

## Research Article

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## Social Innovation Education for Schools in Northeastern Thailand: Toward a Contextualized Model for Sustainable Development

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### Abstract

**Background/purpose.** This research was conducted to address the disconnect between the goals of social innovation and its practical implementation in schools in Northeastern Thailand. The research aimed to develop a sustainable model of social innovation education by first examining successful domestic and international practices, then analyzing the current state of readiness in the region.

**Materials/methods.** This research utilized complex mixed methods research with an evaluation design, conducted in three sequential phases: a qualitative study of exemplary schools, a quantitative survey of readiness among schools (n=38) and high school students (n=1680) in the northeastern region, and the subsequent development of a new model based on the combined findings.

**Results.** Schools showed high readiness in social Impact (M=3.85, SD=0.72), and students excelled in communication & collaboration (M=3.95, SD=0.59). However, significant weaknesses were found in sustainability and scalability (M=3.12, SD=0.94) among schools and systemic problem-solving (M=3.45, SD=0.81) among students. The proposed contextualized model for driving social innovation education for schools was presented, and its practical applications were discussed.

**Conclusion.** The research concludes that while schools in Northeastern Thailand have foundational strengths for social innovation, critical gaps in sustainability and systemic problem-solving must be addressed. The proposed contextualized model for driving social innovation provides a strategic framework to leverage existing strengths and bridge these gaps, fostering authentic, long-term social and economic development.

## 1. Introduction

Education has long been recognized as a transformative force that underpins social, cultural, and economic development, serving as a foundation for human progress and societal advancement (UNESCO, 2015; OECD, 2019). Beyond its traditional role of transmitting academic knowledge, education functions as a catalyst for empowerment, equipping individuals with the capacity to adapt, innovate, and contribute meaningfully to their communities. In today's volatile and complex world marked by widening inequalities, rapid technological disruption, environmental degradation, and socio-political tensions. The purpose of education is to undergo a significant redefinition. Schools are increasingly called upon to cultivate not only cognitive and technical proficiency but also values, mindsets, and competencies that prepare students to become socially responsible, creative, and resilient problem solvers (Mulgan, 2019; Rimanoczy, 2021).

Within this shifting landscape, the concept of Social Innovation Education (SIE) has emerged as a promising framework for reimagining the role of schools in fostering societal transformation. Social innovation, broadly defined as the development and implementation of novel ideas, practices, or solutions that address pressing social challenges and create public value (Moulaert et al., 2013), has gained prominence across multiple sectors over the past two decades. When integrated into educational contexts, this approach transforms schools into critical incubators of change, where learners actively engage in identifying, analyzing, and addressing authentic, real-world problems. SIE emphasizes experiential and collaborative learning, enabling students to design and implement tangible projects that not only strengthen their own competencies but also generate meaningful social impact (Schröer & Krüger, 2019).

At the core of SIE lies a pedagogical commitment to student agency, empathy, systems thinking, and sustainability-oriented leadership (Kassel, Rimanoczy, & Mitchell, 2018). Unlike traditional civic or service-learning programs that may remain at the level of discussion or awareness, SIE requires learners to engage in action—mobilizing creativity, teamwork, and community partnerships to implement solutions that contribute to the common good. This process not only enhances students' knowledge and skills but also fosters civic responsibility, ethical sensitivity, and personal development, while cultivating competencies such as critical thinking, problem-solving, and collaboration that are essential for thriving in the twenty-first century (Alden Rivers et al., 2015; Batista & Helal, 2023).

The developmental significance of Social Innovation Education (SIE) is particularly evident during adolescence—a formative life stage in which identity, social awareness, and purpose are actively constructed (Damon, Menon, & Bronk, 2003). By offering structured opportunities for young people to assume valued roles within their communities, SIE fosters enhanced civic engagement, psychological well-being, and a resilient sense of purpose (Bundick et al., 2006; Lerner, 2002). Moreover, its alignment with the United Nations Sustainable Development Goals (SDGs) underscores its potential to bridge local educational practices with global imperatives for equity, justice, and sustainability (United Nations, 2015).

The application of Social Innovation Education (SIE) carries heightened significance in Thailand's Northeastern region (Isan) due to persistent, complex structural challenges. The region struggles with entrenched disparities in educational quality and access to resources (Fry & Bi, 2018), compounded by rapid demographic shifts, including a rapidly aging population and significant youth out-migration (Office of the Education Council, 2018). Furthermore, Isan's primarily agricultural economy faces mounting vulnerability from recurrent droughts exacerbated by climate change (World Bank, 2022). Therefore, SIE offers a crucial mechanism for fostering localized economic resilience and empowering communities to develop sustainable solutions to these systemic issues.

The Northeastern region of Thailand, or Isan, while recognized for its structural economic and infrastructure disadvantages (Boonperm et al., 2013), possesses remarkable cultural richness and community resilience that serve as powerful, often underutilized assets for educational innovation. Isan's robust indigenous traditions, which include strong patterns of community solidarity, Buddhist ethics, and a rich local cultural heritage (Keyes, 1967, 2014), offer a unique and authentic foundation for designing Social Innovation Education (SIE) frameworks. By leveraging these indigenous strengths, Isan schools can move beyond mere compliance with global imperatives, such as the SDGs, to develop curricula deeply rooted in local values and practices. This strategy reorients education, positioning Isan schools as genuine incubators of social innovation that simultaneously address structural deficits and capitalize on cultural capital. Such an approach empowers students to develop context-sensitive solutions to regional social, environmental, and economic challenges, thereby cultivating creativity, resilience, and civic responsibility essential for sustainable regional development. This approach presents Isan as a critical setting for advancing SIE research and practice.

Despite its growing importance, the field of SIE remains under-researched and conceptually fragmented. Many existing studies build upon adjacent traditions—such as service learning, civic education, and social entrepreneurship—yet this overlap often obscures the distinctive features and outcomes of SIE (Batista & Helal, 2023). Research has rarely provided systematic frameworks or empirical evidence that clarify how SIE can be effectively designed, implemented, and evaluated in diverse educational contexts. This lack of clarity risks limiting its potential to influence policy and practice, particularly in regions where education must address both structural inequalities and the urgent demands of sustainable development.

