

# DEVELOPMENT OF WEBAPPS-BASED E-LEARNING AT SMK MIFTAHUL ANWAR MENES

Mokh. Sidqi Fahmi<sup>1)</sup>, Didik Aribowo<sup>2)</sup>, Irwanto<sup>3)</sup>

1. Sultan Ageng Tirtayasa University, Serang, Indonesia
2. Sultan Ageng Tirtayasa University, Serang, Indonesia
3. Sultan Ageng Tirtayasa University, Serang, Indonesia

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\* Corresponding author.

Corresponding Author

E-mail address:

[arifsetiawan250499@gmail.com](mailto:arifsetiawan250499@gmail.com)

## ABSTRACT

Limitations when teaching and learning in the classroom are sometimes many things that hinder teachers from all learning materials to students. This is a case topic for teachers who want to discuss in detail. This difficulty was complained by teachers and students at Miftahul Anwar Menes Vocational High School, sometimes material that needed explanation in class actually had to be explained in a significant amount of time. The method used was Research and Development (R&D) using the example of waterfall development, research and analysis of the required needs. To develop this online learning implementation design product, it uses several stages: 1) Needs Analysis 2) Design 3) Implementation 4) System testing. teachers & students) then the final output is declared feasible using the output of the teacher's score the Category 53 Percentage Criteria table is in the interval  $X \geq 42$  while the students' Category Criteria Percentage table is 40.8. user ratings are in the interval  $X \geq 39$  which is in the "Very Eligible" category.

## I. INTRODUCTION

In 2020, Indonesia is still hit by the Covid-19 Pandemic as a result, it is still very difficult for us. Covid-19 is an infectious disease caused by a coronavirus that causes severe acute respiratory syndrome (SARSCoV). This virus belongs to the coronavirus family, which can infect animals. When the corona virus attacks a person, it often causes respiratory tract infections such as influenza, MERS (Middle East Respiratory Syndrome), & SARS (Severe Acute Respiratory Syndrome). Covid-19 is a corona virus pandemic that was detected in Wuhan, Hubei Province, China in [1]. This Covid-19 case in Indonesia was found on March 2, 2020, 2 people were confirmed to be infected in Japan. As of June 15, 2020, Indonesia reported 3,929 positive issues, ranking 2nd in Southeast Asia after Singapore & after the Philippines. Covid-19 has had many positive & negative impacts on people all over the world. Every effort has been made by the government to reduce the number of transmission of Covid-19. One of them can be done online, network or online learning policies based on all students to students who are socially limited

The development of information and communication technology is currently growing rapidly with many educational institutions using online learning systems (ELearning) to support and increase the effectiveness and flexibility of learning. The teaching and learning process in the classroom is not optimal because the main problems need to be resolved as soon as possible.

Teachers may not be able to provide appropriate material to their students because of the limited time spent on learning and teaching in the classroom. In this case as a difficult subject for teachers who want to put more details about the subject. This difficulty is often criticized by the teacher and students, documents that require long explanations may actually have to be explained when learning takes place. In addition, teachers always find it difficult to ask questions manually, practice tests, and get the correct output. This is very inefficient because it requires a supportive scope to complete learning manually. Efforts to improve student achievement are always carried out by secondary schools because of all the factors that can increase student achievement. With the use of information and communication technology tools that allow the development of online learning to carry out learning and training activities more effectively. Learning technology is a medium that was born as a communication revolution that can be used for learning purposes other than the use of textbooks, projectors, computers, etc. Teachers must also be able to choose the educational support they need and which is in accordance with their teaching materials so that the teaching and learning process takes place in a positive and creative way and motivates students to learn. This must be the case. Speaking skill is one of the important aspects in speaking

skill. Language skills are very important because the front desk service is the information center or information center of the hotel. Therefore, in order to provide maximum service to our guests, it is necessary a) sufficient skills and abilities to speak in front of the liner [2].

