

Research Article

Design Thinking as a Learning Process Evaluation Method in Outcome-Based Education (OBE) Curriculum

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Received Date: 24 October 2024 Revised Date: 09 November 2024 Accepted Date: 15 November 2024 Published Date: 21 November 2024

Abstract: *The Outcome-Based Education (OBE) approach has been recognized as a learning model focusing on student outcomes and preparing graduates with relevant skills to compete in the global market. This study explores how the design thinking method can be applied to support the implementation of the OBE curriculum in higher education. The learning process becomes more collaborative, innovative, and focused on problem-solving after using this design thinking approach. This study used unstructured observations and semi-structured interviews with students to evaluate the impact of the application of the method on student engagement, the development of creative thinking skills, and problem-solving abilities. The results showed that this approach could increase student engagement in the learning process, encourage innovation in teaching, and provide more effective solutions to challenges faced during the learning process. Thus, the integration of design thinking in the OBE curriculum has the potential to create higher quality and sustainable education.*

Keywords: *Design Thinking, Outcome-Based Education, Sustainable Quality Education, Learning Innovation.*

I. INTRODUCTION

Innovation in teaching means introducing changes and new processes to improve institutions and professional development (Liu & Zhang, 2024; Torrico et al., 2023). The application of this innovation is by implementing creative teaching ideas and materials, as well as new teaching strategies and tactics that focus on student growth in order to increase the effectiveness of instruction (Yao et al., 2024). Innovation in teaching is one of the indicators of excellence in the university environment (Torrico et al., 2023), and universities are one of the ideal places or fields to develop innovation because of the integration of resources at universities (Yao et al., 2024).

Innovation in teaching is more about thinking positively and innovatively and abandoning traditional ideas and procedures. This innovation is reflected in two main aspects: innovation in teaching content and teaching methods. Innovation in teaching content is the continuous renewal of teaching content based on the latest research on the material being taught. Meanwhile, innovation in teaching methods is the innovation of teaching design to improve the learning experience and student engagement (Yao et al., 2024).

Outcome-Based Education (OBE) is a method of learning that provides innovation that focuses not only on what students will learn but also on how students learn it. The concept of learning in OBE is derived from previous teaching approaches. However, it is framed by a new visionary education system that has been previously determined and modified with specific goals. This goal is to prepare graduates who can compete in the global market with special skills, communication and problem-solving skills, and other technical skills (Katawazai, 2021). There are several main requirements needed to implement the OBE curriculum. These requirements include clarity of program goals and objectives, teaching methods and their suitability to develop expected competencies, and various assessment procedures that can reliably monitor whether the expected targets are achieved (Jadhav et al., 2020). Therefore, it is essential to create learning methods that can improve students' knowledge, skills, and behavior (Rathy et al., 2020). Another emphasis on OBE is not on what the teacher wants to achieve but, more importantly, what students should know, understand, demonstrate, and achieve. The results of this OBE curriculum also aim to evaluate students' cognitive, psychomotor, and affective domains (Yasmin & Yasmeen, 2021).

To implement this OBE curriculum, an approach that is as effective as possible is needed so that the desired learning can be created. One way to implement this is by using the design thinking approach. Design thinking is a relatively new approach to learning, where this approach is interpreted as a process and tool used to determine desired goals and inform the processes and skills needed to find and develop opportunities with a series of cognitive actions (Ilyas et al., 2024). The design thinking approach in learning also combines design with creative thinking to find solutions to problems, where someone can see things from a broad perspective by empathizing with others and developing innovative solutions with a collaborative



approach (Doğantan, 2023).

The design thinking approach is the approach that is considered the most appropriate for implementing the OBE curriculum. The existence of design thinking as an approach in the OBE curriculum is expected to improve the goal of graduates who can compete globally by encouraging innovation, problem-solving, and increasing student involvement in the learning process. Currently, no research analyzes the combination of these two things, so this research will discuss in detail the influence of the design thinking approach in learning with the OBE curriculum.

