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แนวทางการออกแบบการสอนแบบเปิด เพื่อส่งเสริมความสามารถในการแก้ปัญหาเชิงสร้างสรรค์ โดยใช้วิดีโอเป็นฐาน: การวิจัยเชิงคุณภาพแบบปรากฏการณ์วิทยา

Guideline to Develop an Instructional Design Models Using Video-Based Open Learning: Quantitative Phenomenology Study

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บทคัดย่อ

การศึกษาครั้งนี้เป็นการวิจัยเชิงคุณภาพแบบปรากฏการณ์วิทยา มีวัตถุประสงค์ (1) เพื่อสังเคราะห์วรรณกรรมที่เกี่ยวข้องกับการออกแบบการสอนแบบเปิด ที่ส่งเสริมความสามารถในการแก้ปัญหาเชิงสร้างสรรค์ (2) เพื่อศึกษาความคิดเห็นจากประสบการณ์ของผู้ทรงคุณวุฒิ เกี่ยวกับรูปแบบการออกแบบการสอนแบบเปิด และ (3) เพื่อเป็นแนวทางในการออกแบบรูปแบบการสอนแบบเปิด กลุ่มตัวอย่างที่ใช้ในการวิจัย คือ ผู้ทรงคุณวุฒิ ที่มีประสบการณ์สอนอย่างน้อย 15 ปี และมีตำแหน่งทางวิชาการ เครื่องมือที่ใช้ในการวิจัย คือ แบบสัมภาษณ์เชิงลึก วิเคราะห์ข้อมูลด้วยการวิเคราะห์เนื้อหาโดยใช้โปรแกรม ATLAS.ti

ผลการวิจัยพบว่า การออกแบบการสอนแบบเปิดเพื่อส่งเสริมความสามารถในการแก้ปัญหาเชิงสร้างสรรค์โดยใช้วิดีโอเป็นฐาน เกิดจากองค์ประกอบ (1) การออกแบบการสอน (2) การเรียนแบบเปิด (3) การทำงานเป็นกลุ่ม (4) การเรียนโดยใช้วิดีโอเป็นฐาน โดยแต่ละองค์ประกอบมีรายละเอียดเชื่อมโยง มีความสัมพันธ์เกี่ยวข้องกัน และเป็นส่วนหนึ่งของกันและกัน นำเสนอแนวทางในการออกแบบตามด้านต่าง ๆ คือ (1) การเรียนแบบเปิด (2) การสอนแบบเปิด (3) การประเมิน และ (4) สื่อการสอน

คำสำคัญ: การเรียนแบบเปิด / การออกแบบการสอน / การเรียนโดยใช้วิดีโอเป็นฐาน / เทคนิคกระบวนการกลุ่ม / การแก้ปัญหาเชิงสร้างสรรค์

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Abstract

The objectives of this quantitative phenomenology study were: (1) to synthesize literature relevant to an open instructional design to enhance creative problem solving ability; (2) to study veterans' experience-based opinions towards the open instructional design model; and (3) to apply the open instructional design as the guideline. The research included sample 10 veterans with 15 years of instruction experience in scholarly or professor positions, two of which specialized in five academic fields. The applied research tools included three in-depth interview sections, namely (1) inquiries about general information of the respondents, (2) opinion towards open instruction, and (3) opinion towards concepts and theories applied with the research. The data were collected by in-depth interviews and analyzed with a content analysis method using the ATLAS. ti program.

The research findings were as follows: The video-based open instructional design model to enhance creative problem solving ability consisted of four components, including (1) instructional design, (2) open instruction, (3) group process, and (4) video-based learning. Each component was related with one another in which the design was proposed as having (1) open learning, (2) open instruction, (3) evaluation, and (4) instruction media.

KEYWORDS: OPEN LEARNING / INSTRUCTIONAL DESIGN / VIDEO-BASED LEARNING / GROUP PROCESS / CREATIVE PROBLEM SOLVING

Introduction

Creative problem solving is an important skill for the 21st century learning which intends to produce creative learners and develops system thinking innovation and initiative problem solving ability (Trilling & Fadel, 2009) among students so that they will be able to apply them when they graduate. System thinking to solve the problem means the ability to figure out and find new solutions, methods or approaches and guidelines to solve the existing problem and develop new, different, precious and useful knowledge to solve the new problems creatively. This knowledge also becomes a guideline to

develop system thinking which is very essential for our hectic life (Brophy, 1998; Crebert et al., 2011; Osborn, 1963)

