2025 TRCI survey report. Access to respondent-level data is subject to ONESQA and TRCI permissions.

Generative AI disclosure. A generative AI tool was used during revision for language editing, structural support, and document preparation. The author is responsible for verifying the data, analysis, interpretations, citations, and final text and retains full responsibility for the manuscript.

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External Quality Assurance Model Focus on Reducing Educational Inequality Under Area-Based Human Resource Constraint of Border Patrol Police Schools

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Abstract

The objective of this research was to develop an external quality assurance model focus on reducing educational inequality under area-based human resource constraint of Border Patrol Police Schools. The research and development methodology was employed. The model was drafted by synthesizing the results of the study on educational inequality and causal factors from Border Patrol Police schools. The accuracy and feasibility of the drafted model were validated by 9 experts. The practical feasibility and contextual acceptance were verified by 18 stakeholders, and the model was evaluated by 9 experts. The research instruments included a document synthesis form, questionnaires, in-depth interview guides, and an evaluation form based on the Joint Committee standards. Data were analyzed using mean, standard deviation, and content analysis. The research results revealed that the developed model consisted of 3 main components: 1) Introduction, which aimed to create educational equity and decentralization; 2) Content, which adjusted the role of evaluation towards spatial supplementary criteria and developmental coaching; and 3) Success Conditions from alliance networks. The evaluation of the model's quality across all aspects—accuracy, feasibility, propriety, utility, and accountability—was at the highest level (M = 4.60 - 4.93), which reflects that this model can be practically implemented to reduce the gap of educational inequality in remote areas sustainably.

Keywords: External Quality Assurance, Educational Inequality, Area-Based Management

Introduction

Education is a vital process in developing people to possess knowledge, skills, characteristics, and potential to live a quality life, enabling the sustainable development of themselves, families, society, and the nation. Furthermore, it serves as a fundamental factor for the country's economic, social, and cultural development. However, Thailand still faces the problem of educational inequality, which is reflected through differences in accessing opportunities, educational resources, quality teachers, learning media and technology, as well as environments conducive to learning. This problem directly affects the learning quality of learners and generates a gap of opportunities in developing the quality of life, economy, and society in the long term (Princess Maha Chakri Sirindhorn, 2002; Ministry of Education, 2023). This is especially prominent in the group of Border Patrol Police schools, which are special-purpose educational institutions established to resolve the lack of educational opportunities for children and youth in rural, remote areas with difficult transportation or areas with security issues, ensuring that children and youth receive thorough, equitable, and quality education without expenses from 1956 until the present. Therefore, Border Patrol Police schools function as special-purpose educational institutions that do not merely provide basic education, but also act as a spatial mechanism to develop the quality of life of learners, families, and border communities. The educational management of this group of schools must consequently align with the specific context of the area, including social, cultural, economic, resource, and community security dimensions (Kumpanart Keeratikorn, 2023).

Although the educational quality assurance system is a primary mechanism utilized by the government to upgrade, maintain standards, and build confidence, particularly the external quality assurance conducted by the Office for National Education Standards and Quality

Assessment (Public Organization) or ONESQA (Office for National Education Standards and Quality Assessment (Public Organization), 2024), in practice, applying a general evaluation approach that acts as a "one-size-fits-all" formula to fit all educational institutions across the country turns out to be a limitation that cannot reflect the actual conditions of schools in specific areas. Quantitative standards emphasize document and evidence inspection rather than opportunity-based outcomes, resulting in Border Patrol Police schools, which already face structural constraints regarding human resources and staff capacity, having to shoulder redundant document workloads. Universal evaluation criteria cannot measure the success of the dual missions of security and community development simultaneously and may even become a tool that reinforces the gap of inequality if the evaluation system fails to genuinely consider the differing baselines based on spatial contexts.

For this reason, the concept of "Area-Based Education Management" has emerged as an important foundational framework to break through the limitations of the traditional system by allowing educational institutions, communities, and alliance networks to participate in designing development, using local data and facts as a baseline for decision-making to achieve targeted and sustainable equity (Equitable Education Fund (EEF), 2023). The critical question of external quality assurance in the context of Border Patrol Police schools nowadays is not merely "whether the school can catch up to pass the central standard criteria," but "how the external evaluation system can adapt to reflect the actual quality conditions and support the reduction of educational inequality." Developing an external quality assurance model based on the spatial context is therefore a systemic innovation that will shift the roles of ONESQA and external assessors from being merely a "standard document inspector" to becoming a "developmental partner and competency-based mentor" (Coach) to collaboratively analyze, improve, and drive educational quality that responds to the holistic mission, covering learning, quality of life development, and the security of border communities equitably and sustainably.

