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Design and Implementation of Web-Based E-Learning with W3C Standardization

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***Abstract*—The development of Internet technology in education such as e-learning has increased significantly. This fact encourages schools to maintain the quality of education by applying e-learning. E- learning is one of the tools to improve the efficiency and effectiveness of performances in teaching and learning. But many e-learning schools do not comply with the standardization of World Wide Web Consortium (W3C). Standardizing the Web has been ignored by the developers of the system. When the W3C is used as a standardization of the system, such a system could be accessed through many browsers. E-learning is a web-based system which is developed using the programming language PHP, and XHTML document types to manage MySQL database. The method is used of system development, namely the System Development Life Cycle (SDLC). The system design method with a functional approach is described using the DFD (Data Flow Diagram). While the modeling of the data base is described by the ERD (Entity Relationship Diagram). E-learning web-based for the school of the W3C standardization is accessible in all browsers as well. E-learning supports the distribution (upload and download) data of the document contains. E-learning is also capable to display online and the results of value for the students, consequently it can help in the learning process.**

Keywords-W3C; Web-Based; E-learning; Browser.

I. INTRODUCTION

In the modern era like now, information technology is developed in accordance with human needs in order to help and facilitate human activities. One of them is the amount of technology used in obtaining information. Information technology is now needed in various fields, among them are health, business, education, and entertainment.

The influence of information and communication technology in the world of education has increased significantly which in line with the shifting from face-to-face learning to more open learning. With the influx of globalization, future education will be more open and two-way, diverse, multidisciplinary, and related to work productivity and competition.

Along with the development of internet technology, e-learning began to be developed. The essence of e-learning is the same as learning conventional method, but it is outlined in digital format through internet technology. E-learning can be used in distance education or conventional education depending on its interests. Developing models of e-learning does not merely present subject matter on the internet but needs to be considered logically and holds the principle of learning. Similarly, development designs are simple, personal, fast, and there are evaluations online.

Evaluations or examinations online help students to not feel overwhelmed in working on the questions. Questions that use images or cannot be clearly seen. Teachers are no longer overwhelmed in making value reports. Students who have not completed can do remedial exams at any time. Examination can take place effectively because it is limited by time. These are examples of benefits of e-learning methods.

Users of e-learning schools, especially students, of course do not only use one type of browser but use a variety of browsers. However, sometimes e-learning webs of schools cannot be opened properly by some browsers. To anticipate the above problems, it is necessary to standardize the web so that the web can be accessed through various browsers. The standard that applies in the world is W3C standardization. The standard web is a technology or specification that has been compiled to make or interpret-based content web. These standards are defined primarily by W3C.

Therefore, we are interested in designing a system that gets W3C validation so that the system can be accessed by students using various versions of browser. Our research entitles "Design and Implementation of Web-Based E-learning with W3C Standardization". Our research object is SMAN 1 Karangpandan.

II. RESEARCH PURPOSES

In accordance with the background and formulation of the problems discussed above, the objectives of this study are:

1) Design web-based e-learning with the Standardization of W3C at Karangpandan High School.

2) Implement web based e-learning by standardizing it with W3C at Karangpandan High School.

III. RESEARCH METHOD

The steps used are literature studies, data collection, system development and study case.

A. Literature Studies

This system is expected to be able to help the process of teaching and learning activities of the academic community at Karangpandan High School. In the application, the teacher can upload the material, give assignments to students, and make quizzes for tests. While students can download material, do assignments, and do quizzes. In addition, there are forums that are used for discussion between students and teachers, this application consultation is used for students communicating with teachers but more personal.

B. Data Collection

Data collection was carried out to obtain supporting data in the manufacture of E-learning at SMAN Karngpandan so that the resulting system has maximum performance. Data collection methods used in this method are:

1) Interview

This method is done by collecting data on the needs of system functionality through competent parties in the school agency.

2) Observation

Method is done by taking data directly at Karangpandan High School. At this stage, necessary data is collected. The usefulness of this method is that researchers can find out problems related to the object of research.

3) Library Study

This method is carried out by studying documents or books of school institutions, references related to the system to be built in school institutions, object-oriented modeling, and standardization of W3C. For example, research that can be read in [1]–[5].