II. LITERATURE REVIEW

A) Outcome-based Education

OBE is one approach to higher education curriculum that has replaced the teacher-centered curriculum. OBE's core tenet is measurable outcomes, which guarantee that students acquire and exhibit a number of necessary skills to finish their coursework. This curriculum has been implemented in various developed and developing countries, such as Australia, Canada, USA, Malaysia, Philippines, Pakistan, and South Africa. This curriculum can connect curriculum content with industry needs, providing students with knowledge about economics and preparing them for work after graduating from college. In implementing this curriculum, several obstacles are faced, such as difficulties in transforming from a traditional curriculum to an OBE curriculum because there are no resources or professionals who understand the form of OBE. In addition, it is not easy to partner with industry to fulfill its curriculum (Mufanti et al., 2024).

B) Design Thinking

In education, design thinking is an analytical and creative approach to problem-solving that supports teachers in designing, managing, and improving the quality of teaching (Calavia et al., 2023; He et al., 2023; Moon & Chang, 2024). This method enables one to view things from a wide angle by empathizing with others and working together to generate different solutions using their own thoughts and discoveries (Doğantan, 2023; Moon & Chang, 2024). This learning uses group collaboration and direct learning strategies and involves students' cognitive, motivation and learning engagement, learning objectives, and teacher-student relationships (He et al., 2023; Ilyas et al., 2024). By using this method, students are encouraged to participate actively, and teachers act as facilitators in the learning process and knowledge development so that they can produce newer understandings to be able to provide higher quality output with the involvement of various stakeholders in the OBE curriculum (Moon & Chang, 2024).

According to the Stanford Design Thinking Model, there are five stages of the design thinking process: Empathize, Define, Ideate, Prototype, and Test. Empathize means approaching a problem by understanding needs from a human perspective. At this point, gather and comprehend the children's fundamental needs using various methods, including direct interviews, behavior observation, and the promotion of imagination-based viewpoint understanding exercises (He et al., 2023). Define means understanding previously collected information (Doğantan, 2023). At this stage, it can be done by researching and synthesizing the information obtained to describe the problem and understand the needs that need to be solved, such as information on who needs the solution, what their needs are, and what has been found (He et al., 2023). Ideate means generating solutions to existing problems. At this stage, ideas can be generated regarding solutions and alternatives to those solutions. Solutions can be generated using various techniques like mind mapping, diagrams, and visual storytelling. This stage also prepares the materials needed to build the prototype in the next stage (Doğantan, 2023; He et al., 2023). Prototype means a physical manifestation obtained from previous ideas. Prototypes can be models, diagrams, or more detailed drawings (Doğantan, 2023; He et al., 2023). Test means conducting a demonstration of the prototype. At this stage, there will be feedback from students, so it may be necessary to develop new prototypes and repeat testing until the appropriate results are achieved (Doğantan, 2023; He et al., 2023).

III. RESULTS AND DISCUSSION

A) Research Methods

Based on the principles of OBE and the design thinking model, this study proposes a learning process evaluation model through design thinking in outcome-based education (OBE) curriculum

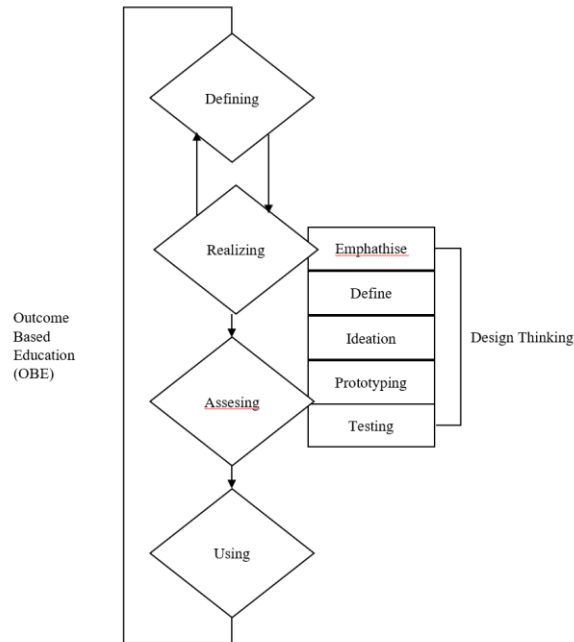


Fig 1. Research Model

In this research method, the researcher used the design thinking framework. The main objectives of using the design thinking method based on the theoretical background above are:

- To test whether the design thinking method can develop creative thinking and problem-solving skills in the teaching process
- To test whether the design thinking method can solve problems during the learning process.
- To test whether the design thinking method can make students more cooperative and motivated

B) Research Design

This research methodology uses a case study with design thinking in the data collection process. Participants in this study were students in classes A and B who had completed at least one year of education in the study program. This research design uses a collaborative and iterative approach based on the design thinking framework (Plattner, 2010; Wheatly, 2016), which aims to develop solutions to problems through a systematic, iterative process. This process encourages exploring and utilizing new ideas through five main stages: empathy, problem formulation, ideation, prototyping, and testing. As a general method, design thinking seeks to create a creative space that allows for a deeper understanding of the problems, audiences (customers), and needs that underlie sustainable development.

C) Data Collection

The basic data collection strategy uses qualitative and quantitative methods. Respondents with the criteria of students who have completed 1 year of education in the study program. Participants in this study were students of the study program who were divided into 2 classes, namely class A and class B. Data was collected through a value scale, interviews, and focus group discussions with each class.

a. Stage 1: Empathize.

The goal of this stage is to observe, listen, and interact directly with the context or problem being studied. At this stage, data is collected through student surveys and interviews using a rating scale protocol.

- Interview: Students in grades A and B were interviewed to learn about the learning process they had undergone and the obstacles they experienced. The interview lasted for one hour and was open format. Some of the questions asked included: “How was the learning process you experienced?”, “What were the obstacles faced?”, and “What is needed to improve the quality of learning?”
- Grade scale: The grade scale used is the average Cumulative Achievement Index (GPA) in 1 year (2 semesters) for each class. GPA is a measure used in the education system to measure students’ academic achievement during a certain study period. It is calculated based on the average value of all courses the student takes and is usually expressed on a scale of 0.00 to 4.00.

b. Stage 2: Define.

The problem framework is developed at this stage by synthesizing the understanding and observations obtained from the first stage. The researcher discusses the results of the survey and interviews with students. Referring to the Liedtka and Olgivie (2011) technique, the dialogue is divided into two parts: a list of problems from data collection (pain points) and what if (how might we), which is the stage of brainstorming and identifying opportunities for change).

c. Stage 3: Ideation.

This stage is a continuation of the how might we process, which is very important in the learning process because this stage focuses on exploring creative solutions to previously defined problems. The results obtained are the best solution ideas from several existing solution ideas.

d. Stage 4: Prototype.

This stage transforms the ideas generated during the ideation stage into a tangible representation. This stage focuses on creating a prototype solution that allows the study program to test and evaluate the effectiveness of a new learning approach tool or process.

e. Stage 5: Testing.

In this final stage, the study program is asked to test the prototype designed to support the learning process. The researcher will not report these steps in this paper because the necessary data has not been fully collected.

D) Implementation

In this phase, findings are presented based on each phase of the Stanford design thinking model described earlier: empathize, define, and ideate (while the prototyping and testing phases are currently under development). Given that design thinking is an iterative process in which each phase influences the others, it is often difficult to clearly distinguish between findings and the phase from which they originate. Therefore, the results presented here reflect the general sequence of events that occur during the learning process.

a. Stage 1: Empathize

At the empathy stage, the initial data collection process was carried out in the form of 1st and 2nd semester of transcript data. Based on the GPA transcript data obtained, the cumulative achievement index value was 3.67 (on a scale of 4). In addition to data collection, interviews were also conducted in each class, and a series of focus group discussions were conducted to explore two main questions:

- What are the obstacles and barriers experienced by students during the learning process?
- What challenges do students face in completing the learning process?

b. Stage 2: Definition (define)

In the definition stage, researchers conducted group discussions with students to explore the obstacles and challenges in the learning process in the classroom. After that, the how might we approach process was carried out to explore ideas and solve problems in general. General findings showed that there were several obstacles (pain points) experienced by students in the learning process, which were grouped based on the following classification:

1. Problems and Difficulties (Pain Point)

This stage is a critical phase where users' or stakeholders' main problems (pain points) are identified in more depth. In the Outcome-Based Education (OBE) context, this stage focuses on identifying challenges or problems faced by stakeholders, such as lecturers, students, or educational institutions, in achieving the expected results (outcomes).

