Developing Students' Core Competency through Design Thinking Pedagogy: A Case Study of ASEAN and Cross-Cultural course for Chinese Students at a Thai University

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Abstract

The unpredictable job market demands employees with necessary skills to tackle challenges at work. Innovative Pedagogy, including the concept of Design Thinking, is gaining attention in university or school management for improving students' learning outcomes. The objective of this study is to study the application of Design Thinking in ASEAN and Cross-cultural course that is a basic course of general education (Gen Ed) at a Thai university. Meanwhile, to identify what kind of core competency students acquire from this course. The research involves qualitative analysis of interviews with 10 students in ASEAN and Cross-cultural Course. The study finds that the Design Thinking process, which consists of 5 steps, is applied in project-based learning in the course and helps students develop creativity, critical thinking, cooperation, and communication skills (4C). Moreover, the Design Thinking process also fosters students' cultural competency, including cross-cultural skills and self-culture confidence.

Keywords: *Core Competency, Design Thinking; ASEAN and Cross-cultural Course*

1. Introduction

In the era of the world's knowledge-based economy, the integration of real-time data and information has become one of the most important parts of a regional economic transformation and growth. Labor-intensive industries are being replaced by skill-intensive industries. The global labor market is demanding more and more skilled workers, especially in Thailand and China. The labor market of China and Thailand require talents who are equipped with core competencies that answer the needs of the workplace. From 2013 to 2020, there was an increase in the number of Chinese students in Thailand. As of 2020, there were a total of 14,423 Chinese students. (Kunnaree and Krongchan, 2021) Developing core competencies in these students in order to meet the needs of the labor market's demand is a significant issue for both students themselves and the institutions.

Students' core competency mainly refers to the characteristics and abilities that students possess. It is the key equipment for the students to be part of the essential workforce that helps drive society and the economy forward after they graduate. According to the framework of "21st Century Learning", competency consists of life-career skills, learning-innovation skills, and information-media-technology skills. (Partnership for 21st Century Skills, 2019). Among these skills, the most widely recognized model is the 4C model, which includes four aspects, namely Critical Thinking, Creativity, Communication, and Collaboration. These four aspects reflect the standard skill that a 21st talented worker must pose. The concept has a relatively wide influence in the international labor market. Moreover, Chinese students who study in Thai universities that are equipped with the above skills and competencies will be advantageous in Thai and Chinese labor markets. Therefore, the universities' curriculum, especially in general education courses. should be reformed on the basis of core competency as those courses can help students equipped with the skills and competencies required by the labor market.

Nowadays, many institutions around the world have redesigned their course curriculum in order to help students develop their core skills and competencies. This idea results in new courses and new teaching techniques. At the same time, a new concept of education is also applied in the process of the development of the curriculum such as project-based learning courses, discussing-based teaching courses, experiential learning courses, and so on. Different pedagogies have different advantages and characteristics. However, it

is possible to combine alternative ways of pedagogies through the concept of Design Thinking in order to develop useful core competencies for the students.

The concept of design thinking was first introduced in the design industry, and it was later used in many different fields of industry. After the School of Design of Stanford University summarized the concept of Design Thinking into a set of scientific methodologies, it quickly became popular in universities and schools around the world. The concept of Design Thinking is divided into 5 steps: (1) empathy, which means collecting the real needs and issues of the target groups (2) definition, which means analyzing their needs and issues (3) ideating, which means brainstorming (4) prototyping and (5) testing and optimizing solutions. (Tu, Liu, and Wu, 2018) Throughout these 5 steps, teachers can train and help their students develop their core skills and competencies. Most importantly problem-solving skills and creativity can be developed through the process of teamwork. Lebid and Shevchenko (2020) have highlighted that the application of design thinking with a project-based approach can promote the growth of many important skills and problem-solving experience. Lee and Park (2022) interviewed 62 students from different cultural backgrounds and found that the multidisciplinary and cross-cultural team quickly put their innovative and applicable ideas into practice by using a visually workable prototype as a powerful tool in the design thinking process. The design thinking process has a positive effect on students' engagement in cross-cultural courses.