C. System Development

Several tools that are used to develop this system are categorized into hardware and softaware.

1) System Development Requirement

Tools required in the orderly conduct of this system using a hardware specification (hardware) and systems(software). The hardware used are:

- Intel Core2Duo Centrino Duo U7300 1.30 GHz CPU
- Memory or RAM 2GB
- HDD 360 GB
- VGA NVidia GeForce 6210M

While several software used are:

- Windows 7 Ultimate 32-bit OS
- XAMPP 1.7.0 (Apache Web Server, MySQL, PHP)
- Web Browser Mozilla Firefox 7

- Web Browser Google Chrome 6.0.427
- Web Browser Opera 9.63
- Web Browser Internet Explorer

2) System Development Method

This research uses SDLC method, a conceptual model in research that describes the stages involved in an information system development from the initial feasibility study, maintenance, and use of information systems. In this method there are 6 stages, namely [6]:

- Analysis of System Requirements

Analysis is the stage to analyze system requirements and system functionality requirements. This study aims to obtain an overview of what is needed in making E-learning at SMAN Karangpandan. Analyzing requests to build e-learning system, at this stage the researcher conducts a review of the processes in teaching and learning activities.

- System Design

The design of this system will be built using a functional approach model. The functional model is able to describe all the functions involved in the software. In this case, the system design uses DFD, while the table design uses ERD, table structure, and menu structure.

- System Implementation

Solve and re-develop the system design then write program instructions and assemble them. After that, prepare data to be input into the system. Writing program code is done using PHP, while the database programming uses MySQL.

- System Testing

Prepares data and tests the system that has been built to determine system performance and performance.

In this study limited to the system testing stage. The researcher does not use the stage acceptance. The picture of the SDLC chart can be seen in the Figure 1.

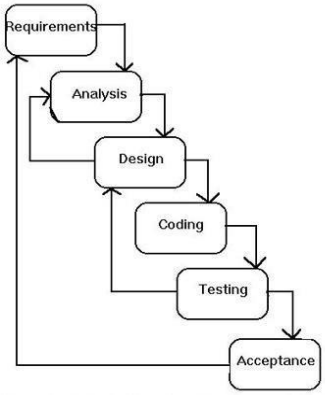

Figure 1. System Development Life Cycle (SDLC)

3) Case Study

We take the implementation of e-learning at Karangpandan High School as our case study. We want to improve quality and in order to follow the development of the world of education.

IV. SYSTEM DESIGN

A. Requirement Analysis

System developed is a system in the form of-based software that web can be used to help teachers and students in teaching and learning activities, making it easier for teachers to provide material by uploading material, giving assignments, and making quizzes for student tests. The ultimate goal of the system to be developed is to help learning activities start and be equipped with quizzes online.

1) Characteristics of System Users

In general, system users are divided into 3, namely:

a) Admin

It is a term for officers who act in data management, teacher data, student data, data on teaching and learning activities.

b) Teacher

It is a term for the teaching staff who act to determine what material will be uploaded, assign assignments to students, and make quizzes that will be done as daily tests.

c) Student

It is a term for teacher students who can download material taught by teachers, see assignments, and do quizzes given by the teacher.

2) Functional Requirement Analysis

System to be built in general must be able to meet the following requirement:

a) Subjects data processing facility
b) Teaching data processing facility
c) Facility for downloading material
d) Facility for uploading material
e) Facility to provide assignments
f) Facility to making quiz
g) Facility for working on quiz
h) Facility for discussion in the forum
i) Facility for consulting

B. System Design

Design includes three types of design stages, namely design process design, database design and system interface design. E-learning SMAN Karangpandan is designed using a functional approach so that the design of the design process is described using DFD. While the initial development of database design using ERD.

1) Design Process

Design includes the flow of data that occurs in the system. The process is described using DFD.

a) Context Diagram (DFD Level 0)

Context diagram is an overview of the system as a whole. The context diagram (DFD level 0) in Fig. 2 illustrates the relationship between entities involved directly with the E-learning of SMA Karangpandan.

