'MY MAP BOARD' AS GRAPHIC ORGANIZER TO ENHANCE LEARNING EXPERIENCE FOR DESIGN THINKING

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Abstract: In design school, creating learning experiences for design thinking is a complex material to be taught and learned. The aim of this study was to understand how to enhance design thinking in the learning of design review using graphic organizer. Design thinking is a framework of a creation process to solve problem, a product, service, system or strategy, structured process to create unique and innovative products and gathering feedback. Reviewing a design work will develop student's competence in using the stage of design thinking. Students would be encouraged to build ideation and problem-solving process actively, through projects analyzes, focusing on solutions and build understanding about a design work and the contributions of others. In order to teach students to explore their ability of design thinking, the application of graphic organizers used as a learning media and evaluation tool, the instructional activity is guided by "My Map Board". Observations data captured the design thinking of the student work, when they using the board for reviewing a design work. The use of graphic organizer to learn design thinking methods is more attractive and easy to understand. In addition, if graphic organizer can enhance student ability of thinking skills, or to make up their missing, they can obtain better academic achievement. Therefore, in the Learning of Design Review Subject in Visual Communication Design Education, it is suggested that teachers give students different instructional media such as graphic organizer to enhance student achievement in thinking skill.

Keywords: Graphic organizer, Design thinking, Learning

1. INTRODUCTION

In visual communication design education, we need a variety of thinking skills to solve problems. The ability and skill to think is something that should be experienced by the student in the learning design. Meaningful learning is a process of connecting new information with related concepts contained in a person's cognitive structure. According to the theory of Ausubel, known as meaningful learning, the learning process can be distinguished in two dimensions, the first; learn to accept and second; learn to find. In first dimension; learning to accept, students only receive and memorize material. While the dimensions; learn to find, students not only receive lessons, but students also find their own concept. Ausubel (1960) developed a new strategy in the process of receiving information, using an Advanced Organizer. Advance Organizer learning model aims to strengthen the cognitive structure, connects a wide range of information and increase memory of new information, through the creation of concept maps or in now also known as graphic organizer. Creating meaningful learning experience in doing the design process is one way to help students understand the design thinking. Therefore in learning design, we need to create variety of methods that students gained knowledge from meaningful experience of learning.

Graphic organizer is a tool in the learning process, for organizing information and constructing knowledge, a visual display representation of knowledge, a way of structuring information that shows the relationship between facts concepts or ideas. In graphic organizers, teacher can see the regularity and completeness of students' thinking processes and be able to show the weakness of the students in understanding the learning material. Design thinking is process of defines the problem and then implements the solutions. Therefore, we need to understand the core of process in making a design work. Graphic organizer is expected to be an opportunity to help students in understanding the design process, build information structure, including need finding, understanding, creating, thinking, and doing.

Design review is one of the subject courses for design students to understand design thinking through the process of reviewing a design work. Design review is a science that observes and criticizes the phenomenon of design as well as other matters concerning both physical and conceptual design. In reviewing a design work requires thinking skills. This research aims to improve the thinking skills using graphic organizer into the learning process activities and guide students to discover their new information through experience in building their own knowledge about design thinking.

2.   THEORETICAL BACKGROUND

2.1 Design Thinking

We cannot hold a design by our hand only. Design is not a product: it's a way of organizing something. It's a process of thought; a system, a way of thinking and feeling to create a solution, by combining data, construction of facts, function, form and aesthetics to meet human needs. "Design is a process that turns a brief or requirement into a finished product or design solution. The design process can be said to comprise seven stages: define, research, ideate, prototype, select, implement and learn. Each of these requires design thinking." (Gavin & Paul, 2010). Design thinking is a mindset, that we can make a difference, through new solutions and positive impact. Design thinking is a framework of a creation process to solve problem, a product, service, system or strategy. There are many different explanations of what design thinking is, but we can sum them up as "taking a designer's approach to try and solve a problem."

