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# Implementation Creative-Based Learning on Enhancing the Innovative Abilities of Education Students

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## Abstract

*This paper studies the classroom teaching mode under the category of innovative learning methods to improve the "innovative skills" scores of first-year education students in University. And learning is certainly different from the research of scientists; however, it also requires students to dare to get rid of the old, dare to make new, and dare to explore what they have learned with multiple ways of thinking. This study aims 1) to Use creativity-based learning to enhance the innovation skills of education major students. 2) to Compare the innovation skills of education major students before and after the implementation of creativity-based learning. This study mixed research method of both qualitative and quantitative approaches. An innovative research methodology was adopted, which is a comprehensive innovation project composed of components such as classroom activities, current teaching conditions, innovation topics, and questionnaires. The sample group consists of 100 first-year education major students from Chengdu Normal University in Chengdu, China, who were randomly selected through cluster sampling. The findings that the average score of students before learning training course was 98 points, and after learning training course, it increased to an average of 144 points, with an average difference of 56 points. The results indicate that after learning training course is better. In summary, the study on enhancing the innovative skills of education students through creative based learning demonstrated significant improvements.*

**Keywords:** *Innovative Skill, Education Students, Creative Based Learning.*

## Introduction

This paper studies the classroom teaching mode under the category of innovative learning methods to improve the "innovative skills" scores of first-year education students in University.

For teaching practice. The world is moving towards competition. People struggle to learn, and to work hard to create a new learning environment. The purpose of education is not only teaching the text book and make the students understand but also adds innovative thinking creative environment and self-sufficiency. Innovative teaching means creativity and novelty of the teacher which changes the style and method of teaching. All over the world, educational institutions implementing new ideas, methods, technology is based innovations to enhance the students' knowledge. According to the investigation and analysis of teachers' classroom models by scholars, it is found that many teachers lack accurate and profound understanding when setting teaching goals, which leads to students passively accepting knowledge, and has less goal setting and teaching guidance in terms of innovative skills. Improving students' comprehensive skills and employment prospects has an important impact. Many teachers mostly use PBL and RBL teaching modes when teaching. Although they can help students better master basic knowledge and share learning experience and experience, there is a big gap in knowledge innovation and clinical practice. The CBL teaching mode is based on the premise that students have mastered basic knowledge and technology.

Fror innovative learning theory. Cognitive Paradigm The student is active processor information who has cognitive competence to learn and resolve problems: at the same time, this competence must be considerate and developed using new learning and strategic abilities. Cognitive approach studies arise at the beginning of the 1960s and are presented as the theory that replaces behavioral prospects who had hitherto led psycholog: "… this cognitive theory provides great contributions to the study of the learning and teaching process, like the contribution to the exact knowledge of some essential abilities for the learning, such as the attention, memory and reasoning". The theory shows a new vision of the human being considering it as an

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organism that makes an activity based mainly on the processing information, very different from the simplistic and reactive vision which, until then, had defended and released the behaviorism. Conception of the student from the cognitive paradigm. The student is an active processor information who has cognitive competence to learn and resolve problems: at the same time, this competence must be considerate and American Journal of Educational Research 110 developed using new learning and strategic abilitie. In the Conception of the teacher from the cognitive paradigm, the teacher is based on the idea that an active student who learns significantly, is able to learn to learn and think. The teacher focuses on the development and organization of didactic experiences to achieve those purposes. It must not play the leading role to the detriment of the cognitive participation of students. Conception of the teacher from the historical-social paradigm. The teacher should be understood as a cultural agent who teaches in a context of practices and culturally specific media not an essential mediator between the socio-cultural knowledge and appropriation processes of students. The teacher should try in his teaching the creation and construction of the ZPD with the students by means of the structure of flexible and strategic scaffolding systems.

To sum up, we believe that learning is certainly different from the research of scientists; however, it also requires students to dare to get rid of the old, dare to make new, and dare to explore what they have learned with multiple ways of thinking.

## Research Methodology

There are 400 first-year students Education majors on Chengdu Normal university, Sichuan Province, Chia, were divided into two classes with 100 students in each class.

*The Sample Group*

Through the random cluster sampling method, one class with 100 students first grade in Chengdu Normal university were sampled.

*Research Time*

The study period from March to September 2024 will be divided into the following phases:

Modify and complete lesson plan according to the creative based learning, modify relevant tools and experiment for 12 hours in June 2024.

The formal research will be conducted in July 2024.

Summarize the research in September 2024, complete the research article.

