



From field to classroom: Developing inquiry and integrative thinking skills among pre-service social studies teachers through place-based education

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ABSTRACT

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This study examines how a four-year scaffolded Place-Based Education (PBE) program supports the development of inquiry skills, integrative thinking, and pedagogical reasoning among pre-service Social Studies teachers. A qualitative case study with a cross-sectional, multi-cohort design was conducted during the 2025 academic year with 200 students across four-year levels: Year 1 (n = 59), Year 2 (n = 55), Year 3 (n = 54), and Year 4 (n = 32). Data were drawn from pre-trip research outputs, preparatory inquiry notes, field journals, post-trip knowledge maps, academic presentations, focus group discussions, and semi-structured interviews with 32 purposively selected students. Thematic analysis identified three interrelated mechanisms. First, epistemic responsibility emerged when students understood that the accuracy and depth of their preparation directly affected their peers' learning. Second, multi-strand cognitive integration developed as students connected geographical, historical, economic, cultural, and civic perspectives to interpret places as interconnected social systems rather than as separate bodies of content. Third, experiential-pedagogical translation occurred when students transformed field experiences into curriculum ideas, learning activities, and teaching resources. Knowledge maps played an important mediating role by helping students organize field evidence and connect emerging interpretations with pedagogical intentions. The findings suggest that field-based learning is most effective when it is deliberately sequenced across a teacher education curriculum rather than offered as an isolated activity. The study provides a four-year curriculum framework that may inform the design of Place-Based Education in other Social Studies teacher education contexts.

Contribution/Originality: This study identifies three mechanisms through which a four-year scaffolded PBE program supports preservice teachers' learning: Epistemic responsibility, multistrand cognitive integration, and experiential-pedagogical translation. It also highlights knowledge maps as human-AI co-constructed artifacts that help transform field experiences into pedagogically usable knowledge. The findings offer a curriculum framework for designing sustained field-based learning in social studies teacher education.

1. INTRODUCTION

Social Studies teacher education is expected to prepare future teachers to help learners make sense of social life through historical, geographical, economic, cultural, and civic perspectives. Yet teacher preparation in many contexts continues to rely heavily on classroom instruction and the transmission of disciplinary content. Although such

instruction provides an important knowledge base, it may offer limited opportunities for pre-service teachers to investigate real communities, examine evidence in context, and consider how disciplinary knowledge can be used in teaching practice (Darling-Hammond, 2017; Symaco, 2023; Zeichner, 2010).

Place-Based Education (PBE) offers one way of addressing this limitation by using local environments, communities, and lived experiences as resources for learning (Gruenewald & Smith, 2008; Sobel, 2004). Rather than treating place simply as the location of an activity, PBE encourages learners to investigate the relationships among people, environments, histories, and local practices. Previous research has associated this approach with greater student engagement, inquiry, and contextual understanding (Smith, 2002). Field-based and outdoor learning have also been used in teacher education to help pre-service teachers connect academic ideas with direct experience and professional practice (Akarsu, 2025; Beames, Higgins, & Nicol, 2012).

Research on PBE, however, has generally focused on short-term projects, individual courses, or single field experiences. A systematic review by Yemini, Engel, and Ben Simon (2025) found growing interest in PBE across educational settings but also pointed to the limited evidence concerning sustained and scaffolded implementation. This gap is particularly relevant to teacher education, where inquiry, interdisciplinary understanding, and pedagogical reasoning are expected to develop gradually rather than through a single activity.

It remains unclear how field-based learning can be structured across different stages of teacher preparation and how its components work together. In particular, more attention is needed to the relationship among pre-trip inquiry, direct experience in the field, and post-trip reflection. Understanding this relationship may help explain how pre-service teachers move from gathering information about a place to interpreting it across Social Studies disciplines and, eventually, using that understanding for curriculum and instructional design.

This study examines a four-year scaffolded PBE program in a Social Studies teacher education curriculum at a Thai university. The program involved 200 pre-service teachers across four year-level cohorts. The study addresses two questions: (1) How does scaffolded PBE support the development of inquiry and integrative thinking among pre-service Social Studies teachers? (2) How do pre-service teachers translate place-based experiences into pedagogical knowledge and curriculum design?

2. THEORETICAL FRAMEWORK

This study draws on Place-Based Education, experiential learning, and inquiry-based learning. Each perspective addresses a different aspect of the field-based learning process. Place-Based Education explains why local settings and communities can become sources of curriculum. Experiential learning helps account for how direct encounters are reconsidered and transformed into knowledge. Inquiry-based learning focuses on the questions, evidence, discussion, and judgment through which that knowledge is constructed. Taken together, the three perspectives provide a basis for examining how pre-service teachers move from studying a place to interpreting it and, eventually, using it for teaching.

2.1. Place-Based Education and Teacher Education

Place-Based Education treats the local environment, including its geography, history, culture, economy, and social relations, as a resource for learning rather than simply as the location of an activity (Sobel, 2004). Place-conscious scholarship has broadened this view by drawing attention to the social, political, historical, and ecological relationships through which places are formed. Learning about a place therefore involves more than observing visible features. It also requires learners to consider whose histories are represented, how communities have changed, and how local conditions are connected with wider social processes (Gruenewald, 2003; McInerney, Smyth, & Down, 2011).

Research in teacher education has shown several ways in which place can contribute to professional learning. Chinn (2007) used local culture, place, and personal experience to help teachers reconsider the relationship between

formal academic knowledge and community knowledge. In social studies teacher education, Akarsu (2025) found that outdoor learning enabled teacher candidates to connect course content with direct observation and lived experience. These studies suggest that local communities can become sources of evidence and curriculum knowledge rather than merely settings for activities.

Studies conducted in other educational contexts provide further support for this approach. Powers (2004), in an evaluation of four PBE programs, found that the educational value of place-based work depended on sustained links among curriculum, community participation, and local concerns. Smith (2007) similarly argued that place-based learning can challenge established school routines by bringing local issues and experiences into formal curriculum. In teacher preparation, White and Reid (2008) demonstrated how place-conscious approaches could help prospective teachers understand the communities where they would work, particularly in rural settings. Their study is relevant to the present program because it places knowledge of context within professional teacher preparation rather than treating it as incidental background.