The Waterfall model is one of the software development models in the SDLC (Sequential Development Life Cycle) model. According to Sukamto and Salahuddin, "SDLC or Software Development Life Cycle or often called the System Development Life Cycle is the process of developing or changing a system. software by using the models and methodologies that people used to develop previous software systems, based on best practices or methods that have been well tested[3]. The Waterfall model is also a "providing model" a sequential or sequential software lifeflow approach starting from analysis, design, coding, and testing". The following is an image of the waterfall model in the SDLC[4]. Method is a step or rule in doing something. SDLC is a general methodology for system development which is sign of progress in analysis and design efforts. According to Shelly and Rosenblatt SDLC has several phases, namely requirements analysis, design, implementation, and testing[5].

E-learning at the Miftahul Anwar Menes Vocational High School, especially the students, of course not only uses one type of browser, but uses various browsers and the implementation of learning that is often used via Whatsapp. The Whatsapp application is not very supported for teaching and learning activities for students. This study took as an example a case in a private school in Pandeglang district that implemented online learning media through whatsapp groups, some shortcomings were found, among others, for students who did not know much about learning through Google. Classroom, based on the output of learning through media such as Whatsapp on the field information generated that Miftahul Anwar Vocational High School is sometimes constrained based on students who don't know much about technology, such as Google Classroom and also other learning implementations because they don't know too much about the platform contained in the previous implementation. Based on that, this research on the design of the implementation of online learning aims to make it easier for students to use an attractive user friendly interface, apart from being based on features as well as in the color display of the interface on the app. This application is intended to invite warmth and arouse students' emotions, based on the user's comfortable feeling towards this application.

The following is the relevance of Mario and Andry's research "Development Of Web-Based E-Learning Applications Using Waterfall Model At Vocational School Strada 2 Jakarta ", that in this study only uses the Web, while this study uses an application[6], and also using the Blackbox Testing Method which is one method that is easy to use because it only requires a lower limit and an upper limit of the expected data, the estimated amount of test data can be calculated through the number of data entry fields to be tested, entry rules that must be met and cases the upper and lower limits that meet[7].

## II. METHOD

### A. Literature Study

#### 1) Understanding Learning

Learning that is to change the behavior and understanding of children does not have the usual potential from the start. At that time, the child changes behavior and expands knowledge through learning interactions [8].

#### 2) E-learning and its application in education

Learning that meets the teaching criteria. In addition, his research describes online learning in universities, including the use of online media. The method used in this study uses whatsapp, line, facebook, twitter, and online media in a qualitative way. System design must be careful about three things that must be met. In short, the learning system should be easy to learn. Systems need to be adapted so that the people who use them are independent of each other. user. The system needs to find hardware quickly and answer questions from the results of the system design being developed [9]. "learning is essentially a change that occurs in a person after completing a learning activity". Active learning is a process where students develop various types of skills and attitudes to build good character. The success or failure of achieving goals is strongly influenced by how students follow the learning system. Learning is always associated with change, whether it involves the entire behavior of the individual or only certain aspects of the individual's personality. These changes are natural for all individuals or humans from birth to the present. Since then, there have been changes in development during that period. So the learning process takes place at this time, and the learning process is an important factor, emphasizing individual creativity [10]. While the characteristics of learning have new abilities or changes. Behavioral changes are knowledge (cognition), skills (psychology), values and attitudes (emotional) [11]. Learning media is one way to overcome all problems in education by not only solving problems, but also providing comprehensive information to students [12].

#### 3) Benefits of learning media

The use of teaching materials in the education and learning process creates new desires and interests, motivates and stimulates learning activities, including psychological consequences. can bring. In general, the advantage of

media in the learning process is to facilitate interaction between teachers and students so that learning becomes more effective and efficient. But more specifically, there are some advantages of a more granular way. For example, Kemp and Dayton (1985) identified several benefits of media in learning [13].