*Definition*

Definition of creative based learning refers that is an educational approach that focuses on fostering creativity through active, experiential, and student-centered learning. It encourages students to explore, experiment, and engage in problem-solving activities, promoting critical thinking and innovation. CBL aims to develop skills such as idea generation, adaptability, collaboration, and reflective thinking by incorporating open-ended tasks, real-world challenges, and opportunities for students to express their unique perspectives. The core of CBL is to create an environment where students can take risks, think divergently, and develop novel solutions, enhancing their capacity for innovative thinking and application. Understanding Creativity (Harvard Graduate School of Education) This article discusses how to effectively assess creative work in classrooms, emphasizing the importance of fostering a culture that values meaningful assessment for learning beyond just grades. It suggests principles from computer science classrooms that could help shape assessment culture across various subjects. It highlights the need for diverse feedback, emphasizes the process of learning for both teachers and students, and stresses the importance of scaffolding independence to allow students to take ownership of their learning.

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Standards of Professionalism refer to the guidelines, principles, and expectations that define appropriate behavior, skills, and attitudes within a profession. They outline the ethical, legal, and quality standards professionals are expected to adhere to in their work environment. These standards ensure that individuals in a given profession act with integrity, maintain competence, demonstrate respect for clients and colleagues, and provide services at the highest quality. Standards of professionalism help maintain trust, credibility, and accountability within a profession and are often established by professional bodies or associations.

Innovative skill refers to the ability to generate new ideas, think creatively, and find novel solutions to problems. It encompasses the capacity to look at challenges from different perspectives, develop original concepts, and implement effective improvements or advancements in various contexts, such as work, education, or technology. Innovative skills involve creativity, critical thinking, adaptability, and a willingness to take risks to bring about positive change or create value.

*Research Framework*

The conceptual framework of the study, using creative based learning to improve the invention skill course for education students, was as follows:

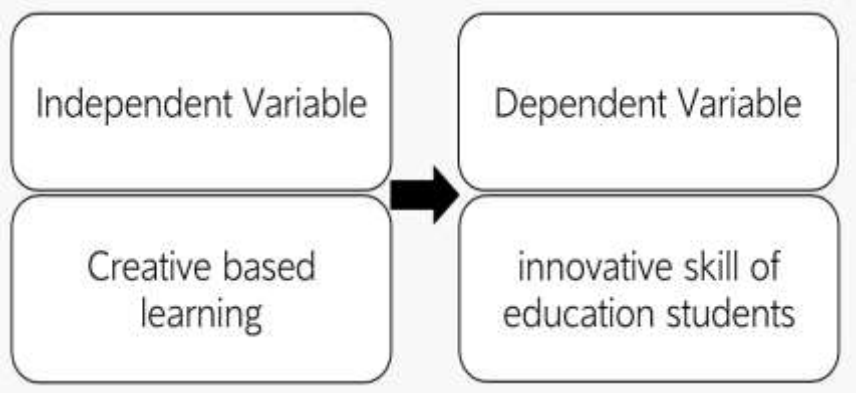


**Figure 4.1** The Research Framework

*Research Processing*

Lesson plan according to creative based learning method

The purpose of lesson plans was to improve the innovative skills of education students. The lesson plan was divided into the following four learning units:

Unit 1: Curriculum Innovation and Education (3 hours)

Unit 2: Standards of Professionalism (3 hours)

Unit 3: Persons and Groups (3 hours)

Unit 4: Project Administration (3 hours)

There are four units in the innovation and entrepreneurship education lesson.

The development process of creating Lesson plan according to the innovative skills using creative based learning and assessment form for validity of lesson plan were followed as.

Studying the principles of creating Lesson plan according to the innovative skills and assessment form for validity of lesson plan from books, textbooks, articles, and related research.

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Creating a Lesson plan according to the innovative skills and assessment form for validity of lesson plan, 4 plans as this above.

Drafting the assessment form for validity of lesson plan at the end of each section, there was a space for experts to write suggestions that could be helpful in improving students' innovative skills.

Taking the instruments to 3 experts to verify the validity. The test consistency the index of congruency was between 0.60-1.00, the level of consideration was as follows:

Rating was +1 There was an opinion that "Corresponds to definition/measurement objectives."

Rating was 0 There was an opinion that "Not sure it corresponds to definition/measurement objectives."

Rating was -1 There was an opinion that "Inconsistent with definition/measurement objectives."

Modifying assessment form for validity of lesson plan according to suggestion.

Taking the research instruments to collect data with the research samples.