Design thinking is approaches to learning that focuses on the development of empathy, creative confidence, encourage ideation and problem-solving process actively, through projects, focusing on solutions that can be overcome various challenges according to the problems encountered. In the process of solving design problems, the first step to be traversed by a designer is dealing with unknowns of what will be designed as well as how it will create the desired value. There are five stages in the design thinking process: 1) empathy, 2) defines, 3) ideate, 4) prototype, and 5) test. Because there is no determination any order to be followed, then the stage is not called step. We can start from any stage as needed.
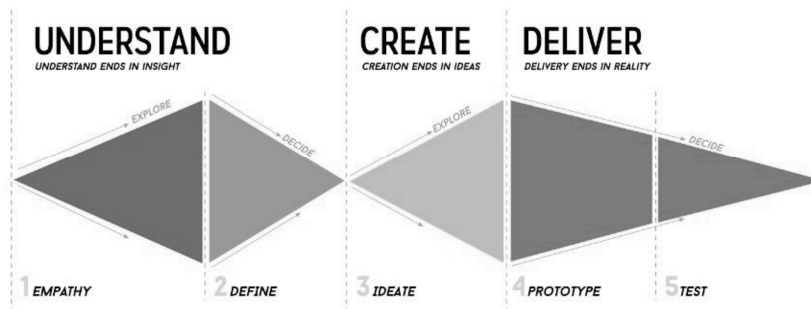

Figure 14 : The design thinking process
Source: Personal Documentation

Empathize; understand the desires and needs of users for whom you are designing, trying to change the position of being someone else, interact, make observations, and immersing yourself in experiences. Define; seek and define the problem through process and synthesize the findings, at this stage is expected to determine the root of the problems derived from the stage of empathy that can produce new insights, we also determine things can be done for the design project. Ideate; exploration of a wide range of diverse ideas possible solution. Prototype; make a physical example of the products from ideation, prototype can be made simple so that we know or experience how to interact and get more response from users. Test; test prototype using high-resolution products that

have been produced and evaluate whether there is less or considered excessive, innovations that have been done, will be tested at this stage.

2.2 Graphic Organizer

Graphic organizer is a visual communication tool that uses visual symbols to express thought to obtain meaning. Graphic organizer, also known as a knowledge map, build upon visual symbol, which contain story maps, concept maps, or diagrams to express thought or ideas and the relationship between them. It can be used to help students to make notes, idea maps, develop thinking and concepts, make connections and structure thinking, also improve memories and think creatively, according to the task obtained. Graphic Organizer facilitate student learning by helping them understand and identify learning within a broad topic, it can really help students, especially when getting a new learning subject that requires them to receive, store, and recall new information.

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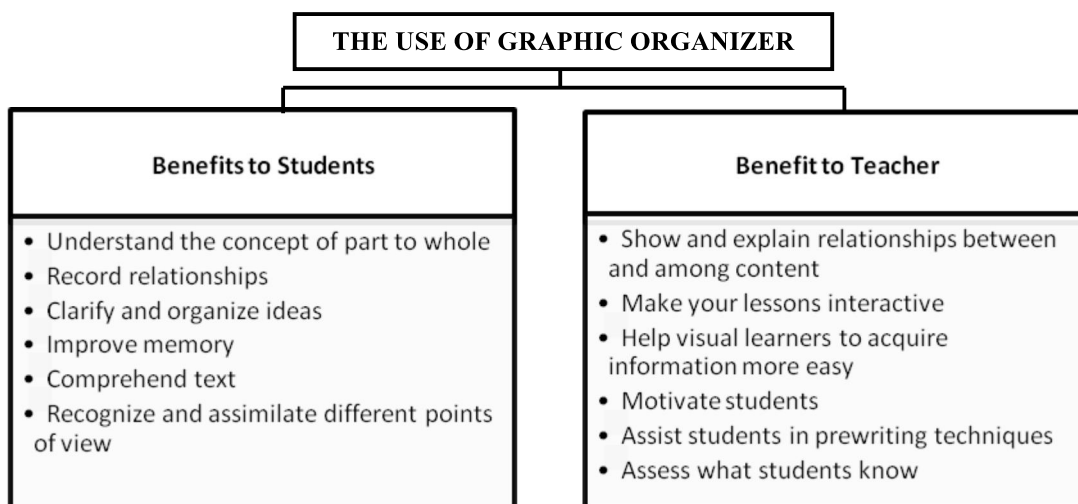| Benefits to Students	Benefit to Teacher
• Understand the concept of part to whole • Record relationships • Clarify and organize ideas • Improve memory • Comprehend text • Recognize and assimilate different points of view	• Show and explain relationships between and among content • Make your lessons interactive • Help visual learners to acquire information more easy • Motivate students • Assist students in prewriting techniques • Assess what students know