The objective of this research was to develop a sustainable model of social innovation education tailored to the specific needs of schools in Northeastern Thailand. There were three research questions as follows:

1. What are the core components and essential skills derived from successful social innovation practices in both domestic and international exemplary schools?
2. What is the current level of social innovation readiness and student competency in schools across the Northeastern region?
3. What is the empirically grounded, contextualized model for driving social innovation that addresses the specific needs of schools in Northeastern Thailand?

This research proposes the development of a sustainable model of Social Innovation Education (SIE) specifically designed for schools in Northeastern Thailand. The synthesis of domestic and international best practices, combined with an assessment of local contextual needs, has yielded a culturally grounded and contextually relevant framework. The implementation of this model is anticipated to advance students' competencies in creativity, problem-solving, collaboration, and civic responsibility, while enhancing teachers' professional capacity for innovative and participatory pedagogical practices. Furthermore, the model is expected to strengthen school–community partnerships, thereby enabling collective action to address pressing social and environmental issues. In the long term, the outcomes of this study are projected to contribute to the reduction of regional educational disparities and to Thailand's alignment with the United Nations Sustainable Development Goals (SDGs).

## 2. Literature Review

### 2.1. Conceptualizing Social Innovation

Social innovation has become increasingly relevant as a paradigm for addressing complex societal challenges in education. Defined as the process of developing and implementing novel solutions that

improve social outcomes and create public value (Moulaert et al., 2013), social innovation emphasizes collaboration, creativity, and sustainability. Within educational contexts, this translates into initiatives that empower learners to identify pressing social problems, design interventions, and implement changes that benefit both their schools and communities. Unlike traditional pedagogical models focused primarily on knowledge transmission, Social Innovation Education (SIE) embeds action-oriented learning into curricula, thereby transforming classrooms into laboratories for social change.

Globally, SIE has been linked to the cultivation of competencies such as critical thinking, problem-solving, creativity, and collaboration skills often described as central to 21st-century learning (OECD, 2019). These competencies align with international educational reforms that increasingly stress the importance of equipping students not only with academic knowledge but also with the capacity to navigate uncertainty and contribute meaningfully to sustainable societies (UNESCO, 2015).

In this research, Social Innovation Education (SIE) is an educational practice that empowers learners through self-directed, collaborative engagement to identify social needs, generate creative responses, and implement solutions that improve community wellbeing. It simultaneously develops students' civic responsibility, personal growth, and capacity for democratic participation while producing tangible contributions toward a more just and sustainable society.

While Social Innovation Education (SIE) shares pedagogical ground with related concepts like service-learning, civic education, and social entrepreneurship, it possesses critical distinctions that define its unique theoretical and practical mandate. Unlike Service-Learning, which often focuses on providing reciprocal assistance and learning within existing community structures, SIE is fundamentally geared toward designing and implementing novel, systemic solutions that actively transform those structures. Furthermore, in sharp contrast to Civic Education, which primarily promotes awareness, knowledge, and democratic participation processes, SIE moves beyond discussion to mandate concrete, action-oriented projects focused on achieving measurable social and environmental change. Finally, while Social Entrepreneurship centers on creating economic value through a market-based model to achieve social goals, SIE's primary focus is the generation of public value and deep systemic social transformation within the non-profit educational context, with success metrics being the scalability and sustainability of the social impact rather than market viability or profitability.

## ***2.2. Social Innovation in Education: Global Experiences***

Across international contexts, social innovation has been embedded into education systems through diverse approaches:

- Finland: Education reforms emphasize project-based curricula, collaborative learning, and sustainability integration, enabling students to co-design solutions for real-life challenges (Sahlberg, 2011; Lonka, 2018).
- Canada: Service-learning and community engagement initiatives integrate social innovation into secondary and higher education, linking classroom learning with civic responsibility (Nicholls & Murdock, 2012).
- Singapore: The 'Teach Less, Learn More' (TLLM) initiative promotes educational innovation in Singapore by shifting from teacher-centric instruction toward learning-centered pedagogies that prioritize depth of understanding over content breadth. This discourse aims to facilitate deeper, more meaningful student engagement and learning, moving beyond traditional content transmission (Tan, Tan, & Chua, 2008).

These cases underscore three recurring principles:

1. Student agency through active, inquiry-driven, project-based learning.
2. Cross-sector collaboration involving schools, NGOs, governments, and communities.
3. Sustainability competencies such as systems thinking, empathy, and adaptability (Wiek, Withycombe, & Redman, 2011).

Based on the systematic review, the research confirms that social innovation (SI) originates in education, acting as both a process and a product, which generates a continuous cycle between the two phenomena. The study establishes a framework showing that educational innovation is supported by co-creation and institutional articulations across various educational settings, including non-formal contexts. Essentially, education is posited as a fundamental vector for applying initiatives and technologies to the social field, ultimately driving social change and improved collective power resources (Batista & Helal, 2023).

While these global models provide invaluable insights into the potential of SIE, the literature lacks critical discussion on the transferability of these practices to different socio-cultural and administrative contexts. For instance, directly importing the Finnish model, which relies on high teacher autonomy and equitable resource distribution, may be problematic in the decentralized, resource-constrained, and exam-driven system of Northeast Thailand. This study, therefore, emphasizes the necessity of developing a framework that is deeply rooted in local cultural strengths (Isan's community solidarity) while responding to global mandates (SDGs).

### ***2.3. Education and Social Innovation in Thailand***

Thailand's educational policy framework has increasingly acknowledged the imperative for innovation and creativity since the late 1990s, aiming to transition the country toward a knowledge- and innovation-driven economy and society. The National Education Act (1999, revised 2017) serves as a pivotal mechanism, mandating that education must develop the learner into a "complete human being"—physically, mentally, intellectually, and morally—with a strong emphasis on lifelong learning and the ability to think critically, synthesize, and create innovation (Office of the Education Council, 2018). This commitment is further solidified by the National Education Plan 2017–2036, a long-term strategy that explicitly sets forth goals for achieving sustainable development and educational quality improvement through the active promotion of innovation. Collectively, these policy frameworks lay a firm governmental foundation for utilizing education as a primary tool to drive and sustain social innovation at both the national and local levels.

