

การพัฒนากระบวนการเรียนการสอนตามแนวคิดของเอนนิสและเทคนิค
เพื่อนช่วยเพื่อนเพื่อเสริมสร้างความสามารถในการคิดอย่างมีวิจารณญาณ
ของนักศึกษามหาวิทยาลัยราชภัฏ

*Development Of An Instructional Process Based On Ennis
Approach And Peer Coaching Technique To Enhance Critical
Thinking Ability*

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บทคัดย่อ

การวิจัยนี้เป็นการวิจัยและพัฒนาวัตกรรมการศึกษาสำหรับเสริมสร้างความสามารถในการคิดอย่างมีวิจารณญาณของนักศึกษาวิชาชีพครูของมหาวิทยาลัยราชภัฏ โดยใช้แนวทางการคิดอย่างมีวิจารณญาณของเอนนิสเสริมด้วยเทคนิคเพื่อนช่วยเพื่อน โดยมีวัตถุประสงค์ของการวิจัย ๑) เพื่อพัฒนากระบวนการเรียนการสอนตามแนวคิดของเอนนิสและเทคนิคเพื่อนช่วยเพื่อนเพื่อเสริมสร้างความสามารถในการคิดอย่างมีวิจารณญาณของนักศึกษามหาวิทยาลัยราชภัฏ ๒) ประเมินคุณภาพของกระบวนการเรียนการสอนตามแนวคิดของเอนนิสและเทคนิคเพื่อนช่วยเพื่อนเพื่อเสริมสร้างความสามารถในการคิดอย่างมีวิจารณญาณของนักศึกษามหาวิทยาลัยราชภัฏ

กระบวนการเรียนการสอนที่พัฒนาขึ้นมีวัตถุประสงค์ของกระบวนการเพื่อพัฒนาความสามารถในการคิดวิจารณ์ ประกอบด้วยความสามารถในการคิดอุปนัย การนิรนัย การหาความน่าเชื่อถือของแหล่งข้อมูล การพยากรณ์ การอ้างเหตุผลที่ผิดหลักตรรกะ การให้คำจำกัดความ และการระบุข้อสันนิษฐาน โดยมีขั้นตอนของกระบวนการ ๒ ระยะ (๑) ขั้นเตรียมความพร้อม เป็นการให้ความรู้ความเข้าใจผู้เรียนให้มีความรู้เกี่ยวกับทักษะพื้นฐานของการคิดอย่างมีวิจารณญาณ (๒) ขั้นฝึกคิด ประกอบด้วย ๒ ขั้นตอน คือ ขั้นการฝึกคิดและขั้นการนำไปใช้ ขั้นการฝึกคิด ประกอบด้วย ๕ ขั้นตอน คือ ๑) ขั้นเสนอปัญหาจากสถานการณ์ ๒) ขั้นพิจารณาปัญหาและเหตุผล ๓) ขั้นสรุปผลการคิด ๔) ขั้นสร้างความเข้าใจและเลือกทางเลือก และ ๕) ขั้นตัดสินใจ ขั้นการนำไปใช้ เป็นการฝึกให้ผู้เรียนได้ประยุกต์กระบวนการคิดอย่างมีวิจารณญาณไปใช้ในสถานการณ์อื่น ๆ ได้

ในเบื้องต้นมีการประเมินคุณภาพโดยผู้ทรงคุณวุฒิ กลุ่มตัวอย่างซึ่งคือนักศึกษาระดับปริญญาตรีของมหาวิทยาลัยราชภัฏศรีสะเกษที่ลงทะเบียนเรียนในรายวิชาการศึกษาและความเป็นครู จำนวน ๓๐ คน ผู้วิจัยประเมินผลจากการวัดผลก่อน-หลังเรียน ด้วยแบบวัดความสามารถในการคิดอย่างมีวิจารณญาณที่ผู้วิจัยสร้างขึ้นโดยใช้แบบวัด “ Cornell Critical Thinking Test Level Z) ของเอนนิสเป็นแนวทางในการสร้าง ผลการให้

