

Creating instructional games of Student Teachers in Social Studies, Faculty of Education, Suan Sunandha Rajabhat University by using Project-Based Learning

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Abstract

This study aimed to 1) Examine the ability of social studies teacher education students to develop instructional games through Project-Based Learning (PBL) 2) Facilitate the creation of instructional games by social studies teacher education students using the PBL approach and 3) Evaluate the effectiveness of the instructional games developed through PBL. The sample group consisted of 31 third-year students from Group 02, enrolled in the Bachelor of Education program in Social Studies at the Faculty of Education, Suan Sunandha Rajabhat University. These students were registered in the course “Instructional Games for Social Studies” during the 1st semester of the 2025 academic year. The sample was selected using cluster random sampling. Research instruments included a learning plan based on the PBL approach, an assessment form for evaluating students’ ability to develop instructional games and an evaluation form for assessing the effectiveness of the instructional games. Data analysis employed the following statistical methods are content validity analysis, Mean scores and standard deviation.

The results of the research showed that 1) The Project-Based Learning approach effectively enhanced students’ ability to develop instructional games. 2) Students demonstrated a high level of proficiency in following the steps for instructional game development using the PBL approach (Mean = 4.60, SD = 0.10). 3) Students exhibited a high level of competency in creating instructional games (Mean = 4.54, SD = 0.65).

Keywords: Project-based learning, Instructional games

1. Introduction

The Faculty of Education at Suan Sunandha Rajabhat University plays a vital role in producing high-quality teachers equipped with the knowledge and skills necessary for effective instructional management. Student teachers are expected to possess high levels of competency, particularly in implementing various instructional processes. Their development must be continuous and holistic, beginning from the first year of study through to the final year, during which they engage in professional teaching practice at partner schools. This stage provides opportunities for interdisciplinary integration aligned with the social studies curriculum. To meet professional standards, student teachers must demonstrate competencies across six key areas: Ethics and morality, Knowledge, Cognitive skills, Interpersonal skills and responsibility, Numerical analysis, communication and technology usage and Instructional methodology. These competencies are outlined by the Bureau of Teacher and Basic Education Personnel Development under the Office of the Basic Education Commission. (Ministry of Education, 2019, p. 7)

The development of teachers with advanced knowledge and competencies enables them to effectively prepare students to face various challenges in both the present and future. Globally, nations have become increasingly active in implementing educational reforms aimed at enhancing the efficiency and quality of education systems. These reforms seek to produce a skilled workforce suited to the demands of a knowledge-based society. In Thailand, significant attention has been given to professional development, including the establishment of teacher competencies, which are essential for effective performance in the teaching profession. (Phimphan Dechakup & Pornthip Khaengkhan, 2008) Therefore, in developing teachers' instructional competencies, providing knowledge through occasional lectures or training sessions is insufficient to foster continuous and effective growth in knowledge, skills, and various professional capabilities. (Costa & Garmston, 2002)

Given their responsibility for teaching social studies, religion, and culture, pre-service teachers in the Social Studies program at Suan Sunandha Rajabhat University must explore innovative instructional methods that engage learners. One such method is the use of educational games, which have gained popularity in contemporary classrooms. Educational games are structured activities involving play or competition designed for learning, with defined objectives, rules, participants, gameplay procedures, and win-loss criteria. Incorporating games into instruction can revitalize the classroom environment, enhance lesson engagement, and reduce boredom. Games promote enjoyment, stimulate learners' wit, and improve memory retention. They also foster collaborative learning, encourage process-oriented thinking, and support social interaction (Sinthapanon, 2018, p. 226).

In addition to media-based instruction, Project-Based Learning (PBL) offers a dynamic educational approach where learners collaboratively select and execute projects based on their interests. This process involves exploration, observation, planning, research, implementation, and public presentation, followed by reflection and synthesis of learning outcomes (Khammani, 2016, p. 139). According to Wangkaewhiran (2008, p. 194), the PBL process includes five stages: (1) topic selection based on curiosity or inquiry, (2) planning with clear objectives and methodology, (3) execution with systematic documentation, (4) report writing to communicate findings and recommendations, and (5) presentation through various formats suited to the project type and learner level.

