



Design Thinking-Project Based Learning (DTPjBL): Modelling Studio Teaching Material in Fashion Design Program

Pingki Indrianti¹ (✉) and Oki Kurniawan²

¹ Politeknik Negeri Media Kreatif Jakarta, South Jakarta, Indonesia
pingki.indrianti@polimedia.ac.id

² Universitas Trilogi, Jakarta, Indonesia

Abstract. Fashion Studio Subject (*Studio Inovasi Mode*) is a preliminary subject of the diploma-final project in the Fashion Design Program, Politeknik Negeri Media Kreatif. This subject sets the students as future designers to create good designs based on problem-solving and user needs. This subject requires a model to help students practice some learning skills to serve design as an alternative solution. This qualitative research discussed the implementation Design Thinking-Project Based Learning model (DTPjBL) as an alternative approach in the fashion studio subject. The data use the descriptive analysis method to describe the general step of the design thinking process in the project-based learning model, including (1) Empathize, (2) Define, (3) Ideate, (4) Prototype, and (5) Evaluate. The open-ended steps and iterative provide various ways of learning and encourage teachers to be more focused on student-centered learning and thus could enhance students' learning skills especially critical thinking, problem-solving, and creative-innovative thinking. Yet design thinking is generally used beyond design fields, this framework is still applied as a framework to standardize the teaching model. Besides entering the opportunity of joint-project among other study programs.

Keywords: Design thinking · Project-based learning · Fashion design

1 Introduction

Studio Inovasi Mode or fashion studio is a preliminary subject of the Diploma-Final Project in Fashion Design Program, Politeknik Negeri Media Kreatif Jakarta, held in the 6th semester. As a significant part of fashion design education, the subject sets fundamental understanding to create a design as a problem-solving towards a project. The project focuses on the solutions to new product development, including design problems, design processes, and design products. The output of this subject is a prototype emphasizing the user-centered design with a process that ensures the design matches the needs and capabilities of the users or consumers. According to Norman [1] a Human-Centered Design (HCD) or User-Centered Design is the solution to a good design. Thus, by focusing on user-centered design, it is expected that the output of this subject could

serve solutions and benefits, both for academics and non-academics people or the wider community.

The subject needs to build a model of teaching material to standardized processes and output products, also a model to develop learning activities that help students improve some learning skills to create a design as an alternative solution. The Project-Based Learning (PjBL) model is justified as it provides a student-centered process that encourages students to be more involved in their learning process to meet their needs [2]. In the PjBL, students solve real-world problems through authentic projects guided by an inquiry question that drives the research and allows students to apply their acquired knowledge [3]. By conducting projects in which they are actively engaged, students can develop their competencies [2, 4] both in the scientific and social fields of study.

There is a connection between the PjBL and the Design Thinking model. The seven stages of PjBL pointed to project work in solving an authentic problem with the student-centered process. On the other hand, Design Thinking supports the problem-solving process through creativity, users' needs, and business strategy. Design Thinking produces a solution that should fit specific functions and satisfy different requirements and constraints [5]. Based on this connection, there is an opportunity to use the Design Thinking Project-Based Learning (DTPBL) approach as a successful pedagogical strategy to enhance students' critical thinking, creative skills, and produce innovative fashion solutions.

This research aims to discuss the implementation of The Design Thinking-Project-Based Learning (DTPjBL) in *Studio Inovasi Mode* (fashion studio subject). The underlying hypothesis of this study is Design Thinking Project-Based Learning (DTPBL) model could help students create a design as an alternative solution for problem-solving. Besides, it will help students practice some learning skills (i.e., critical thinking, problem-solving, creative-innovative thinking, collaboration, and communication). Yet design thinking is generally used beyond design fields, but it is still applied as a framework to standardize the teaching model. In a study of product design engineering [6], the design thinking method strengthens the continuity of a problem statement and solution to develop a tangible product design as an improvement from the previously existing product.

2 Research Method

This qualitative research discussed the implementation of the Design Thinking-Project-Based Learning model (DTPjBL) as an alternative approach in *Studio Inovasi Mode* (Fashion Studio Subject) teaching material. The data analyzed was carried out by descriptive analysis method to describe the general steps of design thinking process and the project-based learning model.

