

## Implementation of Case-Based Learning for Thinking Skills Development: Essential Skills of the 21<sup>st</sup> Century of Thai Students<sup>\*</sup>

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### Abstract

Thinking skill is essential for people of 21<sup>st</sup> century because the process of thinking is important and everyone who possesses the skills will be able to develop themselves and find solutions to their problems. They will also be able to find happiness and keep themselves away from dangers; therefore, is obvious that thinking skill is extremely necessary to help us make decisions and solve problems.

To achieve outcomes that are truly mandatory and necessary for students requires changes on learning methods. Teachers need to teach and equip their students with thinking skill which is required in order to live in the 21<sup>st</sup> century. This means that teachers should plan and facilitate the learning approach that allow students to learn from real-world issues that are related to them. The learning approach should enable students to think and analyze the issues which will ignite their curiosity and enthusiasm to do more research from various sources of information to support or rectify their thoughts, develop their decision-making skill and propose solutions to the issues while replacing their old paradigm with a new one. This thinking skill development approach is called “Case-Based Learning” which consists of 6 steps (DAISSI) including: 1) Define a situation or event, 2) Analyze the problem of a situation or event, 3) Identify alternative solutions, 4) Search results, 5) Share, and 6) Implement.

**Keywords:** Case-Based Learning (CBL), Thinking Skills Development, Skills of the 21<sup>st</sup> Century

### Introduction

The 21<sup>st</sup> Century Skills are mandatory for Thai people as we are part of world citizens who live among technology, business, commerce, and globalized network. Those things widely influence our quality of life because with those changes in our society, technology can now provide more convenience to people and help exchange information any place and anytime. Upper Secondary Education Bureau: A) In this technological and globalized world, people lack awareness of when those newly-developed technology should be used,

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as a result, such deficiency makes them become a “phubbing”. This is the challenge which leads to the strategy to modernize education that is suitable for the 21<sup>st</sup> century. The expected outcome would be that Thai people possessing better social awareness, leadership skill that can guide themselves through future career and self-development, and the ability to cautiously evaluate their own morale, respect to others, and honesty in order to become a valuable member of the society.

Global Megatrends that shape our lives in the 21<sup>st</sup> century. (Global Megatrends, 2012; Canton, 2006; George & Friedman, 2011; Panit, 2012) including seven patterns of change that people must be aware of in order to achieve the outcomes: to revise teachers’ roles, students’ learning approach, school curriculum management, learning site, and community’ roles. The 7 patterns include: Technologicalization, Commercialization & Economy, Globalization and Network, Environmentalist and Energy, Urbanization, Ageing & Health, and Individualization. The conclusion of the megatrends that happens in the 21<sup>st</sup> century is that Thai people have to familiarize themselves with new technology since we will be exchanging and coordinating internationally as well as learning new things in order to develop themselves in preparedness for any changes. The question is that how those skills can be managed and delivered to Thai students. Most importantly how education can enable them to have critical thinking skill, be innovative, be enthusiastic to gather available information and use them to create their own body of knowledge, become an entrepreneur, become a manufacturer, strive for excellence, be patient, work hard, have team spirit, be responsible for the society, have peace and moral in mind, and represent Thai identity. (Sinlarat, 2014)

Instead of role playing, learning approach should be designed to simulate real world situations within contexts or environments that students can acquire new knowledge and experience. A new paradigm will then be created after Once students have used their brand-new experience to analyze and replace their old beliefs and values. From then, students can think paradigmatically and continuously use the model to learn new things. However, students are required to have the ability to obtain new information, analyze them and create a new paradigm. Most importantly, they should be curious and enthusiastic in learning not just relying on teachers’ needs to teach while students are not enthusiastic to learn.

Hence, this learning approach should be designed within the contexts that students are familiar with which can be from situations in their family or community. Teachers can observe different background knowledge and life experience of students from their enthusiasm.

Appropriate learning approaches or methods are required in order to promote learning development of students. Approaches that promotes thinking skill of students, according to Laoriandee (2009:31), are: CATS (Classroom Assessment Techniques), Cooperative Learning Strategies, Problem Based Learning, Independent Investigation Learning, and Case-Based Learning.