Much of the available research, however, concerns individual courses, short-term projects, or single field experiences. Yemini et al. (2025) identified growing interest in PBE across educational settings but noted limited evidence of sustained implementation across successive stages of teacher preparation. The present study examines a four-year program in which different regions of Thailand serve as living curricula. Each field site allows students to investigate how geography, history, economics, culture, and civic life interact within an actual community.

2.2. Experiential Learning in Field-Based Teacher Education

Kolb (1984) experiential learning theory explains learning as a process through which experience is observed, reconsidered, conceptualized, and applied. Kolb and Kolb (2005) later emphasized the importance of the learning environment and the opportunities it provides for experience, reflection, thought, and action.

The model is useful for interpreting field-based learning, although it should not be treated as a fixed sequence in which each activity corresponds neatly to one stage. Fenwick (2001) questioned the individualistic and linear assumptions often associated with experiential learning, while Morris (2020) described the process as iterative and dependent on context. These concerns are particularly relevant to teacher education because students make sense of experience through conversations with peers, guidance from faculty members, curricular expectations, and their developing views of teaching.

Experience by itself does not necessarily lead to professional learning. Hatton and Smith (1995) found that reflection among student teachers ranged from simple description to more analytical and dialogic forms. They also noted that deeper reflection was more likely when teacher education programs provided suitable tasks and structured support. Gelfuso and Dennis (2014) reached a similar conclusion in their work with pre-service teachers. Their study showed that students often needed guided discussion and feedback to move beyond recounting an event and begin examining the assumptions and decisions behind it. These findings suggest that reflection must be deliberately supported rather than expected to occur automatically after an experience.

Loughran (2002) further noted that reflection becomes useful when it is connected with the particular problems of teaching and the development of professional knowledge. This supports the use of guided discussion and post-field knowledge mapping in the present program, rather than treating reflection as a routine written exercise.

In this program, the experiential process begins before students enter the field. Pre-trip research activates prior knowledge, introduces relevant concepts, and raises questions that students carry with them to the field site. Direct observation may then confirm, complicate, or contradict what they previously understood. Daily group reflection allows students to discuss these encounters while they are still in the field. After the trip, knowledge maps and academic presentations require them to select significant evidence, reorganize their observations, and consider how the resulting knowledge might be used in teaching. The experiential cycle, therefore, operates across and within the three phases rather than as a single linear progression.

2.3. Inquiry-Based Learning and Epistemic Responsibility

Dewey (1938) viewed inquiry as a response to situations in which existing knowledge is uncertain or inadequate. Learners encounter a problem, examine available evidence, consider possible explanations, and revise their understanding through reflection and communication. Inquiry is therefore both cognitive and social because ideas are developed and tested through interaction with other people and with the conditions being investigated.

Later research has described inquiry as a process involving orientation, question development, investigation, interpretation, conclusion, reflection, and communication (Pedaste et al., 2015). Research syntheses suggest that inquiry is most useful when learners do more than follow prescribed procedures and instead take part in examining evidence, developing explanations, and justifying their conclusions (Minner, Levy, & Century, 2010). In teacher education, inquiry projects can also reveal how pre-service teachers understand knowledge, evidence, and classroom learning (Windschitl, 2003).

Learning to conduct inquiry and learning to teach through inquiry are nevertheless different challenges. Crawford (2007) found that pre-service teachers' attempts to teach inquiry were shaped by classroom realities, their understanding of subject matter, and the forms of support available during practice. Exposure to inquiry as a learner did not, by itself, ensure that a beginning teacher could design and facilitate inquiry-oriented instruction. Schwarz and Gwekwerere (2007) reported that a guided inquiry and modeling framework helped pre-service teachers connect investigation, explanation, and instructional planning. Their findings point to the value of scaffolding inquiry while gradually increasing students' responsibility for the questions, evidence, and interpretations involved.

These processes are reflected in the present program. Students formulate questions before a field visit, locate and evaluate sources, compare published accounts with field observations, consider alternative explanations, and present their conclusions to others. The design also introduces a form of interdependence. Each student is responsible for one part of the pre-trip investigation, but the group depends on the quality of every contribution. Students must therefore consider not only whether they have completed the task but also whether their information is accurate, sufficiently developed, and useful to their peers. The term epistemic responsibility is used here to describe this relationship between individual inquiry and responsibility for the knowledge available to the group.

2.4. Integration of the Three Theoretical Perspectives

The three perspectives are related but do not serve the same purpose. Place-Based Education identifies the context and subject of learning: the geographical, historical, cultural, economic, and civic dimensions of an actual place. Experiential learning explains how students move between preparation, direct experience, reflection, conceptualization, and possible application. Inquiry-based learning explains the practices through which students ask questions, assess evidence, revise interpretations, and communicate what they have learned.

Their combination also addresses limitations that would remain if any one framework were used alone. PBE provides a meaningful context but does not fully explain how experience becomes knowledge. Kolb's model explains the transformation of experience but may understate the social and collaborative character of field learning. Dewey's inquiry perspective brings attention to problem-posing, evidence, communication, and collective meaning-making, although inquiry can become detached from lived contexts when place is not taken seriously.

The program brings these perspectives together through its three-phase structure. Pre-trip preparation combines place-based content with inquiry and shared responsibility. In-field learning provides direct experience while requiring students to compare prior knowledge with observed conditions and interpret connections across social studies strands. Post-trip reflection and knowledge mapping allow students to reorganize their experience and relate it to curriculum, instructional activities, and learning resources. The three theories thus inform the interpretation of the program as a whole, while the themes presented in the Findings were developed through thematic analysis rather than assigned in advance from the theoretical framework.

Table 1 summarizes the three theoretical frameworks, their respective roles in this study, and the limitations each addresses.

Table 1. Theoretical framework and contributions to this study.