### ***2.4. Social Innovation and Sustainable Development***

Social Innovation in Education (SIE) is fundamentally aligned with global sustainability frameworks, serving as a critical mechanism for achieving their objectives. The Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 17 (Partnerships for the Goals), highlight the essential role of education in fostering innovation, inclusivity, and multi-stakeholder collaboration (United Nations, 2015). Scholars contend that realizing sustainability requires a shift from traditional transmissive education to transformative learning (Sterling, 2001), equipping learners with core competencies such as systems thinking, anticipatory competence, and strategic competence (Wiek et al., 2011; Rieckmann, 2018).

## **3. Methodology**

### **Research Design**

This research employed a Complex Mixed Methods Research with an Evaluation Design (Creswell & Plano Clark, 2018) that integrates both qualitative and quantitative data to evaluate social

innovation practices. This is a hybrid design executed in three sequential phases to achieve its objectives.

### **Phase 1: A Qualitative Study of Exemplary Social Innovation Practices for Sustainability in Schools in Domestic and International Context**

This phase was designed to identify, analyze, and synthesize successful social innovation practices in both Thailand and international contexts.

#### **Inclusion criteria for Domestic (Thailand)**

The selection of Thailand case studies was based on a purposive sampling strategy, guided by the following criteria:

1. The school's operational framework and outcomes demonstrably aligned with the established definition of social innovation.
2. School administrators and teachers exhibited a profound commitment and a clear vision for fostering social change through educational initiatives.
3. The school implemented a student-centered, project-based learning model that provided authentic opportunities for hands-on problem-solving.
4. A robust symbiotic relationship existed between the school and its surrounding community, enabling students to engage with real-world local issues and develop innovative, community-applicable solutions.
5. The curriculum promoted interdisciplinary knowledge application for innovation, supported by effective and consistent guidance from teaching staff.

**Case Selection:** This study focused on five exemplary schools: Meechai Pattana School, Roong Aroon School, Darunsikkalai School, Kamnoetvidya Science Academy (KVIS), and Ban Pla Dao School. Of these, KVIS and Meechai Pattana School were selected for in-depth interviews. To ensure a comprehensive perspective, data were gathered from a diverse group of stakeholders at each of the two institutions, comprising one administrator, two teachers, three students, and three community representatives per school.

#### **Inclusion Criteria for International**

International case studies were selected based on the following criteria:

1. The project outcomes directly correlated with the definition of social innovation and demonstrated a measurable positive societal impact.
2. The project developers possessed a clear vision and unwavering commitment to driving social change through education.
3. The learning model was demonstrably student-centered, incorporating practical, hands-on, and authentic problem-solving experiences.

**Selected Cases:** Eight international case studies were chosen for analysis consisted of, Green School (Indonesia), The Knowledge Society [TKS] (Canada), TEKY STEAM (Vietnam), iEARN (Spain), Pratham's blended learning program (India), Prospect Charter Schools (United States), Innovas School (Peru), and The Skills Builder Partnership (United Kingdom).

**Case Selection:** Eight international case studies were selected for analysis, comprising Green School (Indonesia), The Knowledge Society [TKS] (Canada), TEKY STEAM (Vietnam), iEARN (Spain), Pratham's blended learning program (India), Prospect Charter Schools (United States), Innova Schools (Peru), and The Skills Builder Partnership (United Kingdom).

## Data Collection Instruments

A semi-structured interview protocol served as the primary tool for data collection. The interview protocol focused on three main areas: 1) Vision and School Mission (e.g., "How does your school define success beyond academic achievement?"), 2) Implementation Processes (e.g., "Describe a specific project outcome and how the community was involved."), and 3) Barriers and Facilitators (e.g., "What are the biggest challenges to sustaining these projects?"). Field notes were recorded during and immediately after the interviews and site visits.

The interviews averaged 60-90 minutes and were conducted in a neutral, private setting at each school.

Field notes were recorded with a systematic checklist focusing on:

1. Student Development Activities. (e.g., student projects, Individual study program)
2. Evidence of Community Integration (e.g., non-school people/resources actively involved).
3. Physical/Curricular Systems that Support Innovation (e.g., dedicated maker-spaces, interdisciplinary lesson plans).

**Validity and Reliability of Qualitative Data:** Triangulation was employed by comparing data across multiple sources (administrators, teachers, students, and community representatives). Inter-coder Reliability was ensured by having two researchers independently code 20% of the interview transcripts, yielding a minimum agreement rate of 85%. Participant consent was obtained prior to all interviews, with the right to withdraw guaranteed.

**Data Analysis:** The qualitative data were analyzed using analytic induction, a method involving the systematic categorization and linking of information to generate robust inductive conclusions. The synthesized findings were then compiled into a comprehensive body of knowledge on social innovation for sustainability in educational settings.

## Phase 2: A Quantitative Survey of Social Innovation Readiness in Schools in Thailand's Northeastern Region

This phase employed a descriptive survey research design to quantitatively assess the current state of social innovation implementation and students' social innovation competency within schools in Thailand's Northeastern region.

**Population:** The target population consisted of 933 secondary schools under the Office of the Basic Education Commission in the Northeastern region. The population included 23,286 classrooms and 737,180 students (data retrieved on June 10, 2025, from the Office of Basic Education Policy and Planning).

**Sample size:** The sample size was determined using a cluster random sampling approach. In accordance with Maas & Hox (2005), which recommends a minimum of 30 clusters and 30 individuals per cluster for reliable estimation of regression coefficients and standard errors, the study selected 60 secondary schools. From each selected school, data were collected from one lower secondary classroom and one upper secondary classroom (totaling 60 students per school), eight representative teachers from different academic departments, and two school administrators. This resulted in a total sample of 3,600 students, 480 teachers, and 120 administrators.