The method used to develop the ability to solve problems and encourage learning together as a group, independent study and the presentation of knowledge is Case - Based Learning which involves students, teachers, classes and school. According to Kitrungreung (2010: 12-13) the use of this approach is a way to encourage the students to analyze situations in the society and physical environment. In order to help students understand the content, cases used can be fictional or from real stories. The teacher can apply either inductive or deductive ways as this depends on their objective. If they use the inductive way, the teacher will provide case study analysis to summarize problem, concepts and the resolutions of the problem to students. If they use the deductive way, teacher explain the principles, rules and demonstrate sample cases more clearly. The research result of Hays (2008: 283) showed that by using Case - Based Learning approach, could benefit learning on students' roleplaying and the problems solving skill. In addition, it encouraged students to have team spirit and research more.

It can be seen that change on students' learning methods to achieve mandatory learning outcomes and truly necessary to them is to encourage the students to seek knowledge by themselves. Teachers are required to teach students to learn the life skills of the 21<sup>st</sup> century. They must also design learning methods and facilitate students with opportunity to be more practical by letting them analyze issues or situations in current world that are related to them. Teachers should also motivate and inspire students to learn then become more enthusiastic to do more research and gather knowledge from different sources of information in order to support or debate their previous assumption. After all those learning process has completed, a new paradigm will be created and this method is called Case-Based Learning.

### What's the importance of thinking?

The ability to think is the trait of humans because they can develop things that are around them through thinking process. The process is a feature that is inherent in every person which can be developed further. “We think to solve the problem, find happiness to ourselves and to protect us from dangers so it is very important to think, decide and solve the problem” (Chareonwongsak, 2001). The importance of thinking can be categorized as follows:

1. Thinking defines ourselves. “Thinking” reveals what we know and what we gain from the thought identify who we are. This makes us express in different ways both verbally and physically. This process can be called “The human expression”

2. Thinking is the basis of wisdom and understanding. A person can better find solutions when they take time to think through and reconsider before making any decisions. The Athenian poet once said “The second thought is the smartest” which can be compared to any person who does something repeatedly and has a chance to speculate will come up with better results. Thinking can help improve things and if we do many things simultaneously, there will be lots of ideas come up on our minds. Moreover, we can also connect the idea together to create the new idea as well

3. Thinking is the basis of a decision. Findings of some psychologists revealed that everyday more than 10,000 ideas have flow into human brain, that means in each year there are more than 3,500,000 ideas. With that many ideas into our brain, we have to make a decision. In each day we have to make hundreds or thousands decision. In some cases we decide automatically our of our habits or when we need to consider carefully what happen in our life. New problems will allow us to be more creative and able to develop thing better.

4. Thinking brought major changes. Desire to succeed is in human nature so they usually are not satisfied with their current status and condition. They will try to fight to get what they always wanted by starting from "thinking" which is the power to make a difference “World does not change because of power but thinkers”.

5. Thinking created the capacity to compete in this learning society which has intense competition in both individual and organization level. The advances in information technology that links all parts of the world together have caused the expansion of the scope of competition between different parties, communities, institutions, international organizations, regional organizations until global organizations. With higher education and knowledge of people in the society, numbers of competitors who come from both internal and external educational systems have been increasing. “Thinking is a very important asset among this competitive world that currently is at the age of information, knowledge and wisdom ages”

### Thinking: Learning skills of the 21<sup>st</sup> century.

The conceptual framework for the 21<sup>st</sup> century (Model of 21<sup>st</sup> Century Outcomes and Support Systems) is recognized widely in skill building because it is the concept that focuses on student outcomes both in core subjects and skills of the 21<sup>st</sup> century. It allows students to be prepared in various fields including the supports learning system such as the standards and assessment, curriculum and teaching, teacher development and appropriate environment for study in the 21<sup>st</sup> century. Schools will be changed from a building into Nerve Centers that limitation is not in the classroom but to link teacher students and community access to the treasures of knowledge from worldwide. Teachers will shift from a knowledge deliver to a supporter helping students change information into a useful tool to master in order to create knowledge and Culture of Inquiry.