### B. Framework

In the teaching domain, the need for innovation is now seen as a license. The demand for ability in work innovation is one of the commitments that must be educated by educational organizations to students. To disseminate information to students about innovation, SMK Miftahul Anwar Menes positively needs learning support here targeting both distance learning and thus there must be seriousness in its application, besides that in its activities there are administrators who are responsible for handling the e-learning framework, teachers for educators and can Supervising class tests and online tests even helps educators make it easier to provide direct assessments to students who participate in learning interactions. Meanwhile, for students who are helped by a development program using a responsive WebApp which will later adapt to the program used, students do not need to bother with a PC or PC to take online classes, students only need to log in with the program on their respective Android phones and the application will adapt to the program used by students. Displaying materials or materials also greatly affects internet learning exercises because of course it includes innovations and tools to help with this exercise. In accordance with the statement of principles, namely e-learning infrastructure: e-learning infrastructure can be in the form of personal computers (PCs), laptop computers, Android phones and computers. Network, internet, multimedia devices [14] To implement the internet learning plan at SMK Miftahul Anwar Menes, it is necessary to carry out the following preparatory work:

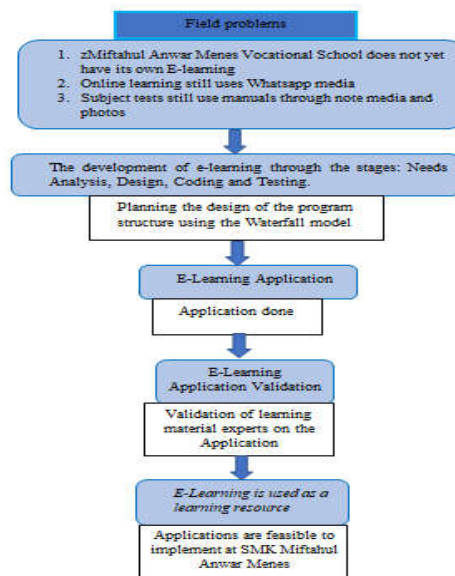


Fig. 1 Research framework

### C. Development Procedure

This research and design uses development research methods. The development of a research model using the waterfall, research and analysis needed to develop this online learning design product includes several stages, namely:

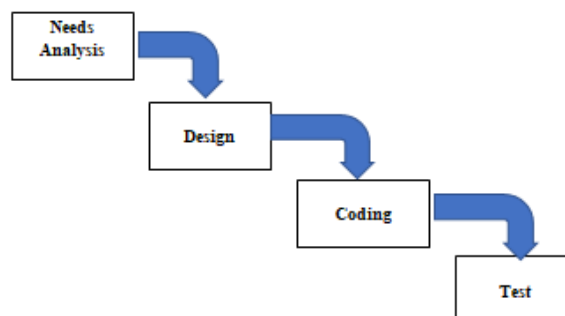


Fig. 2 Waterfall model

### D. Development Model

Research and development is a pretty impressive examination system or strategy for improving practice. Innovative work (Research and development) is a progression of cycles or steps to grow another item or improve the

current item so that it can be represented very well [15]. Cascade model is an SDLC cascade (water fall) model which is often also called a straight successive model or an exemplary life cycle. The cascade model provides a sequential or successive programming lifeflow approach starting from inspection, coding configuration, testing, and supporting stages [16].