**Sampling Method:** A multi-stage random sampling technique was implemented:

**Stage 1:** Cluster random sampling was utilized to select six of the 17 secondary education service area offices within the Northeastern region.

Stage 2: Stratified random sampling was then used to select 10 schools from each of the six selected areas, with stratification based on school size defined by the number of enrolled students (small  $\leq 500$ , medium 501–1,500, large 1,501–2,500, extra-large  $\geq 2,500$ ). The student sample was specifically selected from lower secondary (Mathayom 1-3) and upper secondary (Mathayom 4-6) students to cover all secondary grade levels, culminating in a total sample of 60 schools, 3,600 students, 480 teachers, and 120 administrators.

For the actual data collection, the sample group consisted of 1,680 students (46.67%), 295 teachers (61.45%), and 65 administrators (54.17%), drawn from 38 schools, which constituted 63.33% of the 60 schools targeted for the research.

### **Data Collection Instrument**

(1) Social Innovation Readiness scale, the instrument developed to measure social innovation readiness in schools, is a 30-item questionnaire utilizing a 5-point Likert scale. This tool is designed to assess readiness across four key dimensions: Social Impact, the extent to which the school is focused on creating positive benefits for society. Community Participation is the depth of involvement and collaboration between the school and its local community. Sustainability and Scalability, the capacity of the school's initiatives to be long-lasting and expanded to other contexts. Systemic Change is the school's focus on fundamentally altering existing structures and practices to address core problems.

Validity and Reliability, the content validity of the questionnaire was verified by five experts, resulting in a Content Validity Index (CVI) ranging from 0.80 to 1.00. The 30-item, 5-point Likert-scale questionnaire underwent a pilot study with 30 participants outside the final sample. The reliability of the scale was assessed using Cronbach's Alpha ( $\alpha$ ), yielding alpha coefficients = 0.89, indicating strong internal consistency.

(2) Student Ability to Create Social Innovation Scale, the instrument developed for students is a 20-item questionnaire using a 5-point Likert scale. This tool is designed to measure the four key dimensions that comprise a student's ability to create social innovation: Observation and Critical Thinking, the capacity to notice underlying issues and analyze them objectively. Creativity is the skill to generate novel ideas, solutions, and approaches to social challenges. Systemic Problem-Solving is the ability to understand complex systems and develop solutions that address root causes rather than just symptoms. Communication and Collaboration, the proficiency in articulating ideas and working effectively with diverse groups to implement solutions.

Validity and Reliability, the content validity of the questionnaire was verified by five experts, resulting in a Content Validity Index (CVI) ranging from 0.60 to 1.00. The 20-item, 5-point Likert-scale questionnaire underwent a pilot study with 30 participants outside the final sample. The reliability of the scale was assessed using Cronbach's Alpha ( $\alpha$ ), yielding alpha coefficients = 0.89, indicating strong internal consistency.

Data Collection: The questionnaire was administered online via Google Forms, with a predefined submission window.

Data Analysis: Statistical software was used to analyze quantitative data. Descriptive statistics (mean and standard deviation) were used to assess the current readiness level.

### **Phase 3: The Development of a Model for Driving Social Innovation for Sustainability in Schools**

The Connoisseurship approach (Eisner, 2005) was employed as an evaluative and design methodology.

## Research Procedure

### 1. Preparation

Preliminary model development, the findings from Phase 1 (synthesis of best practices) and Phase 2 (assessment of school readiness) provided the foundational data for creating the initial draft of the "Contextualized Model for Driving Social Innovation in Schools. Nine highly qualified experts were purposively selected for their extensive experience in social innovation. The panel comprised three school administrators, three educational scholars, and three social innovation specialists.

### 2. Data Collection

An expert workshop, a specialized workshop, was convened with the selected experts. The primary objectives were to validate the conceptual soundness of the drafted model and to elicit expert feedback to refine and improve it. The process involved two primary feedback rounds. Round 1: Expert review and individual written feedback on the initial model draft. Round 2: A focused, 1-day Expert Workshop to collectively debate, refine, and validate the model's structure and mechanisms.

### 3. Data Analysis

Inductive Analysis, the qualitative data generated during the workshop were systematically categorized, analyzed, and synthesized to derive key conclusions that guided the final revision and development of the model.

The study was conducted in strict accordance with international research ethics standards set by the Center for Ethics in Human Research at Khon Kaen University, Thailand, prior to the commencement of all data collection procedures. Informed consent was a mandatory prerequisite for participation in all phases. Participant confidentiality was strictly maintained, with all data being anonymized and personal identifiers removed before analysis and reporting.

## 4. Results

### ***4.1. A Qualitative Study of Exemplary Social Innovation Practices for Sustainability in Schools in Domestic (Thailand) and International Context***

The 5 domestic (Thailand) case studies and 8 international case studies illustrate a diverse landscape of educational innovation, moving beyond traditional academics to foster social impact and systemic change. Many Thai schools, such as Meechai Pattana School and Roong Aroon School, integrate life skills, sustainable development, or the Sufficiency Economy Philosophy to promote community development and holistic education. International examples, like Green School (Indonesia) and Innovas School (Peru), emphasize sustainability, scalability, and social entrepreneurship to address both local and global challenges. Furthermore, programs like The Knowledge Society (Canada) and Darunsikkalai School (Thailand) focus on cultivating advanced problem-solving, critical thinking, and future-ready skills through experiential and project-based learning. Collectively, these cases demonstrate a global trend toward using education to build ethical, innovative individuals capable of making a positive, real-world contribution, as shown in Table 1.