Based on these considerations, the researcher is interested in studying the development of instructional games by social studies pre-service teachers at Suan Sunandha Rajabhat University using Project-Based Learning. The study aims to determine whether these students can effectively create instructional games and how such games can serve as a model for higher education teaching practices and further competency development in teacher education.

2. Objective

1. Examine the ability of social studies teacher education students to develop instructional games through Project-Based Learning (PBL).
2. Facilitate the creation of instructional games by social studies teacher education students using the PBL approach.
3. Evaluate the effectiveness of the instructional games developed through PBL.

3. Methodology

The population in this study consisted of third-year students from two class sections enrolled in the Social Studies program at the Faculty of Education, Suan Sunandha Rajabhat University. These students were registered for the course Instructional Games for Social

Studies during the first semester of the 2025 academic year, totaling 63 individuals. The sample group comprised third-year students from class section 02 in the Social Studies program at the Faculty of Education, Suan Sunandha Rajabhat University. A total of 31 students were selected using the Cluster Random Sampling method.

The instruments utilized in this study included: 1) Project-Based Learning instructional plans – designed to guide the teaching and learning process through student-centered project activities. 2) Instructional game effectiveness assessment form – developed to evaluate the efficiency and impact of the instructional games created by the participants.

The analysis of students' ability to develop instructional games through Project-Based Learning was presented using descriptive statistics, specifically the mean and standard deviation. The findings were illustrated through tables accompanied by narrative explanations to provide clarity and support interpretation.

4. Results

The Researcher would like to present the results of the data analysis in Five Parts as follow:

Section 1: Overall mean scores based on the procedural steps of instructional game development by social studies pre-service teachers using Project-Based Learning.

Table 1
Overall Mean Scores by Procedural Stages in Instructional Game Development of Social Studies Pre-Service Teachers at the Faculty of Education, Suan Sunandha Rajabhat University through PBL

Items	Mean (M)	Standard Deviation (SD)	Level
Stage 1 Topic Selection	4.40	0.52	Good
Stage 2 Planning	4.70	0.48	Very Good
Stage 3 Implementation	4.80	0.42	Very Good
Stage 4 Report Writing	4.40	0.51	Good
Stage 5 Presentation	4.73	0.46	Very Good

Based on Table 1, the findings indicate that Project-Based Learning (PBL) effectively supported students in adhering to the procedural steps of instructional game development. Three components were rated at a **very good** level: planning (M = 4.70, SD = 0.48), implementation (M = 4.80, SD = 0.42), and presentation (M = 4.73, SD = 0.46), respectively. Two components were rated at a **good** level: topic selection (M = 4.40, SD = 0.52) and report writing (M = 4.40, SD = 0.51), respectively. These results suggest that PBL enhances students' ability to engage in structured instructional design processes, particularly in the execution and presentation phases, while also supporting foundational stages such as topic selection and documentation.

Section 2: Mean scores by individual components of the procedural steps in instructional game development using Project-Based Learning.

Table 2
Mean Scores by Component of Procedural Adherence in Instructional Game Development Using PBL

Item	Mean (M)	Standard Deviation (SD)	Level
Stage 1: Topic Selection			
1. Justification for topic selection	4.20	0.45	Good
2. Appropriateness of game format	4.60	0.55	Very Good
Stage 2: Planning			
3. Presentation of ideas and operational plan	4.80	0.45	Very Good
4. Clarity in defining procedural steps	4.60	0.55	Very Good
Stage 3: Implementation			
5. Execution according to planned steps	4.80	0.45	Very Good
6. Documentation during implementation	4.80	0.45	Very Good
Stage 4: Report Writing			
7. Format of report writing	4.00	0.00	Good
8. Clarity of communication	4.60	0.55	Very Good
9. Conclusion and recommendations	4.60	0.55	Very Good
Stage 5: Presentation			
10. Content coverage	4.80	0.45	Very Good
11. Appeal of presentation format	4.80	0.45	Very Good
12. Engagement and appeal of the game	4.60	0.55	Very Good

Based on Table 2, the findings reveal that Project-Based Learning (PBL) significantly enhanced students' adherence to the procedural steps in instructional game development. A total of ten components were rated at a very good level, ranked by descending mean scores as follows: presentation of ideas and operational planning, execution according to planned steps, documentation during implementation, content coverage, and appeal of presentation format (M = 4.80, SD = 0.45). These were followed by appropriateness of game format, clarity in defining procedural steps, clarity of communication, conclusion and recommendations, and appeal of the game (M = 4.60, SD = 0.55). Two components were rated at a good level: justification for topic selection (M = 4.20, SD = 0.45) and format of report writing (M = 4.00, SD = 0.00).