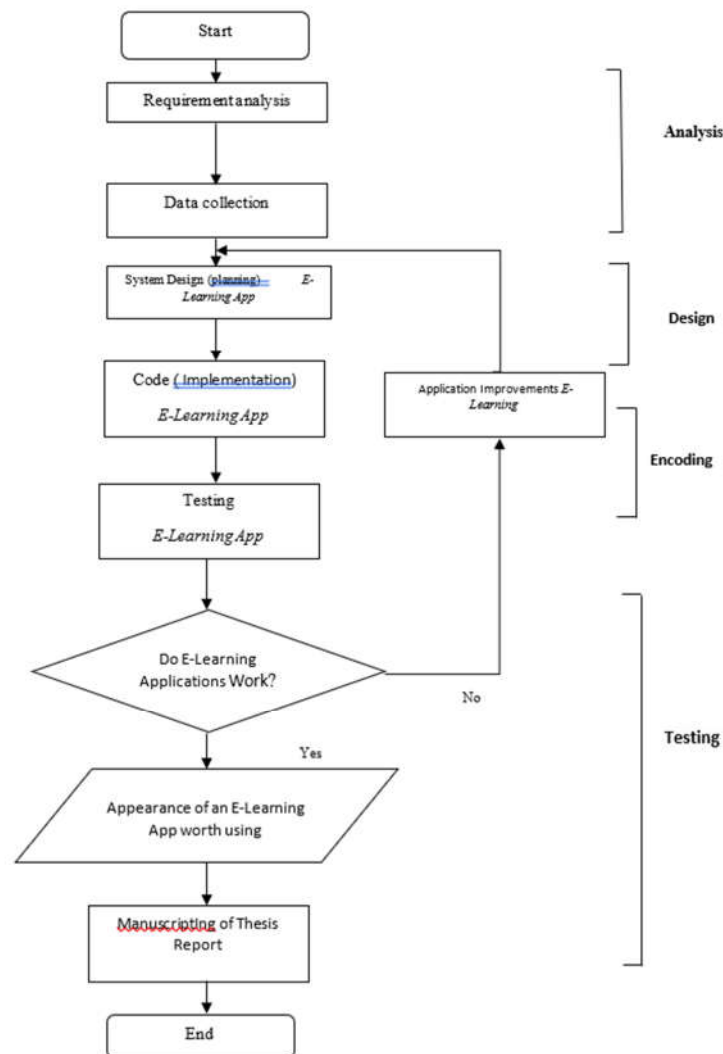


Fig. 3 Flowchart Development Waterfall Model

### III. RESULTS AND DISCUSSION

#### A. Results

##### 1) Requirement analysis

System requirements analysis is needed so that the design process can function optimally as a learning system at SMK Miftahul Anwar Menes. The minimum requirements that must exist based on the results of observations are as follows:

- a) The online learning application of SMK Miftahul Anwar Menes can be used for teaching and learning activities between teachers and students.
- b) The online learning application of Miftahul Anwar Menes Vocational School can be used to upload and download assignment and material files.
- c) The online learning application of Miftahul Anwar Menes Vocational School can be used to carry out online classes that contain learning videos and online discussion forums between teachers and students.
- d) The online learning application of Miftahul Anwar Menes Vocational School can be used to evaluate online learning activities

##### 2) Design

The result of this research is an e-learning application for the RPL major at SMK Miftahul Anwar Menes. application At the access diagram stage, the diagram is made based on the features on the status of each account on the competency standards for operating software applications, namely: describing software applications, operating software applications in processing documents/scripts, and additional requirements needed in the features of each user (admin, teacher and student). For the basic flow on the flowchart describes the design of online learning applications at SMK Miftahul Anwar Menes

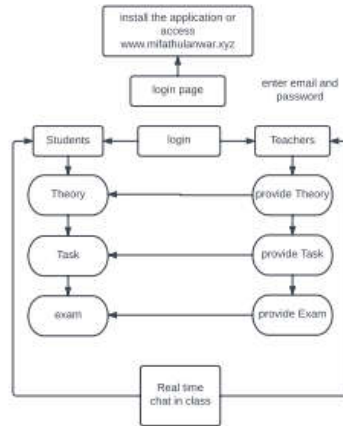


Fig. 4 user flow chart

Use Case Diagram is a depiction of user interaction with the system that shows the relationship between the user and the system. The use case is represented by a simple sequence of steps, so that the flow of the teacher and student user features on the activities in it can be understood easily just by using this user case diagram.