**Table 1.** The Study of Exemplary Social Innovation Practices in Thailand and the International Context

| Name of Case Study                                                            | Location                              | Key Innovative Focus                                                                                                                                                 | Relevance to Social Innovation                                                                                                                                                                                             |
|-------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Domestic Case 1</b><br>Meechai Pattana School                              | Buriram<br>(Northeastern)<br>Thailand | Founded by Mechai Viravaidya. It integrates life skills, health education, and sustainable development directly into the curriculum.                                 | Focuses on systemic change and sustainability. Students work to generate income (e.g., selling vegetables, operating a gas station) to pay for their education, thereby promoting self-reliance and community development. |
| <b>Domestic Case 2</b><br>Roong Aroon School                                  | Bangkok<br>(central)<br>Thailand      | Emphasizes holistic education based on Buddhist philosophy and the teachings of the late King Bhumibol Adulyadej's Sufficiency Economy Philosophy (SEP).             | Community Participation and Social Impact. The curriculum is highly experiential, aiming to cultivate students who are mindful, ethical, and actively engaged in solving real-world community problems.                    |
| <b>Domestic Case 3</b><br>Darunsikkalai School for Innovative Learning (DSIL) | Bangkok<br>(central)<br>Thailand      | Pioneered project-based learning (PBL) and constructionist learning theory (inspired by Seymour Papert). The curriculum is largely student-led.                      | Directly fosters the Ability to Create Social Innovation (creativity, systemic problem-solving) by allowing students to choose projects and develop solutions for complex, real-world issues.                              |
| <b>Domestic Case 4</b><br>Kamnoetvidya Science Academy (KVIS)                 | Rayong<br>(Eastern)<br>Thailand       | A highly specialized, residential high school dedicated to cultivating talented science and math students to become researchers and innovators.                      | Focuses on Advanced Statistics and Problem-Solving. Aims for Systemic Change by grooming a new generation of high-level researchers who can drive national technological and scientific progress.                          |
| <b>Domestic Case 5</b><br>Ban Pla Dao School                                  | Chiangmai<br>(North)<br>Thailand      | Often associated with alternative, small-scale, and community-centered education. Focus on integrated learning that links back to the local environment and culture. | Emphasize Community Participation and the local context. Learning is relevant and applicable to improving the quality of life within the immediate community, addressing social problems at the grassroots level.          |
| <b>Inter Case 6</b><br>Green School                                           | Indonesia                             | Sustainability-focused, holistic, and experiential learning within a natural, bamboo-based campus.                                                                   | Strong focus on Environmental Impact and Sustainability. The curriculum integrates environmental stewardship, community service, and entrepreneurship to create local and global change agents.                            |

| Name of Case Study                                         | Location      | Key Innovative Focus                                                                                                                                                              | Relevance to Social Innovation                                                                                                                                                                          |
|------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Inter Case 7</b><br>The Knowledge Society [TKS]         | Canada        | A highly selective program for young high-achievers (13-17) focused on emerging technologies (AI, quantum computing) and developing skills to solve the world's biggest problems. | Targets Systemic Problem-Solving and Scalability. Cultivates critical thinking and creativity by having students tackle large-scale global challenges using advanced technology.                        |
| <b>Inter Case 8</b><br>TEKY STEAM                          | Vietnam       | A leading provider of STEAM (Science, Technology, Engineering, Arts, Math) and coding education for children in Southeast Asia.                                                   | Focuses on Skills Development and Innovation. Equips youth with future-ready skills, preparing them to be creators of technology rather than just consumers.                                            |
| <b>Inter Case 9</b><br>iEARN                               | Spain         | International Education and Resource Network. Connects schools and young people globally through collaborative online projects that address global issues.                        | High focus on Communication and Collaboration across borders. Fosters social impact by engaging students in meaningful projects (e.g., environmental awareness, peace) with peers worldwide.            |
| <b>Inter Case 10</b><br>Pratham's Blended Learning Program | India         | Uses a combination of digital media and in-person instruction to rapidly improve foundational literacy and numeracy for underserved children.                                     | Focuses on Social Impact and Scalability. An affordable, low-cost model designed to address the massive problem of learning poverty in rural and disadvantaged communities.                             |
| <b>Inter Case 11</b><br>Prospect Charter Schools           | United States | A network of charter schools emphasizing project-based learning, socio-emotional development, and college readiness for low-income and minority students.                         | Targets Systemic Change in urban education. Aims to close the achievement gap by creating a rigorous and supportive environment that fosters critical thinking and community involvement.               |
| <b>Inter Case 12</b><br>Innovas School                     | Peru          | A chain of private, affordable schools designed to deliver high-quality education at scale to the middle class using a standardized, blended learning model.                      | Focuses on Sustainability and Scalability. While a for-profit model, its social impact lies in democratizing access to modern, effective educational practices for a massive segment of the population. |

| Name of Case Study                                     | Location       | Key Innovative Focus                                                                                                                                                      | Relevance to Social Innovation                                                                                                                                                                          |
|--------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Inter Case 13</b><br>The Skills Builder Partnership | United Kingdom | Works with schools and employers to build eight essential transferable skills (e.g., leadership, teamwork, problem-solving) critical for education, employment, and life. | High focus on Systemic Problem-Solving and Communication & Collaboration. Provides a common framework for explicitly teaching and assessing the non-academic skills needed for real-world contribution. |

To validate and enrich the findings derived from the cross-case synthesis, qualitative interview data were analyzed to capture the lived experiences of various stakeholders. The insights gathered from school administrators, teachers, students, and community members strongly corroborate the core themes identified across the exemplary schools.

