



# Integrating Design Thinking Process and Service-Learning Project into Packaging Design Lesson Plan at Vocational Graphic Design Study Program

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**Abstract.** The Packaging Design course provides mastery of the basic concepts of packaging design that combines material application, design aesthetics, and brand marketing. The course examines and trains packaging design techniques and develops them by considering marketing strategies for legal, environmental and global issues with a survey and problem-solving approach. The role of design as problem solving cannot be separated from the designer's ability in the design thinking process. The design thinking process is a problem-solving method that focuses on the user. Design thinking has the ability to develop innovative ideas which center on consumer needs. On the other hand, as a vocational study program graphic design, the courses must be able to be practical and implementable. Therefore, the Service-Learning project is suitable to be used in the packaging design course. All the projects are based on the needs of the Small Medium Enterprises (SMEs). The article is to describe the teaching plan of a packaging design course that blends design thinking process as a creative method and Service-Learning as community-based project. This teaching plan will be implemented and will be written as further research.

**Keywords:** Design Thinking, Service-Learning, Packaging Design, Design Education, Graphic Designing.

## 1 Introduction

The Graphic Design Vocational Study Program requires two aspects, namely the presentation and application of Packaging Design concepts/principles in the development of related knowledge and in solving various problems. Students do not only learn deductive packaging design theory, but are expected to be able to build understanding through problem solving activities. More than that, students are expected to be able to conduct investigations, not only to prove (proving) theories, but to the stages of reasoning (reasoning), developing and understanding (comprehending) concepts, as well as producing real products as a form of understanding the concept of packaging design.

The fact shows that in previous lecture activities the teaching and learning process for Design courses was still assignment-based packaging, the lecturer gave questions for assignments, so the learning process for this course tended to ignore the creative

thinking process. This results in the freedom and creativity of students being limited so that the teaching and learning process becomes less effective and efficient for teachers and students. It was found that student performance was not carried out thoroughly and the majority was dominated by the presentation of concepts by lecturers and students. Identification of problems, the relationship between concepts and real problems and problem solving are not emphasized enough. Organizing lecture activities that begin with identifying authentic problems/real phenomena, studying theory, design and problem-solving techniques, and ends with reporting of results needs to be done, so that student performance can be trained and the expected competencies are achieved. Innovations according to student needs such as directed and comprehensive guidance so that at the end of the activity a real product can be obtained which is absolutely necessary.

The role of design as problem solving cannot be separated from the designer's ability in the design thinking process. The design thinking process is a problem-solving method that focuses on the user [1], [2]. So that in the process of solving this design problem, the designer in particular should carry out the stages of design thinking for the work design process. Design thinking as creative problem solving inspires inward thinking to guide the development of creative and original solutions to meet user needs [3]

Design thinking focuses primarily on deep understanding of the end consumer's real and latent needs, assessing these needs for technical and commercial feasibility in terms of the solutions provided and while continuing to use an iterative design process i.e., defining requirements, exploring solutions using prototypes and implementing the same. Design thinking also teaches us to make mistakes early in the design process, to look inward and outward for solutions and to use techniques such as substituting (one material for another), combining different solutions, adapting, modifying, using another, eliminating (a layer) or rearrange the layers of a typical packaging solution. Various packaging solutions are possible for certain products but not all truly serve customer needs and are technically and commercially feasible. To test a solution, prototyping quickly and with minimum resources is essential.

Based on the background of the problem in this article, it is necessary to synergize learning Packaging Design theory with authentic problem solving in lectures and its application in everyday life as an effort to increase understanding of Packaging Design concepts and design thinking skills. In addition to applying design thinking, it is also followed by the involvement of Small Medium Enterprises (SMEs) as partners in developing packaging designs for these SME products using the Service-Learning method in the Graphic Design Vocational Study Program.

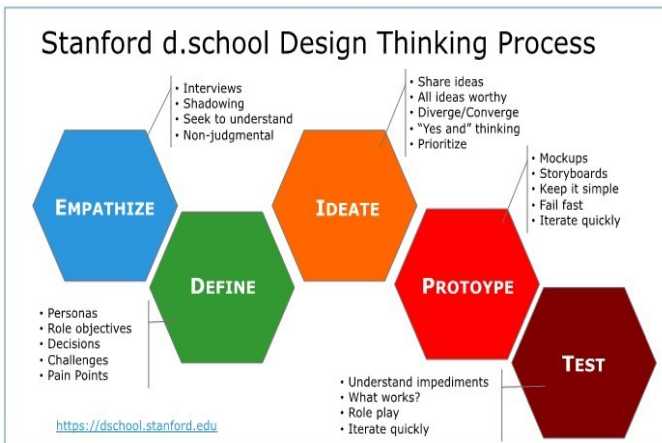
### **1.1 Design Thinking**

Design Thinking is a method of carrying out the design steps. Design thinking considers user needs and combines them with appropriate technological capabilities, so that they can produce good business products as they provide feasibility and effective solutions to a problem [4]. Design thinking holds a number of important elements, namely: 1) emphasizing actions that are centered on the desires and needs of users

(people centered); 2) apply creative power freely. This method does not require standard and rigid rules (highly creative); 3) requires direct experimentation by the design team, not only producing theories or ideas on paper (hands on); 4) Iterative is a process that is carried out repeatedly to improvise to produce good applications [2], [5].