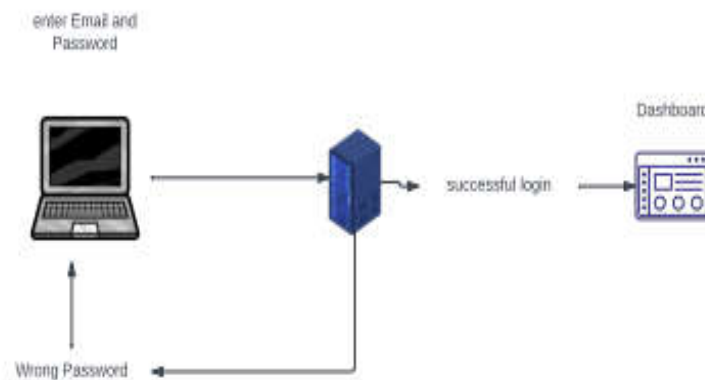


Fig. 5 login activity

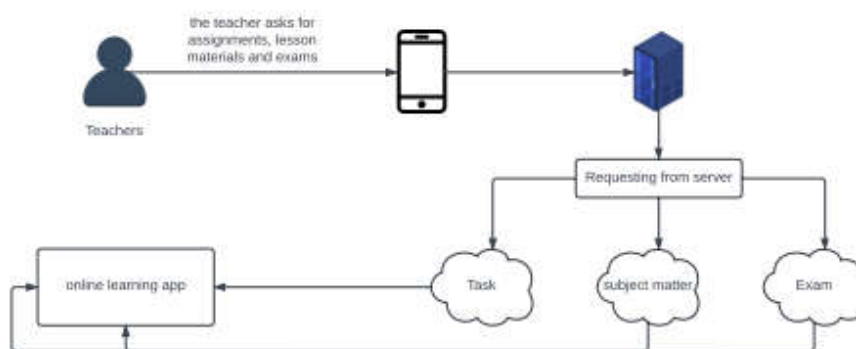


Fig. 6 activity add data

### 3) Encoding/ Implementation

Installation of online learning system applications at SMK Miftahul Anwar Menes which is divided into 4 (four) namely the login page design, administrator page, teacher page, and student page. The following will explain the 4 designs based on their classification levels

