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Empowering Educators and Learners for Digital Transformation In Primary Education: Thailand's Journey

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Abstract

The research aims to systematically investigate Thailand's digital transformation in primary education by analyzing policies, initiatives, classroom innovations, and community engagement, to identify successes, challenges, and lessons to inform future strategies and provide insights for other countries. This study employs a descriptive qualitative research design. This paper presents Thailand's journey in digitally transforming primary education, highlighting policies, initiatives, and lessons for equitable, learner-centered education. Dr. Akkapin shared Thailand's experience at the international conference Global Crisis and Multidisciplinary Approaches in Solo, Indonesia (July 31, 2025). Serving approximately three million pupils across 30,000 schools, Thailand's primary education system faces urban–rural and socioeconomic disparities, emphasizing the need for inclusive digital strategies. National frameworks—including Thailand 4.0, NECTEC's "Anywhere–Anytime Learning," Ministry of Education Digital Literacy Goals (2020–2025), and the 20-Year National Education Vision (2018–2037)—guide reforms toward lifelong learning, Industry 4.0 readiness, and equitable access. The transformation is structured around four pillars: curriculum (competency- and activity-based learning), capacity (teacher development), connectivity (technology and infrastructure), and community (school–community partnerships). Between 2019 and 2024, over 10,000 teachers participated in blended workshops, MOOCs, and micro-credential programs, supported by EdTech Innovation Hubs. Pilot programs, such as Bangkok's Smart Classroom initiative, demonstrated improved teacher confidence and student outcomes. Digital tools—including LMS, OER portals, mobile apps, adaptive learning, and gamified platforms—support student-centered learning, while rural STEAM labs and makerspaces foster creativity and critical thinking. Infrastructure development, device-loan programs, rural e-learning centers, solar-powered pods, and subsidized home internet address the digital divide. Monitoring through national e-Dashboards and data-driven teacher support ensures evidence-based interventions. Emerging technologies, such as AI literacy programs, VR/AR lessons, and AI chatbots, prepare learners for future skills, while blended pedagogy combines face-to-face and online learning with continuous feedback. Sustainability and scale are promoted through Train-the-Trainer models, grants, peer mentoring, and regional cluster networks. Thailand's experience underscores the importance of investing in human capacity, contextual solutions, and continuous improvement to achieve equitable, innovative, and future-ready primary education.

Keywords: *digital transformation, empowering educators and learners, primary education, Thailand*

Introduction

In the 21st century, digital competence has become a core skill for both educators and learners. Primary education plays a foundational role in developing these skills early, enabling students to engage effectively with technology. Digital tools are not only learning aids but also platforms for creativity, collaboration, and critical thinking. Equipping teachers and students with digital competence ensures that they can thrive in an increasingly technology-driven world.

Digital transformation is essentially a change that utilizes technology to simplify all activities (Parida et al., 2024). Digital transformation is becoming an essential aspect of modern education, reshaping how teaching and learning occur across all levels of schooling. In primary education, the integration of technology is especially important because it helps students develop foundational digital skills, critical thinking, and the ability to engage with 21st-century learning tools. Preparing students to navigate a digitally connected world ensures they acquire the skills necessary for lifelong learning and future careers.

Digital transformation, which is mainly triggered by the development of information technology, has reshaped the educational landscape by introducing innovative solutions to improve the efficiency and effectiveness of office management in educational institutions (Ahyani & Dhuhani, 2024). Digital transformation not only changes the way lessons are delivered but also encourages creativity and innovation in the classroom. With digital tools, students can interact with content in dynamic ways, such as through simulations, multimedia presentations, or interactive exercises. This exposure helps them develop problem-solving abilities and adaptability, which are essential in a fast-changing world. Furthermore, technology fosters personalized learning, allowing students to progress at their own pace and explore topics that interest them, making education more engaging and meaningful.