*Innovative Skills Test*

In this research, the innovative skills was achievement of knowledge that divided into three sub-competencies, including: 1) Curriculum Innovation and Education, 2) Standards of Professionalism, 3) Persons and Groups, 4) Project Administration.

The test questions were designed for these three sub-competencies to evaluate students' innovative skills. The paper consists of 40 multiple-choice questions in each part, totaling 160 questions for a total of 160 points.

The development process of creating the innovative skills test and assessment form for validity of the test of innovative skills were followed as.

Studying the principles of the test of innovative skills and assessment form for validity of the test of innovative skills from books, textbooks, articles, and related research.

Creating innovative skills test and assessment form for validity of the test of learning achievement.

Taking the instruments to 3 experts to verify the content validity and index of items objective congruence (IOC) of the assessment form innovative skills test consistency the index of congruency was between 0.67-1.00.

Modifying assessment form for validity of lesson plan according to suggestion.

Taking research instrument to innovative skills test and the result of reliability was 0.93.

Taking the research instruments to collect data with the research samples.

Evaluate quality standards

| Score Range | Quality Level |
|---|---|
| 136-150 | Strong |

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| | |
|---|---|
| 110-135 | Relatively strong |
| 96-109 | General |
| 80-95 | Relatively weak |
| 0-79 | Weak |

*Data Collection*

The data collection is as follows:

Data collection and verification for test tools:

Coordinate with 3 professional scholars experts dispense official document from Krirk University in Thailand, professional scholars experts and give information about data collection process and research tools: instructional model and checklist form about quality of instructional model for consideration (Index of Objective Consistency: IOC).

Collect data from 3 professional scholars experts and analysis data for consideration (Index of Objective Consistency: IOC)

Data collection and validation for research work:

Relevant literature research: Collect literature related

Determination of the research time: the formal research will be carried out in July 2024, and the research data will be collected after the experimental research is completed.

Before and after teaching test: This research is experimental research. One Group Pretest – Posttest Design was used with the following experimental design:

**Table 5.3.1 Experimental Design**

| Group | Pretest | Experimental | Posttest |
|---|---|---|---|
| A | $T_1$ | X | $T_2$ |

The meaning of the symbols used in the experimental design.

A means Random Sampling

X means experimental

$T_1$ means Pretest

$T_2$ means Posttest

*Data Analysis*

Analyze of verified the validity of creative based learning to improve students' innovative skills and

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innovative skills test use the index of consistency as a criterion for consideration standard (Index of item Objective congruence: IOC).

Quantitative data were analyzed through descriptive statistics; means ($\bar{X}$), and standard deviation (SD.).

Quantitative data were analyzed through inferential statistics; Then calculate the different score of learning achievement before and after using Flipped classroom model were analyzed through t – test for dependent sample.

## Result of Research

The improvement in students' innovative abilities as a result of the course, were presented in Table 6.1.

**Table 6.1 Learning Score Between Pre-Test and Post-Test**

| Learning Content | n | Full Scores | Pre-test | | Post-test | | D |
|---|---|---|---|---|---|---|---|
| | | | $\bar{X}$ | SD. | $\bar{X}$ | SD. | |
| 1. Curriculum Innovation and Education | 100 | 40 | 24 | 0.6332 | 36 | 0.347 | 12 |
| 2. Standards of Professionalism | 100 | 40 | 28 | 0.4445 | 34 | 0.411 | 6 |
| 3. Persons and Groups | 100 | 40 | 20 | 0.875 | 38 | 0.341 | 18 |
| 4. Project Administration | 100 | 40 | 26 | 0.578 | 36 | 0.433 | 10 |
| Total | | 160 | 98 | | 144 | | 46 |

As could be seen from Table 6.1, the changes in the outcomes of four learning content of education students about lesson based on the creative based learning were as follows: 1) Curriculum Innovation and Education: The average outcome before learning was 24 points, and the average outcome after learning was 36 points, with an average difference of 12 points. 2) Standards of Professionalism: The average outcome before learning was 28 points, and the average outcome after learning was 34 points, with an average difference of 6 points. 3) Persons and Groups: The average outcome before learning was 20 points, and the average outcome after learning was 38 points, with an average difference of 18 points. 4) Project Administration: The average outcome before learning was 26 points, and the average outcome after learning was 36 points, and the average difference of 10 points

To sum up, 1) The use of real-world problem-solving sessions acts as a benchmark for assessing the course's impact, allowing students to apply what they've learned in creative and innovative ways. 2) Metrics such as course completion and dropout rates offer valuable insights into student engagement levels and the overall educational value of the course. High completion rates often indicate that students are finding the course content meaningful and engaging. 3) Independent assessments from experts provide an objective evaluation of the course's quality and its relevance to the educational goals, validating the teaching method and its alignment with learning objectives.