According to the article about skills of people in the 21<sup>st</sup> century by Prof. Dr. Wijarn Panich (2012: 8-31), education in the 21<sup>st</sup> century that everyone has to study since kindergarten until university and all life is 3R x 7Cs. The 3R are 1. Reading, 2.(W)Riting, and 3) (A)Rithmetics. The 7Cs are 1. Critical thinking & problem solving, 2. Creativity & innovation, 3. Cross-cultural understanding, 4. Collaboration, teamwork & leadership, 5. Communications, information & media literacy, 6. Computing & ICT literacy, 7. Career & learning skills and the characteristics of Thai children in 4.0 age is the 8th C “Compassion” which was added recently.

Hence, people of the 21<sup>st</sup> century must be highly skilled to learn and adapt. The skill for life that learner should have (Upper Secondary Education Bureau: 20-24) are:

1. Critical Thinking and Problem Solving is to develop thinking skills in several ways including: 1) The result both in inductive and deductive ways, 2) Using systematic thinking by analyzing the factors that effects overall result, 3) Consider and make a decision carefully that can analyze and evaluate the evidence information, argument, citation reference and reliability. Analysis and evaluate the main issue, synthesis and links between information and arguments, interpretation of information and conclusions on the basis of the analysis and interpretation and review the knowledge and its work process, 4) solving the problem in the form of training that are generally accepted or different method including inquiry style in different ways for the better result.

2. Communication and Collaboration. The advanced digital and communication technology of the 21<sup>st</sup> century requires skills of communication and cooperation widely and intensely as follow: 1) good communication skills, 2) cooperation skill, 3) creativity and innovation which include thinking and working as a team creatively, applying creativity and innovation to come up with a result.

Model of 21<sup>st</sup> century outcomes and support systems require student to have critical thinking and solving problem, communication and cooperation including flexibility and adaptability. Teachers in 21<sup>st</sup> century should take “Teach Less Learn More” principles. They have to design the learning course and facilitate student in learning skill especially in Computing & ICT literacy.

### **Learning Skill Management: Using Case - Based Learning (CBL) to develop skills of the 21<sup>st</sup> century.**

The processing of information on Case - Based Learning show that scholars have registered the word in Thai as กรณี, กรณีศึกษา, กรณีตัวอย่าง and การศึกษาเป็นรายกรณี which came from the English words: case method, case study and Case - Based Learning. (Laoriandee, 2014:83 and Santos, 1994). In this article, Case - Based Learning Approach (CBL) will be used. This method was founded at Harvard University in 1869-1870 by Christopher Langdell that applied to the instructions of law and medical techniques in the 19<sup>th</sup> century as a model for implementation especially in the field of medical training. This enabled students to link their ideas to create a vision of the future with help of instructors by focusing on actions. In conclusion CBL is very similar to PBL but some details are different. CBL focuses on the role and problem solving of the students with an emphasis on cooperation and also focuses more on knowledge discovery (Rosenbaum and Other 2005:1186). Later, Thai educator shave used Case - Based Learning in their curriculum.

#### **1. Meaning of Case - Based Learning (CBL) Approach**

CBL is very similar to PBL but it uses case studies or problems including events or situations to stimulate learning according to purpose and students must find evidence, supporting documents. In conclusion CBL focuses on the role and problem solving of the students with an emphasis on cooperation and also focuses more on knowledge discovery (Rosenbaum and et.al., 2005:1186). Malau-Aduli and et.al. (2013: 2) said CBL is acceptable to existing knowledge on how to manage a learning cooperation. This method has strengths in integration, the pursuit of knowledge and skills in new forms. The learner must gather information and knowledge and screening the importance of data. Harman and et.al. (2014:1) said Case - Based Learning is a way to use the problem as a basis generally defined from a case study of the content of education. The classification of learning content is a pattern in the end and learning guide is in the middle by using the process without the pattern to build knowledge independently. Therefore, CBL defines a structured learning and learning advice

including this process is aimed at student achievement with the content they learn in class by means of a professional which determine the status of students to solve problems through the action of real-life scenarios. In conclusion, Case - Based Learning is considers a knowledge management by simulating events or situation to make students solve problems by any means of coordination of both skill and the process to get the knowledge focusing with an emphasis on cooperation in the search, acquiring new knowledge through discussion and application.