Theory	Key Scholar(s)	Role in This Study	Limitation Addressed
Place-Based Education	Sobel (2004)	Overarching framework — place as primary curriculum	Lacks process model for cognitive development
Experiential Learning Cycle	Kolb (1984)	Process model — maps Pre/In/Post-trip phases	Individualistic; extended here by social accountability structure
Inquiry-Based Learning	Dewey (1938)	Skills framework — inquiry dispositions & knowledge construction	Extended via concept of epistemic responsibility

3. METHODOLOGY

3.1. Research Design

This study employs a qualitative case study of a four-year PBE teacher education program implemented within a Social Studies Education department at a Thai university. A cross-sectional, multi-cohort design was used: data were collected from all four year-level cohorts during a single academic year (2025), enabling comparison of learning artifacts across four programmatically distinct stages.

3.2. Researcher Positionality

The research team consisted of faculty members in the department who designed and facilitated the PBE program. Two members of the team independently conducted the initial coding. Reflexive strategies included peer debriefing with faculty colleagues who were not involved in the study, active documentation of disconfirming cases, and maintenance of an audit trail throughout the analytical process.

3.3. Participants and Context

The participants were 200 pre-service teachers enrolled in the four-year Bachelor of Education program in Social Studies Education at the Department of Social Studies Education, Faculty of Social Sciences, Srinakharinwirot University, Bangkok, Thailand. All participants were drawn from this program; no students from other schools, colleges, or universities were included.

During the 2025 academic year, participants were enrolled across four year levels: Year 1 ($n = 59$), Year 2 ($n = 55$), Year 3 ($n = 54$), and Year 4 ($n = 32$). The PBE activities were compulsory components of the curriculum, with each cohort undertaking a field experience suited to its stage of professional preparation. Year 1 students studied the Talat Phlu community in Bangkok, Year 2 students traveled to Nakhon Ratchasima, Year 3 students conducted fieldwork in Chiang Mai, and Year 4 students participated in field-based learning in Phuket.

Although participation in the field activities was required as part of the curriculum, the use of students' data for research was voluntary and subject to separate written informed consent. All participants whose data were included in the study consented to the use of their learning artifacts, field journals, knowledge maps, reflections, interviews, and presentations for research purposes. Consent also covered the publication of anonymized quotations and examples of student work. Participation or non-participation in the research did not affect students' grades, academic standing, or involvement in the curricular activities.

The analysis focused on differences associated with year level and the progressive structure of the curriculum. Gender, age, and socioeconomic background were not used as analytic categories because they were not directly related to the research questions. Eight students from each year level were purposively selected for individual semi-

structured interviews, resulting in 32 interview participants. Selection took into account variation in academic performance, participation, leadership roles, and engagement in reflective activities.

This allowed the study to include a range of perspectives from each stage of the program while retaining sufficient depth for qualitative analysis. Table 2 presents the field sites and cohort sizes for each year level in the four-year PBE program.

Table 2. Field Sites and Cohort Sizes.

Year	Location	Students
Year 1	Talat Phlu Community, Bangkok (Bangkok Metropolitan Fringe)	59
Year 2	Nakhon Ratchasima	55
Year 3	Chiang Mai	54
Year 4	Phuket	32

Learning objectives were scaffolded progressively across year levels.

- Year 1 (Talat Phlu Community, Bangkok): Source evaluation and experiential verification, comparing field observations against pre-trip research, evaluating source credibility, and identifying gaps between prior knowledge and observed reality.
- Year 2 (Nakhon Ratchasima): Cross-strand identification and integration, analyzing how Social Studies strands interconnect and identifying potential anchor points for integrated classroom instruction.
- Year 3 (Chiang Mai): Learner-centered instructional design, analyzing target learner characteristics, selecting relevant field knowledge, and designing complete instructional sequences using a backward-design approach.
- Year 4 (Phuket): Place-based learning media innovation, justifying media format selection and designing original place-based learning resources.

3.4. Data Sources and Data Collection

Multiple qualitative data sources were used across all four cohorts. Daily focus group reflections were conducted each evening during the field trip period (2–3 days per cohort). Students participated in small groups of 5–8 members, with approximately 6–10 groups per cohort per day. The total number of focus group sessions across all four cohorts was approximately 26–28 groups (Year 1: approximately 8 groups; Year 2: approximately 7 groups; Year 3: approximately 8 groups; Year 4: approximately 5 groups), reflecting variation in cohort size and trip duration. Discussion questions were differentiated by year level to align with the scaffolded learning objectives of each stage, while sharing two common anchoring prompts across all year levels to enable cross-cohort comparison. All sessions were audio-recorded and transcribed verbatim in Thai by the research team.

As part of the post-field reflection process, students were permitted to use generative AI tools to assist in organizing and visualizing their knowledge maps. AI use was bounded to structural organization and visual representation; students remained responsible for selecting field evidence, constructing conceptual relationships, identifying curriculum connections, and formulating pedagogical interpretations. Faculty facilitators reviewed all knowledge maps to verify that the conceptual content reflected students' own meaning-making. Consequently, the knowledge maps analyzed in this study are understood as human–AI co-constructed artifacts that reflect students' reasoning processes rather than AI-generated outputs. This transparency is consistent with the program's pedagogical stance that digital tools, including AI, should amplify rather than substitute student inquiry. Table 3 summarizes the qualitative data sources collected across the pre-trip, in-field, and post-trip phases, together with their quantities and cohort coverage.

Table 3. Data Sources by Phase and Quantity.

Phase	Data Source	No. of Items	Cohorts
Pre-trip	Student research outputs	200	All cohorts
Pre-trip	Preparatory inquiry notes	200	All cohorts
In-field	Field journals	200	All cohorts
Post-trip	Knowledge maps	200	All cohorts
Post-trip	Academic presentations	50 groups	All cohorts
Throughout	Focus group discussions	Approx. 26–28 groups across 4 cohorts (Y1: ~8, Y2: ~7, Y3: ~8, Y4: ~5)	All cohorts
Post-trip	Individual semi-structured interviews	32 students (8 per year level)	All cohorts

Table 4 presents the daily focus group reflection prompts used across the four year levels and shows how the questions were progressively differentiated according to the scaffolded learning objectives.