Table 1: List of problems experienced (pain points)

No	Category	Class A	Class B
1	College Students	Students are not focused when the lecturer explains the material in class.	The students' presentation method is not easy to understand.
		Students do not respond well to the lecturer's material.	Many students were late for class.
		Students do not understand the lecture material.	The distance between lecture hours is very far.
2	Lecture	The lecturer was absent without confirmation.	Sudden changes to the lecture schedule by the lecturer.
		The lecturer's explanation is not interesting.	The lecturer's assessment is not transparent.
		Lack of interaction between students and lecturers.	The task is still manual (writing).
3	Supporting Systems/ Infrastructure	The wifi signal is often lost/unstable and slow.	Limited book/literature references.
		Academic system that does not display notifications of class schedule changes.	The exam does not use a system (paperless).

		The AC temperature in the classroom is unstable.	Limited power outlets in classrooms disrupt learning, especially for courses that require practical work using laptops.
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c. Stage 3: Ideation

At this stage, it is the stage of generating creative ideas and solutions to solve the problems that have been identified. This stage is very important in designing effective learning strategies to achieve the learning outcomes that have been set. Respondents brainstorm and discuss solutions based on problem identification (pain points).

No	<i>How Might We</i>	
	Class A	Class B
1	Create an up-to-date book/reference/literature database system.	Transparency of the value provided in SSO
2	Lecturers provide materials and references that are more interesting and easily accessible to students.	Agree on a deadline for late submission, which the lecturer must also implement.
3	Using interactive multimedia to support learning	Create an evaluation system for students or lecturers in terms of attendance and explanation of material.
4	A transparent, consistent and structured assessment system facilitates communication between lecturers and students.	The transition from paper exams to digital exams to be more efficient in assessment and more environmentally friendly.
5	The transition from paper exams to digital exams to be more efficient in assessment and more environmentally friendly.	Create a forum between lecturers and students to find solutions for effective teaching and learning activities.
6	The addition of a wifi router, wider wifi access, and higher speed	Feedback system to lecturers on teaching effectiveness

Based on the table above, solutions can be developed to overcome existing problems. Each idea generated in this process is then aligned with the learning outcomes to be achieved. Solution ideas are then evaluated based on their effectiveness in supporting the achievement of targeted skills, knowledge, and attitudes. The best solution idea will be selected and further developed for implementation, with the flexibility to continue to be adjusted as needed during the process. This approach is consistent with the OBE philosophy that focuses on student needs as the learning centre.

IV. CONCLUSION

This study discusses integrating the principles of Outcome-Based Education (OBE) with design thinking methods to support the evaluation of the learning process and find solutions to the problems faced. By adopting OBE, the learning process can be designed according to the needs of students and to improve the quality of education. The four primary components of OBE—definition, implementation, assessment, and utilization—are included in the design thinking process via the suggested design thinking paradigm.

In the application of Outcome-Based Education (OBE), integrating design thinking methods provides an innovative and solution-oriented approach to developing the learning process. Through design thinking, study programs/lecturers can be more responsive to student needs and changes in the dynamic educational environment because this model focuses on exploring problems in depth and producing creative and relevant solutions. Design thinking also allows for creating a more collaborative learning environment, focusing on student involvement in formulating solutions based on real needs.

Using design thinking in OBE also helps align the learning process with the objectives of learning outcomes. With the five main stages in design thinking—empathize, define, ideate, prototype, and test, study programs/lecturers can ensure that the teaching process is systematically designed to support the achievement of specific learning outcomes. This approach improves the way learning is structured and allows for more effective evaluation because the solutions generated are based on real problems students face in achieving learning outcomes.

The overall application of design thinking in OBE strengthens the student-centered educational approach, where the learning process is oriented toward the final result and the experience and learning journey of students. This allows study programs/lecturers to continue innovating and creating an adaptive learning environment by considering feedback from students and other stakeholders in the curriculum development and using more contextual evaluation methods.

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