2.1 The Implementation of PjBL Model

Studio Inovasi Mode is a subject in Fashion Design Program, Politeknik Negeri Media Kreatif Jakarta, in the 6th semester. The authors devised and managed the Project Based-Learning (PjBL) approach to this subject, with the project task lifted from the real issues

or phenomena. According to Jalinus [2] the Project-Based Learning model (PjBL) has seven secondary stages. The stages of PjBL consist of 1). *Formulating the expected learning outcome*; 2). *Understanding the teaching material*; 3). *Skills training*; 4). *Designing the project theme*; 5). *Making the project proposal*; 6). *Executing the task project*, and 7). *Presentation (evaluation) of the project report*.

In the first stage (formulating the expected learning outcome), the students of Studio Inovasi Mode are expected to understand the design process to create good designs based on problem-solving and user needs.

In the second stage (understanding the teaching material), the teacher will instruct students to understand the syllabus and guide them in a class discussion. Since the characteristics of PjBL is student-centered, teachers act more as a facilitator, adviser, guide, and motivator. The teachers will support students to work individual or in group to solve the problem of the project and assume responsibility for their own learning.

In the third stage (skills training), the teachers will assist each student in hard and soft skills training during the project making. The hard skills comprise sketching and production (pattern making and sewing) to support the prototyping process. The soft skills or the learning skills include critical thinking, problem-solving, creative-innovative thinking, communication, and collaboration.

In the fourth stage (designing the project theme), students will create a prototype of fashion clothing for kids' wear, women's wear, or men's wear. The Studio Inovasi Mode comprises of five project-theme of fashion product that students could choose from 1). Pattern making or textile manipulation, 2). Muslim (modest) wear, 3). Outdoor clothing & sportswear, 4). The Plus (plus size & maternity), and 5). Adaptive clothing. Based on the characteristics of the fashion study program in Politeknik Negeri Media Kreatif, the themes should represent the Indonesian-local content.

In the six stage (executing the task project), students will select one of the best themes and work on a proposal to execute one project until finished.

In the final stage (presentation of the project report), students will have a final presentation of the project report for evaluation. In Studio Inovasi Mode, the evaluation results will provide recommendation of the next project to be continued in Diploma-Final Project in the 8th semester (Fig. 1).

2.2 The Implementation of Design Thinking Model

The *Studio Inovasi Mode* subjects uses Design Thinking approach as a method of the design process in the. Tim Brown, the IDEO executive chair of the Design Thinking organization, explained design thinking as a discipline derived from how designers think and operate with a human-centered discovery process followed by the iterative cycle of prototyping, testing, and refinement [7]. This design thinking uses designer sensibility and method to match the need of people. Design thinking serves innovation with technology, users' needs, and business strategy. Uebernickle etc. [8] explain design thinking as an innovation method that uses an iterative process to deliver user- and customer-oriented results to solve complex problems. Yet this design thinking concept is quite tough to describe for its ubiquitous and multifaceted.



Fig. 1. Five project-theme of fashion project in Studio Inovasi Mode

Design thinking is about the process, as good design emphasizes the process. The design thinking process is reflective and iterative. The process is not a linear exercise with one step systematically following another, nor is it circular. It goes back and forth. The basis of the design thinking process (Uebernickle, 2020) includes 1). *Problem definition and redefinition*, 2). *Need finding and synthesis*, 3). *Ideation*, 4). *Prototyping*, and 5). *Testing*. Expert designers show that they go back and forth in an iterative process from analysis problem to prototype, back to analysis, then go forth to ideation, then so on. Some people will think this kind of process looks chaotic and unpredictable. But for designers, where you start doesn't matter. Many organizations develop design thinking models. According to Fuente (2019), The significant models are 1). *3Is by IDEO*. It comprises three phases (inspiration, Ideation, and Implementation); 2). *HPI (Hasso Platner Institute) Stanford*, with five-phase of Empathize, Define, Ideate, Prototype, and Test; 3). *HPI (Hasso Platner Institute) Potsdam Germany*, comprises six phases (Understand, Observe, Point of View, Ideate, Prototype, and Test); 4). *The Double Diamond by British Design Council*, with four-phase of Discover, Define, Develop, and Deliver. The diamond diagram shows the divergent and convergent stages of the design process 5). *SDT: The Service Design Thinking* model has four phases: Exploration, Creation, Reflection, and Implementation. In *SDT*, the outcome is a process, not a finished product.