Most research studies on design thinking and students' competencies have been carried out, focusing on pedagogy and students' learning outcome. According to Cohen and Mule (2019), the design thinking pedagogy offered students rich opportunities to collaborate with others while also deeply engaging with the subject matter of the instructional materials and the process of school-making at home and abroad. Lin, et al. (2020) has heightened that design-thinking-based IT courses significantly develop students' ability to communicate and work with others, solve problems, use technology, and engage in other activities. Most importantly, in addition to supporting the development of students' knowledge and skills, the research findings showed that the design thinking method may enhance the worth, diversity, and originality of digital works that students make in IT courses. Glen, et al. (2015) provided guidance for teachers who are considering the consolidation design thinking projects into their business-related courses. The process of the design thinking projects is structured to include 6 phases: (1) problem finding, (2) observation, (3) visualization and sense-making, (4) ideation, (5) prototyping, and (6) testing. The design of a business model through design thinking is used by instructors to manage class activities.

However, previous relevant studies mainly focus on the application of design thinking in competency-based education for major courses, such as IT and business courses (Lin, et al., 2020; Glen, et al., 2015). Only a few research papers focus on the application of the concept of design thinking in general education courses. When general education courses are considered as fundamental courses equipping students with necessary skills and knowledge in order to be compatible workforce in the future, especially for Chinese students in Thailand. General education courses allow Chinese students to interact and communicate with Thai or other foreigners appropriately, which is one of the most necessary skills. Therefore, the researcher investigated the course entitled 'ASEAN and Cross Culture', the first course for Chinese freshmen in Thai universities, as a case study in order to analyze and figure out how to apply the concept of design thinking in ASEAN and Cross-cultural course. Besides, Liu, et al. (2020) proposed that cultural understanding and heritage should be one of the key competencies in the definition of core competency. Hence, the question is what kind of core competency students get from taking the course, in which the concept of Design Thinking is integrated.

2. Objectives

1) To study how to apply the concept of design thinking in ASEAN and Cross-cultural course

2) To identify what kind of core competency students, acquire from the course of ASEAN and Cross-culture, in which combine the concept of Design Thinking.

3. Methodology and Theory

3.1 Methodology

This research is a qualitative research paper, which uses a case study as a source of primary data. The case study was the course entitled ASEAN-cross culture into which the concept of design thinking was applied. Moreover, to collect primary data, in-depth interviews were conducted with a group of students who had taken ASEAN-cross culture, to investigate students' core competency they had gained from the course Since Chinese students are the majority of international students in Thailand, developing their key competencies can help them understand Thai culture so that they would communicate and interact with local people more efficiently. ASEAN-cross culture is a general education course that aims at developing students' creative and critical thinking, enabling them to recognize existing problems, analyze possible situations, and come up with a constructive solution. It is a basic course that helps Chinese freshmen students to understand Thailand and ASEAN countries. To conduct the research, the first step was the observation of students' behavior in class. Second, after the end of the course, the 10 students were randomly selected for in-depth interviews. The semi-structured interviews helped the researcher to get flexible and topic-related data. The interview questions were as follows:

1) What do you think of the application of design thinking in the course, ASEAN-Cross cultural?
2) What skills and knowledge have you learned from the design thinking projects in the course?
3) Do you have any suggestions for the course in order to develop students' core competency?

In order to make sure that the students' opinions and experiences from the interviews were correctly reflected in the research findings, member checking was used to give students the opportunity to offer their feedback on the research process and confirm the researcher's interpretation of their perspectives. It also contributed to improving the validity of the study findings. Primary data from the interviews, were concluded and analyzed. Then, the findings were presented to individual students. Each of them was asked to provide additional information or clarify certain aspects of their responses. By the validity test of the research instruments above, the primary data were more valid.