### 1. Student Autonomy and Agency in Development Activities

The transition toward student-centered learning environments was heavily emphasized during the interviews. Stakeholders noted that fostering innovation requires shifting control from teachers to learners. As one high school teacher highlighted regarding student autonomy:

*"We shifted from traditional rote learning to a completely project-based approach. Now, students drive their own individual study programs based on their passions, whether it's building a drone or launching a small community recycling initiative. Our role has transformed from instructors to facilitators." (— High School Teacher)*

This pedagogical shift from lecturing to facilitating directly impacted student engagement and career alignment. A Grade 11 student corroborated this sentiment, reflecting on the value of autonomous learning time:

*"The individual study program allowed me to explore things outside the textbook. I spent a whole semester working on a project about sustainable agriculture, and having that dedicated time made me realize what I actually want to study in the future." (— Grade 11 Student)*

### 2. Authentic Community Integration

Beyond academic autonomy, the case synthesis indicated that exemplary schools do not operate in isolation but function as community hubs. This community-centric approach was echoed by a village representative, who noted the breaking down of traditional institutional barriers:

*"Before, the school was just a closed building in our village. Now, we are invited to share our local wisdom with the kids, and they help us solve real community problems. It feels like a genuine partnership where everyone learns from each other." (— Community Leader / Village Representative)*

### 3. Institutional Ecosystems and Structural Support

Finally, the qualitative data confirmed that pedagogical and social innovations cannot occur without structural and physical adjustments within the institution. Reflecting on the crucial role of the school's physical infrastructure and scheduling flexibility, a school director stated:

*"To foster innovation, you need an ecosystem that permits experimentation. We invested in flexible learning spaces and redesigned our timetable to allow for longer blocks of interdisciplinary learning, giving both teachers and students the freedom to innovate without being rushed by the bell." (— School Director)*

In summary, these narrative accounts serve as empirical evidence that triangulates the cross-case synthesis, illustrating how systemic changes in curriculum, community engagement, and school infrastructure manifest in practice.

## **4.2. A Quantitative Survey of Social Innovation Readiness in Schools in Thailand's Northeastern Region**

### **4.2.1. Social Innovation Readiness in Schools**

The data, gathered from a sample group of 38 out of 60 targeted schools (63.33%), indicate that Teachers (n=295) and Administrators (n=65) reported their highest mean readiness score in the Social Impact dimension (M=3.85, SD=0.72), particularly in setting clear goals to solve social problems, suggesting a strong commitment to the social innovation mission. Conversely, they reported the lowest readiness in Sustainability and Scalability (M=3.12, SD=0.94), specifically citing significant challenges in ensuring project continuity after staff changes and securing consistent resource allocation, as detailed in Table 2.

**Table 2.** Social Innovation Readiness in Schools

| Dimension                             | Description                                                                                                                                                                                                                                                                                                                       | M    | S.D. | Rating   |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|----------|
| <b>Social Impact</b>                  | <b>Value Measurement:</b> Innovation must yield beneficial results and generate positive value for society. The successful outcomes must be aligned with and contribute to the achievement of the global Sustainable Development Goals (SDGs).                                                                                    | 3.85 | 0.72 | High     |
| <b>Community Participation</b>        | <b>Relevance Measurement:</b> The development process must provide opportunities for the genuine involvement of the community—from identifying problems and brainstorming to designing and piloting solutions—to ensure that the approach and outcomes address authentic local needs and gain acceptance from local stakeholders. | 3.51 | 0.85 | High     |
| <b>Sustainability and Scalability</b> | <b>Potential Measurement:</b> Innovation must demonstrate the potential for continuous operation and be feasible for further development, adaptation, or expansion (replication) into other communities or societal contexts to achieve broader impact.                                                                           | 3.12 | 0.94 | Moderate |
| <b>Systemic Change</b>                | <b>Efficiency Measurement:</b> Innovation must generate clear outcomes that can be systematically measured and evaluated. It requires empirical evidence that proves the effectiveness and efficiency of the developed innovation in leading to concrete Systemic Change.                                                         | 3.25 | 0.88 | Moderate |

\* M=Mean, SD=Standard Deviation

#### 4.2.2. Ability to Create Social Innovation

Students (n=1,680) reported their highest mean readiness score in Communication and Collaboration (M=3.95, SD=0.59), indicating a solid foundation for effective teamwork. This strength is evidenced by particularly high self-rated abilities in articulating complex ideas (M=4.10) and accepting feedback (M=4.00). In sharp contrast, the dimension of "Systemic Problem-Solving" was identified as the weakest area (M=3.45). The data reveal that students struggled most with fundamental analytical skills, specifically identifying the underlying root causes of problems (M=3.35) and understanding how minor interventions can create large systemic impacts (M=3.45). This disparity highlights a critical gap between collaborative capacity and the complex, structured analysis required for successful social innovation (as detailed in Table 3).

**Table 3.** Ability to Create Social Innovation of Students

| Dimension                                | Description                                                                                                                                                                                                                                     | M    | S.D. | Rating   |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|----------|
| <b>Observation and Critical Thinking</b> | The ability to observe the environment to identify gaps, problems, or opportunities, and to systematically analyze the root causes of an issue, hypothesize solutions for testing, and evaluate the credibility of information sources.         | 3.62 | 0.75 | High     |
| <b>Creativity</b>                        | The ability to initiate, imagine, design, experiment, and improve new ideas and methodologies. This involves using processes that lead to the creation of valuable and distinct innovations.                                                    | 3.78 | 0.68 | High     |
| <b>Systemic Problem-Solving</b>          | A deep understanding of the components and dynamics of a problem. The ability to design solutions that are principled, systematic, comprehensive, and efficient, ensuring that interventions address the root structure, not just the symptoms. | 3.45 | 0.81 | Moderate |
| <b>Communication and Collaboration</b>   | The ability to effectively and clearly convey information, opinions, feelings, and ideas to others. This includes engaging in synergistic teamwork to achieve shared goals and outcomes.                                                        | 3.95 | 0.59 | High     |

\* M=Mean, SD=Standard Deviation

#### 4.3. The Development of a Model for Driving Social Innovation for Sustainability in Schools

The model for driving social innovation in schools is designed to create positive and sustainable change by integrating new ideas with existing problem-solving approaches. Its goal is to holistically develop four key dimensions: Quality Education that promotes lifelong learning; Quality Society that fosters equality and peaceful coexistence; Quality Economy that supports fair growth; and a Quality Environment that preserves natural resources. Schools must integrate these goals into their curriculum, activities, and management to cultivate a new generation of citizens with a global and social consciousness, as shown in Figure 1.