The DTPjBL teaching material in *Studio Inovasi Mode* uses the *HPI Stanford* model as the methodology approach with five-phase of Empathize, Define, Ideate, Prototype, and Test. The author prefers this model for its very clear workflow and easily communicated to design students. The next Sect. 3.1 will discuss further about the implementation of this five-phase *HPI Stanford* model (Fig. 2).

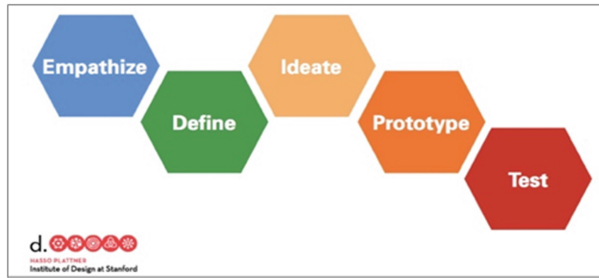


Fig. 2. The Hasso Plattner Institute (HPI) Stanford Design Thinking Model

3 Result and Discussion

3.1 DTPjBL Workflow

In Studio Inova [1] is Mode, students will join the class for about five months with 6 SKS (Indonesian credit system) or 12 h of subject per week by synchronous and asynchronous learning with a fixed schedule in the synchronous and flexible schedule, in asynchronous. The students study in a classroom (zoom meeting/web conference) in a synchronous system, while in the asynchronous, students will learn in their own time to do the project or discuss with teachers. Students will execute the project in some stages until finished. According to de la Fuente [5] and Traifeh [9], the phases of DTPjBL consist of Research, Opportunity (Problem) identification, Concept exploration, Concept refinement, and Final concept. This five-phase is related to the Design Thinking phases (the HPI Stanford model), including Empathize-Define-Ideate-Prototyping-Evaluate. The workflow below depicts the relation of all stages (Fig. 3).

In the first phase (empathizing), students will learn about the real issue through literature study, observation, polling, or interview. In the second phase (define the problem), the data is analyzed using the Six Thinking Hats Map (which will be explained in the next subsection) to determine the users' needs. In the third phase (ideate), there are four processes comprise of Brainstorming ideas to serve as many solutions as possible; Create a design brief that consists of some fashion elements (the silhouette, material, color, detail, look, and silhouette); Create design including a mood board and fashion sketching; and Explore materials or fabrics. In the fourth phase (prototyping), students will build samples of fashion products to represent the design. In the final phase (test), students will evaluate the prototype by interview and polling to get feedback from their original users. Sometimes, students will test the product in a panel discussion form with two or more experts.

A brief chart above explains the general workflow of the DTPjBL in the Studio Inovasi Mode subject. This workflow is not merely a single systematic step following another. It goes back and forth [9, 10]. Since the design thinking concept is ubiquitous and multifaceted with a non-linear iterative process, each student will have a unique and personal workflow of this DTPjBL. Yet, as the basic model, teachers in Studio Inovasi Mode will first introduce this workflow to students, then students could adjust or modify a different flow to meet their needs. Students will discuss it with teachers to determine the suitable workflow they will have to finish the project.

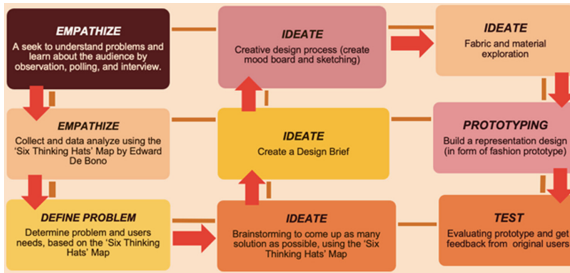


Fig. 3. Workflow of the DTPjBL phases in Studio Inovasi Mode (Source: personal doc.)