Moreover, the researcher reviewed literature as secondary data, focusing on design thinking, constructivism, and core competency. Figure 1 shows the process of Design Thinking in the ASEAN-Cross cultural course and students' learning outcomes, which refer to the key competencies that they would learn from the course.

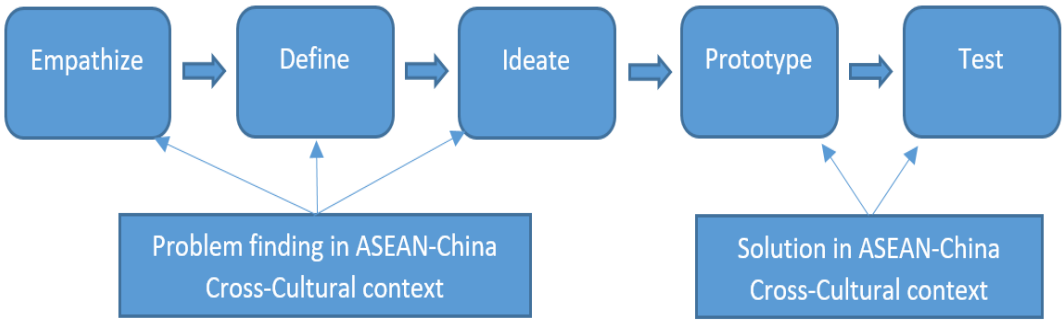

Figure 1 Process of design thinking in the ASEAN-Cross cultural course

3.1 Concept and Literature Review

Design thinking was first introduced in the design industry. It is considered a set of scientific training methods developed in order to enhance the creativity and innovation of designers in the product design process. Now, the concept is widely used in everyday life as well as in the fields of business management, science application, and education development. Moreover, Pratt Institute of Design,

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established as a campus of Stanford University, mainly focuses on design thinking education, and cultivating innovative problem-solving abilities of students from different majors (Chen and Huang, 2017) The process of design thinking is divided into 5 steps: (1) empathy (collecting the real needs of the target groups), (2) definition (analyzing the above needs, refining the problem to be solved), (3) ideating (brainstorming) – prototyping, (4) testing, and (5) optimizing solutions. Nowadays, these steps are applied and transformed into a new teaching method, namely Design Thinking Pedagogy (Spencer, 2016). The design thinking pedagogy helps create a learning environment based on practical problems the students face in a project context and guides student teams' design activities through empathy, definition, ideation, prototyping, and testing. Students define problems using their knowledge and apply design thinking in the process of problem-solving, which can ultimately enhance their innovation confidence and ability through new teaching methods. In conclusion, there are 2 outcomes from design thinking. First, it allows students to frame problems with empathy, rather than just dealing with pre-determined problems. Students can use their own insight to focus on problem-solving. Second, it provides a clear framework for all aspects of education and helps provide strategies and tools that support the development of course activities.

Pande, et al. (2020) has shown a clear relationship between activities of each phase of the design thinking process and various constructivist learning tenets. He found out that the concept had been developed from constructivism. Constructivism is a theory about knowledge and learning that emphasizes the initiative of learners and believes that learning is a process in which learners generate meaning and construct understanding based on their original knowledge and experience. The process often occurs when there are social and cultural interactions. Learning is a process of meaning construction in a certain situation socially or culturally through certain collaborative activities. Thus, the "situation", "collaboration", "conversation" and "Meaning construction" are the four elements in the learning environment. In a constructivist classroom, teachers create situations in which the students will question their own and each other's assumptions. So, constructivist teachers need to create situations that challenge the assumptions of traditional teaching and learning (Amineh and Asl, 2015). According to Christie (2005), learning is both active process and personal representation of the universe. Knowledge is created from experience and altered by diverse encounters. This philosophy places a strong emphasis on understanding and problem solutions. Authentic assignments, first-hand knowledge, teamwork, and evaluation are a few additional crucial elements in the theory of learning. In summary, the realization of design thinking teaching is inseparable from the solid foundation of constructivism, especially, the application of situation, collaboration, conversation, and meaning construction in the course in the design thinking pedagogy. Besides, the role orientation of students and teaching is different from traditional in-class practices, the Design Think courses emphasize students' active independent learning through innovative learning methods, supported by teacher guidance. In this context, design thinking is an innovative teaching method, which d has become more and more important nowadays.