Section 3: Overall mean scores of students' ability to create instructional games using Project-Based Learning.

Table 3
Overall Mean Scores by Procedural Stages in Instructional Game Development of Social Studies Pre-Service Teachers at the Faculty of Education, Suan Sunandha Rajabhat University through PBL

Items	Mean (M)	Standard Deviation (SD)	Level
Overall procedural adherence in instructional game development by social studies pre-service teachers at the Faculty of Education, Suan Sunandha Rajabhat University using Project-Based Learning	4.60	0.10	Very Good

Based on table 3 presents the overall mean score and standard deviation for students' adherence to the procedural steps in instructional game development using Project-Based Learning. The results indicate a very good level of performance ($M = 4.60$, $SD = 0.10$), reflecting the effectiveness of PBL in guiding students through a structured and comprehensive instructional design process.

Section 4: Mean scores by individual components of students' ability to create instructional games using Project-Based Learning.

Table 4
Overall Mean Scores by Procedural Stages in Instructional Game Development of Social Studies Pre-Service Teachers at the Faculty of Education, Suan Sunandha Rajabhat University through PBL

Item	Mean (M)	Standard Deviation (SD)	Level
Dimension 1: Content Quality			
1. Alignment with learners' expected knowledge and skills	4.40	0.85	Good
2. Development of essential process skills	4.47	0.67	Good
3. Promotion of desirable learner characteristics	4.39	0.68	Good
Dimension 2: Creativity			
4. Demonstration of creativity and originality	4.60	0.56	Very Good
5. Expression of novel ideas	4.47	0.70	Good
6. Distinctive, challenging, and engaging design	4.53	0.59	Very Good
7. Attractive, appropriate, and aesthetically pleasing design	4.52	0.77	Very Good
Dimension 3: Product Quality			
8. Practical gameplay system, rules, and mechanics	4.48	0.65	Good
9. Appropriate number of players	4.58	0.63	Very Good
10. Ability to create enjoyment and a fun learning atmosphere	4.65	0.61	Very Good
11. Suitable duration for gameplay	4.54	0.61	Very Good
12. Use of appropriate and cost-effective materials	4.49	0.72	Good
Dimension 4: Educational Value			
13. Presentation, demonstration, and usability aligned with objectives	4.58	0.63	Very Good

Based on table 4 presents the mean scores and standard deviations across four key dimensions of instructional game creation: content quality, creativity, product quality, and educational value. The results show that most components were rated at a very good level, particularly in creativity and educational value. Components related to content and material usage were rated at a good level, indicating consistent performance with room for further enhancement.

Section 5: Overall mean scores by component categories of students' ability to create instructional games using Project-Based Learning.

Table 5
Overall Mean Scores by Procedural Stages in Instructional Game Development of
Social Studies Pre-Service Teachers at the Faculty of Education, Suan Sunandha
Rajabhat University through Project-Based Learning

Item	Mean (M)	Standard Deviation (SD)	Level
Dimension 1 Content Quality	4.42	0.71	Good
Dimension 2 Creativity	4.53	0.66	Very Good
Dimension 3 Product Quality	4.55	0.65	Very Good
Dimension 4 Educational Value	4.65	0.57	Very Good
Overall Average	4.54	0.65	Very Good

Based on table 5 presents the overall mean scores and standard deviations across four key dimensions of instructional game creation by social studies pre-service teachers using Project-Based Learning. The results indicate that students demonstrated very good performance in creativity, product quality, and educational value, while content quality was rated at a good level. The overall average score was 4.54 (SD = 0.65), reflecting a very good level of instructional game development ability.