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Literature Review and Conceptual Framework

The conceptual foundation of this study is based on four interrelated ideas: external quality assurance, educational equity, area-based education management, and program evaluation standards. External quality assurance is an independent mechanism for monitoring, evaluating, and certifying institutional quality. In the Thai context, ONESQA plays a central role in evaluating educational institutions and using evaluation results to support improvement. However, in special-purpose schools located in remote or border areas, external quality assurance must be sensitive to contextual limitations rather than relying solely on uniform documentary criteria.

Educational equity emphasizes fairness rather than sameness. From this perspective, schools with greater structural disadvantages should receive contextually appropriate evaluation and support. This principle aligns with OECD (2012), which argues that equity requires targeted support for learners and institutions facing structural barriers. Area-based education management further supports this orientation by encouraging local stakeholders to

participate in planning, decision-making, resource mobilization, and the design of educational development that responds to actual local conditions. Finally, the Joint Committee standards provide criteria for judging the quality of evaluation, including accuracy, feasibility, propriety, utility, and accountability. These concepts jointly guided the development and evaluation of the model in this study.

Research Objectives

To develop an external quality assurance model focus on reducing educational inequality under area-based human resource constraint of Border Patrol Police Schools.

This research employed the Research and Development (R&D) methodology, which was conducted in 4 phases as shown in the table below:

Research Methodology

Research Phase	Sub-objectives	Data Sources / Target Groups	Instruments Used
Phase 1	To study spatial inequality.	Personnel from 81 Border Patrol Police schools.	Document synthesis form & 5-dimension questionnaire.
Phase 2	To analyze causal factors.	Key informants from 4 Best Practice schools (12 people).	Structured in-depth interview guide.
Phase 3	To draft and validate the model.	• 9 experts (to validate accuracy/feasibility). • 18 stakeholders (to verify practical use/contextual acceptance).	5-level rating scale questionnaire.
Phase 4	To evaluate and refine the model.	9 experts (Expert Connoisseurship).	Joint Committee standard evaluation form (propriety, utility, accountability).

The research instruments included a document synthesis form, questionnaires, structured in-depth interview guides, and evaluation forms based on the Joint Committee standards. All instruments were reviewed by experts for content validity before use. The quantitative instruments used a five-point rating scale, while the qualitative instruments were designed to obtain contextual explanations, area-based constraints, and stakeholder recommendations.

In Phase 2, the structured interview guide was used to explore causal factors affecting educational inequality in Border Patrol Police Schools. Key issues included teacher shortages, multi-grade and multi-subject teaching, limited access to professional development, teaching Thai as a second language, and difficulties in maintaining educational continuity after primary education. For example, one interview question asked: “How do human resource constraints, such as teacher shortages or limited teacher specialization, affect learning opportunities and educational continuity in your school, and what support from the community or networks helps reduce these constraints?” The responses were used to identify links between human resource constraints and educational inequality and to inform the development of the model.

Quantitative data were analyzed using mean and standard deviation. Qualitative data from open-ended responses, interviews, and expert recommendations were analyzed through content

analysis by grouping recurring themes, identifying causal relationships, and synthesizing implications for refining the model.

Research Conclusion and Discussion

Conclusion

The results of the model development revealed that the " External Quality Assurance Model Focus on Reducing Educational Inequality Under Area-Based Human Resource Constraint of Border Patrol Police Schools " consisted of 3 components: 1) Introduction, comprising the principles of educational equity, decentralization, evidence-based practice, and resource management based on spatial necessity; 2) Content, comprising supplementary quality assurance criteria, spatial external evaluation processes, continuous development mechanisms, and model evaluation guidelines; and 3) Success Conditions, covering the roles of school principals, border patrol police teachers, the Royal Thai Police, and ONESQA. The prominent feature of the model is the transformation of the external quality assurance role from document-based inspection to development-supportive evaluation, utilizing empirical evidence, spatial context, and alliance network participation as a baseline to elevate educational quality and reduce learners' inequality in border areas.