3.2 The Use of Stix Thinking Hats Map

Along the workflow of DTPjBL in Studio Inovasi Mode, the ‘Six Thinking Hats’ map contributes to analyzing data in the phase of *empathize*, *define*, *ideate*, *prototyping*, and *test*. Edward De Bono [11] describes the ‘Six Thinking Hats’ or the ‘Lateral Thinking’ present characters of thinking to examine a problem. In a problem-solving case (in a group discussion), each team member will have a hat that has a specific perspective to solve the problem. *The red hat* represents emotion and feeling influence thinking (e.g., fear, love, hatred, anger, *etcetera*). The goal of this thinking is to experience an emotional reaction. *The white hat* represents a neutral perspective, fact-oriented, and objective temperament. Only facts count, and the gaps in the data are quickly recognized and named. *The yellow hat* has optimistic thinking. The goal is to identify all benefits and advantages of a potential solution. *The green hat* represents new ideas, concept, and creativity. *The black hat* to identify risk and weakness. *The blue hat* focuses on the management, control, and organized of the ideation process. The implementation of six thinking is explained below.

- ***The red hat*** will help students share their emotions, opinion, and feeling to recognize and understand the authentic problems. Besides, students could share and choose their interest in the five-theme project by using this red hat thinking to be implemented in the project. The red hat provides the process of empathizing and defining problem.
- ***The white hat*** describes an objective and logical way of thinking based on factual data and information. Students use the white hat to validate opinions of the red hat, benefits of the yellow hat, ideas of the green hat, and risks of the black hat. The data could be in reference studies of journals and books, expert interviews, polling, and observation. The white hat appears in all phase of design-thinking.
- ***The yellow hat*** describes opportunities, benefits, and best-case scenarios related to solutions of problem-solving. The yellow hat appears in all phase of design-thinking.
- ***The green hat*** depicts new ideas and creativity to find solutions to the problem or issues. Students use the green hat in the ideate and prototyping phase to serve various ideas of design and techniques related to problem-solving.
- ***The black hat*** is the opposite of the yellow hat. It depicts a negative way of thinking. In Studio Inovasi Mode, students use black hats to identify risks or worst case scenarios, obstacles, and weaknesses in finding solutions. The black hat appears in all phase of design-thinking (Fig. 4).

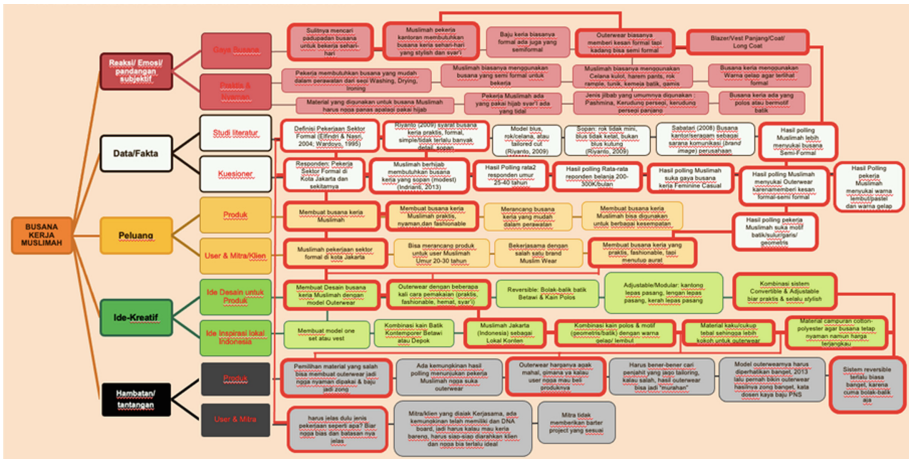


Fig. 4. Example of Six Thinking Hat Map in DTPjBL Process (Source: Personal Doc.)