## The Five-Step Development Process

The development of social innovation for sustainability in schools follows a continuous and interconnected five-step process:

1. **Define Vision and Social Innovation Goals:** This step involves setting a clear direction for the desired social change. The vision must align with sustainability principles, and the goals should be measurable, providing a shared direction for all stakeholders in developing social innovation projects.
2. **Cultivate an Innovation Mindset:** This involves fostering an open attitude, a willingness to be creative, and a readiness to learn from failure. This mindset encourages students, teachers, and staff to continuously look for opportunities to solve social problems and develop new innovations.

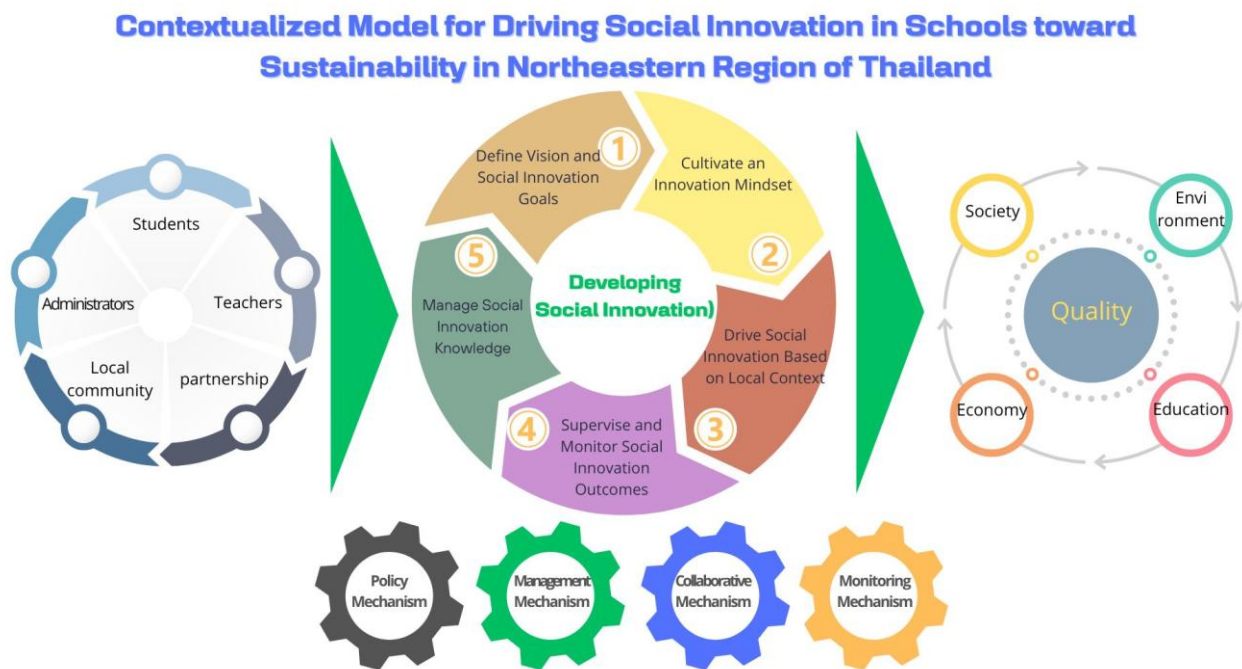


**Figure 1.** Contextualized Model for Driving Social Innovation in Schools Toward Sustainability in the Northeastern Region of Thailand

3. **Drive Social Innovation Based on Local Context (Geo-Social):** Innovations are designed and implemented to be relevant to the local context, including culture, lifestyle, natural resources, or specific local problems. This approach ensures community participation and genuine sustainability.

4. **Supervise and Monitor Social Innovation Outcomes:** A continuous evaluation system is put in place to assess whether the innovations are meeting their goals. This includes identifying strengths and weaknesses and providing constructive feedback for future development.

5. **Manage Social Innovation Knowledge:** This final step involves documenting the lessons learned, processes, and outcomes of the innovations. This knowledge is then disseminated to serve as a model for other schools or communities, creating a platform for ongoing knowledge sharing and further innovation.

## Four Driving Mechanisms

The model is supported by four key mechanisms:

1. **Policy Mechanism:** This sets the direction and creates an enabling environment for social innovation through clear policies, such as including innovation goals in the school development plan, providing special budgets, or offering incentives for teachers and students to innovate.

2. **Management Mechanism:** This involves systematic planning and execution to drive innovation effectively. It includes establishing a school innovation committee, clearly defining roles, managing resources efficiently, and continuously monitoring progress with a focus on adaptability.

3. **Collaborative Network Mechanism:** This builds partnerships with various stakeholders both inside and outside the school, such as the local community, universities, businesses, and non-profit organizations. The goal is to share knowledge and resources to strengthen innovation efforts.

4. **Monitoring and Evaluation Mechanism:** This involves a continuous process of tracking and evaluating the progress, outcomes, and impact of innovation projects. It uses evidence-based data and participatory processes to gather feedback for ongoing improvement.

The ultimate condition for success is the collaborative synergy between students, teachers, administrators, and the local community, all sharing a common goal to create positive change.

Summary of expert feedback (Connoisseurship Workshop), the nine experts provided key feedback that refined the model by emphasizing 1) The need for the 'Local Context' (Geo-Social) principle to be culturally explicit, integrating Isan's community networks and Buddhist ethics into the innovation process; 2) Clarifying the Monitoring and Evaluation Mechanism to focus on impact metrics (e.g., community satisfaction, project longevity) rather than just output metrics (e.g., number of projects); and 3) Strengthening the 'Management Mechanism' to include specific roles for external stakeholders (Local Administration Organizations) to ensure long-term resource support for scalability.

## 5. Discussion

The research findings present a nuanced picture of social innovation readiness in Northeastern Thai schools, revealing both foundational strengths and significant implementation gaps. This discussion contextualizes these results by drawing on a wide range of academic literature, offering a comprehensive interpretation of the challenges and opportunities.