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กระบวนการเรียนการสอนพบว่า ผู้เรียนมีคะแนนความสามารถในการคิดอย่างมีวิจารณญาณหลังการเรียนสูงกว่า ก่อนการเรียนอย่างมีนัยสำคัญทางสถิติที่ระดับ .05

คำสำคัญ การคิดอย่างมีวิจารณญาณ เทคนิคเพื่อนช่วยเพื่อน ความสามารถในการคิดอย่างมีวิจารณญาณ

Abstract

This paper was aimed to develop an education innovation for enhancing critical thinking ability of teacher student at the undergraduate level of Rajabhat University. The developed innovation based in Ennis's critical thinking approach and peer coaching technique. The objectives of this research were to (1) develop learning process by using Ennis's critical thinking approach and peer coaching technique so as to accelerate critical thinking ability (2) evaluate the quality of learning process developed.

There were 2 key stages of learning process developed in this research i.e. (1) preparation stage and (2) thinking stage. The second stage, thinking stage, was composed of 5 steps, which were 1) problem structuring of situation, 2) logics and problem scrutiny, 3) thinking summary, 4) understanding manipulation and option selection, and 5) decision making level. The learning process was on process of implementing in classrooms of process and experimental group. The population was undergraduate students of Rajabhat University involved with educational major of teacher professional career. The data were collected by using developed pre-post testing thinking competencies measurement application form of the critical thinking in which was accumulated with "Cornell Critical Thinking Test Level Z" from Ennis and Millman approach and then the data were analyzed by using t-test. To sum, the experimental result had ever been found that learner had scoring competencies in direction with critical thinking at pre studying more than post studying throughout statistical significant of .05.

Key Words : Ennis Approach, Critical Thinking Ability , Peer Coaching Technique

Introduction

Coincidentally, the critical thinking capability was the indispensable factor throughout human being quality development due toward critical thinking scrutiny & decision making coped with several problems of every day life equal toward student also. The development had been taking place with

student so as to be smart, ethics and happy in which depended on self-thinking development collaboratively. Moreover, thinking and critical thought learning was in dispensable to systemize educational system by means of maximum utility and quality; consequently, it was evident to be policy documentary in which declared from ministry of education not only

national education act B.E. 2542 accompany by amendment statement resume no. 2 B.E. 2545 (department of national education, B.E.2545: 14), national education scheme B.E.2544-2559 (department of national education committee, B.E. 2545: 20), national education standard (department of national education secretariat, B.E. 2548) but also national social and economic development scheme of statement no. 10 B.E. 2550-2554 (ministry of education, B.E.2551: 4). Recently, many factors were also crucial to develop human capital in line with critical thinking with a view toward being smart, happy and potential people into society at large. Subsequently, Thai education system had ever been pinpointed and concentrated on learning construction studying in which had fostered & triggered with a view toward critical thinking capability.

Critical thinking ability was defined with systematic thinking including thinking skills in terms of appropriate efficiency each of situation from scrutiny, reasonable logic and daily usage information dealing. Naturally, it was led toward problem resolution on account of societal sustainable living with happiness in which also had been reasonable thinking in line with several problems resolution and critical thinking.

In addition, critical thinking was meant critical scrutiny and logical thinking so long as being alternative decision making choice or taking action. (Ennis, 1985: 45) What's more, personal skill was a long way with information

analysis between truth and logical opinions; therefore, it covered with truth retrieval to keep abreast of credible source of references, logical reason formulation without prejudices bias. In brief, development of critical thinking occurred no matter with life living of efficient critical thinking empowerment and enhancing.

Subsequently, Ennis's critical thinking approach was applied by learning and teaching activities for many approaches such as (1) trigger students to choose various options and guide lines from hypothesis questioning, source of information finding. (2) pinpoint of evident, reason, question of frequency that was why? and search of meaning (3) practice of generous people, point of view reaction, lateral thinking, reason finding from the other's empirical evidences (4) opinions exchange and sharing (5) open mind of questioning in touch with unknown matter (6) series of time spacing between student's thinking so long as answer's student (7) point of views issue record and writing including triggering opinion's student (8) collaboration of opinion and encourage opinion's student by means of supportive reason and scrutiny of opinion issue for defect point (9) thinking share and exchange for contention and thinking exchange (10) finding the suitable answer repetition to be conclusion and summary (11) finding of answer indicator measurement (12) integrated and linkage with above process to be thinking and (13) assignment and delegation of thinking practices

toward students who didn't understand from thinking approach guide line.

