

## **Development of an Instructional Process Using Design Thinking and Community-Based Context to Enhance Creative Thinking for Elementary Education Pre-service Teachers**

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The Asian Conference on Education and International Development 2025  
Official Conference Proceedings

### **Abstract**

This research aimed to develop an instructional process by integrating design thinking concepts with community-based context to promote creativity in school activities provision course. For the study, sample consisted of 28 third-year elementary education pre-service teachers at Phuket Rajabhat University who were selected by purposive sampling. This research applied the d.school design thinking process, which consists of five steps: empathize, define, ideate, prototype, and test. The research instruments were (1) an expert assessment form, (2) A creativity test, and (3) self-reflection form. Data were analysed by both quantitative methods and qualitative content analysis. The results of the study found that 1) the developed instructional process consisted of four steps: (1) problem exploration and issue identification, (2) discovery of multiple perspectives, (3) activity selection and creation, and (4) presentation of ideas, and we did it through storytelling, which had the highest level of accuracy and appropriateness. 2) after studying with an instructional process using design thinking with a community-based context was found that students had overall creativity scores (fluency, flexibility, originality, and elaboration) more than before and that were significantly different at the 0.05 level. and 3) The pre-service teacher reflection found that they are reflected in 4 mains: 1) learning experience 2) creativity and design thinking 3) group work and communication and 4) self-development.

*Keywords:* design thinking, community-based learning, creative thinking, pre-service teachers, elementary education

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## Introduction

Currently, developing learners at all levels to have skills in thinking, problem-solving, and working effectively with others is an important goal of the Thai and international education systems. In particular, molding learners into creative thinkers has become a necessary skill for learners to live and develop their careers in a rapidly changing world. However, the approach to teaching and learning at the higher education level in teacher production still focuses more on conveying content than creating experiences that are connected to the real context of the community, which may result in student teachers lacking design thinking skills and creating activities that meet the needs of learners and society. As can be seen from the teaching and learning process of the subject of school activities provision course for elementary education majors; the aim is to enable students majoring in primary education to design primary education learning activities and apply theoretical knowledge to real situations. However, from past teaching and learning, the teacher himself found that the design of the teaching and learning process did not respond to students' learning because it focused mainly on classroom lectures, which was not enough to help students understand the process of designing learning activities in primary schools. In addition, students lacked the opportunity to learn from real contexts, resulting in the design of learning activities that were not consistent with the real needs of primary school students and the context of the school. It is necessary to have a process that allows students to practice thinking, analyzing, and doing real work. To design appropriate learning activities, student teachers need to use a systematic thinking process, analyze user needs, brainstorm creative ideas, and experiment to make improvements. The application of design thinking to teaching management is an appropriate approach because it is a process that emphasizes a deep understanding of the problems and needs of users, brainstorming to find creative solutions, creating prototypes and testing them, which will help students design and create learning activities that truly meet the needs of elementary school students. The application of design thinking to teaching management, along with integration with the community context, is in line with the vision of Phuket Rajabhat University as an institution for producing teachers for local development. Therefore, the teaching and learning process should be designed to promote learning through practice experiential learning and emphasize the systematic use of creativity so that graduate teachers have the ability to organize quality learning activities that are truly connected to the context of learners and communities. The context of Phuket Province has many outstanding characteristics, including cultural diversity and ways of life. It is considered a learning resource with the potential to promote the learning process of student teachers very well. The organization of learning that is connected to the community or uses the community as a base (community-based learning) can therefore stimulate students to understand real situations, develop communication skills, analyze data, and create valuable and practical activities in specific situations of each community, leading to teaching and learning that promotes intellectual processes, such as creativity. Design thinking with the community as a base stimulates learners to practice in all dimensions. To develop creative problem-solving skills (Rotsangrat et al., 2020), which is consistent with (Lertchanadecha, 2023) the process was applied to manage learning using design thinking. Teachers encouraged them to study and research from various sources of learning, exchanged knowledge with each other until they truly understood, and allowed learners to gain a deeper understanding. They exchanged perspectives from many people to find solutions and tested until they obtained a solution or innovation that met the needs of the situation, which was consistent with Dumidae and Awae (2022), who applied the concept to design teaching and learning, allowing learners to think analytically and solve problems in a variety of ways, resulting in new forms of creativity that could create educational innovations. Therefore, it can be considered that the use of design

thinking with the community as a base is an important tool in promoting creative thinking skills, where learners can learn from real problems, have the opportunity to communicate, work together, and lead to the design of valuable and feasible activities in the school or community situation. For this reason, the research team is interested in developing a teaching and learning process using the design thinking process with the community as a base to promote creativity in designing learning activities for primary education major students so that students can design and develop learning activities that meet the needs of the learners effectively. and to prepare students to have design thinking skills that are essential for future educational development.

