



## Development of Digital Teaching Materials Using Problem Based Learning Models on Business Introduction Subject

Dionisius Sihombing<sup>1</sup>, Albert Pauli Sirait<sup>2</sup>, Boimin Sirait<sup>3</sup>

<sup>1,2,3</sup> Universitas Negeri Medan, Indonesia

Corresponding Author : ✉ [dions1977@gmail.com](mailto:dions1977@gmail.com)

### ABSTRACT

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This research aims to develop digital teaching materials, an E-book for the Introduction to Business course based on the Project-Based Learning (PBL) model. The development procedure of the Business Introduction E-book using PBL is adapted from the ADDIE development model. Media experts provided a total score for all assessment items of 57.5, with an average score of 3.83. Content experts gave an excellent rating, with a total score of 86 and an average score of 4.30. It can be concluded that the digital teaching material, an E-book based on PBL, is suitable for use in the Introduction to Business course. The student questionnaire responses yielded a percentage of 86.15% for the aspect of enjoyment, 83.15% for student interest in using the E-Book, 82.65% for the aspect of attention, and 87.45% for the aspect of student engagement.

*E-Book, Teaching Materials, Project Based Learning (PBL), Introduction to Business*

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## INTRODUCTION

The 21st-century learning involves preparing students to use technology and learning media to foster creativity, innovation, communication, research, and problem-solving skills, ultimately enhancing students' life skills for the challenges they will face in their lives (Kusmana et al., 2020).

The teaching and learning process is a system consisting of various interconnected and controlled subsystems within the components of the learning system. Learning encompasses teachers, learning materials, the learning environment, students, and learning objectives, all of which mutually influence each other to achieve the learning goals. Success in learning is said to occur when one possesses thinking skills, especially when attempting to solve problems. Therefore, improved learning outcomes are expected when teaching staff and students collaborate effectively in their tasks (Almoether, 2020; Nkechi, 2016).

The objective of the Introduction to Business course is to provide students with an understanding of how a business organization strives to achieve its goals by analyzing and considering the organizational environment. However, the learning process for the Introduction to Business course has not shown sufficient development of students' creativity. The teaching process for the Introduction to Business course is limited to knowledge transfer (Arsyad, 2016; Hamruni, 2012; Prayitno, 1995).

The lack of optimal learning processes and outcomes poses a problem that needs to be addressed. The author believes that efforts should be made to design appropriate learning methods that make students more active and independent. Problem-based learning is characterized by real-world problems as a context for students to learn critical thinking, problem-solving, and independent learning (Nur, 2020). This learning model engages students directly, with the instructor acting as a guide to explore knowledge and facilitate interactions among students (Danim, 2007). It is expected that the Problem-Based Learning model will enhance students' activity and creativity in the learning process, thus improving learning outcomes. The MBKM (Merdeka Belajar Kampus Merdeka) curriculum recommends using the Problem-Based Learning model in teaching (Majid, 2014; Thobroni, 2016).

Learning materials are defined as all types of instructional materials, whether written or unwritten, used by teachers to achieve learning objectives based on the curriculum (Suyono & Hariyanto, 2012). Teaching materials can be produced in various formats, including written materials in the form of books, such as modules, and teaching materials delivered in digital media through the internet and/or intranet. In this study, digital educational materials refer specifically to e-books, which are deemed suitable for learners in the online learning era (Nasrul Makdis, 2020).

E-books not only contain text but can also include interactive audio and visual element (Siti Rodi'ah, 2021). Materials that utilize e-books can help students gain a deeper and easier understanding of the learning material because e-books include not only text but also images, audio, and video. E-books are believed to make learners actively participate and become more independent in their learning (Nasrul Makdis, 2020).

Digital learning materials based on problem-based learning are developed with the hope of facilitating the achievement of cognitive competencies or students' knowledge by studying real-life problems presented as learning materials. Based on this background, the objectives of this research are to assess the feasibility of the E-Book for the Introduction to Business course based on PBL, to evaluate the suitability of the learning materials for the Introduction to

Business course based on problem-based learning, and to determine students' interest in the E-book for the Introduction to Business course based on PBL.

## **RESEARCH METHODE**

The research development procedure for the Problem-Based Learning (PBL)-based E-book for the Introduction to Business course was conducted using the stages of the ADDIE development model, namely analysis, design, development, implementation, and evaluation (Mulyanta and Leong, 2009).