Table 4. Daily Focus Group Reflection Protocol by Year Level.

Reflection Prompt	Y1	Y2	Y3	Y4
Experiential learning: What did this place teach you today? What surprised or puzzled you most?	✓	✓	✓	✓
Epistemic comparison: How did what you observed confirm or contradict what you studied beforehand? What requires you to rethink your prior understanding?	✓	✓	✓	✓
Source evaluation: How did pre-trip sources and in-field sources differ in what they revealed? Which source was most credible and why?	✓	—	—	—
Strand identification: Which Social Studies strands are present in this place? Which are most visible, and which require deeper investigation?	—	✓	✓	✓
Strand integration: How do the knowledge strands connect? Which strand is essential for understanding the others? What anchor point would you choose for integrated classroom teaching?	—	✓	✓	✓
Learner analysis and instructional design: Which learners would benefit most from this place's content? How does learner context shape your instructional design?	—	—	✓	✓
Media development: Which media format would best convey this place's knowledge, and why? How would you design the development process for a place-based learning resource?	—	—	—	✓

Note: ✓ = Prompt included for this year level; — = Not included. The first two prompts function as anchoring questions common to all year levels, enabling cross-cohort comparison. All questions were originally administered in Thai.

3.5. Trustworthiness and Rigor

Trustworthiness was established through methodological triangulation across multiple data sources, peer debriefing with faculty colleagues outside the research team, an audit trail documenting coding decisions, and explicit management of researcher positionality through reflexive practices.

3.6. Data Analysis

All qualitative data were analyzed using thematic analysis (Braun & Clarke, 2006). Two researchers independently conducted initial coding; codes were compared, and consensus was reached. All student artifacts and focus group transcripts originally in Thai were translated into English with back-translation verification by a bilingual colleague. Particular attention was paid to disconfirming cases, instances where student artifacts or interview responses did not align with emerging themes. These cases were discussed between the two researchers and incorporated into the iterative refinement of thematic boundaries, ensuring that the final themes reflected the full range of observed patterns rather than only confirming evidence. Table 5 illustrates the coding process by showing how selected raw data extracts were developed from initial codes into categories and overarching themes.

Table 5. Example of Coding Development.

Participant	Raw Data Extract	Initial Code	Category	Theme
Y1-P03	"If I did not prepare, my group would miss important information."	Responsibility toward peers	Shared accountability	Epistemic Responsibility
Y1-P12	"I compared information from several sources before the trip."	Multi-source investigation	Inquiry expansion	Epistemic Responsibility
Y2-P18	"History, geography, and economics are connected."	Cross-disciplinary linkage	Systems interpretation	Multi-Strand Cognitive Integration
Y3-P08	"I began to see places as complete systems."	Holistic understanding	Systems thinking	Multi-Strand Cognitive Integration
Y3-P22	"I thought about how to teach this to future students."	Instructional application	Pedagogical reasoning	Experiential–Pedagogical Translation
Y4-P07	"The knowledge map became the basis for lesson planning."	Transformation of experience	Pedagogical design	Experiential–Pedagogical Translation

Note: Participant codes follow the format Year-Participant Number (e.g., Y1-P03 = Year 1, Participant 3). Codes are used consistently across all data sources to enable cross-reference while preserving anonymity.

3.6.1. Unit of Analysis

The primary unit of analysis in this study was not the individual participant but the recurring patterns evident across learning artifacts, focus group discussions, and interview data generated within the four-year PBE program. The purpose of the analysis was to identify shared developmental patterns associated with different stages of the scaffolded curriculum rather than to construct individual participant narratives. Accordingly, thematic analysis focused on recurring meaning patterns across data sources and cohorts. This clarification is important given the large number of participants ($N = 200$): while all students contributed learning artifacts that informed the analysis, the analytical focus throughout was on program-level patterns of epistemic and pedagogical development, not on individual trajectories. Individual interview data ($n = 32$) provided depth and nuance to the patterns identified, rather than serving as a representative sample of the full cohort.

3.7. Ethical Considerations

The field-based learning model examined in this article was originally developed through the research project entitled Learning Management Approaches for Strengthening the Implementation of AUN-QA Criteria in the Bachelor of Education Program in Social Studies. The project received ethical approval from the Human Research Ethics Committee of Srinakharinwirot University (Certificate No. SWUEC/E-048/2565; approved on July 20, 2022). Following completion of the project, the Social Studies teacher education program adopted the model as part of its curriculum and continued to use it with successive cohorts. This article reports on the implementation of the model during the 2025 academic year.

The field-based activities were compulsory for students enrolled in the program because they were designed to develop inquiry, integrative thinking, instructional design, and the ability to apply field-based knowledge to teaching. Participation in the research, however, was voluntary. Students were informed about the purpose of the study, the types of information collected, and the intended use of their data. Written consent was obtained before their learning artifacts, field journals, knowledge maps, group reflections, interviews, or presentations were used for research.

Students also consented to the use of anonymized excerpts and examples of their work in research reports and publications. They could decline the use of their data without any effect on their grades, academic standing, or participation in the curricular activities. Only data from students who provided consent were included in the analysis. All data were de-identified, and participant codes were used throughout the article. No names or other information that could identify individual students are reported.

4. FINDINGS

The findings are organized around three interrelated themes that emerged from thematic analysis across all data sources. Together, they illustrate a developmental trajectory from epistemic engagement to cognitive integration and finally to pedagogical translation. Table 6 summarizes the primary and supporting data sources associated with each of the three themes and indicates the cohorts in which the core evidence was concentrated.

Table 6. Data Source and Cohort Distribution Across Themes.