While technology in learning has long been in demand and continues to advance rapidly, adopting digital transformation still presents significant challenges. Haq et al. (2023) stated that the development of digital-based education faces challenges, especially in terms of human resources and digital devices. Digital transformation in primary schools also raises questions of equity. Not all schools have the same level of infrastructure, devices, or internet connectivity. Students from disadvantaged backgrounds may face barriers that limit their access to digital learning opportunities. Addressing these gaps is essential to ensure that all learners can benefit from technology and that educational progress is not hindered by socioeconomic disparities.

Despite its potential, implementing digital transformation in primary schools comes with significant challenges. The challenges include limited infrastructure, low digital literacy among teachers, and resistance to adopting new digital systems (Kamila et al., 2025). While digital tools can improve efficiency and communication, the school must address these barriers by enhancing internet connectivity, providing adequate training for educators, and ensuring continued policy support to fully realize the benefits of digital administration. Many educators may lack adequate training or confidence in using digital tools effectively. Students also have varying levels of digital literacy, which can create gaps in learning outcomes. Additionally, limited access to infrastructure, devices, and internet connectivity can hinder the smooth integration of technology into classrooms.

The challenges of digital transformation extend beyond access to technology. Teachers may struggle to adapt traditional teaching methods to digital platforms, which requires time, effort, and new instructional strategies. Students may face distractions from devices or difficulty in understanding new learning formats. Additionally, the rapid pace of technological change can make it hard for schools to keep their digital resources updated. These challenges highlight the need for careful planning, ongoing support, and flexibility in integrating technology into primary education.

The empowerment through technology in education is boundless (Lipipun & Angasinha, 2023). It requires extensive effort in course design to create an interactive, engaging, meaningful, and personalized learning experience. Teachers are central to the successful integration of technology in classrooms. Empowering educators means providing them with continuous professional development opportunities, hands-on training, and access to innovative teaching resources. When teachers are confident in using digital tools, they can design lessons that actively engage students, support collaborative learning, and foster problem-solving skills.

Educators play a critical role in digital transformation by integrating technology into teaching practices. Teacher professional development programs are necessary to enhance digital competence and pedagogical skills. Educators must design lessons that not only deliver content but also engage students interactively, foster problem-solving, and encourage collaborative learning through digital tools. Educators are the bridge between technology and effective learning. Beyond technical skills, they need to cultivate a mindset that embraces experimentation and continuous learning. By modeling the responsible use of digital tools, teachers can inspire students to use technology thoughtfully. Educators can also encourage collaboration through group projects using digital platforms, helping students learn not only subject matter but also teamwork, communication, and leadership skills. Their guidance ensures that technology becomes a means to enrich learning rather than a distraction.

Empowering learners goes beyond giving them access to devices. Students need guidance to use technology responsibly and creatively. Encouraging self-directed learning, exploration, and digital collaboration helps students take ownership of their education. These practices build confidence, adaptability, and critical thinking, preparing learners to navigate both digital and real-world challenges. Learners must also be empowered to take an active role in digital education. Developing digital literacy enables students to use technology creatively and responsibly. Encouraging self-directed exploration, collaboration with peers, and critical engagement with digital resources helps students become independent and confident learners in a technology-driven environment.

Learners who actively engage with technology can take ownership of their education and develop independent learning habits. By exploring digital tools and resources, students can strengthen research skills, creativity, and critical thinking. Interactive learning environments, such as educational games or virtual collaborations, allow students to practice decision-making and problem-solving in safe, controlled settings. Empowered learners are more confident and capable of adapting to new situations, which prepares them for lifelong learning and participation in a technology-driven society.

Digital transformation requires strong institutional frameworks. Schools need clear policies on technology use, digital safety, and teaching strategies. Support from the wider community—including parents, local organizations, and policymakers—helps create an environment where technology is used effectively and ethically. Collaborative efforts ensure that digital tools are integrated smoothly and sustainably into primary education. Successful digital transformation in primary education requires strong policy and institutional support. Schools need clear strategies for technology adoption, while governments can provide frameworks, funding, and training programs. Support from parents and communities also strengthens the learning ecosystem, ensuring that students and educators can fully leverage digital tools for educational purposes.