Presently, national educational committee department of research report (B.E. 2548, 202) stated that post educational reform and national education act B.E. 2542 declaration took place in touch with almost all students had ever changed the critical thinking in direction of positive tendency compared with conventional learning approach. Moreover, one of the major problems was lack of comprehensive thinking skills from many students that developed for so long steps at advance. At the same time, there were points of view to be criticized with a view toward empirical data by means of thinking skills education evaluation. Nevertheless, it was not found that this project could not be effective critical thinking students in progress and obvious assessment due toward several teachers had been lack of critical thinking capacity skills and learning activities curriculum for example teaching media material obstacle, adversity's student toward this learning approach adjustment.

Coincidentally, potential development of critical thinking was the obligation from teacher; therefore, it was involved with development of teacher professional career by means of critical thinking capacity person from this approach. Moreover, development of teacher career had ever been the same as pragmatic person as long as learning activities management in terms of student center of critical thinking approach.

However, at present, education area had found of the teacher problem 4 main issues (Montri Chulawattanathon, B.E. 2543: 222) were (1) related problem of teacher career profession learners (2) related problem of teacher production (3) related problem of teacher career profession (4) related problem of teacher development in which teacher producing institution had discovered a problem of teacher ethics curriculum course in line with ordinary teaching technique, lecturing technique without innovation and technology.

In addition, research report record paper had still suggested of teacher producing institution in which had received the capability competencies development urgently on account of student center. Generally, it was agreement of research paper from Charuek Rattanasomboon (B.E. 2549: 54-56) that stated of undergraduate institution having been studying of student center approach emphasized on ambiguous evidence achievement result. Also, educational curriculum resume passage had focused on student center to indicate learner learning center approach with a view toward knowledge creation by themselves. Teacher should advise and facilitate the learner learning constructivism by themselves. In addition, national education committee department (B.E. 2548: 11) had ever been determined the indicator of learning student center approach in terms of teacher and students. The involved indicators had related with student center approach technique such as learner receiving of critical thinking

and group thinking development, knowledge creation and invention by themselves, learning participation, knowledge providing application with a view toward thinking practices and many techniques that involved with curriculum of student center approach of teacher obligation and mission directly.

Equally important, the absolute importance of critical thinking had been relation with critical thinking collaboration technique approach; consequently, it pinpointed of critical thinking development in terms of teacher career professional students having been necessary and indispensable for student of teaching curriculum course. It deserved toward continuous development in which utilized of both students themselves and advantages of critical thinking on account of student development in progress. There was the priority of teacher career profession students toward being critical thinking potential capability.

Related Theory and Concepts

Ennis's critical thinking approach

Ennis was a scholar who studied and reviewed the topic of critical thinking approach. Absolutely, Ennis's critical thinking approach was composed of deposition of individual and ability by means of critical thinking development. What's more, it was included with deposition of individual and critical thinking ability so long as learning activities and information retrieval by logical reason,

discussion, and question of ambiguous issues to originate the obvious evidences with a view toward self confirmation thought.

Simultaneously, thinking skills procedure had focused on learner center approach in which involved with opinion share and exchange, experiences and various option & alternative. In addition, experiences integration and linkage had ever led to external contingency situation or daily life pragmatic practices application also. In short, the conclusion of knowledge originated from mutual scrutiny consideration, logical reason debate till the best appropriate answer so as toward being self consistency confidence and implementation in progress.

