Development of a Regional STEM Education Ecosystem in the Lower Mekong Basin:

A Case Study of the Faculty of Science, Nakhon Phanom University, Thailand

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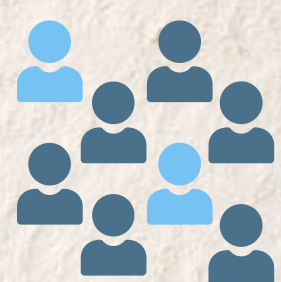
The project addresses the need for 21st-century skills through context-based STEM education in Thailand's SANUK provinces (Sakon Nakhon, Nakhon Phanom, Mukdahan) aligned with Thailand 4.0 and the 20-Year National Strategy.
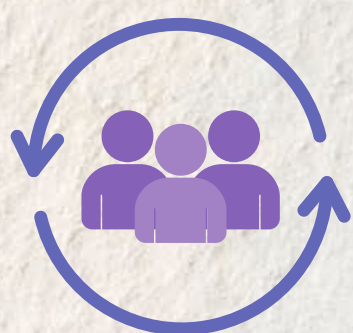
Phase 1 (2019) → **Phase 2 (2020)**

15 STEM modules created (e.g., water testing, herbal soap, robotics, solar energy).

Teacher training via 10 modules and guidebooks.

Participants: 1,939 students and teachers from 26 schools.

Mentors: 19 university faculty trained as STEM mentors.

OBJECTIVES

To cultivate creative problem-solvers among students by engaging them in real-world STEM-based learning

To develop an integrated STEM learning model applicable from elementary to tertiary education.

To provide youth with STEM-related career readiness through hands-on activities

To establish a collaborative network of schools and academic institutions centered around sustainable STEM practices

Evaluation and Impact

- O-NET score increase: average +11.76%
- Satisfaction rate: 4.32 of 5.00
- Improved teaching capacity and student interest in science.

Key Achievements

01 A regional STEM Learning Centre was established at Nakhon Phanom University, equipped to serve students, teachers, and surrounding schools.

02 500 copies of a STEM activity handbook were distributed to 158 educational institutions, supporting schools in conducting their own STEM sessions.

03 A local flora guidebook documenting 70 plant species with medicinal uses was published and disseminated.

04 A nature study trail was developed as part of the university's learning landscape, integrating environmental education into STEM practice.

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