Effective digital transformation requires a coordinated effort from schools, governments, and communities. Schools need clear guidelines for integrating technology into curricula, including policies on digital safety, ethical use, and equity of access. Government support, such as funding for infrastructure and teacher training, ensures that all schools can participate in the digital shift. Involving parents and the community also helps reinforce learning beyond the classroom, creating an ecosystem where students can safely and effectively benefit from digital resources. Dagli et al. (2023) also support that school administrators play an important role in developing their digital skills and successfully managing digital transformation.

Integrating digital tools in primary education helps cultivate skills that are essential for the future, such as creativity, critical thinking, problem-solving, and collaboration. Innovative teaching methods using technology encourage students to experiment, explore, and learn actively. Preparing students with these skills from an early age helps them adapt to future educational and career challenges.

There are previous studies related to digital transformation. The need for digital transformation in education has also been amplified with COVID-19 (McCarthy et al., 2023). The COVID-19 crisis forced and accelerated digital transformation in educational institutions (Aljanazrah et al., 2022). In the context of the digital transformation of education and the forced transition to an online form of education due to COVID-19, digital educational content becomes an effective teaching method for school children (Karimova et al., 2023). Lipipun & Angasinha (2023) examine how technology empowers educators and learners in Thailand's primary education. It finds that, despite initial resistance, many teachers adopted digital teaching during the pandemic, with leading educators using creative, student-centered approaches to engage learners and foster responsibility. These examples show how both teachers and students can thrive in digital transformation, offering models for effective technology integration in education.

Bosova et al. (2021) present an authorial perspective on the digitalization of education in Russia, focusing on primary general education and the Mathematics and Computer Science subject areas. The study finds that digital transformation in primary education requires strengthening logical and algorithmic components in mathematics, enhancing data-related content, and addressing theoretical computer science concepts. It also highlights the need to prepare future primary school teachers to effectively operate within a digitally enriched educational environment. Al-Shreifeen (2023) analyzes the digitalization of primary education in Saudi Arabia, focusing on trends, impacts, and the effectiveness of technology in teaching and learning. It examines current policies, classroom integration of digital tools, and the experiences of teachers and students to provide a comprehensive understanding of digital education in the Kingdom. The study finds that digitalization in Saudi primary schools has made significant progress, improving student engagement and learning outcomes. However, further investment in teacher professional development and technological infrastructure is needed to ensure the sustainability and effectiveness of digital education. The findings also highlight the importance of strategic planning and policy development to strengthen the implementation of digital tools in schools.

Then, Sarasean (2024) examines the challenges in Thailand’s education system, including an outdated curriculum, educational inequalities, insufficient teacher training, and limited digital literacy, which have led to poor performance in international assessments. It finds that reforms such as curriculum modernization, enhanced teacher training, and technology integration—supported by government initiatives and lessons from neighboring countries—can foster critical thinking, creativity, and problem-solving, reduce inequalities, and prepare a globally competitive workforce. Poonputta & Nuangchalerm (2024) investigate and enhance twenty-first-century competencies among primary school teachers in Thailand's sub-northeastern region. Specifically, it sought to (1) assess teachers’ needs for developing these competencies, (2) construct a model to establish the competencies, and (3) implement and evaluate the effectiveness of the developed model. The study found that teachers in the sub-northeastern region require targeted support to strengthen their twenty-first-century competencies. The developed model, when implemented, effectively enhanced these competencies among participating teachers. The results provide valuable guidance for educators and policymakers to improve teacher development programs and promote higher-quality education in the region. Ibrahim et al. (2024) examine the effect of headmasters’ innovative leadership in utilizing digital tools for administrative roles in Malaysian primary schools, and how such leadership supports school development in alignment with the Malaysian Education Quality Standard (MEQS). The study finds that headmasters' adoption of digital tools enhances data-driven decision-making, administrative efficiency, and communication, fostering more responsive and effective leadership. AlAli & Wardat (2024) examine the feasibility of implementing digital transformation as a strategy to reduce educational wastage in basic education schools within the Irbid Governorate by optimizing teaching and learning through innovative technologies. The research revealed that digital transformation in basic education faces obstacles such as the lack of integrated digital systems, limited use of modern technologies and teaching methods, and inadequate teacher proficiency and training. Syauta et al. (2024) analyze adaptive strategies employed by elementary schools in Maluku, Indonesia, in responding to the challenges of digital transformation amid geographical and infrastructural constraints. The research found that digital transformation is hindered by limited infrastructure, uneven teacher readiness, and resistance to change, yet some schools show adaptive innovations through available technology and community engagement.