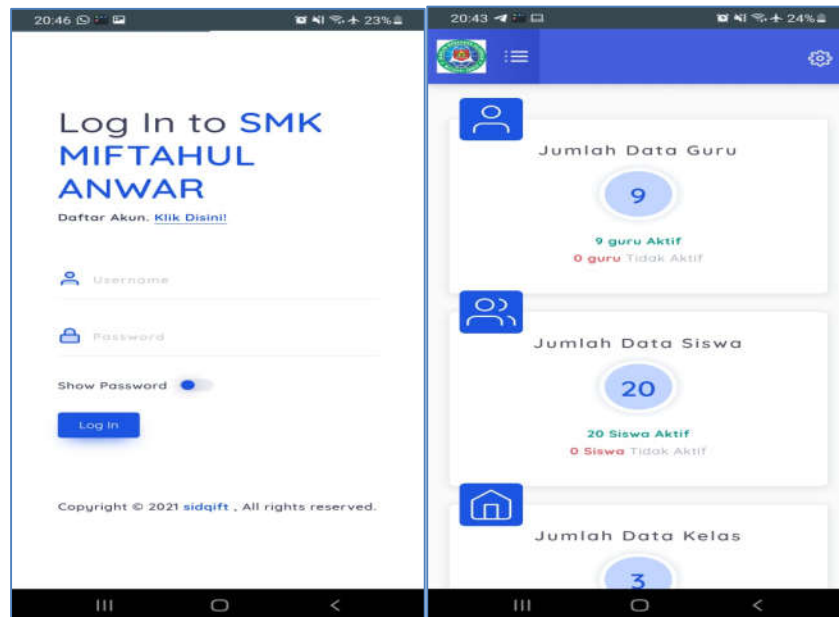


Fig. 7 . a) Login page b) Admin dashboard page

In the picture above presents the installation of the administrative dashboard page. The Dashboard or in Indonesian referred to as the Dashboard is the main page of the online learning application at SMK Miftahul Anwar Menes admin. This page contains important information in the form of update notifications and shortcut summaries that can make it easier for administrators to manage teacher and student users in the online learning application. This is how the Dashboard looks like which has a Home sub-menu to display status or information on the amount of teacher data, the number of student data and the amount of class data and the Update sub menu as an information page if there are new users added to the Miftahul Anwar Menes Vocational School learning application

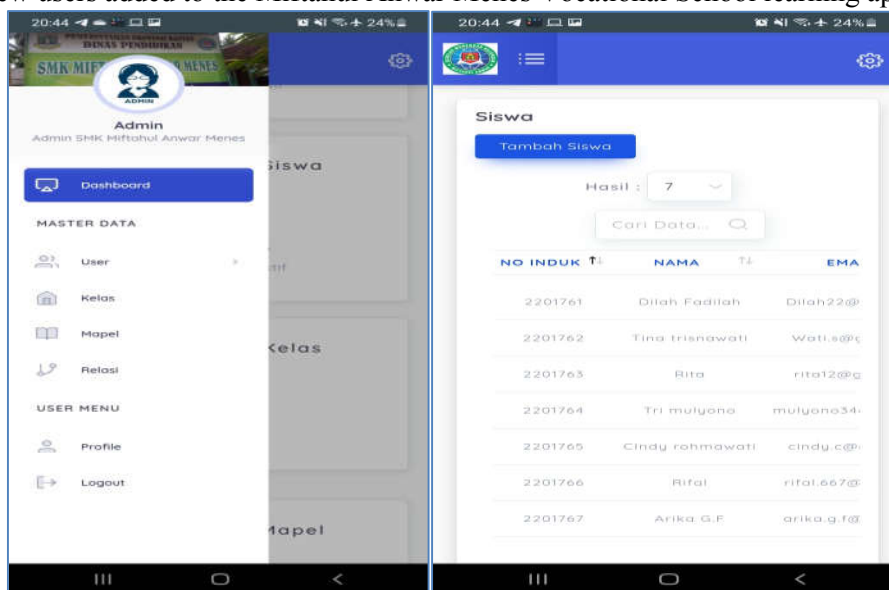


Fig. 8 a) Admin data master panel b) Student management

The dashboard in the 3 line panel in the top corner will display the master data panel from various user management including the management of teachers, students, classes, subjects and administrative relations. like the picture above. on the student management page this feature is only the administrator who has the authority to edit and delete the student data because for the safety and convenience of users to avoid unwanted things.

Student management or Administration as a service that focuses on setting, monitoring, and adding student enrollment, individual services serve to add, edit or delete student data, To add these data administrators can add manually one by one or can also add all at once by add students according to the desired data needs.

#### 4) Testing

The next stage is the testing stage. Several stages of testing were carried out when testing the online learning application system with Miftahul Anwar Vocational School. That is, we tested using black box testing, which are as follows:

TABLE 1  
 BLACK BOX TESTING

No	Description Testing	Expected Results	Validity		% Score
			Y	N	
1	Dashboard	Go to the main page	Y		100
2	Materi	Go to the page tambah materi	Y		100
3	Tugas/Quiz	Go to the page tambah Tugas/Quiz	Y		100
4	Ujian	Go to the page Ujian, Ujian pilihan ganda, ujian essay	Y		100
5	Sign In Profile	Username, Password, with validation	Y		100
6	Logout	Exit the page	Y		100
7	Chat realtime	Live chat	Y		100
8	Dashboard admin	Go to the page Jumlah data guru, jumlah data siswa, jumlah data kelas, jumlah data mata pelajaran	Y		100
9	Management Peserta didik	Add siswa	Y		100
10	Management Guru	Add guru	Y		100
11	Class and subject management	Add kelas, add mata pekajaran	Y		100
12	Dashboard guru	Kelas saya, Mapel saya	Y		100