Objectively, Ennis's approach emphasized on logical reasonable defense of thought contention, thinking reflection, opinion share and exchange, consideration and trustworthy creditability probability so as toward being decision making on belief and pragmatic implementation. Contingently, daily life agreement of situation had taken place with a view toward critical thinking and series of time spacing; therefore, it defined of learning procedure suitable scheme toward all situations including debatable issue problem of daily life situation. Also, the content of knowledge and learning chapter had emphasized on critical thinking in line with suitable classroom activities of paper & text book materials analyze of critical thinking practices. In addition, the main objective of learning innovation came

from logical reason debate, interaction, point of view discussion from learners. At last, the end of learning had already been encompassed with outstanding decision making action on belief or practice follow; in the other word, critical thinking practices process had been a long way with linkage contingency situation toward important & considerable utilities owing toward authenticable imply of resolution and conflict decision making all times.

Coincidentally, Ennis's learning and approach had been crucial toward teacher career professional ethics on account of teacher career knowledge dissertation to many students. It was included with learning curriculum activities in line with consideration scrutiny so as to plan efficient learning scheme, critical thinking intervention of studying, logical reason of information retrieval, peer review of opinion share and situation imply. That was the achievement of educational institution management in respect toward critical thinking practices and capability in touch with life cycle living and educational institution teaching.

Peer Coaching Technique

Equally important, critical thinking development occurred into complex interdependence procedure on account of layering stages capability variously so long as assistance support or opinion share and exchange with a view toward peer coaching technique. The main purpose was very crucial issue in order to perceive point of view and

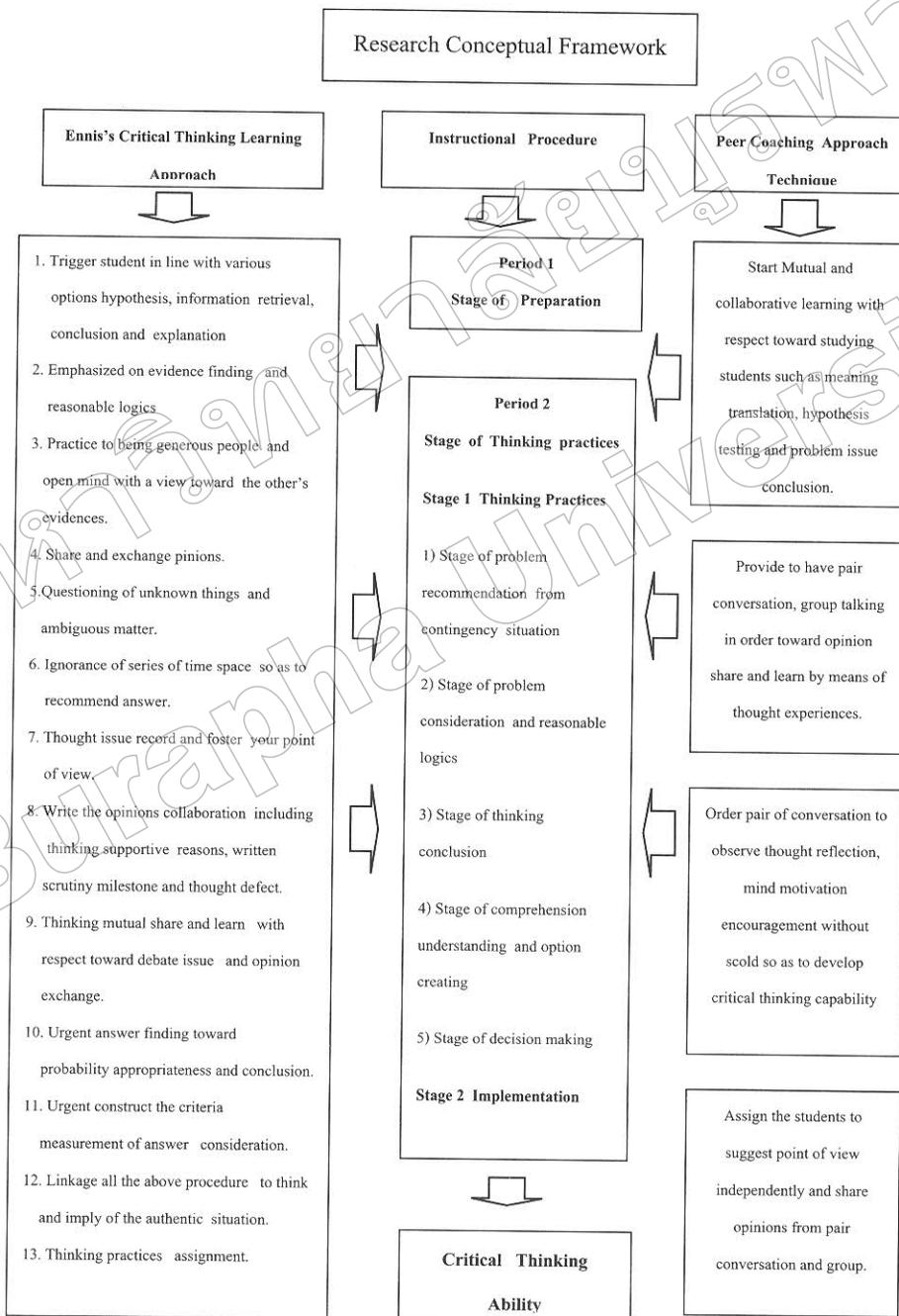
considerable scrutiny action in which had been suitable in line with empowerment approach from learning innovation. The function of learning innovation had ever been potential the competency of critical thinking, opinion share & exchange, alternative option encouragement and thought discussion.