The results of the model validation by experts indicated that the overall accuracy and feasibility of the model were at the highest level (M = 4.90, SD = 0.30). Considering each standard, the accuracy standard was at the highest level (M = 4.87, SD = 0.34), and the feasibility standard was at the highest level (M = 4.93, SD = 0.25).

The results of the model verification by stakeholders revealed that the overall practical feasibility and contextual acceptance were at the highest level (M = 4.74, SD = 0.44). Considering each aspect, the contextual acceptance was at the highest level (M = 4.76, SD = 0.43), and the practical feasibility was at the highest level (M = 4.73, SD = 0.45).

The results of the model evaluation by experts based on the propriety, utility, and accountability standards showed that the overall quality was at the highest level (M = 4.60, SD = 0.49). Considering each standard, the accountability standard had the highest mean (M = 4.64, SD = 0.48), followed by the propriety standard and the utility standard, which had equal means (M = 4.58, SD = 0.50).

Discussion

From the development of the external quality assurance model focus on reducing educational inequality under area-based human resource constraint of Border Patrol Police Schools, key issues can be discussed as follows:

1. The developed external quality assurance model truly aligns with the principle of educational equity. This is because it focuses on evaluation based on spatial necessity rather than implementing a uniform standard regardless of context (One-size-fits-all). The formulation of supplementary criteria regarding teachers' operational competency, administrative decentralization, opportunity-based and sustainable outcomes, and the educational continuity support system assists the external evaluation to reflect the actual quality conditions of Border Patrol Police schools, which face structural limitations in educational opportunities, human resources, and teacher development. This is consistent with the framework of the OECD (2012) regarding equity and quality in education, which states that equity in education does not mean equal resource allocation or using identical criteria (Equality), but rather fair resource allocation and targeted support for specific groups, providing the maximum assistance and flexibility to those with less or who are structurally disadvantaged, thereby preventing the evaluation system from becoming a tool that reinforces the educational inequality gap.

2. Systemic innovation in transitioning the role of external assessors from a "document inspector" (Inspector) to an "area-based coach" (Coach). The developed model has a major highlight in adjusting the role within the content component of the evaluation model from external assessors who emphasize fault-finding and compliance document inspection to becoming consultants, mentors, or coaches providing developmental coaching to the school leadership team and teachers. This role was found to be appropriate for the specific context of Border Patrol Police schools at the highest level. This is because border patrol police teachers face critical human resource constraints and must shoulder multi-tasking missions, including learning management, security duties, and quality of life development for communities under royal initiatives. This overloaded workload leaves teachers with insufficient time to prepare conventional quality assurance reports. Transitioning to coaching and authentic assessment helps reduce unnecessary document burdens and shifts energy from "preparing for inspection" to "developing learning management competencies" that integrate naturally with normal work routines through empathetic evaluation. This is consistent with the program evaluation standards of the Joint Committee (Yarbrough et al., 2011) in 3 main dimensions:

- Utility Standards Aiming to ensure that evaluation results are genuinely utilized to improve learning management and develop the quality of life of learners.
- Feasibility Standards Designing evaluation processes that align with the constraints of time and staff capacity of border patrol police teachers.
- Propriety Standards Honoring and respecting the value of cultural and linguistic diversity of learners in border areas. Quality assurance based on the coaching concept is thus a policy innovation that restores justice and dignity to education in remote areas genuinely.

3. The accuracy and feasibility of the model reflect a systematic connection between theory and practice. The validation results of the model's accuracy and feasibility by experts were at the highest level, demonstrating that the model is theoretically sound and practically applicable within the context of Border Patrol Police schools. This is because the researchers did not draft the model solely from theory, but used the empirical evidence of inequality and causal factors studied within the areas as a baseline (Evidence-based), along with a screening and review process by experts covering policy, research, and Border Patrol Police school administration fields directly. This resulted in a developed model that is complete, sharp, and directly addresses the problem-solving needs of this group of special-purpose educational institutions.

4. Acceptance from practitioners reflects the success of area-based education management and participation. The verification results by stakeholders and field practitioners were at the highest level, confirming that this model is accepted and highly feasible for practical implementation. This is because the model is highly flexible, considers spatial contexts, and allows schools, communities, and alliance networks to participate in reflecting information, exchanging learning, and proposing guidelines together. This aligns with the concept of Area-Based Education Management, which allows stakeholders in the area to participate in managing education by utilizing resources, empirical evidence (Data-Driven), and their specific contexts as a baseline for decision-making, collaboratively building a sense of shared ownership and achieving holistic, opportunity-based quality development sustainably (Monnapat Manokan, 2018; Equitable Education Fund (EEF), 2023).