Core competency first appeared in the research reports of the Organization for Economic Cooperation and Development (OECD) and the Council of the European Union. In 1997, the OECD launched the "Definition and Selection of Competencies: Theoretical and Conceptual Foundations" research project. However, the key competencies were not used at that time but in an article entitled "Key Competencies for a Successful Life and a Well-Functioning Society", published in 2003 (Chu, 2016). After that, the "Framework for 21st Century Learning" emphasized different types of competencies in the report. Moreover, the 4C model: (1) Collaboration (2) Critical Thinking, (3) Creativity, and (4) Communication, is one of the most famous key competency models in the educational world. (1) Collaborative ability refers to the ability of people to cooperate, associate, and coordinate with each other at work as a team or a partner. It includes the idea of acceptance of tasks, active participation, negotiation and discussion, listening, and respect. These behaviors coordinate interpersonal relationships and group cooperation. (2) Critical thinking means a conscious and deliberate process used to interpret or evaluate information and experiences with a set of reflective attitudes and abilities that guide thoughtful beliefs and actions (Mertes, 1991). (3) Creativity is creative thinking, which can be in form of learning, imaging, and experimenting. It can help increase the efficiency of productivity, problem-solving, and interaction in the workplace. (4)

Communication refers to the ability to communicate with others in general. It is necessary to choose different communication methods according to different objects, such as language communication, eye gestures, action reminders, etc. In conclusion, key competencies are abilities that reflect personal performance in everyday life. Developing students' core competency is not only beneficial to the students themselves but also can shape the students' mindset to promote social development in the future.

When Chinese students in Thailand are equipped with key competencies in the design thinking pedagogy developed from constructivism theory, they can cooperate and interact with other students in class or local people out of class. When interacting with Thai people, the students can develop their critical thinking through interaction with Thai people who have completely different types of mindsets from theirs. Meanwhile, when the students conduct in-class discussions, they can improve their creativity through brainstorming with classmates. This type of competency is developed through study-abroad experience, which is vital core competency for them in order to pursue their desired career in the future. Therefore, this research paper focuses on how to apply the concept of design thinking in ASEAN and Cross-cultural course. At the same time, the paper also focuses on knowledge and skills that the students learn as well as their ability to apply them in the real world.

4. Result

The concept of design thinking and core competency is commonly applied in the educational field. The researcher conducted qualitative research through observation and in-depth interviews in the case of ASEAN and Cross-cultural courses. The research targeted at Chinese freshmen students at a Thai university enrolling, in xxx, one of the required general education courses. Developing critical thinking, creativity, and problem-solving is the ultimate goal of the course, which was in line with the principle of key competencies. In addition, the results of this research are stated as follows:

- Design thinking concept was applied in project-based learning of ASEAN and Cross-cultural course. In each step of the project, the students were required to: (1) identify existing problems in the region of ASEAN and China, (2) define and ideate the details and background of those problems, (3) design a solution, (4) make a prototype, and (5) test the prototype and ensure it could solve the problems.
- Students could be equipped with creativity, critical thinking, cooperation, communication, cross-cultural, and self-culture confidence skills through ASEAN-Cross cultural course.

4.1 The application of the design thinking process into the project-based study in ASEAN-cross culture course

ASEAN-cross culture course allowed the student to learn through lectures, activities and projects. For the lecture part, the lecturer introduced ASEAN countries' politics, economy, culture and society to the students, focusing more on Thailand. These are important for the Chinese freshmen students in order to study and stay in Thailand. Due to the importance of constructive learning, the cross-cultural course required the students to do two specific activities in order to enhance their understanding of all ASEAN countries. Activity one required them to make their own ASEAN map that modeled and presented the economic characteristics and cultural customs of each ASEAN country. Another activity required them to practice cross-culture communication skills with Thai or ASEAN students in the campus. These two activities were in line with constructivism theory. The activities provided them with an opportunity f to actively learn knowledge and skills in real situations. From the observation, students were found interested in learning and constructing their own cognition about ASEAN economy, culture, languages, etc.

