

Fostering Place-Based Astronomy Education in a Ubon Ratchathani Geopark: A Case Study of Lao-Ngam Pittayakom School

Thursday, 4 September 2025 11:00 (15 minutes)

Lao-Ngam Pittayakom School, located within the Ubon Ratchathani Geopark in northeastern Thailand, lies amidst distinctive geological landmarks such as Sam Phan Bok, Pha Chan, and the Giant Rock Pillars. This region's exceptional dark sky conditions (Bortle scale Class 1 at Pha Chan) and rich cultural-geological context make it an ideal setting for place-based astronomy education.

In December 2021, the school founded an Astronomy Club with three main objectives: (1) to inspire student interest in astronomy through voluntary, inquiry-based learning; (2) to integrate local natural and cultural resources into science education; and (3) to promote science citizenship and public communication through outreach activities.

The club has grown from 30 to 95 secondary-level members since its founding in 2021. It organizes regular stargazing sessions, observational field trips, astronomy outreach programs for elementary school and project-based learning activities at local dark-sky sites. The Pha Chan area has served as the venue for annual astronomy camps for three consecutive years since the club's establishment. Collaborative partnerships with the Ubon Ratchathani Geopark Office, the Provincial Administrative Organization and local Administrative Organization have significantly enriched these efforts.

Student-led projects have explored topics such as dark sky conservation and archaeoastronomy, drawing direct connections between local heritage and modern scientific inquiry. Notably, many alumni continue their astronomical pursuits at university level and return to mentor current members, creating a sustainable knowledge transfer cycle. To overcome budget constraints, the club fundraises through souvenir sales during outreach events.

Through participation in regional events—including meteor shower observations, astronomy camps, mobile planetarium programs, and astronomy-themed activities at festivals—students not only gain scientific knowledge but also develop skills in teamwork, communication, and civic engagement.

Looking ahead, the school plans to establish a permanent Astronomy Learning Center and build a local school network to coordinate annual astronomy outreach programs for surrounding communities.

This case study demonstrates how rural schools can empower students and bridge science with culture by leveraging place-based resources and community collaboration—fostering meaningful astronomy education under pristine dark skies.

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Session Classification: Oral Presentation

Track Classification: Extracurricular Astronomy Activities