### Foundational Strengths and Conceptual Alignment

The study's finding that teachers and administrators possess a strong conceptual understanding of social impact aligns with the core principles of social innovation and is a crucial starting point for change (Howaldt & Schwarz, 2016; Phills, Deiglmeier, & Miller, 2008). This shared vision is the first prerequisite for any meaningful social transformation (Mulgan, 2019). Furthermore, students' high proficiency in communication and collaboration (OECD, 2019) is a vital asset, providing a strong basis for the community participation seen in exemplary schools (Moulaert et al., 2013). These findings suggest that the existing educational system in the region, while facing broader reform challenges (Fry & Bi, 2021), has successfully cultivated a foundational mindset for social engagement and teamwork.

### Critical Gaps: The Challenge of Sustainability and Systemic Change

Despite these strengths, the research highlights a critical disconnect between intent and execution. The low capacity for sustainability and scalability among staff is a significant impediment to long-term impact. This finding resonates with global research on social enterprise and innovation, which points to a lack of robust administrative and resource-management frameworks as a common barrier to scaling viable solutions (Nicholls & Murdock, 2012; Westley & Antadze, 2010). This issue is particularly relevant to the Thai context, where educational management often faces its own unique challenges (Office of the Education Council, 2018).

Furthermore, the students' deficit in systemic problem-solving is a major concern. Without the ability to identify and address the root causes of complex issues, innovative projects risk becoming temporary fixes rather than sources of structural change (Mulgan, 2019; Westley et al., 2017). This

gap suggests a need for a pedagogical shift away from rote learning towards more transformative and experiential learning models (Kolb, 1984; Mezirow, 2000; Rieckmann, 2018), akin to approaches seen in successful educational systems like Finland (Lonka, 2018; Sahlberg, 2011).

### **The Proposed Model as a Strategic Solution**

The proposed Contextualized Model for Driving Social Innovation directly addresses these identified gaps. By leveraging the existing strengths in social intent and collaborative skills, the model offers a strategic framework to overcome the weaknesses in sustainability and systemic thinking. This approach aligns with calls for educational reform that focus on developing sustainability mindsets (Kassel et al., 2018; Rimanoczy, 2021) and fostering a new generation capable of contributing to the United Nations' Sustainable Development Goals (UNESCO, 2015; 2017; United Nations, 2015). The model's pragmatic focus is to transform foundational readiness into tangible and lasting change, thereby bridging the divide between aspiration and implementation and positioning the region as a hub for authentic, context-driven social innovation.

However, the Contextualized Model is primarily designed for the Isan region, but its foundational principles—leveraging local context (Geo-Social Focus) and addressing sustainability gaps—make it highly adaptable to other marginalized regions in Thailand or Southeast Asia facing similar resource constraints and structural inequalities. The model's mechanisms (Policy, Management, Collaborative Network, M&E) provide a generic but structured framework that can be populated with different local contents (e.g., coastal resource management in the South, ethnic minority issues in the North).

## **6. Conclusion**

The study concludes that while schools in Northeastern Thailand possess foundational strengths for social innovation, critical gaps in sustainability and systemic problem-solving must be addressed. The primary strengths identified are a strong conceptual understanding of social impact among teachers and administrators and a high level of communication and collaboration skills among students.

However, the research highlights a significant challenge in translating these foundational strengths into a sustainable and scalable reality. The findings suggest that the lack of robust administrative and resource-management frameworks impedes the long-term viability of social innovation projects. Concurrently, a deficit in students' ability to identify root causes prevents the development of solutions that can create tangible, structural change.

Therefore, the proposed Contextualized Model for Driving Social Innovation is not merely a theoretical framework but a pragmatic, strategic solution. By leveraging existing proficiencies and systematically addressing these identified weaknesses, the model provides a clear pathway for fostering authentic, long-term social and economic development within the region's educational landscape. This framework's core purpose is to transform the foundational readiness into tangible and lasting change.

## **7. Suggestion**

### **7.1. Suggestions for Practice**

To address the identified gaps, schools should focus on the following:

- **Establish a Formal Management Mechanism:** Create a dedicated social innovation committee or assign a project coordinator to oversee the continuity of projects. This ensures that innovations don't collapse with staff turnover, providing a stable structure for long-term viability and sustainability.

- **Integrate Systemic Thinking into the Curriculum:** Develop and implement educational activities that train students to analyze the root causes of problems. Move beyond surface-level solutions by teaching them to map out interconnected issues and design holistic interventions. This could involve case studies or collaborative problem-solving workshops.

- **Build Strategic Partnerships:** Actively seek collaboration with local businesses, universities, and community organizations. These partnerships can provide crucial resources, expert mentorship, and opportunities to scale student projects beyond the classroom, strengthening both sustainability and community participation.

- **Implement a Robust Monitoring and Evaluation System:** Use data-driven feedback loops to continuously assess project outcomes. This will help students and teachers understand the real-world impact of their innovations, allowing for ongoing adjustments and ensuring that efforts lead to genuine, systemic change.

## 7.2. Suggestions for Further Research

To build on this study's findings, future research could explore:

- **The Impact of the Proposed Model:** A longitudinal study could be conducted to evaluate the effectiveness of the "Contextualized Model for Driving Social Innovation" in schools that adopt it. This would provide empirical evidence of its impact on project sustainability and student skills.
- **Barriers to Sustainability:** Further qualitative research could delve deeper into the specific organizational and cultural barriers that hinder project sustainability in Northeastern Thai schools, offering more nuanced insights for targeted interventions.

## Declarations

**Author Contributions.** Literature review, conceptualization. C.D.: methodology, data analysis. E.F.: review-editing and writing, original manuscript preparation. All authors have read and approved the published version of the article.

**Conflicts of Interest.** The authors declare no conflict of interest.

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**Ethical Approval.** This study adheres to ethical standards by maintaining the confidentiality of the Center for Ethics in Human Research, Khon Kaen University. Participation was voluntary, with identities anonymized and the right to withdraw from the research at any time. These measures ensured research integrity and respected participant rights.

**Data Availability Statement.** The data that supports the findings of this study are available on request from the corresponding author. The data, which contains information that could compromise the privacy of research participants, is not publicly available due to certain restrictions.

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