Obviously, the course allowed them to conduct a project. Then, the question was how to conduct it properly. Through observation, the teacher applied the concept of design thinking in the project-based learning activity in order to develop their core competency. The concept of Design Thinking in the course included 5 steps: 1) Empathy, 2) Defining, 3) Ideating, 4) Prototyping, and 5) Testing.

Empathy is the ability to empathize with another person's feelings or emotions, which is the basis to find the root of a problem or raise a question, respectively. The purpose of the first step is to understand what people really care about and where the problem actually comes from. In this phase, students can

conduct interviews in order to understand the course of the problem, which is where the origin of creativity and innovation happens. In the context of ASEAN and Cross-cultural course, students' project started with empathy so that they could understand different social problems in ASEAN countries and China by interviewing or searching information on related issues. For example, there was a group of students who found out that the roots of the transportation problem in Bangkok were high oil prices and traffic jams. They got this empathy from their everyday lives, which caused them to pay high taxi fares Meanwhile, they interviewed some Thai students in the campus and concluded problems of transportation.

Defining refers to thinking about and digesting the requirements gathered in the empathy phase and bringing out one's own perspectives of what are people's needs (Pande, M., & Bharathi, S. V., 2020). After students found the problems in ASEAN and China region, they discussed and searched for more information about the problems. In their group, they also conducted brainstorming and discussion. The members in the group exchanged different opinions and analyzed the background and impact of the problems. In the course, each group focused on socializing among students within the campus, and found out a problem concerning the lack of socialization between Chinese and Thai students. Thus, they constructed a questionnaire to define the variables that caused this problem. Meanwhile, they collected data from different platforms to prove that the causes of the problem, which they found out, were practical. From the defining step, students not only understood the target group but also provided the construction and definition of their projects' main problems.

Ideating is the third phase in the design thinking process. study groups come up with a lot of ideas for solving the problems and select one that would, possibly, lead to the most creative solutions. In creative brainstorming, it is necessary to develop many possible solutions to solve the problems identified in the empathy and the defining steps. Moreover, the process of thinking and infinite creative ideas of the student is developed in their brain at this stage, and useful solutions, which really answer to the problems, are often found among the ideas expressed by the team members. In the course, the students used the paper mapping method to record their opinion and suggestions. At this stage, their empathy for the problems was integrated, which helped them understand constructively more about the problems. Team discussion allowed the students to come up with more creative thinking and new ideas because there were no restrictions that limited their thoughts. As a result, many original ideas and solutions to the problem were developed. Team participants with fresh ideas and perspectives on the problems were encouraged to speak out, and their ideas were consolidated with others'. All viewpoints were recognized without being judged. These opinions and suggestions were the outcomes of the brainstorming. A creative discussion, which allows them to come up with creative imaginations and alternative ideas, was one of the most effective ways that developed their creativity.

Prototyping is an interesting phase. In the empathy, defining, and ideating phases, the students had already defined and discussed the problems and solutions. In this step, they were to make a prototype for the solutions. The prototype was modeled according to the designed solutions. In this stage, the students might use applications for phones, solution plan designs, or physical items according to the ideation of the solution. For example, a study group selected Thai silk as their case study. The group noticed that Thai silk was well-known to Chinese customers. The group, then, designed a silk scarf with cute elephant and panda characters on it as a prototype to promote customers' preferences. The silk scarf was a reflection of the Thai culture. The designed silk scarf was a handicraft product, which ensures that traditional craft was included in the product design. In addition, this prototype also created a balance between traditional and modern culture which respected the taste of modern consumers and upheld the traditional value. This prototype design reflected the development of their creativity in design concepts. In addition, it promoted their critical understanding of Thai and Chinese traditional and modern cultures.