Theme	Primary Data Sources	Supporting Sources	Primary Cohorts
Theme 1: Epistemic Responsibility	Research outputs, preparatory inquiry notes, focus groups	Field journals	Year 1, Year 2
Theme 2: Multi-Strand Cognitive Integration	Field journals, focus groups	Presentations	Year 2, Year 3, Year 4
Theme 3: Experiential–Pedagogical Translation	Knowledge maps, focus groups	Presentations	Year 3, Year 4

Note: All cohorts contribute data to all three themes via the two anchoring focus group prompts common across year levels; the table reflects where each theme's core evidence is concentrated.

4.1. Theme 1: Epistemic Responsibility as a Driver of Pre-Field Inquiry Depth

The first theme reveals that the pre-trip phase functioned as a mechanism for generating epistemic responsibility among pre-service teachers. Rather than treating pre-field preparation as routine background research, students experienced it as a socially accountable knowledge-production process.

4.1.1. Socially Accountable Inquiry

Field preparation required each student to present their findings to peers who depended on their expertise during field visits. This structure shifted learning from individual completion to collective knowledge responsibility. Focus group data indicate that students perceived a heightened obligation to ensure accuracy, depth, and clarity in their research outputs.

"Before coming, I only knew this was an old community near Bangkok. I did not think it had religious diversity on this scale. I assumed it was just a typical neighborhood. But I found that it had cultural, religious, and historical diversity I had not expected."

(Y1-P01, Focus Group (Talat Phlu))

The awareness that peers would rely on each student's individual research drove students to consult multiple sources and revise their understanding iteratively before the field visit. Students explicitly connected the social structure of preparation to the depth of their inquiry effort.

"I used websites because they allowed me to find information from many sources and compare them, but I knew I also had to check every source carefully because my group would be relying on what I found."

(Y1-P03, Focus Group (Talat Phlu))

"Geography affects settlement patterns. Settlement patterns affect economic activity. Economic activity affects the culture of the community, and culture affects the beliefs of the community. I had to keep searching until I understood how all of it connected, not just for myself, but so I could explain it to the others."

(Y1-P03, Focus Group (Talat Phlu))

This pattern of accountability-driven preparation was not limited to Year 1. A Year 2 student, reflecting on the Nakhon Ratchasima field visit, described a similar shift in how they approached pre-trip research as the program progressed.

"I thought it would just be an activity outside the classroom. But after actually participating, I felt that I had learned to think more like a Social Studies teacher."

(Y2-P02, Focus Group (Nakhon Ratchasima))

4.1.2. *Expansion of Inquiry Scope*

Analysis of pre-trip presentations and preparatory inquiry notes shows that students consistently moved beyond single-source descriptions toward multi-source and multi-perspective inquiry. Preparatory notes were particularly revealing because they preserved the developmental trajectory of students' thinking across drafts, making visible the process by which initially thin descriptions were progressively expanded through additional source consultation.

A pattern evident across multiple Year 1 preparatory note sets was the progressive enrichment of initial drafts. An early response by Y1-P01 noted simply: 'I knew it was an old community, a beautiful place, and had historical traces.' By the time the same cohort had completed their preparation, student Y1-P07 had constructed a substantially more layered account: 'I now understand why there is such cultural diversity here, why Thai Buddhists, Thai Muslims, and Thai-Chinese Mahayana practitioners settled in the same area, how three different religious beliefs came to share this space, and how this explains the community's economic strength and its development as a heritage tourism site today.' This progression, from a single geographic observation to a historically grounded, multi-strand explanation, was consistently visible across Year 1 preparatory note sets, suggesting that the structural demand of peer-accountable presentation drove students to deepen their inquiry iteratively.

4.1.3. *Emergent Epistemic Awareness*

Students increasingly recognized gaps, contradictions, and uncertainties in their own knowledge. This awareness became a catalyst for deeper inquiry, suggesting that epistemic responsibility not only increases effort but also reshapes how knowledge is perceived, as provisional and constructed rather than fixed.

"I originally thought this community was Buddhist. But I found that there is religious diversity and multiple cultures here. The knowledge I had before was incomplete."

(Y1-P08, Focus Group (Talat Phlu))

"I did not know anything about this place at all. I had only seen it through online media. But after going there, I understood that we can integrate Social Studies knowledge in many ways, and we understand a community much more deeply through actually being there."

(Y1-P02, Focus Group (Talat Phlu))

This emergent epistemic awareness, the recognition that prior knowledge is partial and that reliable understanding requires multisource verification, was particularly visible among students who reported using community members and on-site sources to check information gathered online. Y1-P02 noted that the most credible source was a community survey conducted with residents, "because they have lived here for a long time and understand things here better than anyone else." This disposition toward source triangulation, generated through the accountability structure of the pre-trip phase, extended naturally into in-field inquiry.

4.2. *Theme 2: Multi-Strand Cognitive Integration Through In-Field Experience*

The second theme demonstrates that field experiences enabled students to integrate Social Studies knowledge strands in situ, transforming isolated disciplinary knowledge into interconnected systems of understanding. The depth of integration differed meaningfully across year levels: Year 1 students predominantly identified individual strands; Year 2 students began linking strands explicitly; Year 3 students interpreted systemic relationships in relation to instructional design; and Year 4 students integrated strand knowledge with media design rationale.

4.2.1. *Strand Convergence in Real-World Contexts*

Field journal analysis shows consistent patterns of students linking geography, history, economics, culture, and civics within single observational settings. Marketplaces, heritage sites, and community spaces were repeatedly interpreted as multidimensional learning environments rather than single-topic case examples.

"Geography affects settlement patterns. Settlement patterns affect economic activity. Economic activity affects the culture of the community, and culture affects the community's beliefs. All of this was visible in one place."

(Y1-P03, Focus Group (Talat Phlu))

By Year 2, students were not only identifying strands but also making explicit causal connections between them. Reflecting on the Nakhon Ratchasima field visit, one student described the process of strand-linking that emerged from observing the Ban Prasat community:

"I saw that we can integrate Social Studies knowledge in many ways. Geography affects how people make a living. Historical accounts come from people in each area. Seeing it in the real place makes you understand much more than reading about it."