4 Conclusion

Fashion Studio Subject (Studio Inovasi Mode) is a preliminary subject of the diploma-final project in the Fashion Design Program, Politeknik Negeri Media Kreatif. This subject sets the fundamental understanding for students to create a design as a problem-solving toward a project. This study showed that Design Thinking Project-Based Learning (DTPjBL) could be a suitable method for teaching material. The pedagogical strategy in the DTPjBL encourages students to enhance critical thinking and creative-innovative thinking to create a design as an alternative solution. The workflow of DTPjBL uses the Hasso Platner Institute (HPI) Stanford design thinking model (Empathize-Define-Ideate-Prototype-Test) for its very clear and easily communicated to design students. The workflow has a non-linear iterative phase in that students will have a personal workflow depending on the project to meet their needs. Students will discuss it with teachers to determine the suitable workflow they will have to finish the project. This way of learning will support students to have more responsibility and be more involved in their learning process to meet their needs. Yet design thinking is generally used beyond design fields, but it is still applied as a framework in Studio Inovasi Mode to standardize the teaching model. Future research could be a DTPjBL for the joint project among other study programs (different fields) to have more innovative fashion products with various issues or phenomena. The transdisciplinary study could also enhance the students' learning skills of communication and collaboration.

Acknowledgments. The authors wish to acknowledge encouragement from Politeknik Negeri Media Kreatif, especially Mrs. Rachmawaty, M.Ds as Coordinator of the Fashion Design Program, for the opportunity to build the Design Thinking-Project-Based Learning (DTPjBL) teaching material in Studio Inovasi Mode subject. The authors also thank Mrs. Rina Watye, M.Ds, and Mr. Iwan Amir, S.Pd, for their advice and support during the team teaching on this subject.

References

1. D. Norman, *The Design of Everyday Things Revised and Expanded Edition*, New York, Basic Books, 2013.
2. N. Jalinus, R. A. Nabawi, A. Mardin, The seven steps of project based learning model to enhance productive competences of vocational students, in: *Proceedings of the International Conference on Technology and Vocational Teachers (ICTVT 2017)*, Atlantis Press, Yogyakarta, 2017, pp. 251–256. DOI: <https://doi.org/10.2991/ictvt-17.2017.43>
3. S. Bell, Project-based learning for the 21st century: skills for the future, in: *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, vol. 83, 2010, pp. 39–43. DOI: <https://doi.org/10.1080/00098650903505415>
4. T. Koparan, B. Guven, The effect on the 8th grade students' attitude towards statistics of project based learning, in: *European Journal of Educational Research*, vol. 3, 2014, pp. 73–85. DOI: <https://doi.org/10.12973/eu-jer.3.2.73>
5. J. de la Fuente, I. Carbonell, M. LaPorte, Design thinking as a framework for teaching packaging innovation, in: *Journal of Applied Packaging Research*, vol. 11, 2019, pp. 39–69.
6. E. Rezasyah, R. S. Pradita, M. A. L. V. Loekitodisastro, C. Angeline, D. Mangindaan, Permodelan materi pengajaran mata kuliah ergonomi pada program product design engineering, in: *Engineering, Mathematics and Computer Science Journal*, vol. 2, 2020, pp. 107–114. DOI: <https://doi.org/10.21512/emacsjournal.v2i3.6598>
7. T. Brown, Design Thinking, in: *Harvard business review*, vol. 86, 2008, pp. 1–10.
8. F. Uebernickel, L. Jiang, W. Brenner, B. Pukall, T. Naef, B. Schindlholzer, *Design thinking: The handbook*, World Scientific, 2020.
9. H. Traifeh, T. Staubitz, C. Meinel, Improving learner experience and participation in MOOCs: A design thinking approach, in: *Proceeding 2019 IEEE Learning With MOOCS (LWMOOCS)*, Milwaukee, WI, USA, 2019, pp. 165–169. DOI: <https://doi.org/10.1109/LWMOOCS47620.2019.8939623>
10. L. Mononen, Systems thinking and its contribution to understanding future designer thinking, in: *The Design Journal*, vol. 20, 2017, pp. S4529–S4538. DOI: <https://doi.org/10.1080/14606925.2017.1352949>
11. E. D. Bono, *New Thinking for the New Millennium*, Viking Adult, 1999.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