Previous studies have widely discussed digital transformation in primary education across different contexts. Much of the existing research emphasizes the impact of COVID-19 in accelerating the shift toward digital education (McCarthy et al., 2023; Aljanazrah et al., 2022), the effectiveness of digital educational content (Karimova et al., 2023), and the challenges of curriculum modernization, teacher training, and infrastructure limitations (Sarasean, 2024; Al-Shreifeen, 2023). Research in Thailand has examined how educators adapted during the pandemic, with teachers adopting creative and student-centered approaches despite initial resistance (Lipipun & Angasinha, 2023). Other studies in regional and global contexts have highlighted the importance of enhancing teacher competencies (Poonputta & Nuangchalerm, 2024), leadership roles in digital transformation (Ibrahim et al., 2024), and adaptive strategies in geographically constrained areas (Syauta et al., 2024). However, there remains a research gap in providing a comprehensive, contextualized analysis of Thailand's digital transformation journey in primary education that integrates multiple dimensions—policy direction, teacher empowerment, student engagement, and systemic challenges—beyond the immediate impacts of the pandemic. While earlier studies often focus on isolated factors such as teacher readiness, leadership, or infrastructure, limited attention has been given to how these elements intersect within Thailand's broader educational reforms and socio-cultural realities.

This study contributes novelty by offering a holistic exploration of Thailand's journey in empowering both educators and learners within the digital transformation of primary education. Unlike previous works that either concentrate on pandemic-driven adaptations (Lipipun & Angasinha, 2023), competencies in specific regions (Poonputta & Nuangchalerm, 2024), or comparative international perspectives (Bosova et al., 2021; Al-Shreifeen, 2023), this research provides an integrated account of Thailand's context. It highlights not only the technological and infrastructural dimensions but also the pedagogical, cultural, and policy-driven factors that shape digital transformation. The study's novelty also lies in its emphasis on empowerment as a central theme, exploring how teachers and students are positioned as active agents rather than passive recipients of digital reform. By situating Thailand's experience within both national reforms and global shifts, this research generates insights that can inform sustainable models of digital transformation in primary education, particularly in Southeast Asian contexts where inequalities, infrastructure gaps, and cultural dynamics intersect with educational innovation.

Research Method

This study employs a descriptive qualitative research design, which focuses on providing a clear, detailed, and systematic description of a phenomenon as it naturally occurs (Fitria, 2024). Descriptive qualitative research relies on narratives, documents, and interpretations rather than statistical data or hypothesis testing. Unlike experimental or quantitative designs, it does not involve manipulation of variables but instead emphasizes understanding and portraying events, policies, and practices in their real-life context. In the present study, the phenomenon being examined is the digital transformation in Thailand's primary education, as reflected through national policy frameworks, long-term strategic visions, implementation programs, and documented case studies presented in the slides.

In this study, data were collected using a qualitative descriptive approach, primarily through the review and analysis of documents, narratives, and case studies. Documents are defined as any written, visual, or digital records that provide information (Fitria, 2023). Specifically, the researcher examined national policy frameworks, long-term strategic plans, implementation programs, and documented case studies related to digital transformation in Thailand's primary education. This approach enabled the collection of rich, detailed descriptions of how policies are designed and implemented, as well as the practical experiences of educators, schools, and communities in adopting digital education initiatives.

The data in this study were analyzed using qualitative content analysis following the steps proposed by Miles and Huberman (2014). The process began with data collection, which involved gathering primary data from the PPT slides as the main source and supplementing it with secondary literature and policy reports related to Thailand's education system. Next, data reduction was carried out by identifying key themes from each slide, while removing overlapping or repetitive information to focus on the most relevant points. The reduced data were then organized through data display, where the content was categorized into thematic groups aligned with the research focus: Policy and Vision, Teacher Empowerment and Training, Technology and Tools, Community Engagement, Infrastructure and Digital Divide, Monitoring and Policy Recommendations, and Future Vision and Reflections. Finally, the stage of conclusion drawing and verification involved interpreting the findings to highlight Thailand's strategies, challenges, and outcomes, comparing them with global frameworks such as UNESCO's digital literacy competencies, and generating conclusions and recommendations that could be applicable and transferable to other educational contexts.