Figure 2 : the use of graphic organizers to enhance thinking skills
Source: The Use of Graphic Organizers to Enhance Thinking Skills in the Learning of Economics chapter 4.7

Graphic organizer become learning tool for students to process information obtained through the learning process, both from the activities in the classroom as well as information from other sources. Graphic organizer also as an evaluation tool, we can see the extent of understanding of the material provided. According to Wandersee (1990) concept map proposed linking personal insight, ability to explain meaning, ability of transferring concepts with creativity by means of producing concept map. Therefore student can be stimulated to explore themselves by encouraging brainstorming, discussion, clarify and organize, connects the parts to the whole, drawing sequence, generating new ideas, analyze the causes and effects, etc. Students challenged to make structure from information by making a concept map, arranging a concept or topic into a meaningful mode learning pattern. The most fundamental goal of graphic organizer is to foster meaningful learning, by producing a concept map students will have the opportunity to build new relationships between concepts, challenges the assumption of personal, get new model thinking and imagine the unknown things, these are attempt to build meaningful learning.

2.3 Design Review

Design Review is a subject course at design school. The subject is learning to observe and criticize the phenomenon of design (design work, design philosophy, design strategy, design history, theories of design, design methods, aesthetic values, and lifestyle changes) as well as other matters relating to design world in general, both the work and the concept, and its impact on society. Design review saw the phenomenon of design as part of the growth stages of design. These stages

are not stand alone, but are a series with the growth in the context of social, political, economic or cultural.

The design review invite students learn to create insights from design work, through visual form, expression of emotions displayed, thoughts, or anything else related to the design technique and making, also the environment when the work was created. In studying the design review, students are expected to explore information from a design work. Studying the works that are not in "their time" requires the ability to view it from various angles. Make a review of a design work can be done in several phase through the; 1) form; discussing a design work from the physical form of the design, for example: form, scale, color, and so on, 2) expression; discussing a design work from the ability of the work expresses a theme or message, and, 3) environmental; discussing a design work as a function or an instrument to achieve the goal of social, political, economic and psychological.

3. THE RESEARCH METHOD

This study is a qualitative research design. This research is to describe the implementation of graphic organizer in teaching of design review. But on the other hand, the study was also to find out the students understanding and learning results of the learning process in the classroom. The subjects of this research are students of the third semester, in the subject of design reviews at visual communication design school.

The data were collected through graphic organizer board guidelines. The researcher used observation and the work result from the graphic organizer board in collecting data. The analyze data will be done with the following steps; organizing and describing the data using student assessment results.

4. RESULT AND DISCUSSION

The first part of the discussion will explain about the implementation of graphic thinking "my map board". Second, related to the students' work result from the graphic organizer, to know about the ability of students in answering questions.

4.1 My Map Board

My Map Board is a tool that contains tables that comes with questions. The main goal of this graphic organizer board is to teach the critical thinking for students. Students need to engage in higher levels of thinking to reach their design thinking competences, instead of simply memorizing facts and ideas. The question designed to stimulate students to remember the learning material, understand, make connection, categorize, synthesize, evaluate, and apply the information they know to find conclusion, getting new information and engaging the meaningful learning.