(Y2-P01, Focus Group (Nakhon Ratchasima))

"I began to understand the true essence of knowledge from the actual place, what it means that humans use land in this way, what they choose to present, and what they choose to preserve."

(Y2-P01, Individual Interview (Nakhon Ratchasima))

4.2.2. From Descriptive Observation to Analytical Interpretation

Students progressed from simply describing what they observed to interpreting underlying relationships between social systems. This shift is evident in journal entries where initial descriptive notes were followed by analytical reflections identifying structural connections such as economic exchange systems, historical migration patterns, or governance structures.

This progression from description to analysis was particularly legible when comparing Year 1 initial responses with their post-field reflections. Before the field visit, Y1-P01 described the site in general terms: 'I knew it was an old community, a beautiful place used in films, with long historical traces.' After the field visit, the same student's language had shifted considerably toward analytical interpretation.

"I did not expect this community to have such a level of religious diversity. I assumed it was just a typical neighborhood, but I found that it had cultural, religious, and historical complexity. The community reflects an intersection of history, economy, and ways of life; it is not just a market."

(Y1-P01, Post-field Reflection (Talat Phlu))

A similarly clear shift was visible among Year 2 students. In the initial notes, students described Ban Prasat and Phimai as historical sites. In post-field reflections, they had begun to interpret these sites as systems: geography explains why the settlement formed, the settlement explains the economic patterns, and the economic patterns explain what has been preserved and why. This paired trajectory, thin initial description followed by causal systemic analysis, was consistent across approximately two-thirds of the student artifacts reviewed at both year levels.

4.2.3. Cognitive Shift Toward Systems Thinking

Across cohorts, students demonstrated a clear shift from silo-based disciplinary thinking to systems-oriented interpretation. Repeated exposure to place-based inquiry appears to support the development of integrative cognitive structures that transcend subject boundaries.

"Phuket does not have value only as a tourist destination. It also reflects the relationship between history, culture, economy, and environment. I had not understood that before."

(Y4-P03, Individual Interview (Phuket))

Year 4 students, drawing on three prior years of scaffolded field experience, articulated this cognitive shift with particular clarity and retrospective awareness. A student reflecting on the Phuket field visit made explicit the multistrand connections they had learned to see automatically:

"The Andaman coastline, its submerged geography, is why there are beautiful islands. That geography is why tourism developed. Tourism is why household economies exist in the form they do. And all of that connects back to

why the ancient port cities formed here, why there is such ethnic and religious diversity, and why the Vegetarian Festival exists in Phuket today. Social Studies is the foundation of how life works."

(Y4-P01, Focus Group (Phuket))

"I now see that physical geography affects people's way of life. I also see how people adapt to changes in their environment; that is something you cannot read in a textbook. You have to be there."

(Y4-P02, Focus Group (Phuket))

4.3. Theme 3: Experiential–Pedagogical Translation in Post-Field Reflection

The third theme captures how students transformed field experiences into pedagogical knowledge through structured reflection, knowledge mapping, and collaborative discussion. Year 2 students produced knowledge maps that organized strands conceptually without explicit instructional intent; Year 3 students produced maps incorporating curriculum standards, learning goals, and activity suggestions functioning as proto-lesson plans; Year 4 students extended their maps to include media format justifications and resource development rationale.

4.3.1. From Experience to Instructional Representation

Post-trip knowledge maps reveal that students translated observed phenomena into structured teaching representations. These maps frequently included explicit links between place-based observations and curriculum strands, indicating emerging pedagogical reasoning.

A representative example is the knowledge map submitted by Y3-P08 following the Chiang Mai field visit. The map uses Warorot Market as its central anchor and contains six nodes, each labeled with a Social Studies strand. What is distinctive about this map is that the student did not simply categorize observations by subject; each node also contains a note about how the strand could become the basis for a classroom activity. The geography node notes that vendors' produce changes by season and by where it comes from, and adds: 'Students could map this with a simple product-origin chart.' The Economics node connects the highland-lowland trade pattern to a curriculum standard and asks: 'Who benefits most from this market, and has that changed?' The History node references the market's age and links to an activity comparing old photographs with what students see today. The nodes are connected by arrows that the student labeled with phrases such as 'explains why' and 'leads to this problem,' suggesting that the student was already thinking about the map as a teaching sequence, not just a summary. While the map does not yet constitute a complete lesson plan, it functions as a proto-pedagogical design, a conceptual scaffold that holds both field knowledge and instructional intent at the same time.

Figure 1 illustrates the progressive development of knowledge maps across the four-year PBE program, from source evaluation and descriptive representation in Year 1 to cross-strand integration, instructional design, and place-based learning media innovation in subsequent years.