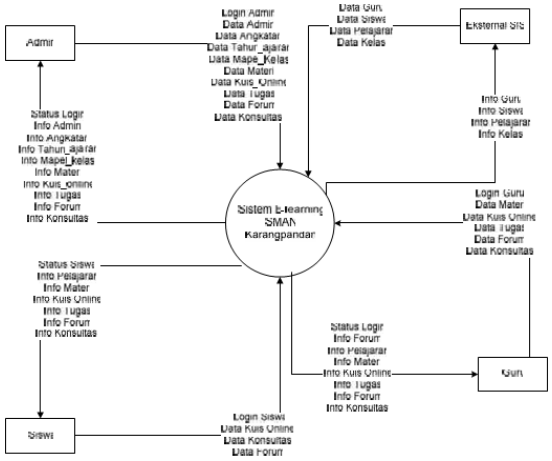

Figure 2. Context Diagram (DFD Level 0)

From diagram figure above can be concluded that there are 4 entities:

1. Admin

   Admin plays a role in the process of data input and data processing in this e-learning system.

2. Teacher

   Teacher has role in uploading material, giving assignments, and making quizzes for tests.

3. Student

   Students as entities that can download material and work on quizzes.

4. External School Information System (SIS)

   External SIS is an entity that provides the main data in Karangpandan High School E-learning, for example master data teacher, master data students, master data lessons, and master data class.

b) DFD Level 1

DFD level 1 is a further explanation of the previous level 0 DFD. This diagram presents the processes that occur in the system, shown in Fig. 3.

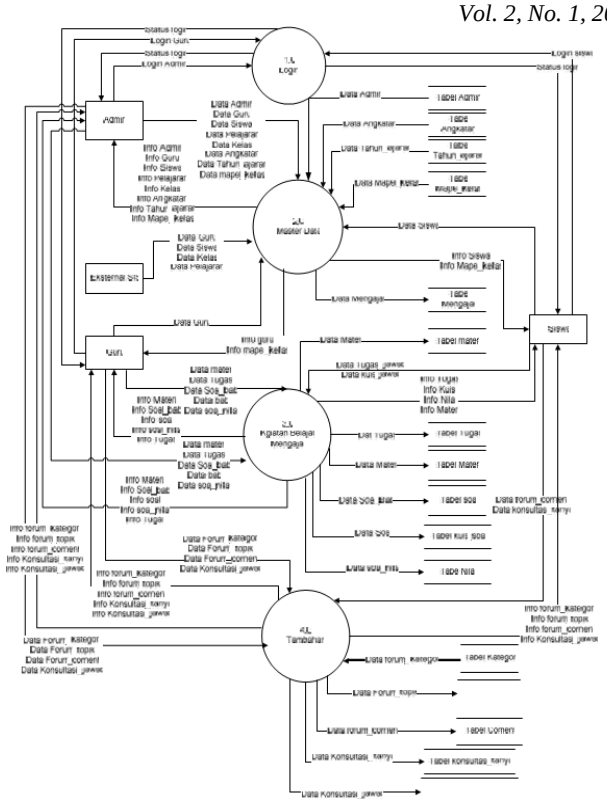

Figure 3. DFD Level 1

In DFD level 1 there are several processes that occur, including:

1. Login

   Log in starts with the admin entering the data log in the form of a username and password. The system will check from the admin whether the data log in the entry entered is valid and is in the database.

2. Data Process

   data processing contains the data needed for e-learning namely admin data, teacher data, student data, class data, force data, and teaching data.

3. Teaching Activity Process

   The system can do just that, as the teacher can upload material and can be downloaded by students. There are tasks, tasks that are done by students, according to the teacher's instructions and there is a deadline for collecting assignments. And there is a quiz, quiz made by the teacher and done by students simultaneously. When students log in and will work.

4. Additional Process

   The additional process contains other features that can be done by this system, namely this system has a forum. This forum is used classically and the teacher can participate. There is also consultation, consultation used as service

private message for students to communicate with the teacher.

C. Interface Design

1) Database Design

Design is the result of the implementation of the ERD image that has been made. System E-learning Karangpandan SMAN consists of several tables arranged in one database.

a) Admin Table

Contains admin data that manages e-learning school. Table 1 shows this data.