Recommendations from the Research

1. Policy Recommendation (For ONESQA): This model should be piloted, and quantitative document criteria should be reduced.

2. Operational Recommendation (For the Royal Thai Police): Budgetary decentralization should be implemented, and partnerships with local universities should be established to develop border patrol police teachers.

3. Recommendation for Future Research: Experimental research should be conducted to compare the experimental group and the control group over a period of 3 years.

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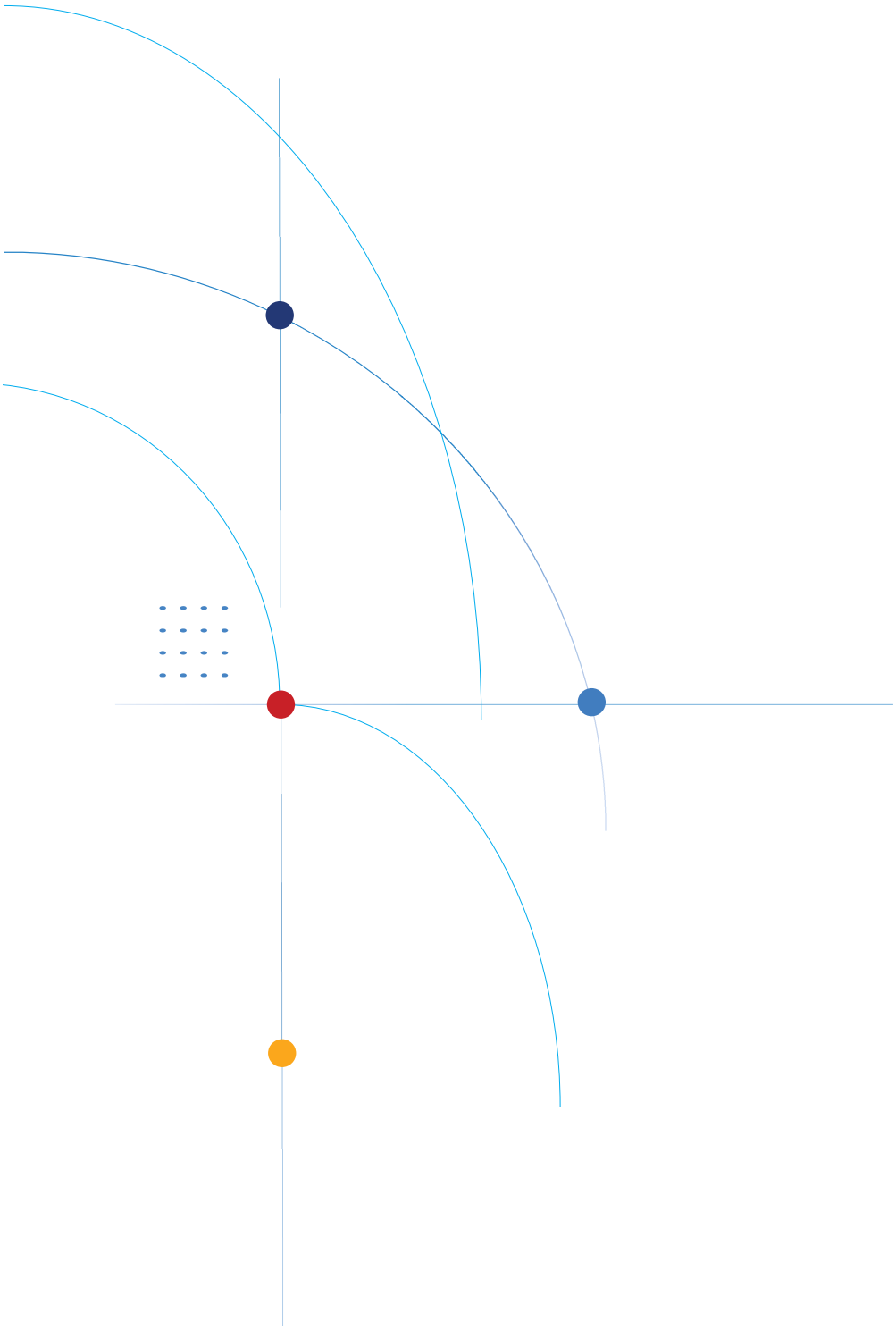
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