APPLICATION-ASSISTED PROJECT BASED LEARNING TRANSFORMATION DURING COVID-19 ADAPTATION AT MADRASAH ALIYAH NEGERI

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Abstract

Article Info	
Received: 30/10/2022 Revised: 12/11/2022 Accepted: 21/11/2022	One learning model that is regulated by Covid-19 during online learning is Project-Based Learning (PBL). Prior to the pandemic, Madrasah Aliyah Negeri (MAN) Dairi had begun the Project-Based Learning method, although at the time, it relied solely on digital technology for communication. Although online learning has been implemented, it cannot be optimized because the only platform available is Whatsapp for communication. With the school environment and strategic location in the capital city of the Dairi Regency, integrated learning should be implemented, particularly in Project-Based Learning, to maximize adaptation to this new habit. Researchers are therefore interested in developing a platform that can support and transform Project-Based Learning learning model. The method utilized for system development is the ADDIE method (Analysis, Design, Development, Implementation, and Evaluation). The results of this study reveal a platform that can accommodate teachers and students in the use of Project-Based Learning (PBL), with 80.22 percent of the responses falling into the "Very Good" category.
Keywords: addie method, adaptation covid-19, project-based learning	

1. INTRODUCTION

The Covid-19 pandemic needs widespread adoption of information technology by educational institutions. The offline (in-person) instruction must follow the online instruction (on a network). Project-Based Learning is a constrained learning strategy in online education (PBL)[1], [2]. Prior to the outbreak, State Aliyah Madrasah (MAN) Dairi had begun implementing the Project-Based Learning pedagogy. MAN Dairi relied solely on digital communication tools throughout the COVID-19 epidemic[3]. Even though online education has been developed (on the network), it cannot be utilized because WhatsApp is the only available communication tool. Due to the school's proximity to the capital city of the Dairi Regency, the possibility of adopting this new behavior is highest. Academics are therefore interested in developing a platform that can support blended learning with Project-Based Learning[4].

2. METHOD

2.1 Collecting Data

Research requires extensive data collecting; this is done to identify how the learning process is operating so that researchers may assess the challenges that must be solved at MAN Dairi. Interviews and observations were employed for data collecting, and a questionnaire was utilized to measure the impact of platform adoption.

2.1 Development Method

The method utilized for system development is the ADDIE method (Analysis, Design, Development, Implementation, and Evaluation)[5]. This method was chosen due to its simplicity, but

it should be emphasized that each of these steps must be implemented in a structured and sequential manner.
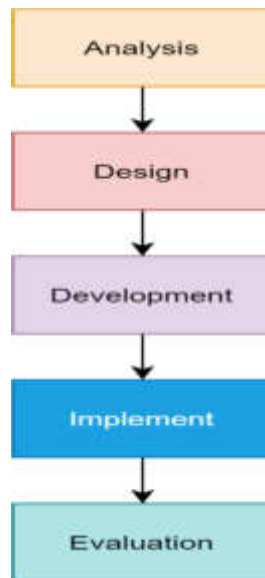

Figure 1 ADDIE Sequences

This method consists of several steps, including the following:

1. Analysis
    At this stage, all the requirements for the system are to be built, including software requirements analysis, hardware analysis, and project requirements analysis.
2. Design
    At this stage, all the things that have been analyzed in the first stage begin to build the framework, especially the design of the project to be made and the design of the system to be built.
3. Development
    At this stage, all the parts that have been designed in the previous stage are implemented into a system so that at this stage the materials and materials related to the project can be accessed through the media in carrying out blended learning.
4. Implementation
    In this stage, everything implemented is applied to students who will become users of this Project Based Learning (PBL) process or field trials.
5. Evaluation
    At this last stage, a thorough evaluation of the results obtained in field trials and the system used can be improved to get maximum results.