Results and Discussion

Results

The title "Empowering Educators and Learners for Digital Transformation in Primary Education: Thailand's Journey" reflects the central focus of this study, which is to explore how Thailand has approached the integration of digital technologies in its primary education system. The phrase "empowering educators and learners" highlights the dual focus of digital transformation—not only equipping teachers with the necessary skills and tools to adopt technology in classrooms but also ensuring that students develop the competencies required to thrive in a digital society. The title also emphasizes the context of primary education, a foundational stage in which digital literacy and learning habits are cultivated. By framing the study as "Thailand's Journey," the title suggests a process-oriented exploration that considers both policy design and practical implementation, including the successes, challenges, and lessons learned along the way.

The presentation "Empowering Educators and Learners for Digital Transformation in Primary Education: Thailand's Journey" offers a structured exploration of how Thailand is navigating the shift toward digital learning in its primary education system. It highlights the intersection of national policy frameworks, long-term strategic visions, and practical initiatives implemented in schools and communities. Through case studies, pilot projects, and emerging technologies, the presentation reflects on both the achievements and challenges of this journey. Before examining the details slide by slide, it is important to understand that this presentation not only documents Thailand's progress but also provides insights and lessons that can be applied in broader global contexts, especially for countries seeking to integrate digital literacy and equitable access into their education systems.

Table 1. Empowering Educators and Learners for Digital Transformation in Primary Education: Thailand's Journey

Slide	Title / Topic	Key Points
1	Title	Introduces theme: Empowering Educators and Learners for Digital Transformation in Primary Education: Thailand's Journey. Speaker: Dr. Supaphorn Akkapin. Context: International conference in Solo, Indonesia, July 31, 2025. Highlights Thailand as a national case study and global model.
2	Welcome & Objectives	Purpose: Share Thailand's digital-education policy, showcase initiatives/case studies, reflect lessons learned, and recommend next steps. Frames the presentation as descriptive and reflective.
3	Global Digital Education Context	Situates Thailand in global K–12 digitalization. UNESCO identifies digital literacy as a core competency. Shift from technology adoption to learner-centered models.
4	Thailand's	6 years of Prathom (Grades 1–6), ~3 million pupils, ~30,000 schools.