5. Conclusion And Future Work

The study on the ability of social studies pre-service teachers to develop instructional games through Project-Based Learning (PBL) yielded the following results: 1) Project-Based Learning effectively facilitated the development of instructional games. 2) Project-Based Learning enabled students to follow the procedural steps of instructional game creation at a very high level, with a mean score of 4.60 and a standard deviation (SD) of 0.10. 3) Project-Based Learning enhanced students' overall ability to design instructional games, which was rated at a very high level (mean = 4.54, SD = 0.65).

Based on the study of instructional game development among third-year social studies pre-service teachers at the Faculty of Education, Suan Sunandha Rajabhat University, using Project-Based Learning, the findings were discussed according to the research objectives: Project-Based Learning significantly contributed to students' ability to create instructional games that foster ethical and moral development, with an overall mean score of 4.60 and SD of 0.10. Students performed exceptionally well in three key stages of game development: planning (M = 4.70, SD = 0.48), implementation (M = 4.80, SD = 0.42), and presentation (M = 4.73, SD = 0.46). Two stages were rated at a good level: topic selection (M = 4.40, SD = 0.52) and report writing (M = 4.40, SD = 0.51). The overall ability to develop instructional games was rated very high (M = 4.54, SD = 0.65). The top nine attributes rated at a very high level included: Enhancing instructional effectiveness (M = 4.69, SD = 0.52) Potential for further development and application (M = 4.69, SD = 0.56) Creating enjoyment and a fun learning atmosphere (M = 4.65, SD = 0.61) Demonstrating creativity and originality (M = 4.60, SD = 0.56) Appropriate number of players (M = 4.58, SD = 0.63) Demonstration and usability aligned with objectives (M = 4.58, SD = 0.63) Suitable duration for gameplay (M = 4.54, SD = 0.61) Distinctive, challenging, and engaging design (M = 4.53, SD = 0.59) and Attractive, appropriate, and aesthetically pleasing design (M = 4.52, SD = 0.77). Six attributes were rated at a good level: Use of appropriate and cost-effective materials (M = 4.49, SD = 0.72) Practical rules and gameplay mechanics (M = 4.48, SD = 0.65) Development of essential learning

process skills (M = 4.47, SD = 0.67) Expression of novel ideas (M = 4.47, SD = 0.70) Alignment with expected learning outcomes (M = 4.40, SD = 0.85) Promotion of desirable learner characteristics (M = 4.39, SD = 0.68)

These results affirm that Project-Based Learning is an effective instructional strategy that allows learners to engage in hands-on activities, research, experimentation, and presentation based on their individual capabilities (Jaitieng, 2010, p. 133) and **Project-Based Learning (PBL)** is a learner-centered instructional approach that encourages students to engage in self-directed learning based on their interests. It emphasizes hands-on experience and systematic work processes that lead to the construction of new knowledge. Students may engage in exploration, invention, or problem-solving activities, allowing them to discover knowledge independently and produce tangible outcomes. (Thitiya Netwong & Boonyalak Tamnanchit, 2012, pp. 1–11, as cited in Teeraporn Plailek, 2021, p. 199). The PBL process follows five structured steps: (1) topic selection based on curiosity and inquiry, (2) planning with clear objectives and methodology, (3) implementation with organized documentation, (4) report writing to communicate findings, and (5) presentation in formats appropriate to the project type and learner level (Wangkaewhiran, 2008, p. 194). These findings are consistent with prior research. Aajin and Netthanomsak (2011, p. 11) found that students in a five-year teacher education program using PBL achieved an average score of 24.72 (82.40%), exceeding the benchmark of 80%, with 77.36% of students meeting the required criteria. Similarly, Saengpan (2019, pp. 172–173) demonstrated that the ESCAPE Model—integrating PBL with social media—effectively enhanced communication skills among pre-service teachers. Post-intervention performance was significantly higher than pre-intervention scores at the .05 level, and students showed notable improvement in English speaking skills through project presentations.

These findings further support the notion that Project-Based Learning creates meaningful learning environments by allowing students to select topics of interest, collaborate, explore, plan, and execute projects. The process culminates in the creation of new knowledge or products, followed by public presentation and reflective discussion, which fosters deeper understanding and skill development (Khammani, 2016, p. 139).

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