In the meantime, graduated students who pursued their career have to face with different problems all the time no matter occupation it is. Learners should solve their problem creatively. They should practice problem solving skills during their life in the university. Good problem solving skill derived from the systemic analysis and synthesis of ideas obtained from brainstorming that come up with a guideline for the most correct and proper problem solving. In contrast, learners who are not in the education system could have a chance to share and learn different theories and ideas with students in the education system by applying and sharing their direct working experiences. This would enable students in the education system acknowledge about actual problem in the workplace and society. The society nowadays needs qualified personnel to solve the existing problems creatively because creative persons would try to improve and correct their working with more effective solving methods.

In order to solve any problem creatively, it required different ideas and one of the most important approach is to develop system thinking among students so that they can apply these ideas. These ideas can be learned from group technique which was the applied process to utilize individual's talents or skills and ideas. Group learning in the group process technique referred to experience, knowledge and data sharing in a learning group to develop required skills among interested students under the supervision and guidance (Brilhart, Galanes, & Adams, 1997; Engleberg & Wynn, 2000; Limpicharoen, 2009)

Further to our literature and research review, there have been class managements to develop creative problem solving skill using different instructional methods, strategies and techniques such as cooperative

learning, metacognitive instruction, associative thinking, action learning, col laborative learning, problem-based learning, creative problem solving process, inquiry-based learning, blended learning and six thinking hats. Instructors have applied different instructional method, strategy and technique to design instruction and research including action research, synectics method, experiential learning, project-based learning, activity-based learning, concept mapping, divergent thinking, convergent thinking (Cheng, Glantz, & Lightwood, 2011; Daorueng, 2012; Hargrove & Nietfeld, 2015; Jaisook, 2012; Laisema & Wannapiroon, 2014; Minamino & Kinoshita, 2010; Paksanchai, 2012; Pansakul, 2002; Parnes, 1967; Phaksunchai, Kaemkate, & Wongwanich, 2014; Seechaleaw, 2010; Tantivitayamas, 2011; Theerawongnukul, Ratana-Ubol, & Keeratiburana, 2014; Vidal, 2010)

The Global Competitive Report 2014-2015 by World Economic Forum (WEF) reported that Thailand's education quality was ranked inferior to other countries in Asian region. This proved that the overall education quality in Thailand was considered serious to be solved urgently at all level (WEF, 2014). Thailand's education has been problematic in different aspects particularly for education quality. Current important and problematic issues included the followings. (1) Learning problems included instruction curriculum, learning process and learning assessment; and (2) Problems about distribution of educational opportunity and education quality included education management.

Further to above mentioned problems, the most serious problem was learning problem, disparity and quality education since they derived from instructors and the universities. They were something around us and the responsibility of instructors to develop good curricular. The development began with their class. Instructors were subject to develop learning process

and evaluate its result. Further to youth survey in Thailand in 2014 by Office of Youth and the Quality of the Learning Society, it was found that 69.4% of the respondents wanted instruction changed and focused on daily life applications rather than learning theories. About 58.7% of the respondents agreed that Thai students learned the hardest in the world but they could not apply their knowledge out of class and in their daily life.

The study of guideline aimed to develop open instruction for instructors directly, so that they could design their open instruction to interested students in their class. It was the instruction that allowed students to learn different knowledge from different institutes using collaborative learning among students from different institutes and interested persons. Collaborative learning applied instruction material and technology with no charge. Elements of open instruction included variety of learners or students, instructors and knowledge contents from different and up-to-date sources of learning. Open learning also included self-assessment, motivation design to generate participation and learning society along with practical planning. Elements of open learning led to instructional design by instructors and consisted of syllabus or subject evaluation, group learning, learning material, instructional videos, student and instructor forum, exercise and test, and project and assignment of practice.

It was obvious that open learning was the instruction system to solve and reduce learning problems particularly for problems concerning expense, time, venue, accessibility and content structure. It also promoted and supported learner-center instruction of wide learning context (Clarke & Walmsley, 1999). Open learning was the instruction platform developed by MOOC that allowed instructors to develop their lessons, students to enroll the course and the society to create life-long learning society. MOOCs' concept

was considered true innovation of repackaging of learning derived from open learning (Haggard et al., 2013; Kim, 2014; OpenLearning, 2015)

Now it is information and communication technologies are applied with open instruction. They utilized video assisted instruction and provided different channels to manage class. The comparison of learning time and worthiness of normal and open learning showed that open learning using YouTube took the least time and generated the most learning worthiness. The mentioned problem solving had to be processed systemically using instructional system design to design open learning environment. Systemic open instructional design would be the guideline for instruction management that was successful and could reach the instruction objective.