TABLE I. ADMIN TABLE

Field Name	Data Type	Field Size	Desc.
Id	Integer	6	Primary Key
Nama	Varchar	40	
Password	Char	32	
Email	Varchar	25	
Id_jenis_*user*	Integer	5	
Foto	Varchar	50	
Location	Varchar	225	

b) Grade Table

Grade table contain the class year of the students entered school. Grade table is shown in Table 2.

TABLE II. GRADE TABLE

Field Name	Data Type	Field Size	Description
Id_angkatan	Integer	5	Primary Key
varchar	Varchar	10	

c) Comment Table

Comment table contains comment data in the forum menu. The comment table is related to the topic table, because each topic can contain several comments (Table 3).

TABLE III. COMMENT TABLE

Field Name	Data Type	Field Size	Description
Id_coment	Integer	5	Primary Key
Id_topik	Integer	5	
*User*name	Varchar	50	
Isi_coment	Text		
Tgl_coment	datetime		

d) Teacher Table

Table 4 contains teacher data. This table contains the NIP that uses username, and the password that the teacher uses to log in and complete the profile.

TABLE IV. TEACHER TABLE

Field Name	Data Type	Field Size	Description
Nip	Varchar	25	Primary Key
Nama	Varchar	40	
Password	Char	32	
Kelamin	Enum('L','P')		
Jabatan	Varchar	20	
Alamat	Varchar	100	
Email	Varchar	25	
Telepon	Varchar	12	
Foto	Varchar	50	
Location	Varchar	225	
Tempat_lahir	Varchar	25	
Tanggal_lahir	Date		
Kd_pelajaran	Varchar	5	
Id_jenis_user	Integer	5	

e) User Type Table

User table is a table that contains user groups. This is the table which contains groups users who can access the system based on their access rights. It is shown in Table 5.

TABLE V. USER TYPE TABLE

Field Name	Data Type	Field Size	Description
id_jenis_user	integer	5	Primary key
Nama user	varchar	5	
Level user	integer	5	

f) Category Table

Category table contains a set of topics in a forum (see Table 6).

TABLE VI. CATEGORY TABLE

Field Name	Data Type	Field Size	Description
Id_kategori	Integer	5	*Primary Key*
Nama_kategori	Varchar	30	
Keterangan	Varchar	50	

g) Class Table

This table contains class data that are in a school, which is related to the student table and teacher table. It can be seen in Table 7.

TABLE VII. CLASS TABLE

Field Name	Data Type	Field Size	Description
Id_kelas	Integer	5	Primary Key
Nama_kelas	Varchar	25	
Nip	Varchar	25	

h) Consultation Question Table

This table contains answers from the consultation Question. Responsible consultation that filled in was the teacher. Table 8 shows this data.

TABLE VIII. CONSULTASION_QUESTION TABLE

Field Name	Data Type	Field Size	Description
Id_kon_tanya	integer	5	Primary key
Nis	Integer	5	
Isi_tanya	Text		
Nip	Integer	14	
Kd_pelajaran	Varchar	5	

Tanggal	Datetime		

i) Consultation Answer Table

Table 9 contains answers from the consultation of Question. These responsible consultations are filled in by teachers.

TABLE IX. CONSULTATION ANSWER TABLE

Field Name	Data Type	Field Size	Description
Id_kon_jawab	Integer	5	Primary Key
Id_kon_tanya	Integer	5	
Nip	Integer	14	
Isi_jawab	Text		
Tanggal	Datetime		

j) Quiz Table

This table contains data about the questions the teacher made as an evaluation of students during the lesson. Table 10 shows it.

TABLE X. QUIZ TABLE

Field Name	Data Type	Field Size	Description
Id_soal	Integer	5	*Primary Key*
Soal	Text	50	
Jawab_a	Text		
Jawab_b	Text		
Jawab_c	Text		
Jawab_d	Text		
Jawab_e	Text		
Kunci	Text		
Foto	Varchar	50	
Location	Varchar	225	
Usename	Varchar	50	
Tgl_kuis_soal	Datetime		

k) Class Subject Studies Table

This table contains what subjects will be taught in a class. It can be seen in Table 11.

TABLE XI. CLASS SUBJECT STUDIES TABLE

Field Name	Data Type	Field Size	Description
Id_mapel_kelas	Integer	5	Primary Key
Id_kelas	Integer	5	
Nip	Varchar	25	

l) Material Table

This table in Table 12 contains material uploaded by the teacher.