	Primary Education Landscape	Highlights urban-rural and socioeconomic disparities, emphasizing equity and inclusion.
5	National Policy Framework	Anchored in Thailand 4.0 innovation strategy. MoE digital literacy goals (2020–2025). NECTEC's Anywhere–Anytime Learning ecosystem. The 20-Year National Education Vision (2018–2037) focuses on equity, lifelong learning, and Industry 4.0 readiness.
6	Thailand's Long-Term Education Vision	20-Year National Strategy (2018–2037) & 15-Year Education Strategy (2017–2031). Six thrusts: equity, quality, teacher development, research, cluster-based management, and sustainable funding. Roadmap for sustainable transformation.
7	Four Pillars of Transformation	Curriculum (competency-based), Capacity (teacher development), Connectivity (technology/infrastructure), Community (school–community partnerships). Balanced approach addressing pedagogy, resources, and social participation.
8	Teacher Empowerment Programs	2019–2024: 10,000+ teachers in blended workshops. MOOCs and micro-credentials in digital pedagogy. Regional EdTech Innovation Hubs support peer learning and innovation.
9	Case Study: Bangkok Pilot Training	120 teachers in Smart Classroom pilot. Hands-on learning with interactive whiteboards/quiz apps. 87% reported increased confidence. Demonstrates effective experiential training.
10	Digital Tools & Platforms	LMS (Moodle, Google Classroom), OER portals (Thai National Digital Library, OpenThaiEd), mobile apps (MathChamp, ReadAloud). Diversifies learning and expands access.
11	Student-Centered Learning Models	Project-based e-portfolios, adaptive-learning for literacy/numeracy, and gamification (badges, leaderboards). Promotes active learning, engagement, and personalization.
12	Case Study: Smart Classroom Deployment	111 schools with tablets and IoT sensors. Real-time dashboards. 22% improvement in standardized test scores. Demonstrates tech integration and data-driven teaching.
13	Community & Parental Engagement	Digital Family Week in 50 provinces. Rural e-learning centers and parent portals. Highlights family/community roles in sustaining reform.
14	Infrastructure & Connectivity	95% schools with broadband by 2023. Public-private partnerships (AIS, True Corp). Device-loan schemes and multi-year budgets for equity.
15	Bridging the Digital Divide	Targeted grants, NGO device distribution, solar-powered pods, subsidized home internet. Focus on rural/disadvantaged areas.
16	Monitoring, Evaluation & Data Use	National e-Dashboard tracks KPIs. Schools submit quarterly reports. Teacher support teams tailor interventions using data.
17	Emerging Technologies in Classrooms	AI literacy for 10M learners, VR/AR in science/social studies, AI chatbots for homework. Prepares students for future skills and innovation.
18	Blended Pedagogy in Practice	Combines face-to-face & online learning, flipped classrooms, and continuous feedback loops. Ensures digital tools complement teaching.
19	Case Study: Rural Makerspace Project	STEAM labs in 3 northern provinces. Mentoring by RMUTK undergraduates/artisans. 30% improvement in creative thinking. Grassroots innovation succeeds in rural areas.
20	Mitigation Strategies	Train-the-Trainer models, digital-innovation grants, peer-mentoring networks. Empowers local educators and ensures sustainability.

21	Policy Recommendations	Establish digital-pedagogy standards, secure multi-year infrastructure funding, and scale pilot programs via cluster networks. Aligns national goals with practice.
22	Collaborations & Partnerships	RMUTK–MoE research, university EdTech incubators, international best-practice exchanges. Ensures innovative, evidence-based, globally informed reforms.
23	Vision for the Next Decade	Equity-driven digital expansion, digital citizenship, ethical tech use, preparedness for AI/automation disruptions. Holistic forward-looking strategy.
24	Reflections & Takeaways	Prioritize people over platforms, tailor to local contexts, and continuous improvement via iterative data use. Human-centered, adaptive approach.
25	Thank You & Q&A	Gratitude and invitation for dialogue. Dr. Supaphorn shares contact info to encourage collaboration.

Source: *Empowering Educators and Learners for Digital Transformation in Primary Education: Thailand's Journey, Dr. Supaphorn Akkapin, RMUTK; Global Crisis & Multidisciplinary Approaches (2025).*

The table, Table 1: Empowering Educators and Learners for Digital Transformation in Primary Education: Thailand's Journey, provides a structured summary of a 25-slide presentation delivered by Dr. Supaphorn Akkapin at the international conference Global Crisis and Multidisciplinary Approaches in Solo, Indonesia, on July 31, 2025. It offers a clear overview of the presentation's content, highlighting the key topics and insights discussed throughout the session.

The first column of the table lists the slide numbers (1–25), providing a sequential framework that organizes the content in the order it was presented. The second column, Title / Topic, gives a concise heading for each slide, capturing the main theme or focus, such as Teacher Empowerment Programs, Digital Tools & Platforms, or Policy Recommendations. This allows the reader to quickly identify the subject matter covered on each slide. The third column, Key Points, summarizes the essential information, highlights, or findings presented. For example, Slide 1 introduces the presentation theme and situates Thailand as both a national case study and a global model for digital transformation in primary education. Slides 2 through 6 outline the presentation objectives, the global context of digital education, and Thailand's national education policies and long-term strategies. Slides 7 to 12 focus on implementation pillars, teacher training programs, digital tools, student-centered learning, and pilot case studies demonstrating practical application.