In addition, peer coaching technique had emphasized on interaction participation opportunities including interdependent assistance each other owing toward teaching student having observed with a pair each others. What's more, it was on procedure such as planning, advisory collaboration to being objective and improvement, teaching efficiency development. (Wynn and Kromey, 1999; cited in Ladyshevsky, 2006: 68; Falchikov, 2002: 18; Keith and Meredith, 1997: 218; Ackland, 199; cited in Ladyshevsky: 68; Ackland, 1991; cited in Bowman and Me Cormick, 2000: 256) Nevertheless, peer coaching technique had in direction with collaborative learning study in line with pair studying, group learning and socialization procedure with a view toward interaction participation. (Vaidya and Pennsylvania 2000: 241)

Notwithstanding, peer coaching technique had been emphasized on one issue of development such as learning capability, observation procedure of new knowledge discovery, advisory conversation and mutual resolution working in accordance with peer task and pair or group activities.

Research Methodology

Recently, this paper was in touch with R & D educational innovation in which involved with learning procedure from Ennis's approach by means of peer coaching technique so as to empower & encourage critical thinking ability of Rajabhat university undergraduate students. Also, it composed of research conceptual framework as follow.



Fundamentally, quality assessment of learning procedure had been agreement of learning curriculum scheme and critical thinking ability equipment by means of academic expert and on process of population sampling group. What's more, teacher career profession students of Sisaket Rajabhat University had ever registered in subject of education and teacher ethics disciplinary syllabus approximately 30 students. According to pre-test learning, students of population group had imitated with critical thinking ability quotient in order to receive evidence information of critical thinking ability before learning action a long way with researcher developed already. In addition, afterward, population group had been evaluated with critical thinking test measurement for 12 weeks period in touch with critical thinking measurement equipment in which researcher had been constructed it to appraisal this research result impact. It was called that "Cornell Critical Thinking Test Level Z's Ennis approach" construction area paradigm that evaluated 7 perspectives as follow 1) Induction 2) Credibility of Sources 3) Prediction and experimental Planning 4) Fallacies 5) Deduction 6) Definition and 7) Assumption Identification.

Research Result

There were two factions of result of this study.

1. The Learning & Studying Procedure

The researcher had developed a learning procedure in line with Ennis's approach development construction including peer coaching technique that was a preparation stage and thinking pragmatic practices throughout this details as follow.

Period 1 preparation stage was knowledge comprehension understanding on account of fundamental skill of critical thinking abilities so long as be confident pair conversation. Also, it was called toward peer coach technique approach in line with mutual assistance potential ability each others.

Period 2 thinking pragmatic practices was composed of 2 stages as follow

1. **Thinking practices** was composed of 5 sub unit stages as follow

1.1 The stage of contingency situation formulation was structuring observation learner to cite, issues classify, problem condition comprehension and authenticable problem statement.