The board design using concept maps, with monochrome color black and white. Use Art Deco style, a style of design that became the material on the design review learning. The contents of map board are divided into four part of subject lesson maps:

a. **First PART:** Explaining about student's knowledge, the graphic organizer simple listing: groups related items and depicts chronological sequences of objects or events.
Questions used - discussing a design work from the physical form of the design:
1. Can you make a list, specific visual form of this work?
2. What is the background of events when the work was made?

b. **Second PART:** The graphic organizer highlights apparent differences between objects and connects reason with result.

Questions used - discussing a design work from the physical form and ability to expresses a theme or message:

1. Can you identify the different characteristics of this work with other styles (specify other styles)?
2. Write down in your own words, what message conveyed through this work?

c. **Third PART:** Clarify and organized several design work
Questions used:

1. Put two pictures on this section. Complete with the designer's name, title of the work and year this work was made

d. **Fourth PART:** Personal assumptions and build up new relationship of knowledge assimilate different point of view.
Questions used - discussing a design work as a function or an instrument to achieve the goal:

1. Which part is important to note if we want to make work that way?
2. What is the relationship between the works with the current environment when this work was made?
3. Can you build a new design style using the style from the past in a different era? Explain your answer!

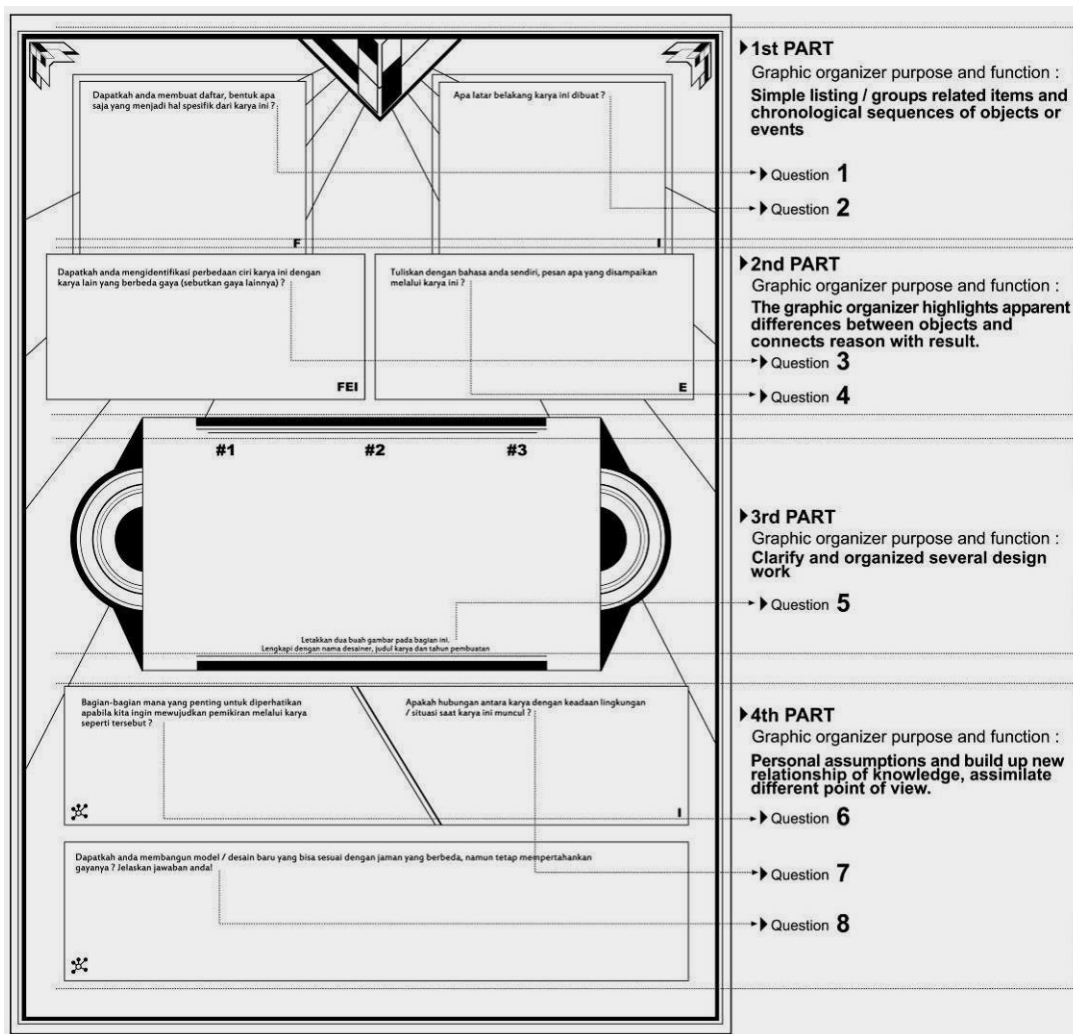Here is the following questions that applied into the "My Map Board" :