TABLE XII. MATERIAL TABLE

Field Name	Data Type	Field Size	Description
Id_materi	Integer	5	*Primary Key*
Kd_pelajaran	Varvhar	5	
Nama_materi	Varchar	30	
Id_kelas	Integer	5	
Keterangan	Varchar	100	
Nama_file	Varchar	50	
Type_file	Varchar	50	
Size_materi	Varchar	50	
Content	Longblob		
Nip	Varchar	25	
Tanggal	Datetime		

m) Mark Table

This table contains the results from the kuis_soal that students must answer. in question_ answer so that it produces a value. Table 13 shows this data.

TABLE XIII. MARK TABLE

Field Name	Data Type	Field Size	Description
Id_nilai	Integer	5	Primary Key
Nis	Integer	5	
Nilai	Varchar	5	
Tanggal	Date		
Id_soal	Integer	5	

n) Subject Studies Table

Table contains data on what subjects are taught in a school. It can be seen in Table 14.

TABLE XIV. SUBJECT STUDIES TABLE

Field Name	Data Type	Field Size	Description
Kd_pelajaran	Varchar	5	Primary Key
Nama_pelajaran	Varchar	40	

o) Student Table

This table contains student data in a school. This table contains NIS used for the username and password used to log in on the system. This table also contains complete student profile data (Table 15).

TABLE XV. STUDENT TABLE

Field Name	Data Type	Field Size	Description
Nis	Integer	5	Primary Key
Nama	Varchar	40	
Password	Char	32	
Kelamin	Enum('L','P')		
Alamat	Varchar	100	
Email	Varchar	25	
Telepon	Varchar	12	
Foto	Varchar	50	
Location	Varchar	225	
Tempat_lahir	Varchar	25	
Tanggal_lahir	Date		
Id_kelas	Integer	5	
Id_angkatan	Integer	5	
Id_jenis_user	Integer	5	

p) Questions Table

This table contains a collection of questions to be worked on. It is shown in Table 16.

TABLE XVI. QUESTION TABLE

Field Name	Data Type	Field Size	Description
Id_soal	Integer	5	Primary Key
Kd_pelajaran	Varchar	5	
Id_kelas	Integer	5	
Nama_soal	Varchar	50	
Nip	Varchar	25	
Tanggal	Datetime		
Dibaca	Integer	5	
Timer	Integer	5	
Jml_soal	Integer	5	

q) School Year Table

This table, in Table 17, contains the school year for the school.

TABLE XVII. SCHOOL YEAR TABLE

Field Name	Data Type	Field Size	Description
Id_tahun_ajaran	Integer	5	Primary Key
Nama_tahun_ajaran	Varchar	40	
Status	Integer	1	

r) Topic Table

This table contain any topics discussed in the forum. Table 18 shows this topic table.

TABLE XVIII. TOPIC TABLE

Field Name	Data Type	Field Size	Description
Id_topik	Integer	5	Primary Key
Id_kategori	Integer	5	
Topik	Varchar	30	
Username	Varchar	30	
Tgl_topik	Datetime		

s) Task Table

This table contains the assignment data given by teachers to students. It can be seen in Table 19.

TABLE XIX. TASK TABLE

Field Name	Data Type	Field Size	Description
Id_tugas	Integer	5	Primary Key
Nama_tugas	Varchar	30	
Isi_tugas	Text		
Name_file	Varchar	50	
Type_file	Varchar	50	
Size_tugas	Integer	10	
Content	Longblob		
Nip	Varchar	25	
Kd_pelajaran	Varchar	5	
Id_kelas	Integer	5	
Tanggal	datetime		

V. IMPLEMENTATION & TESTING

A. *Implementation*

Implementation is a stage of translating the results of the design of e-learning system into the form of lines of program code. e-learning Karangpandan SMAN is a web-based application that is implemented using the PHP and JavaScript programming language, while the database used is MySQL.

1) XAMPP Implementation

A XAMPP application has integrated Apache (web server), PHP and MySQL. This e-learning system can be run on several web browsers. After completing installing XAMPP, to find out if PHP is active, it can be seen through a web browser by typing: http://localhost/xampp/ in the address bar. It is shown in Figure 4.