The data collection method employed by the author was a media and material evaluation survey using a questionnaire. This survey adopted the theory of Walker and Hess, as mentioned by Arsyad (2010), which consists of three basic criteria for educational media: content and objective quality, teaching quality, and technical quality.

## **RESULT AND DISCUSSION**

### **Development of PBL-Based Digital Teaching Materials (E-Book) for the Introduction to Business Course for Management Students at the Faculty of Economics, Universitas Negeri Medan.**

The development stages were carried out based on the ADDIE development model, as explained below:

#### **Analysis (Analysis)**

##### **1. User (User)**

The users of the developed E-Book in this study are students in the Management program at the Faculty of Economics, Universitas Negeri Medan. Interviews conducted by the author with several students indicated that they require instructional materials that are engaging, user-friendly, and accessible for both face-to-face and online learning.

##### **2. Required Materials**

Students were presented with various learning topics prepared by the researcher based on the curriculum. Subsequently, students were asked to provide their opinions on the topics they found most essential in the Introduction to Business course.

The materials to be included in the digital E-Book for the Introduction to Business course are as follows:

- 1) Business and Business Environment
- 2) Ethics and Social Responsibility
- 3) Forms of Ownership and Business Combinations
- 4) Management Aspects in Business
- 5) Role of Marketing in Business

- 6) Management of Products in Business
- 7) Human Resource Management
- 8) Financial Management in Business

### **Initial Product Design Stage (Design)**

The instructional materials will be packaged in digital form (E-book), aligned with the competencies specified in the curriculum. The initial design of the PBL-based E-book product is divided into two designs: PBL-based material design and E-book display design.

- a) PBL-Based Material Design - The researcher determined the material design based on the needs analysis and further developed it into several sub-materials: 1. Business and Business Environment 2. Ethics and Social Responsibility 3. Forms of Ownership and Business Combinations 4. Management Aspects in Business 5. Role of Marketing in Business 6. Management of Products in Business 7. Human Resource Management 8. Financial Management in Business - The presentation of material and sub-material is tailored to the basic principles of PBL, where the material description starts with phenomena commonly encountered by students, followed by questions or problems aimed at guiding students in understanding the learning material.
- b) E-Book Display Design - The developed E-book should be presented engagingly and interactively. Therefore, the researcher created a visual design for the E-book using relevant images related to the material.

### **Development (Pengembangan)**

#### 1. Product Creation Stage

##### a) Cover Design:

The initial design of the E-book includes the cover, featuring the course name and author's name.



**Figure 1.**  
**E-book Cover Design**

- b) This section displays the menu or table of contents of the E-book, including items such as the Syllabus (RPS), Material, Exercise/Quiz Questions, and Bibliography.



Figure 2.  
Menu Display Design

- c) Material Display

This page contains material that is by that in the table of contents.



Figure 3.  
Material Content Display Design

- d) Tampilan Soal Latihan/Kuis

This page contains practice questions for each chapter.



Figure 4.  
Practice Questions Page View

## Implementation

During the implementation phase, the learning process is conducted through blended learning. The entire learning process for the Introduction to Business course utilizes the E-book. Before testing, the E-book product is first evaluated by instructional media experts and Introduction to Business content experts. Following the completion of the learning using the E-book, the author collects feedback from students through a questionnaire.

1) Expert Validation

a) Media Expert Assessment Results

This e-book was tested by 1 digital learning media expert who assessed the suitability of the learning media. The media assessment recap results are shown in Table 1 below:

**Table 1.**  
**Media Expert Assessment**

No	Items	Score
1	Attractive cover design on E-book media	3,50
2	The color harmony of the writing with the background	4,00
3	Interesting visualizations	3,50
4	Writing clarity and font size in e-book media	3,50
5	The attractiveness of the appearance of the material content in the e-book	4,00
6	E-Book layout view	4,00
7	Clear and uncomplicated directions and instructions	4,00
8	Tables and Figures relevant to the lesson material	4,00
9	Placement of Tables and figures	4,00
10	Tables and figures are easy to understand	3,00
11	Video links work fine	4,00
12	E-books can be run on mobile devices and computers	4,00
13	Font size accuracy	4,00
14	Conformity between the PBL Model and Material Presentation	4,00
15	Stages of the PBL model in Ebook	4,00
<b>Total Number</b>		<b>57,5</b>
<b>Average</b>		<b>3,83</b>
<b>Criteria</b>		<b>Very Eligible</b>

Media experts gave it a score of 57.5 and an average rating of 3.83. Based on the total score and average score, in other words, the PBL-based e-book teaching materials developed are suitable for use for learning introductory business courses.

a) Results of Material Expert Assessment

The material expert that the author has determined is an expert in understanding Introduction to Business and has a scientific background related to the science of learning Introduction to Business. The results of the material assessment are shown in Table 2 below.