After their prototypes were designed and made, the students presented them to the class. Each group then asked for feedbacks about the prototype and found out if the feedback was correspondent with the result of the interview previously conducted. After that, the group modified the prototype according to the feedbacks received. Another case was that a team developed a mobile application prototype and asked Thai and Chinese students whether they liked it. The application interface included (1) a startup page, (2)

user guidelines, (3) homepage, (4) menu bar, (5) personal setting, and (5) page composition. When the team introduced the prototype to the target group, they learned some feedbacks such as the development of AI language glasses or simultaneous interpretation in Thai - Chinese. Later, all of the feedbacks were summarized in order to upgrade the design of the application. Once the final prototype was created the prototype was tested. In conclusion, a complete learning outcome came from students' cooperation, critical thinking, communication, and creativity, based on the construction of knowledge and experiences from the design thinking process.

All in all, empathy and defining phrases included check-up 1 (week 3) in the lesson plan. Ideating and prototyping phrases included check-up 2 (week 10 and week 11). After testing the prototype, they presented their showcases the final learning outcome of students at week 15. From those self-dominated studies, they were equipped with the key competencies, as the learning outcomes of the course.

4.2 The learning outcome of core competency from Design Thinking Projects in ASEAN and Cross-culture Course

Based on the application of the design thinking process in the ASEAN and Cross-culture Course, one of the most concerning issues of the course was that the students really learned and developed their core competencies, the main focus of this research. From the observation and in-depth interviews, the researcher concluded that the students' key competencies were developed through the 4C model by applying constructive learning through projects, which includes critical thinking, creativity, communication, and collaboration. In addition, the students 'cultural skills were also developed by the the design thinking pedagogy in this course. They could understand local people's way of thinking and culture, which enabled them to interact with local people effectively. Moreover, the students could generate meaning and construct understanding from their experience in activities and course knowledge by themselves via the course curriculum. However, some students were not willing to participate in the project, which prevented them from developing their certain key competencies. As a result, those having low or no participation in the group project affected their group member negatively, especially in the group presentation.

From the observation and in-depth interviews h, it was found out that most of the students developed key competencies after finishing the course. The fundamental competency they acquired was cooperation. Cooperative ability refers to the ability of people to cooperate and coordinate with each other at the workplace. It includes acceptance of tasks, active participation, negotiation and discussion, listening, and respect. These are behaviors that coordinate interpersonal relationships and group cooperation. In the course, the students were divided into 10 groups, each of which contained5 students. Each group member had to participate in the group discussion and made a collective plan to finish the task on time by listening and respecting each other. In one case, a student joined with several excellent team members who helped him a lot with his work. The team members also taught him tons of little task-implementing techniques and ways of thinking. They also shared different opinions with each other. Even though sometimes they had intense debates, but after making a common understanding, the team could reach an agreement on the way to complete the task in the project. In this regard, it satisfies one of the key tenets of the constructive learning theory, which increase students' commitment and class participation instead of learning only from the teachers. The cooperative learning environment needs to be able to allow students to explore freely and pursue their own interests and use a variety of resources and tools to reach their objectives, especially classmates, who play an instructional assistant role in the classroom environment.

Critical thinking means a conscious and deliberate process that is used to interpret or evaluate information and experiences with a set of reflective attitudes and abilities that guide thoughtful beliefs and actions (Mertes,1991, p.24). One definition of critical thinking found in a general psychology text is: "Critical thinking examines assumptions, discerns hidden values, evaluates evidence, and assesses conclusions. (Petress, K., 2004). Most Chinese freshmen students in Thailand have already adapted to test-oriented education, which leads them to educational practices that are disconnected from the demands of social development and designed to prepare students for entrance exams. They can only learn from a textbook published and sold by a publishing firm, which is an exam-oriented type of education. However,