Figure 3 : "My Map Board"
Source: Personal Documentation

4.2   The Implementation of Graphic Thinking to Learn Design Review

The "My Map Board" used as a tool on one of the midterm exam. The map present four phase of design review, from the understanding of the beginnings of the birth of design styles in visual communication design since the Industrial Revolution in Europe and then make a critical review using several style that has been learned in the Design Review class.

This map only focus on the two stages of design thinking; 1) empathize stages, showed from the first and the second part of map board and 2) define stages showed from the third and the fourth part of map board. The answers that result from the map board describe the students ability in design thinking, the students can focuses creative confidence when exploring the opinion through the map board, the question encouraging ideation and fostering active thought on design style. In the first step to be traversed when learning design review is dealing with the variety of style from a design work, then students are expected to know more about the characteristics of each variety of the design style, and in the end student will learn how to design with the unknowns of what will be designed as well as how it will create the desired value.

After introducing the using of "My Map Board" students make a group discussion. **The first part** is asking the student to discuss the map board. The discussions conducted in groups, they have to decide to choose several design style to explore, and after that they may discuss each other about the question of the board. Students try to understand about the question in the map, at the time of explanation, some students looked confused. They worry if the answer they choose will be wrong. This is becoming a source of worry students appeared.

As a process, design thinking that taught by concept maps (graphic organizer) provides opportunities for students to be easier to learn. This is shown in how students respond to the concept map. Although students feel confused at first, but after being given the explanation that "the best answer is, when you are able to explain the various forms of visual style, according to the knowledge that you have, and you can give a new or an original opinion about design style that you choose" and then slowly students seemed to be understand. This is shown from the observation, if the student is given the opportunity to share an opinion with their point of view, it will provide a positive response, student start to expresses thoughts, they began to give examples of statements or answers that will be written on the board, the courage to give opinions and make the process of exploration increased.

The second part is to answer questions and perform analysis by constructing ideas and information they have. The question at the first part was to explain about student's knowledge related items and depicts chronological sequences of objects or events and the physical form of the design. The answers are written on the board on the part one show that students try to explore their thoughts, included many kinds of knowledge about design style, history, the environment, sensitivity to see visual form, interesting and creative point of view. Answers given by the students are the understanding of the ideas from the design style they wanted to convey.