Figure 4. XAMPP Implementation

2) Database Implementation

Database used is MySQL, because MySQL is a database that can be used freely and is easy to use and learn. The name of database the system e-learning is 'elsmankrap', consisting of 19 tables, which were created using phpMyAdmin. PhpMyAdmin can be accessed through a web browser with the address: http://localhost/phpmyadmin/. It can be seen in Figure 5.

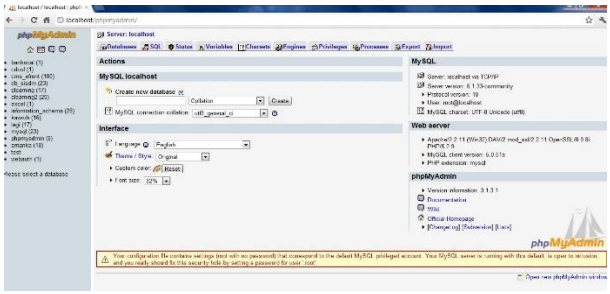

Figure 5. Database Implementation

3) Implementation of the System Login

Log in page is the page that first appears when a user accesses the system through a web browser. The main page can be accessed by typing: http://localhost/elsmankrap/ on the web browser's address bar as shown in Figure 6.

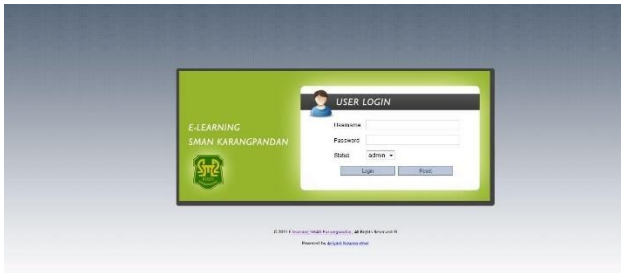

Figure 6. Log-In Page Implementation

4) Home System Implementation

First page entered, after logging in, a home page will appear when the user accesses the system through a web browser. This file is named index.php. It is shown in Figure 7.

Figure 7. Home Page Implementation

5) Admin Page Implementation

This page is the interface if the user logs in is Admin. On the admin menu page there are several menus, including managing profiles user, managing master data, managing lessons, managing forums, managing consultations.

a) Admin Profile: It is shown in Figure 8.

Figure 8. Admin Profile Page

b) Managing Teachers-Form (View Teacher Data): It is shown in Figure 9.

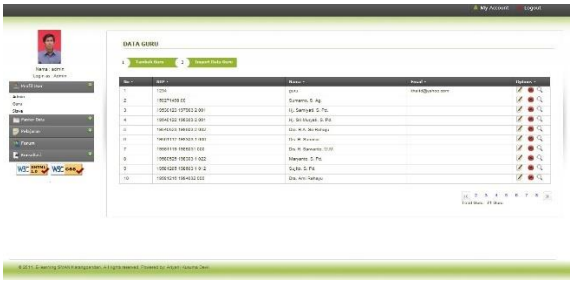

Figure 9. View Teacher Page

c) Managing Teacher Form (Add Teachers): It is shown in Figure 10.

Figure 10. Add Teachers Page

d) Managing Teacher-Form (Import Form): It is shown in Figure 11.

	A	B	C
1			
2	19591129 198603 1 000	Drs. Amin Suryadi, M. Pd.	19591129 198603 1 000
3	19611226 198903 1 000	Drs. Sugiardo, M. Pd.	19611226 198903 1 000
4	19561112 198303 1 000	Drs. H. Sunarso	19561112 198303 1 000
5	19561119 1985031 000	Drs. H. Sarwanto, M.M.	19561119 1985031 000
6	19581216 1984032 000	Dra. Ami Rahayu	19581216 1984032 000
7	19600512 198403 2 007	Dra. Hj. Endah Susanti	19600512 198403 2 007
8	19620721 198803 2 003	Dra. Yuliani Pratiwi	19620721 198803 2 003
9	19540402 198302 1 004	Sudiyono, S. Pd.	19540402 198302 1 004
10	19600828 198603 1 017	Drs. Bambang Wahyudi	19600828 198603 1 017
11	19540523 198603 2 002	Dra. R.A. Sri Rahaju	19540523 198603 2 002
12	19610329 199003 1 003	Drs. Ponco Wiyatno	19610329 199003 1 003
13	19600310 198903 1 008	Drs. Gatot Supriyanto	19600310 198903 1 008
14	19591106 198903 1 008	Drs. Supardi	19591106 198903 1 008
15	19580525 198303 1 022	Maryanto, S. Pd.	19580525 198303 1 022