When implementing design thinking in the making of a product, the following steps repeated as needed to produce the right work [1]:

- 1) **Emphasize.** Starting with an empathetic understanding of a problem that must be resolved. This step is centered on the user to find out what they want by being direct and face to face, carrying out debriefing and acting as if they are users. So that user problems can be solved smoothly.
- 2) **Define.** The results are analyzed and synthesized to determine the core issues to be identified. A define step is useful for solving user problems because the problems have already been defined.
- 3) **Generate ideas.** All ideas are accommodated as problem solvers that have been determined in the definition phase. This phase is important to collect as many ideas or problem solutions as possible. The last step is to research and test ideas to find the right way to solve the problem or prepare the elements needed to avoid problems in the future.
- 4) **Prototype** produces several variations of cheap products and reduces the size, or have special characteristics that exist in the product so that it can find solutions to problems that were produced in the previous phase. Prototypes are tested on the team itself, or on other people. When feedback appears, it needs to be improved again in order to produce a good and precise prototype.
- 5) **Test.** The products have been publicly tested and evaluated, and changes and additions have been made to the results to eliminate problems and gain a deeper understanding of the product and its users.



**Fig. 1.** Five-step design thinking process proposed by Stanford University.



storing, identifying and differentiating a product in the marketplace. Ultimately, packaging design acts as product marketing by uniquely communicating the personality or function of a consumer product. Through a comprehensive design method, packaging design uses many means to deal with complex marketing problems. Brainstorming, exploration, experimentation, and strategic thinking are some of the basic ways in which visual and verbal information becomes a concept, idea, or design strategy. Through an effective product design strategy [12].

Packaging works as [13]: 1) Protection, here the packaging protects the products it packs so that the quality of the products it protects reaches the consumers' hands. 2) The function of the container focuses on the convenience of consumers in carrying and using packaged products. 3) Promotion, in the packaging design as a differentiator from competing products, providing information, benefits, how to use and other information needed by consumers. Packaging does not only function as a product protector, but also can be seen from the artistic and aesthetic side. So that in packaging design must pay attention to several factors, namely: security, economics, distribution, communication, aesthetic ergonomics, identity, promotion and the environment [14]

Packaging based on the Structure of the Packaging System can be divided into [15]: 1) Primary Packaging is the entire packaging that is displayed and makes consumers decide to buy the product, whether it is in contact with the product (bottle) including the label attached to the bottle. 2) Secondary Packaging, namely packaging whose main function is to protect a group of other packages (primary packaging) during storage in the warehouse and when distributed to customers. such as carton boxes and milk cans, tempeh baskets and so on. 3) Tertiary and quaternary packaging, namely if you still need to wrap primary, secondary and tertiary packaging. Usually used for protection during transport.

Based on the SKKNI (Indonesian National Work Competency Standards) in the field of packaging design consultancy stipulated in the Decree of the Minister of Manpower of the Republic of Indonesia Number 423 of 2014, a packaging design consultant should have the ability to communicate with related parties, conduct product packaging trend research according to market needs, plan samples make (mock up) packaging designs and coordinate the formation of finished samples (mock up) product packaging designs with third parties as well as monitor and evaluate the use of product packaging.

## 2 Methods

Packaging Design course is a course that provides mastery of the basic concepts of packaging design that combines material application, design aesthetics, and brand marketing. The Packaging Design Course examines and trains packaging design techniques and develops them by considering marketing strategies for legal, environmental and global issues with a survey and problem-solving approach. Learning methods in the form of discussion, problem solving and giving assignments.

Lectures are delivered with theoretical strategies and discussions. In the semester lesson plan it is explained in detail in the course learning outcomes (CLO). The learning outcomes are then formulated in Sub-CLO and indicators. Indicators require study materials and learning resources. Determination of teaching materials starts with determining learning outcomes from the Packaging Design Course, namely:

- 1) Able to understand the function, purpose, structure of packaging design.
- 2) Able to design the shape, structure, packaging pattern of a commercial product.
- 3) Able to design packaging while considering pre-production, production, marketing strategies on legal, environmental and global issues.
- 4) Able to prepare final data in detail before the production process or packaging printing.

### **3 Results and Discussion**

The principle of packaging design is to convey design thinking and teach design methods. The purpose of creating such reforms is not to cultivate designers but to guide students in expressing themselves and cultivating real problem-solving abilities, thereby enabling them to propose creative packaging design concepts [16].

Natadjaja and Yowono [17] implemented service-learning (SL) in packaging design courses. They recognized that SL was a teaching and learning approach that integrated community service with academic studies. They believed that by implementing the SL program, the students could contribute their knowledge to the community and enhance the quality of their study of packaging design [17]. The Implementation of SL program is to meet the students with the Small and Medium Enterprises (SME) directly.