## **2. Objectives of Case - Based Learning (CBL) Approach**

According to concepts of the scholars such as Yuthipan (1994:55), Chaiyasorn (1996:106-107), Khammanee (2012:362), Laoriandee and others (2017), the author has summarized the purposes of Case - Based Learning Approach as follow: 1. The approach aimed at enhancing the skills of critical thinking, 2. Provides students with an opportunity to research by themselves and solve actual problems, 3. Provide understanding of contents and various emotions, 4. Help student prevent the potential problems, 5. Allow students to think critically and learn from others' thoughts so they can have wider perspectives., 6. A way of working together as a group and exchange ideas, experiences, feelings, and attitude toward each other.

## **3. The Process of Case - Based Learning (CBL) Approach**

In this article, the author will present the process of Case - Based Learning Approach of both foreign and Thai scholars as guideline.

Mellish and Brink (1990: 84) offer The process of learning management by using Case - Based Learning as follow : Step 1) Students study and understand and also be prepared for criticism. Step 2) Students share critical case study, they may resist new ideas that conflict with their belief. Step 3) Students compare what was analyzed by yourself and the analysis of the group. Step 4) Students will combine new knowledge and old knowledge together. Easton (1992: 12 -14) offer the process of le Case - Based Learning as follows: Step 1) Understand the situation. Step 2) Diagnose the extent of the problem. Step 3) Make a choice on how to fix the problem. Step 4) Predict the outcome. Step 5) Evaluating alternatives. Step 6) Analyze the result clearly and Step 7) Show the result. Williams (2004: 4) proposed the process of Case - Based Learning as follow: Step 1) Define the problem, create small groups and assumptions. Step 2) Analyze problems, Group members depict or describe the problem as a whole this will lead to more research and discussion brought together. Step 3) Select tactical solutions and Brainstorm together to analyze the problem. Step 4) Research by the analysis the documents

or related information. Step 5) The discovery of the results, the group members did the experiment together to discover the new knowledge. Step 6) Exchange the assumptions and the result with another group and Step 7) Apply the result to use. From the research of using Case - Based Learning in abroad country, the research work of Fuschetti (2002 : 45) survey of high school students problem-solving process and results of the activities of student learning by using tactical solutions. The example group is the students with high math abilities they can solving mathematical problem verbally. Take the quiz result and interview of student simultaneously and study the learning activities of each students. Use the tactical training solutions to develop problem-solving skills of students in processing, analysis and interpretation of scientific proof.

There is also a Thai student, Khaemanee (2012: 362 - 363) suggested the process of Case - Based Learning as follows: Step 1) The instructors or the students presented a case study. Step 2) Students study the study case. Step 3) Students discuss the question to find an answer. Step 4) The instructors and students discuss the answer. Step 5) The instructors and students discuss the problem and solution of the students and make a conclusion. Step 6) The instructors evaluate the students learning. Kitrungreung (2010 :158) did the research about the development of teaching using Case - Based Learning. The teaching pattern of PCSSC Model has a teaching process consists of 5 steps. Learning, Case study, Find the solution, Share the experiences and Continue to create new knowledge. Cause the teacher students capable of critical thinking, higher than before the experiment at a statistically significant level at 05. Kharaket (2010 :170) did the research about the development of a network computer learning using Case - Based Learning. From the result of ability to solve problems of Grade 6 student in science class it was found that higher than before learning at significant level at 0.5. Phocheun (2012: 133) did the research about the development of the ability to solve math problems of Grade 9 student. The result show as 1) They did good at Surface area and volume lesson, 2) Their ability to solve the math problems after learning is good., 3) The comment of students said that they agree that the atmosphere of learning is the first priority and the second is the activities and the benefits of learning.

From the process of Case - Based Learning of the scholars and researches in above article, the author has synthesized the process and called it DAISSI.

Step 1: Define a situation or event.

Teachers have students gather in small group of 4-5 people and then teacher presents the case study is a situation or event, in daily life or simulation.

Step 2: Analyze the problem of a situation or event.