Further, Slides 13 to 19 emphasize community engagement, infrastructure development, bridging the digital divide, monitoring and evaluation, adoption of emerging technologies, blended pedagogy, and rural innovation projects. Slides 20 through 24 cover mitigation strategies, policy recommendations, collaborations, the vision for the next decade, and key reflections on lessons learned. Finally, Slide 25 concludes the presentation with gratitude, an invitation for questions, and contact information for further collaboration. Overall, the table serves as a concise, organized overview of the entire presentation. It enables readers to understand the flow of content and key messages while highlighting how Thailand's approach integrates policy, pedagogy, technology, community participation, and evaluation to achieve digital transformation in primary education.

Discussion

This study is developed from the analysis of a presentation that highlights Thailand's journey in implementing digital transformation in primary education. The PowerPoint material already contains essential elements of research, such as factual data, national policy frameworks, implementation strategies, and case studies that illustrate the process of educational change. Several findings presented in the slides can serve as research data, for example, 87% of teachers reported increased confidence after digital pedagogy training, a 22% improvement in standardized test scores was recorded in smart classroom schools, and rural makerspace projects contributed to a 30% gain in students' creative thinking. These figures, combined with qualitative descriptions of policies and practices, provide a strong foundation for conducting a descriptive qualitative study. Moreover, the presentation also outlines Thailand's 20-Year National Strategy and 15-Year Education Strategy, which align with global educational frameworks such as UNESCO's emphasis on digital literacy as a 21st-century core competency. The integration of policy frameworks, teacher empowerment programs, technological innovations, community engagement, and policy recommendations demonstrates that the material is not only informative but also researchable. Therefore, transforming the PPT content into a research study is feasible, particularly within a descriptive qualitative design, policy analysis, or case study approach, since the focus is on describing processes, analyzing strategies, and drawing lessons learned from Thailand's experience in digital education.

The presentation "Empowering Educators and Learners for Digital Transformation in Primary Education: Thailand's Journey" delivered by Dr. Supaphorn Akkapin, Dean of the International College at RMUTK, at the international conference Global Crisis and Multidisciplinary Approaches: The Roles of Science, Society and Policy in Shaping Future in Solo, Indonesia on July 31, 2025, offered an in-depth exploration of Thailand's efforts in digitalizing primary education. The presentation highlighted Thailand as a national case study and a global model for integrating technology with pedagogy.

Dr. Akkapin began by outlining the objectives of the presentation: sharing Thailand's digital-education policy framework, showcasing flagship initiatives and case studies, reflecting on lessons learned, and recommending strategies for future development. He placed Thailand's experience within the broader context of global K–12 digitalization, emphasizing UNESCO's recognition of digital literacy as a core 21st-century competency and the global shift toward learner-centered educational models.

Thailand's primary education system comprises six years of Prathom (Grades 1–6), serving approximately three million pupils across 30,000 schools. The presentation emphasized urban-rural and socioeconomic disparities, highlighting the need for equity and inclusion in digital transformation. Thailand's national policies, anchored in the Thailand 4.0 innovation strategy, include Ministry of Education digital literacy goals (2020–2025), NECTEC's "Anywhere–Anytime Learning" ecosystem, and the 20-Year National Education Vision (2018–2037), which promotes equity, lifelong learning, and Industry 4.0 readiness. Complementing this is the 15-Year Education Strategy (2017–2031) with six thrusts: equity and inclusion, quality standards, teacher development, research and innovation, cluster-based management, and sustainable funding.

The reform rests on four pillars: curriculum (competency-based and activity-driven learning), capacity (teacher development), connectivity (technology and infrastructure), and community (school-community partnerships), ensuring a balanced integration of pedagogy, resources, and social participation. Between 2019 and 2024, over 10,000 teachers participated in blended workshops, MOOCs, and micro-credential programs, supported by regional EdTech Innovation Hubs. Pilot programs, such as Bangkok's Smart Classroom training for 120 teachers and the subsequent deployment in 111 schools with tablets and IoT sensors, demonstrated significant gains in teacher confidence and student test scores, confirming the effectiveness of experiential, practice-based learning.