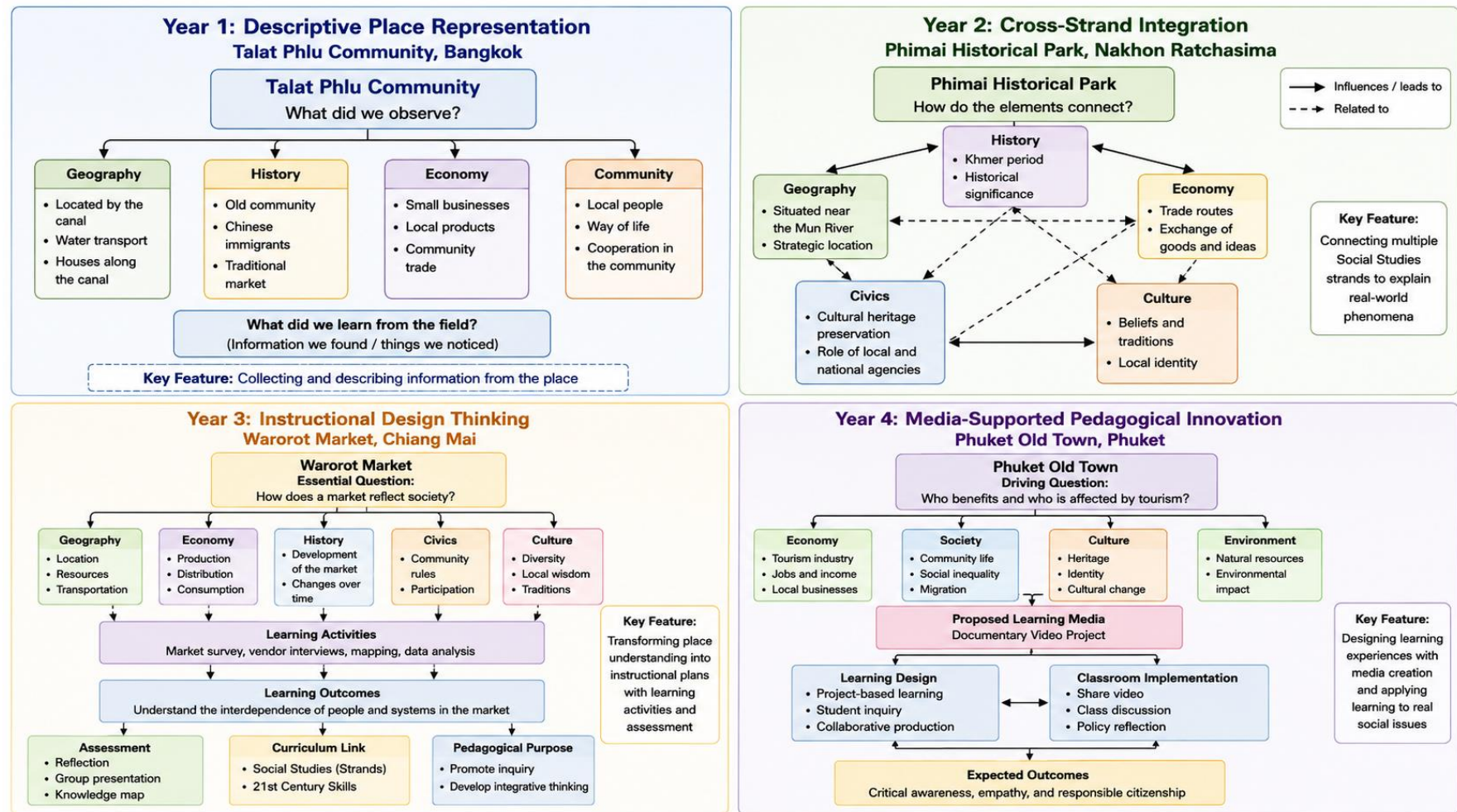


Figure 1. Development of Knowledge Maps Across the Four-Year PBE Program. Representative examples illustrating scaffolded progression: Year 1 (source evaluation, descriptive level), Year 2 (Cross-strand integration, causal connections), Year 3 (Instructional design, essential question and assessment), and Year 4 (Media innovation, driving question and learning product). Knowledge maps were developed as human–AI co-constructed artifacts; students directed conceptual content, field evidence, and pedagogical interpretation while AI tools assisted with structural organization and visual representation.

Note: Names and certain details are provided for illustrative purposes only. Knowledge maps were generated by the Year 1 (n=59), Year 2 (n=55), Year 3 (n=54), and Year 4 (n=32) cohorts during 2025.

4.3.2. Knowledge Maps as Proto-Pedagogical Design

Rather than serving as mere summaries of learning, knowledge maps functioned as proto-lesson designs. Students embedded instructional ideas, learning activities, and classroom applications within their conceptual representations of place. This was most clearly visible in Year 3 and Year 4 maps, where the architecture of the map itself followed the logic of instructional design rather than disciplinary categorization.

"This experience is more than learning outside the classroom. Social Studies is the foundation of how life works. I now see that every place contains Social Studies, and I want to bring that understanding into how I design lessons for my future students."

(Y4-P01, Focus Group (Phuket))

The functional continuity between the knowledge map and lesson plan was most explicit among Year 4 students, several of whom directly converted map nodes into instructional sequence components. Y4-P02's knowledge map for the Phuket coastal economy included a node on community displacement, linking it to a proposed documentary video that would capture both the physical geography of the coastline and interviews with residents. In the subsequent academic presentation, this node was expanded into a full lesson plan section, and the video concept developed into a production brief specifying interview questions, filming locations, and the curriculum standard it would address. The map node had functioned simultaneously as a conceptual record of field observation and a generative scaffold for pedagogical design.

4.3.3. Emergence of Pedagogical Reasoning

Focus group data show that students articulated specific strategies for using place-based learning in their future classrooms, including designing field-based activities, integrating community resources, and using place as an anchor for inquiry-based instruction.

"A documentary video is the media I would choose. It can convey the stories and way of life of people in the area most clearly. I would collect field data, photographs, and interviews from the real location to create this media."

(Y4-P02, Academic Presentation (Phuket))

"I would develop an AR program. It would let students see things in three dimensions, and it could reach every student, not just those who can travel to the site."

(Y4-P01, Academic Presentation (Phuket))

"QR Code Learning, I would attach QR codes to a workbook that link to photographs, video clips, and data collected from the real location. Students can scan and access information anywhere, any time. But I also want to make it more interactive, add games, quizzes, and virtual activities so that learning becomes participatory."

(Y4-P03, Academic Presentation (Phuket))

"This experience is more than learning outside the classroom. Social Studies is the foundation of how life works. I now see that every place contains Social Studies, and that is something I want to bring into my teaching."

(Y4-P01, Focus Group (Phuket))

5. DISCUSSION

This study adds to the literature on Place-Based Education and teacher education by identifying three related processes that emerged across the four stages of the program: epistemic responsibility, multi-strand cognitive integration, and experiential-pedagogical translation. Together, these processes help explain how sustained engagement with place may support the gradual development of inquiry, interdisciplinary understanding, and pedagogical reasoning among pre-service teachers. This finding responds to the need for closer attention to longer-term and scaffolded forms of PBE in teacher education, rather than isolated field trips or short-term projects (Sobel, 2004; Yemini et al., 2025).