Group members analyzed the problems in the overall situation which leads to research more information from various knowledge sources by using information technology and discuss together.

Step 3: Identify alternative solutions.

Group members brainstorm together to find and identify the best solution.

Step 4: Search results.

Group members use the solution to solve the problem until got the answer.

Step 5: Share

Students check the answers by offering a solution in front of the class to let other groups know.

Step 6: Implement

Other groups of students can bring a solution that discovered and is mutually acceptable to all groups to solve the problem.

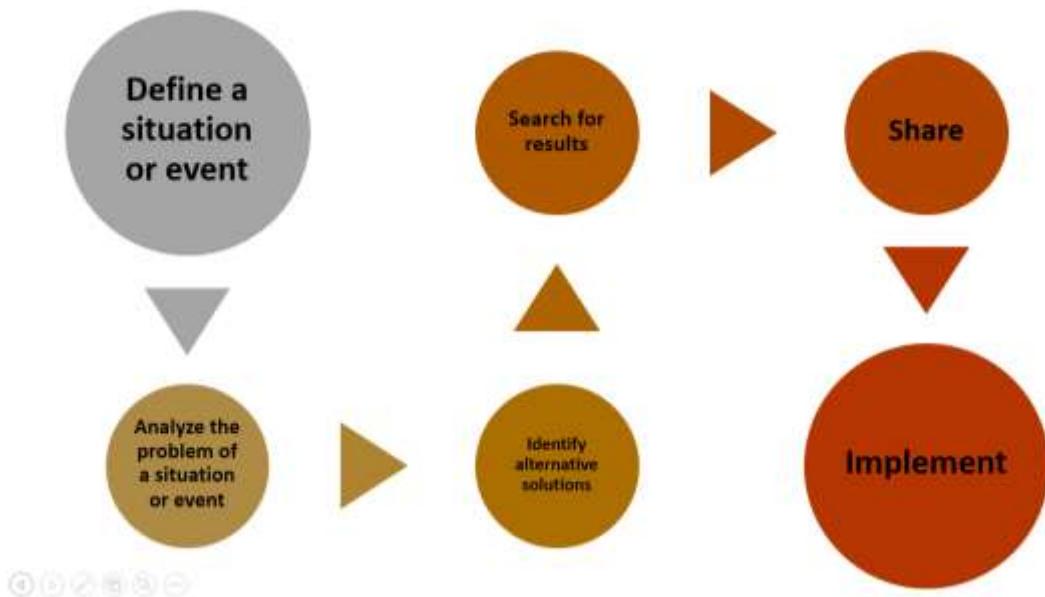


Figure: Case - Based Learning process (DAISSI).

### **Roles of the teacher in Case - Based Learning (CBL) to develop thinking**

Teachers have to design the learning course and facilitate student to learn with action because learning is caused by the heart and brain of their own. However, teacher still play an important role. Making learning activities conducted with good results for the students. The teacher must consider to do these the following actions:

1. Create an independent atmosphere of teaching.
2. Arrange the group activities, all members of the group had the opportunity to talk with and comment with each other.
3. Instruct the children to think wisely, teachers must have proposed challenging, interesting and suitable problems appropriated to the age of children
4. Let the student decide for themselves, even that lead to the failure because they will remember the mistake.
5. Use questions to stimulate student interest.
6. Use a variety of assessment methods and focus on the process and tactical solutions.

### **Conclusion**

The ability to think and thinking skills is very important for education today because of the skills is necessary for learning, working and successful life. Especially in 21st century is the age of information and knowledge that changes quickly and continuously. The educators say thinking skills is the most important skills. So what is necessary and important in management education to children and students in modern times is to promote and develop the student's ability of thinking (Gough,1991). Educators both overseas and in the countries, have agreed together that students are able to learn and capable of advanced thought if school care to teach him to think. Also the teacher must have the ability to think and thinking skills. The Case - Based Learning (CBL) teaching is the concept of teaching that strengthens students to have higher thinking skills and adaptation. The environment of learning can make student eager to ask a question that lead to the discussion with their friend to seek the best answer. So, if the teachers want to teach a child to think wisely, they have to design the learning course with Active Learning continuously.

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