In order to design open learning, instructors had to recognize its elements and design process so that they could design their open learning class. The researcher, therefore, was interested in investigating opinion of veterans as a guideline for systemic open instruction development and group process using video to enhance creative problem solving ability of undergraduate students.

Research framework

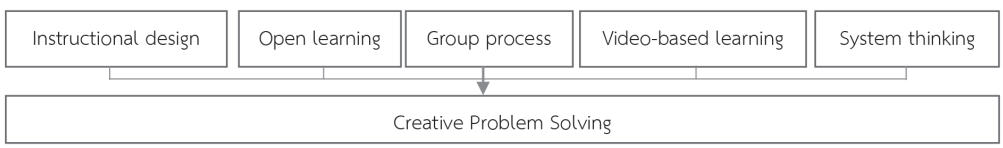

Figure 1 Research framework

Research objectives

1. To synthesize related literatures and apply them as question structure in the interview.

2. To analyze veterans' opinions towards guideline of video-based open instructional design using critical thinking and group process to enhance creative problem solving ability of undergraduate students.

3. To apply as the guideline of open instructional design to enhance creative problem solving ability.

Research methodology

In order to collect data, the researcher had studied and synthesized research papers and literatures relevant to open instructional design to develop creative problem solving ability and apply them to develop an interview structure prior to actual interview.

To collect data, the research had made appointment with veterans, collected data using in-depth interview with individual veteran and obtained qualitative data. Prior to the interview, we had been allowed to record the interview. In case of inconvenience of the veterans, the researcher had taken note different topics in the interview and let them prove that note prior to further analysis.

Sample group in this research consisted of veterans with at least 15 year experience of instruction or instructional design development. They were instructors or professors in the faculty of education-education science or related fields or adjunct professors. These 10 veterans included 2 specialists in different fields as (1) instructional design, (2) computer network instruction, (3) educational technology and communication (4), curriculum development and higher education instruction, and (5) creative problem solving and they were recruited with purposive sampling method.

Research tools were three section in-depth interviews inquiring about (1) general information of the respondents (2) their opinion towards open

instruction, and (3) their opinion towards guideline and theory applied in this research. Details of structured and open-ended interviews were as follows. In the first section, general information of the respondents were inquired. The second section inquired about eight topics including (1) opinion towards open instruction, (2) learners' characteristic in open learning (3) subject, content, activity and time period of suitable open instruction, (4) type and characteristic of instruction media and technology to be applied with open instruction, (5) influencing factors toward successful open instruction, (6) challenge and barrier or limitation of open instruction, (7) guideline to develop open instruction, and (8) guideline to prepare instructors and students. In the fourth section, it inquired about four topics were inquired including, (1) open instruction management using group process for students in the course (2) the application of system thinking with group process to enhance creative problem solving ability, (3) video-based open instruction management (video on demand, live video and video conference), (4) elements of open instruction which included (a) content, (b) instructional method and strategy, (c) opinion sharing activity, (d) learning environment, (e) instruction media and technology, (f) instructor (g), students, (h) interaction and commu nication, and (i) measurement and evaluation.

The researcher had analyzed with content analysis method along the following steps. (1) Observation was applied to distinguish the difference of definitions (meanings) or compare the similarity of obtained data from the interviews (2) Data collection referred to finding code similarity of data obtained from the interview and transcript or record, and finding the relation of the speech and code hidden in the definitions, and (3) Analysis aimed to find how each part of the code correlated with one another and with the phenomenon.

Research findings

1. The synthesis of research papers and literature relevant to video-based open instructional design to enhance creative problem solving ability revealed that components of open distant learning consisted of subject evaluation, group learning, instructional material, video, forum, exercise and test, evaluation, practice or workshop and project or performance. In order to obtain each component, instructors were subject to design their own open learning through video-based learning (Ebner, Lackner, & Kopp, 2014; Guàrdia, Maina, & Sangrà, 2013; Gulatee & Nilsook, 2016; Jasnani, 2013; Kilgore & Lowenthal, 2015; Kleiman, Wolf, & Frye, 2013)