Digital tools and platforms—including Learning Management Systems (Moodle, Google Classroom), OER portals, and mobile apps like MathChamp and ReadAloud—facilitate diverse, accessible, and student-centered learning. Approaches such as project-based e-portfolios, adaptive learning for literacy and numeracy, and gamification strategies promote active engagement, personalization, and autonomy. Community and parental involvement are central, exemplified by initiatives like "Digital Family Week" workshops, rural e-learning centers, and parent monitoring portals.

Infrastructure development has ensured 95% broadband coverage in schools by 2023, supported by public–private partnerships, device-loan schemes, and multi-year budget allocations. Efforts to bridge the digital divide include targeted grants, NGO-supported device distribution, solar-powered learning pods, and subsidized home internet, ensuring equitable access for rural and disadvantaged students. Monitoring and evaluation through national e-Dashboards and quarterly performance reports guide data-driven interventions, while emerging technologies such as AI literacy programs, VR/AR lessons, and AI chatbot assistants prepare students for future skills and innovation.

Blended pedagogy integrates face-to-face and online learning, flipped-classroom micro-lectures, and continuous feedback loops, complementing rather than replacing traditional teaching. Additional initiatives, including rural STEAM labs mentored by university students and artisans, have improved creative thinking by 30%, demonstrating the success of grassroots innovation. Sustainability is further ensured through Train-the-Trainer models, digital-innovation grants, and peer-mentoring networks. Policy recommendations include establishing national digital pedagogy standards, securing multi-year infrastructure funding, and scaling successful pilot programs through cluster-school networks.

Collaborations and partnerships with RMUTK–MoE research initiatives, university EdTech incubators, and international exchanges ensure reforms are evidence-based, innovative, and globally informed. Looking ahead, Thailand envisions equity-driven digital expansion, cultivation of digital citizenship, ethical technology use, and preparedness for disruptions such as AI and automation. Lessons learned emphasize investing in human capacity, contextualizing solutions locally, and iterating continuously using data—highlighting a human-centered and adaptive approach to digital education transformation. The presentation concluded with an invitation for dialogue and collaboration, reinforcing Thailand's commitment to sharing knowledge and best practices in digital education.

Conclusion

This paper presents Thailand's journey in digitally transforming primary education, highlighting policies, initiatives, and lessons for equitable, learner-centered education. Dr. Supaphorn Akkapin shared Thailand's experience at the international conference Global Crisis and Multidisciplinary Approaches in Solo, Indonesia (July 31, 2025). Serving approximately three million pupils across 30,000 schools, Thailand's primary education system faces urban–rural and socioeconomic disparities, emphasizing the need for inclusive digital strategies. National frameworks—including Thailand 4.0, NECTEC's "Anywhere–Anytime Learning," Ministry of Education Digital Literacy Goals (2020–2025), and the 20-Year National Education Vision (2018–2037)—guide reforms toward lifelong learning, Industry 4.0 readiness, and equitable access.

The transformation is structured around four pillars: curriculum (competency- and activity-based learning), capacity (teacher development), connectivity (technology and infrastructure), and community (school–community partnerships). Between 2019 and 2024, over 10,000 teachers participated in blended workshops, MOOCs, and micro-credential programs, supported by EdTech Innovation Hubs. Pilot programs, such as Bangkok's Smart Classroom initiative, demonstrated improved teacher confidence and student outcomes. Digital tools—including LMS, OER portals, mobile apps, adaptive learning, and gamified platforms—support student-centered learning, while rural STEAM labs and makerspaces foster creativity and critical thinking.

Infrastructure development, device-loan programs, rural e-learning centers, solar-powered pods, and subsidized home internet address the digital divide. Monitoring through national e-Dashboards and data-driven teacher support ensures evidence-based interventions. Emerging technologies, such as AI literacy programs, VR/AR lessons, and AI chatbots, prepare learners for future skills, while blended pedagogy combines face-to-face and online learning with continuous feedback. Sustainability and scale are promoted through Train-the-Trainer models, grants, peer mentoring, and regional cluster networks. Thailand's experience underscores the importance of investing in human capacity, contextual solutions, and continuous improvement to achieve equitable, innovative, and future-ready primary education.

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