The packaging design course is not only rich in theory but also actually practice. The theory involves the hypothesis of consumer needs and the process of the packaging production [18]. In higher vocational colleges, it is extremely important to construct a characteristic teaching material project-based which is the integration of theory and practice. The packaging design course at the beginning not only could place the practical application of packaging design, but also could integrate the theory of packaging design with the practical application [19]. Therefore, this implements a project-based learning model for the tasks that students have. The students will be divided into small groups to solve the problem of the product packaging of the SMEs.

This course emphasizes students to think creatively and have practical abilities. Therefore, we developed courses involving design thinking and innovative teaching plans to orient students in implementing packaging design with SMEs.

**Table 1.** Teaching strategy for packaging design course.

Design Thinking	4D (Double Diamond)	Service-Learning Project	Learning Strategy	Learning Experience
Emphasize	<b>Deliver:</b> Interviews, observations, questionnaires	Investigation	Discussion, Presentation	Students conduct a field survey of SMEs using interview and observation techniques
Define	<b>Define:</b> Concept mapping	Preparations	Group discussions	Students determine the packaging design needs of SME products
Idea	<b>Developer:</b> Brainstorming, brainwriting,	Action	Mentoring, group discussions	Students explore creative ideas for SMEs product packaging through alternative packaging design visualizations
Prototype	<b>Deliver:</b> Pitching	Reflection	Presentations, group discussions	Students choose the final design to be presented to SMEs with various considerations that refer to the define stage.
Test		Demonstrations	Presentations, group discussions	Students conduct packaging trials with prospective buyers through exhibitions

This Learning Plan follows the steps of design thinking which starts with Emphasize, Define, Ideate, Prototype and Test, as follows:

- 1) Emphasize stage: guiding students to understand consumers and product design issues from SME products in Surabaya. This stage is carried out not only by observing SME products but also by conducting exploratory research, interviews, distributing questionnaires and field surveys. Students communicate directly with SME owners to compile an empathy map and determine pain points from existing packaging design problems. Students conduct an investigation of SMEs who are partners in product packaging development. Investigation results are presented and discussed in class so that lecturers get an initial picture of SME problems that are accompanied by students.
- 2) Define stage: guides students to consider the relationship between packaging design and specific user groups and then redefines and clarifies consumer needs for packaging design. Students do concept mapping as a preparatory stage for carrying out

the next stage of action. This concept mapping contains the results of a needs analysis from SMEs based on the results of previous investigations. Needs analysis can be in the form of analysis of the target market, Strength Weaknesses Opportunity and Threat (SWOT) and Unique Selling Proposition (USP). Learning is done by discussion method in each group. The lecturer gives directions in each group because each group has different problems and solutions.

- 3) Ideate Stage: directing students to jointly brainstorm and share problem solving as well as various creative ideas. This activity is carried out in small groups. The expected result of this stage is that students think out of the box in getting as many solutions as possible from these problems. Students explore creative ideas through visualization of work by producing many alternative design solutions. Learning is done by doing mentoring in each group to help explore students' creative ideas. Group discussions are conducted to provide input on creative ideas to determine the best.
- 4) Prototype Stage: directs students to select specific consumers and develop stories for consumers together and then develop prototype products that are easy to produce and manufacture. The prototypes are made from storyboards, computer graphics, or cardboard to verify ideas [20]. The results of the design exploration at the ideate stage selected the best that can solve the SME design problem. The final result of this packaging design is presented in front of SMEs for approval.
- 5) Test phase: using test the feasibility test of the prototype and determine areas that can be improved in the future. Students together with SME make exhibitions as a trial venue for the target market. Exhibitions can be held on campus to reduce costs.

This course pays more efforts on practice performance. The final scores consisted of theoretic test, attending and final project. The final project has 60% count, test and attend each has a value of 20%. Final project assessment is the supplement of project-based learning and the summary of students' learning processes and outcomes. Project evaluation is divided into two, which are process and summative assessment. The assessment process is the evaluation of the project implementation process. Each group member organizes self-assessment based on the tasks that have a self-complete and impersonal role in the sub-project activities, and then the teacher assesses the attitude and behavior of each student and provides a score for each student. Summative assessment is the assessment of project results [21].

## 4 Conclusion

Packaging design course related not only to technical skills. A regular program gave students the ability to create unique, creative, elegant and modern packaging designs, but the designs were not cheap and easy to produce and implement. Vocational education should involve more practical teaching methods which guide students to discover practical and real problems and find suitable solutions. This method provides the basis for growing students' ability to think practically and independently. Therefore,



packaging design should be focused on the consumer's needs along with the user oriented design thinking, consumer's culture should be analyzed to produce the unique packaging design.

## Acknowledgments

This research was supported by the Vocational Faculty of Universitas Negeri Surabaya and fully supported by LPPM (Institution of Research and Community Service) Universitas Negeri Surabaya (UNESA).

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