The most direct measure of effectiveness is the observable improvement in students' creative thinking, problem-solving abilities, and their ability to implement innovative solutions in educational contexts. These skill developments demonstrate how creative-based learning fosters not only theoretical understanding but also practical, actionable creativity in students.

Result of comparing students' innovative skill before and after the implementation using creative based learning

The researcher collected and analyzed data from pre-test and post-test of a lesson focused on using creative-based learning to enhance the innovative skills of education students. The data analysis included statistical

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measures such as mean, standard deviation, and a dependent t-test for correlated samples to assess the effectiveness of the course in improving innovation. The findings were presented in Table 6.2.

**Table 6.2 Comparison of Career Planning Competency by Pre-Test and Post-Test With Training Course**

| Learning content | | n | Full Point | $\bar{X}$ | SD. | t | p |
|---|---|---|---|---|---|---|---|
| Total score | Pre-test | 100 | 160 | 98 | 1.962 | 9.98** | .00 |
| | Post-test | 100 | 160 | 144 | 1.118 | | |

**Statistically significant at level .01 (p <.01)

From the Table 6.2, it could be observed that the career planning competency post-scores were higher than pre-scores, which was statistically significant at the 0.01 level. The average score of students before learning training course was 98 points, and after learning training course, it increased to an average of 144 points, with an average difference of 56 points. The results indicate that after learning training course is better.

## Conclusion

In summary, the study on enhancing the innovative skills of education students through creative-based learning demonstrated significant improvements. The lesson plan designed with this approach followed four key steps: planning, implementation, inspection, and action. By applying creative-based learning, students exhibited enhanced skills in various areas, such as applying knowledge in new situations, solving problems critically, demonstrating creativity and originality, and showing adaptability to change—all aligning with the research objectives.

Moreover, a comparative analysis of students' innovative skills before and after the intervention showed a notable increase in scores, with pre-test averages of 98 out of 160 and post-test averages rising to 144 out of 160. This improvement was statistically significant at the 0.01 level, affirming the research hypothesis that creative-based learning effectively boosts students' innovative capacities.

The findings underline the potential of creative-based learning as an impactful teaching approach, fostering critical thinking, creativity, and flexibility in educational contexts. The measurable growth in students' innovative abilities highlights its value in shaping more effective and engaging learning experiences.

### Recommendation

General recommendation

Encourage the integration of knowledge from other disciplines, such as design thinking, engineering, and information technology, into education to broaden perspectives and stimulate innovative thinking.

Implement projects that require education students to collaborate with peers from diverse backgrounds, promoting the exchange of ideas and enhancing creativity through diversity.

Leverage advanced technology and simulation tools to create realistic scenarios where students can experiment with innovative solutions in a risk-free environment, encouraging exploration and experimentation.

Incorporate reflective practices into the curriculum, allowing students to reflect on their learning experiences, identify areas for improvement, and conceptualize new ideas.

Provide workshops and seminars led by innovators in education to inspire students and expose them to real-world examples of innovation in the field.

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Cultivate an educational environment that celebrates creativity and innovation, where students feel supported to take risks, ask questions, and challenge traditional practices.

Create mechanisms for continuous feedback from students, teachers, and educational partners to adapt and refine the curriculum based on real-world needs and successes

### Suggestions for Further Research

Further research into using creative-based learning to enhance the innovative abilities of education students is crucial for continuous improvement and adaptation to the ever-changing educational environment. Here are some suggested areas of focus:

Conduct comparative studies to evaluate the effectiveness of creative-based learning versus traditional teaching methods in improving the innovative skills of education students.

Undertake longitudinal research to track the career progression of graduates who have experienced creative-based learning, assessing the long-term impact on their innovative capabilities and career achievements.

Explore opportunities for interdisciplinary research that examine the integration of creative-based learning principles from other fields into innovative educational practices and their effect on student outcomes.

Investigate the role of emerging technologies, such as artificial intelligence and virtual reality, in facilitating creative-based learning and improving the innovative skills of education students.

Examine how cultural and institutional factors influence the implementation and effectiveness of creative learning strategies in educational settings across different regions.

Identify the barriers to and enablers for adopting creative-based learning within traditional education systems, providing insights for educators and policymakers to overcome challenges.

By addressing these recommendations and suggestions for further research, the education sector can evolve to better prepare students to navigate the challenges of the modern education landscape and empower them with the innovative skills necessary to lead change.

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