In order to obtain each component, instructors were responsible to design their own open learning through video-based learning (Greenberg & Zanetis, 2012) for specified three groups of video-based instruction models as (1) video on demand, (2) one-way real time video and (3) two-way real time video to be applied as instructional material and communication tool through group process. Instructors were subject to design group process or group activity from literature synthesis as follows; idea brainstorm, merge ideas, look from the outside, have a view of future based on the past, imagine about the future, use group inspection, consider things concretely, use intelligent tool, use question, use pressure and think systemically. These approaches helped instructors consider problems or situation by finding their relationship or connection. They focused on critical thinking, overall factors along with cause of problems among different components. Its process included problem proposal, understanding of the situation, draw or imagine the problem, identify cause of the problem, determine factors related to the cause and result, and plan to solve the problem using systemic instructional design process.

2. After the interviews, the researcher had transcribed word by word, reviewed the obtained data by comparing data from our listening and record for many times. Then we reviewed transcribed and noted data for many times in order to observe meaning of different descriptions in each process, eliminated those unrelated data and came up with core data. After that, we transcribed coding message from the dialogues and considered what the meanings of those words were which they were called categories or sub themes. We, finally, summarized different categories or sub themes as a single subject

Finding revealed that creative problem solving related to open learning, group process, collaborative learning, objective determination, video-based opinion and learning sharing activity, performance and content were rated the most important, followed by system thinking.

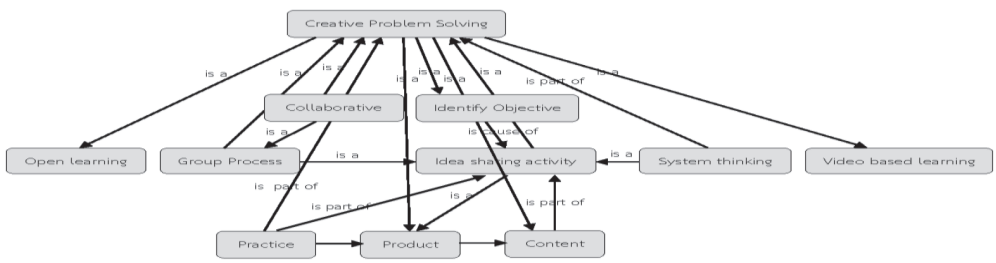

Figure 2 The element to enhance creative problem solving

The analysis showed that open learning related to instructional principles, concepts, theories and designs, instructor analysis, various learners and instructors, motivation, various content, and activity planning were rated the most important, followed by experience, preparation, university's policy, knowledge, interaction and communication, analysis, and requirement.

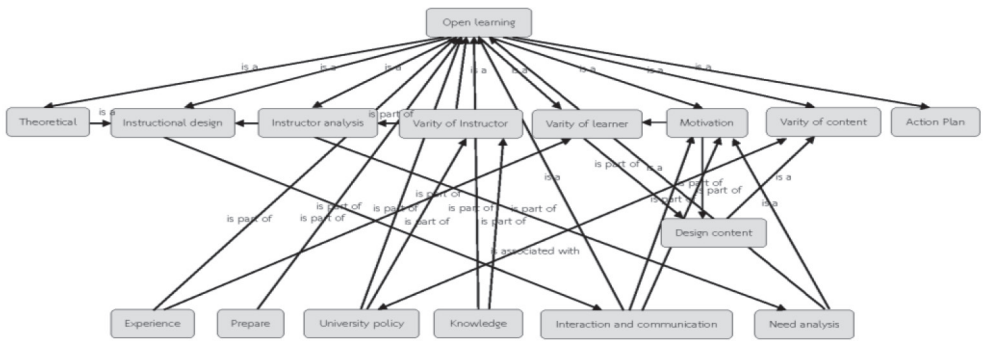

Figure 3 The elements of open learning

The diagram showed that instructional design related to instruction principle, concept and theory, system thinking, instruction media and technology, activity design, learning environment, group process, variety of instructor and instruction strategy were rated the most important, followed by interaction and communication, evaluation, online media, instruction management system, communication, opinion sharing activity and open learning.