The first process, epistemic responsibility, was most evident during the pre-trip phase. Students were not preparing information solely for individual completion; their peers depended on the quality and accuracy of what they brought to the group. This arrangement encouraged them to compare sources, question incomplete information, and refine their explanations before entering the field. The finding is consistent with Dewey (1938) view of inquiry as a social process in which knowledge develops through shared problems and communication. It also suggests that peer dependence may create a particular form of accountability that strengthens inquiry beyond ordinary group participation.

The second process, multi-strand cognitive integration, developed through direct engagement with places. Social Studies knowledge is often organized into separate disciplinary areas, but communities, markets, heritage sites, and landscapes are not experienced in this way. In the field, geographical conditions were connected with settlement, economic activity, cultural practices, historical change, and civic life. Such connections became more explicit among students in the later year levels. This supports the view that interdisciplinary understanding involves more than placing different subjects alongside one another; it requires learners to examine the relationships among them within a shared problem or context (Klein, 2006). Direct experience also provided opportunities to connect academic knowledge with complex social settings, a feature widely regarded as important in professional learning and teacher preparation (Darling-Hammond, Flook, Cook-Harvey, Barron, & Osher, 2020; Zeichner, 2010).

The third process, experiential-pedagogical translation, was most visible during post-field reflection. Students did not move directly from experience to lesson planning. They first had to select significant observations, organize relationships among ideas, and consider how those ideas might be represented for learners. In this process, knowledge maps served as mediating artifacts between field experience and instructional design. This interpretation is consistent with experiential learning, in which experience is reconsidered and reorganized through reflection and conceptualization (Kolb, 1984) while also recognizing that learning in this program was collaborative rather than purely individual (Fenwick, 2001). The maps also reflect the broader process through which teachers transform subject matter and experience into forms that can be used for teaching (Loughran, 2010; Shulman, 1987).

Concept maps have also been used in teacher education to make students' ideas about teaching visible. Beyerbach and Smith (1990), for example, used concept mapping to examine how pre-service teachers organized their understanding of effective teaching and how those ideas changed during a teacher education course. The knowledge maps in the present study served a related but somewhat different purpose. They not only revealed how students organized knowledge but also required them to connect field evidence with curriculum content, learning activities, and possible teaching resources. The maps therefore provided a working space in which disciplinary interpretation began to develop into pedagogical reasoning.

An unexpected feature of the program was the use of generative AI to assist with the organization and visual presentation of knowledge maps. Students used AI mainly to arrange information and improve visual structure, while the selection of evidence, interpretation of relationships, and development of teaching ideas remained their responsibility.

Faculty review of the maps indicated that the content was grounded in students' field observations and discussions. In this context, AI functioned as a support for representation rather than as a replacement for inquiry. This use is consistent with a human-centred approach in which technology supports educational purposes while learners remain responsible for judgment, meaning-making, and the quality of the final work (UNESCO, 2023).

The findings should be interpreted within the limits of a single institutional case. They do not establish that the same developmental pattern will occur in every teacher education program. Nevertheless, the three-phase structure, pre-trip inquiry, in-field investigation, and post-trip pedagogical reflection, offers design principles that may be adapted to other settings. Case study research can contribute in this way by providing analytically useful insights and contextualized design knowledge rather than statistical generalization. Any adaptation would need to take account of local curricula, available field sites, institutional resources, and the cultural context of teacher preparation. The

value of the framework therefore lies less in reproducing the program exactly than in considering how field-based learning might become a sustained and purposeful part of teacher education.

5.1. Limitations

Several limitations should be acknowledged. First, this study employs a cross-sectional design; developmental inferences rest on the assumption that differences across year levels reflect cumulative program effects rather than pre-existing cohort differences.

Second, as faculty members who designed and facilitated the program, the researchers hold insider positionality, which carries inherent interpretive risks. Third, the single institutional and national context limits transferability. Fourth, this study relies on student-produced artifacts and self-report data and does not directly observe in-service teaching practice.

6. CONCLUSION AND IMPLICATIONS

The findings suggest that a scaffolded, four-year Place-Based Education program can support the development of inquiry and integrative thinking among pre-service Social Studies teachers. Across the four cohorts, students at later stages of the program demonstrated increasingly complex ways of observing, interpreting, and connecting place-based experiences with classroom practice. These patterns should be understood as differences across year-level cohorts rather than as longitudinal changes within the same group of students.

Three concepts emerge as contributions to the field: epistemic responsibility, multistrand cognitive integration, and experiential–pedagogical translation. Unlike prior frameworks that describe PBE outcomes in general terms, this transferable framework identifies the specific mechanisms through which each phase of a field-based program produces qualitatively distinct forms of learning.

6.1. Curriculum-Level Implications

The four-year PBE framework proposed in this study offers a transferable curriculum design for Social Studies teacher preparation programs. The scaffolded progression from inquiry foundations (Year 1) to media innovation (Year 4) provides a concrete roadmap for building disciplinary and professional competencies over time, adaptable to different geographical, cultural, and institutional contexts. The role of faculty as facilitators, rather than content deliverers, is central to the framework's effectiveness.

6.2. Professional and Lifelong Learning Implications

Teachers who develop place-based inquiry skills during preservice preparation are better positioned to engage in lifelong professional learning. The disposition to read any environment as a potential Social Studies curriculum is fundamentally transferable; a teacher who learns to see the world as curriculum can continue to grow throughout a career.

6.3. Directions for Future Research

Future research should prioritize true longitudinal tracking of individual student cohorts across all four years to establish stronger causal claims about developmental trajectories.

Additional directions include investigating the long-term impact on in-service teaching practice; exploring the adaptability of the framework in urban versus rural contexts; examining digital tools for extending place-based inquiry beyond physical field experiences; and examining the transferability of the framework across different institutional and national contexts.

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Informed Consent Statement: Written informed consent was obtained from all participants prior to their inclusion in the study. Participation was entirely voluntary, and all participants were informed about the study's purpose, data collection procedures, and intended use of their information. All collected data were anonymized to ensure participant confidentiality. Participation or non-participation did not affect students' grades, academic standing, or curricular activities.

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

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