**Table 2.**  
**Material Assessment Recap Results**

No	Items	Score
1	Learning outcomes following the KKNi curriculum	5,00
2	E-Books can support the achievement of learning goals	4,00
3	E-Books are easy to use in both face-to-face and online learning.	5,00
4	The material is presented in an interesting way	4,50
5	Material complies with RPS	4,00
6	The e-Book presents material based on the PBL learning model	4,50
7	E-books are easy to use independently sentences are easy to understand	4,00
8	The material is arranged correctly	4,50
9	The audio and visuals in the E-Book are relevant to the material	4,00
10	The learning videos contained in the E-book are easy to understand	4,00
11	Encourage students to be actively involved	3,50
12	Practice questions are easy to understand	4,00
13	Practice questions are relevant to learning material	4,50
14	Use terms that are easy to understand	4,00
15	Practice questions are relevant to learning material	4,50
16	Material design stimulates students' curiosity	4,50
17	Material novelty	4,50
18	The e-book is designed according to the theory and stages of the PBL model	4,50
19	The assignments in the E-book use the PBL model	4,00
20	The images used in the E-Book are relevant to the material	4,50
<b>Total Number</b>		<b>86</b>
<b>Average</b>		<b>4,3</b>
<b>Criteria</b>		<b>Very Eligible</b>

The results of the calculation for all evaluation items of the material provided by expert evaluators yield a total score of 86 items with an average

score of 4.30. It can be concluded that the material in the PBL-based e-book is suitable for use in the Introduction to Business course.

## 2) Implementation of E-Book in Learning

The Introduction to Business course utilizes an E-book based on the PBL model in this research. 30 students are participating in this learning process. In this implementation phase, the stages of online and offline learning execution are carried out, and the researcher follows the steps outlined in the PBL learning model.

### Students' Interest in PBL-based E-Book

To determine students' interest in learning the Introduction to Business course using the PBL-based E-book, students were asked to fill out a response questionnaire, providing assessments for each indicator. The results of the student response questionnaire showed a percentage of 86.15% for the aspect of enjoyment, 83.15% for the aspect of student interest in using the E-Book, 82.65% for the aspect of attention, and 87.45% for the aspect of student engagement. Considering these four aspects, the student's responses were highly positive, indicating that students have a very high interest in learning the Introduction to Business course using the PBL-based digital E-Book material.

### Evaluation Phase

Evaluation is conducted for the improvement of the PBL-based E-Book. In this research, suggestions and criticisms from respondents are summarized. These suggestions are presented in Table 4 below:

**Table 4.**

#### Suggestions from Respondents and Improvements to the E-Book

Aspect	Suggestion	Improvements to E-Books
Software	1 This e-book can only be accessed when the user has the E-Pub software or application on their device, therefore also create an e-book in PDF form.	Researchers have created an E-book in PDF format. Files can be accessed via the link contained in the E-book
	2 It would be better if the display form was designed to be even more attractive.	
Desain Pembelajaran	1 The material display design needs to be made even more attractive.	Researchers have added some interesting and relevant images
	2 Enrich teaching material references	Added up-to-date references



	3	Practice questions are designed according to the PBL learning model	Researchers have redesigned the practice questions so that the practice questions are designed according to the PBL model
Visual	1	Redesign the appearance of the homepage with a more attractive theme.	Researchers will continue to redesign the theme and appearance of the E-Book.
	2	It's good that the videos contained in the E-Book can be downloaded by students.	Researchers have included video download links in the E-Book.

### Discussion

The development of the PBL-based E-Book for the Introduction to Business course followed a systematic approach, encompassing user analysis, material identification, product design, development, implementation, expert validation, student assessment, and continuous improvement. The positive evaluations from both media and material experts, coupled with high student interest and engagement, affirm the suitability of the E-book for effective learning in the Management program at Universitas Negeri Medan. The ongoing commitment to addressing feedback ensures the continuous enhancement of the E-book's quality and usability.