The second part is trying to highlights apparent differences between the physical form and expression of the object. In this part student tries to make connections and structure thinking, from the reference, they may explain in a variety of formats. The question helps them to identify areas of focus, especially when the students have to compare different design style and recall new information. Student willingness and ability to feel empathy and find meaning in the design work that was not made in the time they turned out to be easier to do. It can be found on the answer explanations on this part.
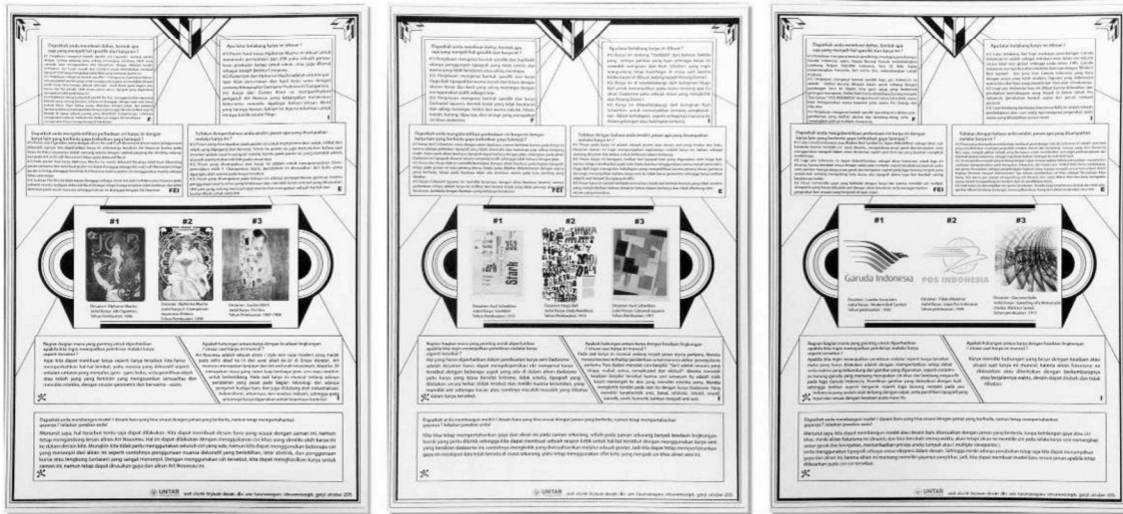
Figure 4 : Example of "My Map Board" made by students
Source: Personal Documentation

From the third part students have to clarify and organized by chosen several design work. In this part some students may choose the pictures they like and easy for them to make an analysis. From the answers on the board shows that students understand about the design style, they can explain designers name, title and year of production.

The fourth part will give the students to explore and make their opinion through the part before. These sections help students get ready to learn the next stage of design thinking that is ideating. Students was encouraged to set a purpose and a new thinking from the previous section, also described several examples of how the development of the design is very influential, from one age to another time. Some of the students seemed to have the courage to build their own understanding, make a conclusion using their own viewpoint. This part helps the students to organize their thought in summarizing. Student is easy to combine their opinion in to a sentence; this can be seen from their argument and opinion on the map.

To find the results of student's ability to produce a thought and opinion, analysis is carried out through the answers written by students. From the result show that most of students could reach the thinking level indicator well. The first indicator is **making new connection** of some information, from the answered showed that students could make connection and general classification about several design styles, although some of the answers are not clear. The second indicator is **creating a new point of view** by linking information with the environment, themselves and combines them with the knowledge they get from learning materials in the classroom. They could found the certain information such as the new design style that is influenced by the style of design in the previous era. Students make critical review and provide feedback, correction, analysis and description.

The third indicator is to decide **different opinion** of each question. In deciding the argument of a question, some sentences found that they still use the information contained in textbooks, but the majority started to give new information from personal assumptions, making new thinking, or build up new relationship between several design style and unify them to produce a new design style. The last indicators are to **make prediction, imagination** on how about design style in the future. The students also had various answers to make opinion, ideas or vision, knowledge and references based on the earlier part. There are many different explanations that clarify the understanding of empathy, problem solving and invention ideas on design style they choose. From the discussion, it could be conclude that graphic organizer provide opportunity in enhancing the understanding of design thinking when learning design review.

5. CONCLUSION

Graphic organizer has the ability to stimulate student in exploring a subject and to improve their design thinking skills. Making thinking structure from graphic organizer can make a huge difference in their attitude toward reading particular book or use learning methods that are only in one direction. Graphic organizer builds excitement for the learning process, construct ideas, mind maps, visual, seek and define the problem and synthesize the findings with easier and more enjoyable for them. This strategy can help the students create learning experience, build their competence in understanding design thinking through the observations and immersing in experiences by reviewing a design work.

The "My Map Board" shows that the implementation of graphic organizer has built a process of meaningful learning by helping students to construct their own knowledge, to remind students of what they already know about the design style, help them to enhance their ability about design thinking and what they need to know about learning design review.

ACKNOWLEDGEMENTS

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