3. RESULTS AND DISCUSSION
3.1 Data requirements

The results of the interviews and observations constitute the needs analysis of the to-be-developed platform, which can be separated into functional and non-functional requirements [6]. Non-functional requirements are requirements that are not linked to the process but are required to create a blended learning platform[7]. Functional requirements refer to the process that will occur on the platform. There are two types of non-functional requirements: hardware requirements and software requirements. The functional needs obtained during the research implementation can be seen in the table that follows:

Table 1 Functional Requirements

No	Item	Activity Requirements
1	System user manager	The constructed system, add, change members in the PBL platform
2	PBL Class Manager	The constructed system, add, change classes in PBL
3	PBL Evaluation and Material Manager	The constructed system can show, calculate, and alter PBL assessments and materials.

Evidently, the aforementioned requirements are necessary for the construction of the platform; hence, non-functional requirements will be used to support these needs[8]. Regarding this study, non-functional needs can be summarized in the table below:

Table 2 Non-Functional Requirements

No	Type of Non-Functional Requirements	Item
1		Intel Core I3
2		RAM 4GB
3	Hardware	Monitor with resolution 1024x768
4		Standard Keyboard
5		Server : 2Core
6		Server : RAM 4GB
7		Web Browser Chrome
8	Software	Nginx Web Server
9		MYSQL

3.2 Design Phase Results

After doing a needs analysis, the next step in the research process is to design each process that will be incorporated into the system under construction. The UML (Unified Modeling Language) translation of system functionality will also be explained at this level. The figure below depicts the specifics of the UML form defined:
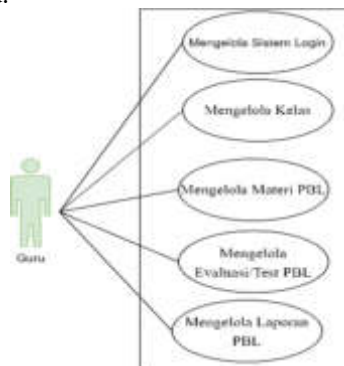

Figure 2 Teacher's Use Case

In the Use Case Diagran, the teacher, as the individual who can manage the management of students with Project-Based Learning (PBL), will grant the system several permissions to manage and administer the platform, including classes, PBL material management, PBL evaluation, and participant-submitted PBL reports[9]. Nevertheless, students also have access to the built platform, regardless of the fact that it simply offers answers to PBL evaluations and sends PBL reports.

After the use case, an activity diagram is provided as the next step. Additionally, the activity diagram may be viewed from the beginning through the end of an activity. The activity diagram of PBL material input is depicted in the following image:
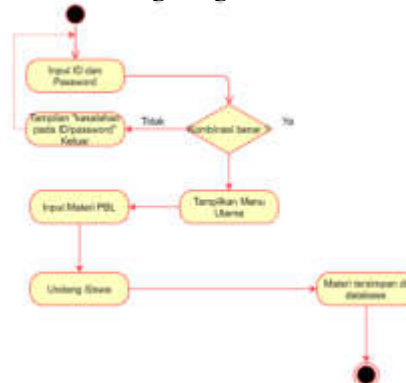

Figure 3 Activity Diagram For Input Material in PBL

After logging into the site, the teacher can input the material to be provided to students, whether it be PBL material or guidance from PBL that is being worked on.

3.3 Development and Implementation Phase Results

At this point, the research will produce a designed and implemented system design. In the ADDIE technique, the stages of the Development process are distinct from the stages of the Implementation process. The distinction is evident during the developing period. When it reaches the implementation phase, the generated platform will be applied to users, including MAN Dairi, a partner in this project. The current results are depicted in the figure below:

Figure 4 Form Login Platform PBL

Teachers and students can access the PBL portal as a resource for conducting Project Based Learning using a username and password (PBL). After successfully logging in, students get immediate access to the Project-Based Learning (PBL) content selected by the teacher.