### **Objective of Study**

This research aimed to develop an instructional process using design thinking with a community-based context to promote creative thinking in a school activities provision course for pre-service teachers in elementary education.

## **Literature Review**

### **Design Thinking Process**

Design thinking is a thinking and development process that consists of many steps, in which designers try to understand the needs and perspectives of users until they can create and develop many possible approaches to solve certain problems caused by groups of people in various disciplines. The aim is to create innovations or creative works and believe that creating these things cannot happen using only one knowledge. It comes from practices related to thinking and the process of practice. The teaching model that is consistent with design thinking is a teaching model that emphasizes the development of process skills, which are skills related to various methods of operation, which may be intellectual processes or social processes, leading to learning from groups of people of various subjects, allowing them to see problems in many dimensions and truly understand the problems through scientific principles, reasoning, and understanding the feelings of others. Design thinking has a step-by-step process. The process will show the reflection of the thinking method. The work that comes from the design thinking method shows the value in terms of society, communication, and feelings (Atichartchayakorn, 2022; Chaichaowarat, 2023; Eamcharoen, 2024; Khammanee, 2016). In conclusion, design thinking is a thinking process. It arises from the practice that involves thoughts and processes in practice that emphasize cooperation and integration of diverse knowledge and focus on creating innovations to meet the needs of users.

### **Forms of Design Thinking**

Currently, there are 3 popular forms of design thinking that are applied: (Chaichaowarat, 2023) 1. Design thinking of the Massachusetts Institute of Technology (MIT) is a process that focuses on people, emphasizing the integration of design, business management, and engineering processes to create innovations that enhance the quality of the organization. 2. Design thinking of the Hasso-Plattner Institute of Design of Stanford (d.school) is a process that emphasizes understanding users and their real needs before designing solutions. It consists of 5 steps: 1) Deeply understanding the problem (Empathize) is studying and deeply understanding the needs and perspectives of users. 2) Clearly defining the problem (Define) is defining a clear problem. To see the scope and challenges of design 3) Brainstorming for

solutions (Ideate) is brainstorming and generating many possible ideas to solve problems. 4) Prototype is creating representatives of various ideas to test. 5) Test is testing prototypes to receive feedback and improve. Each step will help designers develop and improve their ideas or innovations more effectively by increasing their understanding of user needs, clearly defining the problem, being open to brainstorming, and receiving feedback from prototype testing. And 3. Design thinking of the Singapore University of Technology and Design (SUTD) or Design 4Ds is a process that emphasizes research and problem framing. It consists of 4 steps: Discovery, Define, Development, and Deliver. All 3 forms of design thinking have a process step that is ordered in order, but it is still flexible and has a non-linear process nature. This means that the steps may not be carried out in strict order, but the process steps can be repeated, and feedback is given or used continuously, including adjustments at each step, which allows the process to be flexible and able to develop innovations or products that best meet the needs or problems. The author has seen the importance of design thinking from the Hasso-Plattner Institute of Design of Stanford (d.school), which is a process that emphasises understanding users and their real needs before designing solutions. Students can study and access learning experiences, which will lead to designing instruction that meets real needs and contexts. In addition, the user-focused design concept and participatory process allow teachers and student teachers to jointly plan and continuously improve instruction.

### **Community-Based Learning (CBL)**

Community-based learning (CBL) integrates classroom learning and community learning as a pedagogical strategy, equipping students with the skills needed, especially personal and soft skills. CBL also promotes student volunteerism and experiential learning. Community-based learning (CBL) integrates classroom learning and community learning as a pedagogical strategy, equipping students with the skills needed, especially personal and soft skills. CBL also promotes student volunteerism and experiential learning (Hamzah et al., 2023). Context-based learning is a learning process that encourages students to connect their learning knowledge to real-life situations. Context-based teaching is teaching that comes from the context of students (Taohom & Panawong, 2024). Teachers should carefully consider the correspondence between the targeted content to be conveyed to the learners and the focus context. CBL should focus on students' creative thinking. (Simsawat, 2022). The development of learning processes and education in primary school by learning and gaining experiences from local communities as a foundation for students' learning, it promotes holistic and experiential learning that allows learners to learn from real experiences and various situations within the community. Using communities as a source of knowledge can enhance learners' learning experiences and create more connections to the real lives of learners and local communities (Thasook et al., 2023).