#### B. Discussion

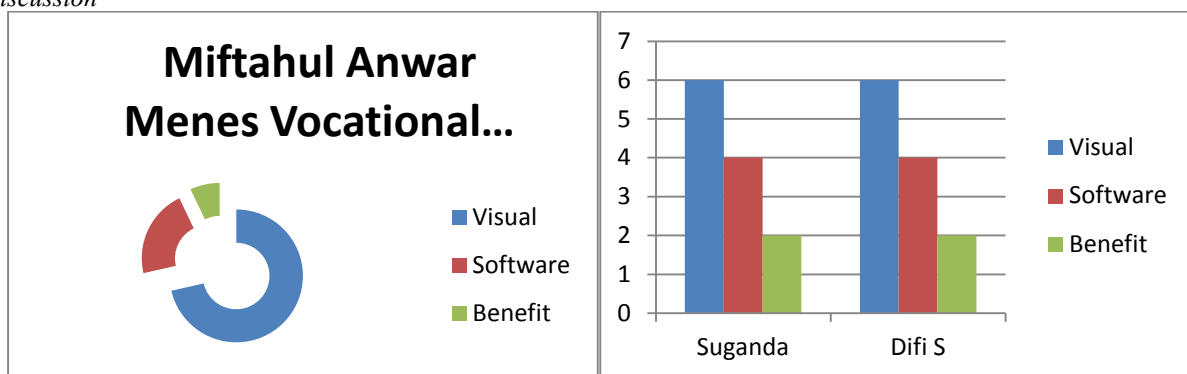


Fig. 9 a) Medium donut chart b) Teacher respondent graph

In Figure a the graph above shows that the visual is the highest among software and benefits, but because the data results are filled in by one user, namely the school administrator of Miftahul Anwar Menes Vocational School, the overall value of the average value of this media user is 53, if we calculate and compare it with the assessment table the percentage of the criteria for the media evaluation category is in the interval  $X > 42$  this value means "Very Eligible" meaning that the online learning application at the Miftahul Anwar Menes Vocational School has been tested as feasible to be implemented in the Miftahul Anwar Menes Vocational School as an activity application. study online.

In Figure b the graph above shows that the visual is the highest among software and benefits, but because the data results are filled in by one user, namely the school administrator of Miftahul Anwar Menes Vocational School, the overall value of the total average value of this media user is 37, if we calculate and compare with the assessment table the percentage of criteria for the media evaluation category is in the interval  $X > 36$  this value means "Very Eligible" meaning that the online learning application at Miftahul Anwar Menes Vocational School has been tested feasible to be implemented in Miftahul Anwar Menes Vocational School as an application online learning activities.

#### IV. CONCLUSION

The design of online learning applications as online learning media at Miftahul Anwar Menes Vocational School, the steps for designing online learning applications include: 1) Needs analysis stage 2) Design stage 3) Implementation stage (coding) 4) System testing stage. The stages of designing an online learning application product at SMK Miftahul Anwar Menes include 1) Preparation of application design by making an application layout design. Determine the color scheme to be used, and design the menus needed in the application. 2) the process of designing the online learning application design at SMK Miftahul Anwar Menes using the PHP program before the process of hosting the online learning application product is carried out. 3) The process of filling out the application

template according to the needs of the menu on the class and page. 4) the process of hosting online learning application products using a hosting provider site, namely domosquare.com. Online learning application products as online learning media at Miftahul Anwar Vocational School in this application contain menus in the form of class menus, task/quiz menus, scoring, edit profile menus, edit name and password menus and are equipped with material in the form of text, file and video input.

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