Figure 5 Lists of Subject that Contain PBL

After selecting one of the Project-Based Learning (PBL) activities, students can carry out PBL activities by following the platform's instructions. The given instructions or directions may be in the form of written text or video guides, making it easy for students to engage in PBL anyplace[10].
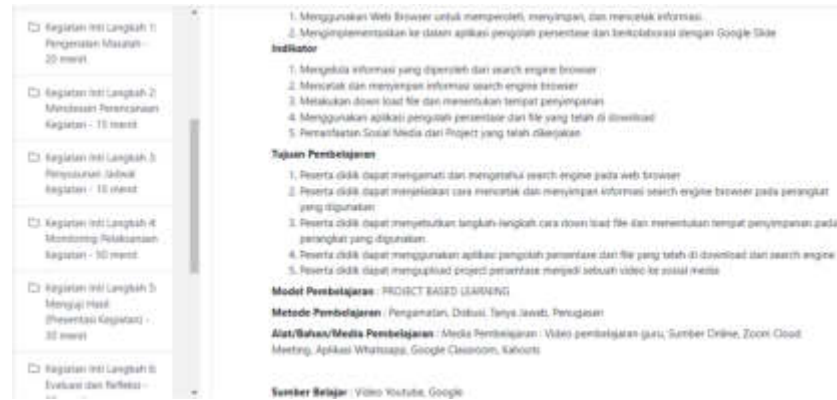

Figure 6 Lists of PBL Activity

After the platform has been constructed successfully, teachers and students are instructed on how to use it so that the application can be used immediately. In addition, teachers and students are given a questionnaire regarding the constructed platform so that the findings can be utilized as an evaluation of the constructed PBL platform and to determine the response of platform users in adopting Project-Based Learning. A questionnaire containing 15 Likert scale items with 30 replies[11]. The response criteria for respondents are shown in the table below:

Table 3 Likerts Scale

No	Scale	Percentage
1	Very Good	80% - 100%
2	Good	60% - 79,99%
3	Fair	40% - 59.99%
4	Bad	20% - 39.99
5	Very Bad	0% - 19.99%

There are four (4) possible responses to each question: 1) SA (Strongly Agree), A (Agree), D (Disagree), and VD (Strongly Disagree). The collected percentage results are used to advance to the Evaluation phase. The findings of the questionnaire are presented in the table below:

Table 4 User Responses

No	Positive Response				Negative Response			
	SA	D	Percentage(%)	Criteria	D	VD	Percentage(%)	Criteria
1	11	14	83%	Very Good	5	0	17%	Very Bad
2	9	18	90%	Very Good	3	0	10%	Very Bad
3	9	15	80%	Very Good	6	0	20%	Bad
4	7	18	83%	Very Good	5	0	17%	Very Bad
5	7	21	93%	Very Good	2	0	7%	Very Bad
6	5	21	87%	Very Good	4	0	13%	Very Bad

7	6	13	63%	Good	9	2	37%	Bad	
8	8	15	77%	Good	6	1	23%	Bad	
9	7	22	97%	Very Good	1	0	3%	Very Bad	
10	5	8	43%	Fair	15	2	57%	Fair	
11	8	21	97%	Very Good	1	0	3%	Very Bad	
12	0	7	23%	Bad	23	0	77%	Good	
13	8	20	93%	Very Good	2	0	7%	Very Bad	
14	10	19	97%	Very Good	1	0	3%	Very Bad	
15	6	23	97%	Very Good	1	0	3%	Very Bad	
Jumlah	106	255	1203%		84	5	297%		
Rata-rata	7.07	17.00	80.22%	Very Good	5.6	0.33	19.78%	Very Bad	

3.4 Evaluation Phase Results

At this stage, results from respondents are collected. However, many things continue to elicit significant negative responses in some of the addressed questions, particularly those directly relating to questions that ask about the interface of the platform 77% of the responses say it needs to improve for the future. This study's findings can be used as suggestions for future research.

4. CONCLUSIONS

Based on the needs analysis of the MAN Dairi School, this research results in the development of a blended learning platform capable of supporting the Project-Based Learning (PBL) learning model. In addition, the data analysis is implemented in order to construct a platform for properly understanding learner needs during the Covid-19 Pandemic. A questionnaire was used to gather responses from platform users, with the average user rating the platform as "Very Good" with an 80.22% positive response rate. 77% of participants responded negatively to questions related the platform's user interface. Consequently, it can be concluded that the constructed platform can help teachers and students implement Project-Based Learning even in limited face-to-face settings during Covid-19.

5. Acknowledgement

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