in the ASEAN-cross culture course, the pedagogy actively promoted students' initiatives and developed their constructive learning. This learning method helped them to have critical thinking as an outcome of the study. For the step of this type of study, firstly, students are to examine the assumption of the design thinking project with empathy and defining. Secondly, the students are required to exchange their opinions among their classmates with discerning hidden values in the ideation and develop a prototype that solves the problem they have discussed. Finally, they need to evaluate evidence after testing the prototype, making the final prototype with assessed conclusions. One of the Chinese students in class stated that "we chose the automobile manufacturing industry as our case study project. We have learned the reasons why there are no independent automobile brands in Thailand and learned the attitude of Thai people towards Japanese automobiles. From this topic, we found out that Thai people had different attitudes towards Japanese from us. This is due to the friendly relationship between Japanese and Thai people. Belief and trust influence Thai people's consumer behavior". From this point of view, it is concluded that the design thinking pedagogy process could lead to the discover the hidden values the students never know before, which could help them to construct their point of view with critical thinking.

Another two skills that the students learned from this course were creativity and communication. Creativity is creative thinking, which can be learned, imaged, and experimented. It can help manufacture products, solve problems, and improve the well-being of the society. In the case of the ASEAN-cross culture course, the students applied the concept of design thinking to their projects. As it was a new learning experience and environment, students were impressed and became more creative. After interviewing with a Chinese student, the student said the teaching method in the course was new and different from what they had experienced in China. Different from the inherent teaching-thinking mode in China, this creative and flexible learning technique helped the students achieve the real purpose of studying abroad. Throughout the course, the students conducted discussions and debates about the project enthusiastically. Finally, they made a perfect creative prototype, which reflected their own knowledge and way of thinking. In fact, the concept of design thinking in pedagogy is to help promote students' creativity and innovation. It pushes and motivates the students to think of the matter by themselves instead of listening and doing blindly as their teachers tell them to. Meanwhile, communication, the ability to communicate with the others, is necessary for them to choose different communication methods according to different target audiences, such as language communication, eye gestures, action reminders, and so on. Communication among group members about the task they were assigned allowed them to exercise their oral expression and emotional skills. Even though they, sometimes, encountered some difficulties and challenges along the process of project implementation, they still overcame these issues.

In addition, this research found out that the students' cultural competence was promoted through their design thinking projects. Cultural competence cross-cultural skill and self-culture confidence. Through cross-cultural activities, teachers played a supporting role to motivate the Chinese students to actively communicate and interact with local people. A cross-cultural activity, entitled "Understanding your Thai friends" instructed the students to interview their Thai friends to understand whatever they want to know about Thailand. However, the interview had to be related to the topic of the project. This activity helped the students to become more aware of cultural differences that exist in real life. Then, they had to develop critical thinking and creativity to understand the different cultures. The researcher interviewed a student who said "I get to understand more about Thai culture. I communicate with local people in order to look for cultural distinctions between China and Thailand". Therefore, the design thinking project is one of the most effective teaching methods to construct a cross-culture situation and conversation in a friendly manner to develop students' cross-culture skills. Meanwhile, by learning through cross-cultural activities and projects y, the student could develop their self-culture confidence. An interviewed student said that "The ASEAN cross culture course offered by the school was very necessary to foreign students. It helps acknowledge us about the important role of the Chinese students in Thailand as a part of force that drives forward the relationship between Thailand and China in a peaceful and respecting manner. It helps broader our horizons about the cultural diversity in the world outside China". In summary, the students not only developed their

understanding about ASEAN cultures and society, but also developed a core value of self-culture confidence in themselves.