1.2 The stage of problem and reason logics was considerable scrutiny analyze to find information creditability and reasonable logics.

1.3 The stage of thought conclusion was pragmatic practices of several issues and problems including composed reasonable logics toward summary construction, hypothesis statement, induction, deduction so as to reply the various summary conclusion approaches.

1.4 The stage of comprehension understanding was a long way with answer consideration on account of information scrutiny, information logics, conclusion of obvious question afterward determine possible option alternative.

1.5 The stage of decision making had ever been practiced the considerable scrutiny of option and decision making with a view toward the best alternative options.

2. The Pragmatic Implementation was practiced into learner implication in touch with contingency situational thinking procedure including any other events so long.

From the stage of Period 2 thinking pragmatic practices, The teacher & learner had a role to being activities from studying so long.

Process	Sub-Procedure	Teacher Role	Learner Role
1. Thinking practices	1.1 The stage of contingency situation formulation	preparation for appropriate learning & studying by question, curiosity motivation, atmosphere building for thinking in line with contingency situation	Opinions state, vigilant being of team work by questioning, mutual collaboration situation scrutiny and spiritual mobilizing to summarized points of view
	1.2 The stage of problem and reason logics	thinking fostering, spiritual coaching, behavioral observation for learner, additional source of information, role model thinking, persuasion questioning adding toward 2 ways communication channel, recommendation of fundamental skill such as comparisons, observation, analysis and	Participation of problem analysis, advisor collaboration, example statement, additional recommendation adding, information system formulation, pair matching team working, reasonable acceptance by logics, finding criteria indicator for information measurement
	1.3 The stage of thought conclusion	Motivation of thinking, led questioning, learner observation and thinking revision	Analysis participation, logics reasonable consideration scrutiny and collaboration suggestion to conclusion
	1.4 The stage of comprehension understanding	Fostering of questioning, a source of additional information	Questioning & answer for additional information, example itemization for concrete obviously evident, peer spiritual incentive motivation each others, opinions mobilizing and thinking confirmation or logics adjustment thought
	1.5 The stage of decision making	Thinking motivation and conclusion in short selection, feedback analysis information, learner observation	Opinion expression for feedback, thinking conclusion of decision making activating
2. The Pragmatic Implementation		Contingency situation preparation so as to practice thinking process	Ongoing procedure participation of thinking process in line with each of critical thinking stage

Accordingly, research outcome result had ever been appeared from learning innovation recently; therefore, this approach of teaching had been received of learning procedure with respect toward thinking competencies and critical thinking ability from teacher career profession occupation in terms

of disciplinary and the others subjects. Also, it still was imply in touch with teacher, lecturer by means of learning approach for critical thinking ability of competencies development in line with other disciplinary or in other level education in progress.

2. The experimental operation was along way with learning procedure as follow of this experimental result.

	N	X	S.D.	t
Pre-learning	30	16.73	4.748	
Post-learning	30	23.43	4.083	.000

According to this figure table, this was expressed on sampling group being the critical thinking score competencies at higher than post experimental sampling group for the statistical significant level at .05.

Suggestions

Trustworthy, Ennis's approach procedure implementation was empowered with peer coaching technique approach so as to encourage and motivate the critical thinking by means of suggestions as follow.

1. Having learning scheme and plan curriculum of all semester owing toward critical thinking evolution being deposition of continuous pragmatic practices for a long term periods.

2. Having learning procedure to being capability on account of other disciplinary subject implementation of course syllabus to construct the debatable issues which had

used reasonable logics problem resolution and decision making.

3. Having designed critical thinking evaluation assessment of thinking capability in order toward being constructed the different contents including needed implication matter.

4. Given this learning intuitional construction, teacher should participate into thinking learner motivation due toward critical thinking capability procedure in which was ongoing very difficult to do on serious procedure. Actually, the incentive fostering motivated frequently taking advantage toward caused of spiritual peer coaching technique by mean of learner acceleration.

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