The development of digital teaching materials using the Problem-Based Learning (PBL) model for the Business Introduction subject is a crucial initiative in the modern educational landscape. This in-depth study explores the significance, challenges, and potential outcomes associated with this innovative approach (Hursen, 2021; Sinaga et al., 2021).

1) Significance of the PBL Model, The PBL model is recognized for its effectiveness in fostering critical thinking, problem-solving skills, and active engagement among students. By centering the development of digital teaching materials around this model, educators aim to go beyond traditional lecture-based methods and create a dynamic learning environment. PBL encourages students to explore real-world problems, collaborate with peers, and apply theoretical knowledge to practical scenarios. 2) Alignment with Business Introduction Subject, The choice to apply the PBL model specifically to the Business Introduction subject is strategic. This subject often covers fundamental

concepts such as business environments, ethics, management aspects, and marketing. By using PBL, students can delve into these topics through real-world case studies and scenarios, enhancing their understanding of the subject matter and its practical applications.

3) Digital Teaching Materials Development, The development of digital teaching materials involves a comprehensive process. The initial analysis phase identifies the target audience, their needs, and the essential curriculum topics. Following this, the PBL model is applied to design materials that stimulate active learning. This includes structuring content to initiate discussions, posing guiding questions, and incorporating multimedia elements for an engaging learning experience.

4) Challenges in Development, While the benefits of using the PBL model are evident, challenges may arise during the development process. These challenges could include the need for extensive research to create authentic problem scenarios, ensuring the digital platform's accessibility, and aligning the materials with the specific learning objectives of the Business Introduction subject.

5) Implementation Strategies, The implementation of digital teaching materials using the PBL model requires careful planning. Educators may adopt a blended learning approach, combining online and offline activities. The materials should facilitate both individual and collaborative learning, allowing students to explore, discuss, and present their findings.

6) Assessment and Feedback, Assessment strategies in a PBL environment should focus on evaluating problem-solving skills, critical thinking, and the ability to apply knowledge to practical situations. Continuous feedback loops are essential to guide students' progress and refine teaching materials for future iterations.

7) Evaluation of Effectiveness, The study should include an evaluation of the effectiveness of the developed digital teaching materials. This involves assessing student performance, gathering feedback from both educators and students, and analyzing whether the PBL model enhances the learning experience compared to traditional teaching methods.

8) Future Implications, The success of this initiative has broader implications for the integration of PBL models in other subjects and disciplines. Lessons learned from the development and implementation process can inform future strategies for enhancing digital learning materials across various academic domains (Cebrián et al., 2020; Hursen, 2021; Rossano et al., 2016).

In conclusion, the development of digital teaching materials using the PBL model for the Business Introduction subject represents a progressive step towards fostering active and practical learning experiences. This in-depth study provides insights into the rationale, challenges, strategies, and potential outcomes associated with this innovative educational approach.

## CONCLUSION

Media experts provided a total score of 57.5 with an average score of 3.83. It is concluded that the PBL-based E-Book instructional material is suitable for use in the Introduction to Business course. The assessment of the material resulted in a total score of 86 with an average score of 4.30. It can be concluded that the material in the PBL-based E-Book is suitable for use in the Introduction to Business course. The student response questionnaire yielded percentages of 86.15% for the aspect of enjoyment, 83.15% for the aspect of student interest in using the E-Book, 82.65% for the aspect of attention, and 87.45% for the aspect of student engagement. Therefore, it can be concluded that students have a high level of interest in learning the Introduction to Business course using the PBL-based E-Book.

The main implications of the entire study are the potential for further implementation of Problem-Based Learning (PBL) methods and the use of E-Books in Introduction to Business courses or other subjects. Positive findings from media expert evaluations, material assessments, and student responses provide a strong foundation to consider applying this method on a larger scale. The most significant implication is the constant need for attention to feedback from users, both experts and students. Developers must continue to monitor material performance, respond to suggestions, and make ongoing improvements to ensure the optimal quality and relevance of PBL-based E-Books. Thus, the implications of this article support the use of PBL-based materials in the form of E-Books for Introduction to Business courses, highlighting their effectiveness, validity, and student interest in adopting this learning method.

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