5. Discussion

In this qualitative research, the results of a case study were used as primary data in order to recognize the application processes of the concept of design thinking in ASEAN-cross culture course. Moreover, in-depth interviews were used to explore the students' outcome of core competencies from the course. According to the results, the design thinking process including 1) empathy and problem finding 2) define 3) Ideate 4) prototype and 5) test was applied in the project-based activities. From the innovative pedagogy process, the students could actively construct their knowledge and ideas through team discussions. Rosetta et al. (2019) argued that the Design Thinking pedagogy offered students rich opportunities to collaborate with others while also deeply engaging with the subject matter of the instructional materials and the process of studying abroad. According to constructivism theory, teachers create situations in which the students will question their own and each other's assumptions. Therefore, a constructivist teacher needs to create situations that challenge the assumptions of traditional teaching and learning. (Roya, 2015). The teacher of ASEAN-cross culture course needed to motivate students' curiosity through the designing thinking processes, guiding them to discover situations in different dimensions to construct their knowledge and the project's content. Design thinking as a problem-solving pedagogy emphasizes empathy, collaboration, and experimentation to create innovative solutions. It is an effective and interesting way to develop student engagement in learning. By removing tension and embarrassment, the design thinking process improves group dynamics and encourages students to participate more actively. (Luka, 2019) Students can experience real-life problems in a cross-culture context, especially for the Chinese students in Thailand. When they brainstorm about problems and solutions in daily life on the course, their motivation and creativity are sustained.

For the students' learning outcome of core competencies from the course, this research found out that ASEAN-cross culture course with a design thinking project helped promote students' core competencies as specified in the 4C model and developed their cultural competence, especially in cross-cultural skills and self-culture confidence. (Kurbanova and Abdurahmonova, 2022) Therefore, with design thinking pedagogy, the students will be equipped with creativity, critical thinking, cooperation, communication, cross-cultural skill, and self-culture confidence by taking ASEAN-cross culture course. This course is beneficial for Chinese freshmen students who study in Thailand since it provides them with an opportunity to learn and understand ASEAN cultures and societies and develop their own cultural confidence. Thus, in the context of cross-culture education, the scope of core competencies in the 4C model needs to be expanded and emphasized. Cross-cultural skills and self-culture confidence also need to be considered as necessary skills for the students. Liu, and et al. (2020) found that cultural competence should have a standpoint in respecting diverse differences and having an open and inclusive attitude, at the same time, having self-culture confidence, being firm with the vitality of one's culture. This shows that Chinese students who study abroad have to be equipped with cultural competence to boost their confidence during their stay and once they are graduated. Finally, this skill will help them to be part of the modern labor market successfully.

6. Conclusion

In the case study of the ASEAN- cross-culture course for Chinese students in a Thai university, the design thinking concept was applied in project-based learning. The process of the project is as follows： (1) the students found the existing problem in the region of ASEAN and China, (2) the students defined and ideated the detail and background of the problems, (3) the students designed a solution, (4) the students made the prototype, and (5) the students tested the prototype and ensured if it could solve the problem. Moreover, the in-depth interview results showed that the students successfully developed their 4C core competencies, which included creativity, critical thinking, cooperation, and communication. Furthermore, key competencies could be developed through the process of the design thinking. The students strengthened

their cultural competence in the two dimensions: cross-culture skills and self-culture confidence. These two dimensions of cultural competence were beneficial to the Chinese students because they could learn and understand about culture of ASEAN countries where they were staying and studying in. At the same time, the course allowed the students to interact with people from different cultural backgrounds. Additionally, the design thinking group projects emphasized the development of an understanding of and respect for different cultures.

Finally, as for the limitation of the methodology, the research is yet to investigate the insight of teachers who teach this course. A focus-group interview with teachers in future research is recommended for the course evaluation in order to examine the efficiency of the design thinking process in developing students' core competencies. The design thinking pedagogy can be applied to the instruction in undergraduate secondary, primary level courses. For primary and secondary grades, students will be encouraged to think more critically about the issue they are attempting to solve, and to take into account a variety of viewpoints and possible solutions. Thus, teachers can integrate it into a lesson plan to promote students' engagement in the course. Students can use a concept of design thinking to find answers to issues they have come up with. Administrative personnel can identify the pain point in their work process first, then find the optimized solution to take over daily work.

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