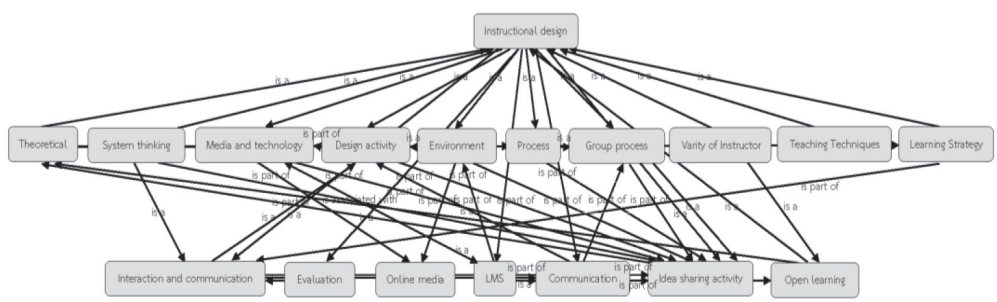

Figure 4 The elements of instruction design

Analysis revealed that system thinking related to interaction, communication, instructional design, opinion sharing activity, case study and process were rated the most important, followed by creative problem solving ability.

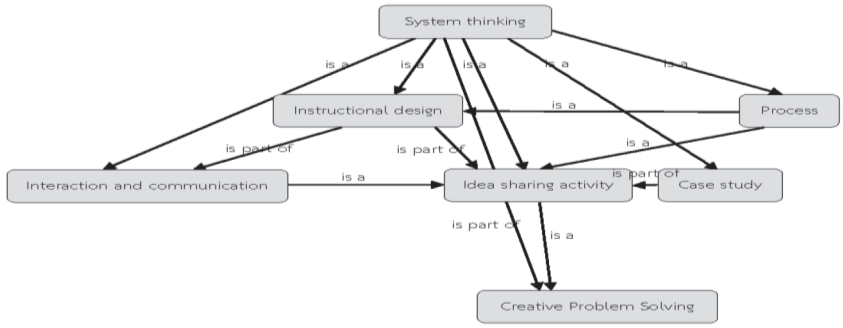

Figure 5 Components of system thinking

Analysis revealed that group process related to opinion sharing activity, variety of learners, norm and regulation, group switching, agreement of the group, group size and communicating time were rated the most important followed by instruction process and design, collaborative working, communication along with instruction principle, concept and theory, motivation, preparation, learner analysis, and media and technology.

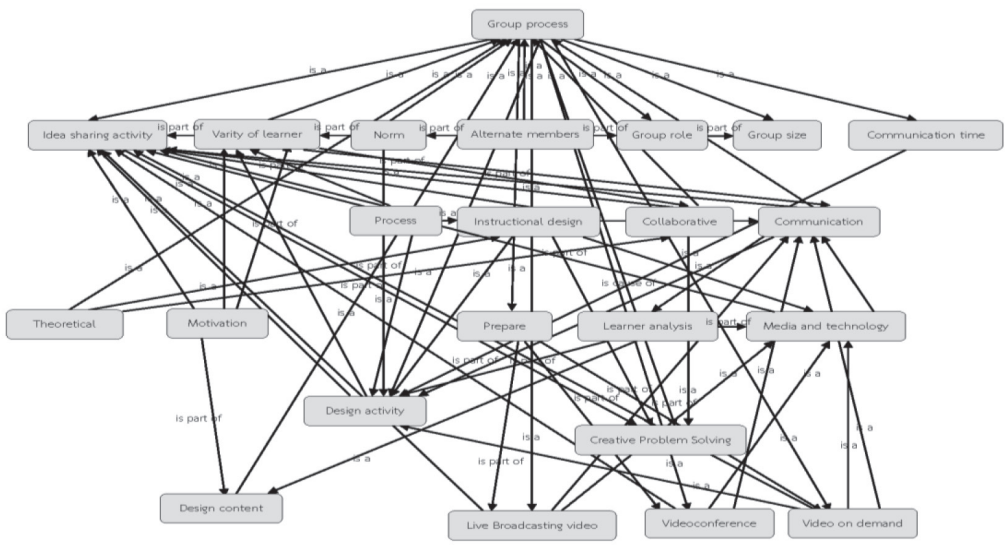

Figure 6 The elements of group process

Analysis revealed that video-based learning related to live video, video on demand and video conference were related the most important, followed by activity design, opinion sharing activity and communication, along with case study, group process, media and technology, instruction strategy, interaction and communication and preparation.

Discussion

The guideline to develop open learning using video to enhance creative problem solving ability of undergraduate students related to different elements in the analyze. It could be applied as the guideline to develop open instruction with the following reasons.

Open instruction

1. Instructors should emphasize on choosing the correct principle, concept and theory of open instructional design and focus on fostering systemic or critical thinking among learners which was considered an important instruction strategy to design activity with precise process through medial and technology under proper open learning environment.