### **Creative Thinking**

Creative Thinking refers to the skills used to explore novel ideas or generate solutions while problem-solving. This definition builds on Guilford's division of creativity into eight constructs: flexibility, fluency, novelty, analysis, reorganization, redefinition, synthesis, complexity, and elaboration (Guilford, 1967, as cited in Suherman & Vid'akovich, 2022).

## Methodology

### Population and Sample

The sample group in this study comprised 28 third-year undergraduate students who were purposively selected based on their enrolment in the education programme, majoring in elementary education at Phuket Rajabhat University, specifically in the school activities provision course, and who voluntarily participated in this research.

### Research Instruments

The instruments used in this research were 1) an expert assessment form, aimed at evaluating the validity and appropriateness of the teaching management using the Design Thinking Process with a community-based context, 5 persons 2) A creativity test (pre and post-test) aimed to assess the creativity abilities of student teachers before and after the implementation of the Design Thinking Process in a community-based context, which was assessed by experts. The creativity test consisted of fluency, flexibility, originality, and elaboration. 3) The self-reflection form aimed to have students reflect on their learning experiences and creativity in the design of learning activities.

### Data and Analysis

1. The results of the development of the instructional process using design thinking with a community-based. The researchers studied and designed it to consist of 4 steps as follows: 1) problem exploration and issue identification, 2) discovery of multiple perspectives 3) activity selection and creation, and 4) presentation of ideas, and we did it through storytelling. And brought it to the person who evaluated the correctness and appropriateness. The evaluation results are shown in Table 1.

**Table 1**  
*Evaluation of the Developed Instructional Process*

Dimension	Mean	S.D.
1. Problem exploration and issue identification	4.60	0.51
2. Discovery of multiple perspectives	4.47	0.52
3. Activity selection and creation	4.33	0.49
4. Presentation of ideas and we did through storytelling	4.60	0.51
Overall	4.50	0.50

Based on the above Table 1, it was found that overall, the instructional process using design thinking with a community-based context developed by the researchers had the highest level of accuracy and appropriateness (mean = 4.50, S.D. = 0.50).

2. Results of using the instructional process using design thinking with a community-based context to promote creative thinking in a school activities provision course for pre-service teachers in elementary education, as shown in Table 2.

**Table 2***The Comparison Score of the Creative Thinking Scores Before and After Learning*

Creative thinking	Test	N	Score	Mean	S.D.	t-test
Overall, 4 components	Pre-test	27	24	9.74	1.84	18.98*
	Post-test			17.89	1.64	

\* Significant level .05

Based on the above Table 2, it was found that students had overall creativity scores (fluency, flexibility, originality, and elaboration) before and after studying with an instructional process using design thinking with a community-based context that were significantly different at the 0.05 level, with the average score after studying (mean = 17.89, S.D. = 1.64) being higher than before studying (mean = 9.74, S.D. = 1.84).

3. The of student reflection analysis data from student reflection found that students gained real experiences to design learning activities from the beginning to the end of the learning process. The reflection points can be summarized into 4 main areas: 1) Learning experience; It was found that students gained perspectives from the community context to design learning activities that were consistent with the needs of primary school students. These activities focused on meaning for learning, allowing them to understand the content deeply and see the importance of learning in real life. 2) Creativity and design thinking; It was found that many students reflected that the activities encouraged them to think outside the box, dare to think, dare to present, and look for new ways to solve problems or design learning activities. 3) Group work and communication. It was found that students worked together in groups and practiced reflecting and giving advice both in groups and between groups to further develop learning activities. 4) Self-development; It was found that students gained guidelines for designing diverse learning activities and dared to express their opinions more. The results of the reflection show that organizing activities that integrate the community context with the design thinking process helps promote meaningful learning for students. It also develops skills in creativity, communication and collaboration, which is consistent with the research objective of promoting creative thinking competencies of student teachers in real community contexts.

### Conclusion

This research focuses on developing a teaching and learning process using the design thinking process with the community as a base to promote creativity in designing learning activities for primary education students. The developed teaching and learning process consists of 4 steps: 1. Problem exploration and issue identification 2. Discovery of multiple perspectives 3. Selection and creation and 4. Presentation of ideas, and we did it through storytelling. The results of the research show that this learning process can significantly promote students' creativity. In addition, self-reflection found that students developed creative thinking skills, systematic problem solving, and logical presentation of ideas and were able to work with others. They were also able to design learning activities that were appropriately and creatively linked to real life and the community context. This study therefore reflects the results of applying the design thinking concept to learning management for student teachers, which is in line with the current direction of teacher development, which emphasizes producing teachers with the ability to think creatively, solve problems, and design quality learning, along with learning from real areas. In particular, using the

community context as a living learning resource makes the learning process more meaningful and encourages student teachers to see the value of further professional development.

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