2. To design an open instruction, instructors should specify instructional step and activity, and design instruction materials with apparent instruction planning. They also should have good understanding of instructional design.

3. To design an open instruction, instructors should be analyzed the class should be provided with variety of instructors. These instructors were knowledgeable, specialized in teaching content and capable of teaching.

4. To design an open learning, instructors should always be aware of variety of learners which referred to students in the class and out of the curriculum so that the course consisted of different learners, and the

instructors were responsible for designing an interesting instruction throughout the course.

5. To design an open learning, various course contents should be accessible for students outside the course, be related to learners' daily routine, practical and useful, and could not learned anywhere.

6. Instructors should design an attractive instruction suitable for their learners or design an instruction which motivated or encouraged learners internally and externally related to learners' emotion and feeling.

7. To plan activities for an open learning, instructors should design practical activities that learners could apply with their problem solving and focused on the feasibility in learner's daily life.

8. Instructors should be concerned about learners' various experience in term of their age, race, religion and culture. Learners' experience in the course should relate to the course content as much as possible and the course should consist of different age of learners.

9. Instructors should design good preparation for both learners and instructors prior to an open learning provision.

10. Instructors should carefully consider curriculum based on the university's policy and design an open learning for other learners out of the course or propose their instructional policy to the management prior to design that open learning.

11. Instructors should emphasize on designing the activity which enabled learners to acquire new knowledge through that activity.

12. Instructors should emphasize on interaction and communication among instructors and learners by focusing on time, communicating tools and different learners' skills. In addition, instructors should encourage collaborative communication among learners during idea sharing activity and online

evaluation using open instruction model.

13. Instructors should analyze the needs before and during the open learning activities by enquiring or studying about learners and instructors' needs.

Open learning

1. Instructors should focus on video-based instruction that allowed visual and sound learning among learners so that they could re-learn again later on.

2. Instructors should apply live video to teach real time situations or lectures so that many learners could view the video on real time basis at the same time.

3. Instructors should apply video on demand to present or teach different contents which the video should not be longer than 8 minutes. Instructors could also use video clips broadcast through social media or social media VDO sharing.

4. Instructors should apply video conference to teach and communicate with learners since video conference could transmit pictures, voice and data among learners and instructors or among learners. They could also communicate synchronously with one another. To design an activity for idea sharing and communication, instructors should prepare learners' skills in using different tools, media and technologies based on instructors' instruction strategy using case study or group process which focused on creating collaborative interaction and communication.

5. Instructors should design group process or group activities which allowing learners in the course and out of course to share their ideas, participate with the open instruction, present and discuss their comments collaboratively to provide learning from ideas or opinions of others.

6. The role of instructor during group process was to give conclusion or shared by different idea of different learners based on the regulations, norms and agreements of the group, collaborative requirements and instruction conditions specified by the instructors.

7. Instructors should determine learner groups. Each group should consist on 3-5 members communicating no more than 45 minute session. Instructors should be flexible about the venue of the activity and group member switching.

8. Instructors should select proper concept of group process design, motivation creation, learner and instructor preparation, learner analysis and media and technology used in the activity.

9. Instructors should apply critical thinking strategy with their instruction along with group process.

10. Instructors should focus on interaction and communication among learners by designing an apparent process of contributing ideas, sharing activities and applying case studies designed by the instructors so that learners would acquire creative problem solving ability.

Evaluation of open instruction

1. Instructors should focus on learner's project or performance evaluation or activity designed by the instructors that allowed learners to learn collaborative problem solving and conclusion.

2 Instructors should focus on the evaluation based on creative problem solving process by the learners based on its actual circumstance.

Instructional media in open instruction

1. Instructors should design proper instructional media suitable for the activity as an instructional media and communicating tool. They should also

focus on online media and tools that allow collaborative working activities among learners via social media.

2. Instructors should focus on using video on demand, live video and video conference transmite their instruction based on mobile device applications.

Recommendations

1. Other researchers could apply research findings to develop open instruction with critical thinking and group process using video to enhance creative problem solving ability of undergraduate students later on by investigating about detail of each element suggested by the veterans in this research.

2. Future researcher should collect both qualitative and quantitative data, analyze and compare and apply it as the guideline to develop open instruction design model later.

3. Future researcher should interview or inquire both students in the university and out of the university along with instructors about their need, expectation and current circumstances of open instruction.

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