Figure 11. Import Teachers Data

e) Managing Teachers-Form (Edit Teachers Data): It is shown in Figure 12.

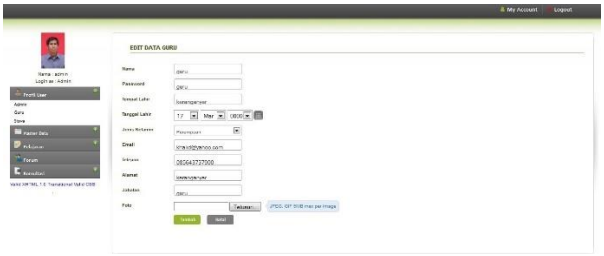

Figure 12. Edit Teachers Details Page

f) Managing Teachers-Form (Teachers Detail Form): It is shown in Figure 13.

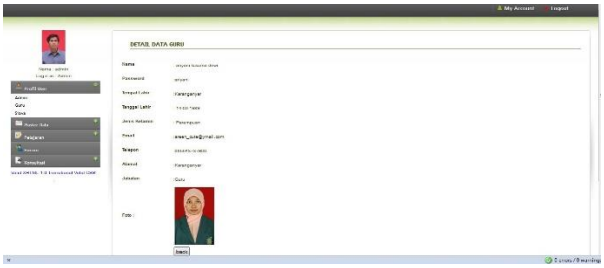

Figure 13. Teachers Detail Form

g) Managing School Year (View School Year Form): It is shown in Figure 14.

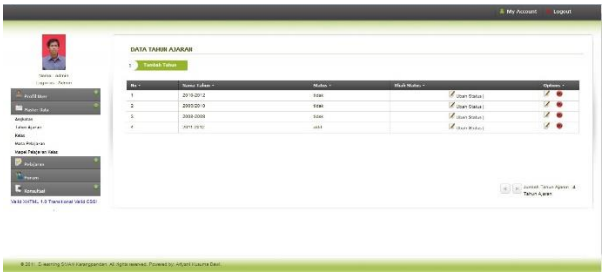

Figure 14. View School Year Form

h) Managing Classes (Form View Class). It is shown in Figure 15.

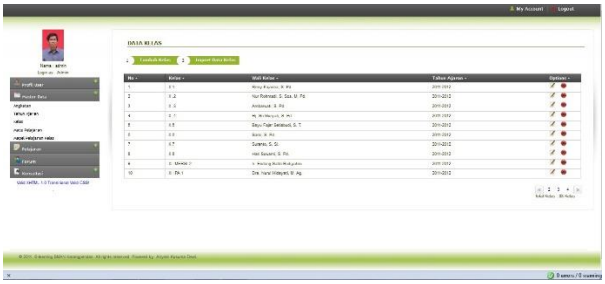

Figure 15. View Class

i) Managing Study Subjects (Study Subjects View Form). It is shown in Figure 16.

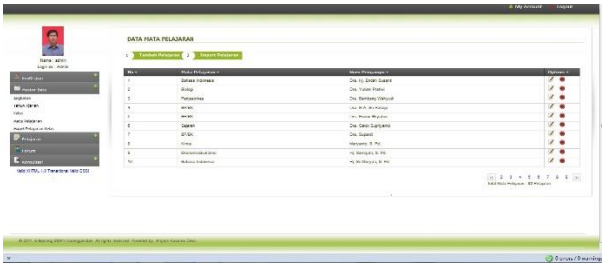

Figure 16. Study Subjects View Form

j) Managing Class Map (Class Map View Form). It is shown in Figure 17.

Figure 17. Class Map View Form

k) Managing Class Study Subjects (Study Subjects View per Class): It is shown in Figure 18.

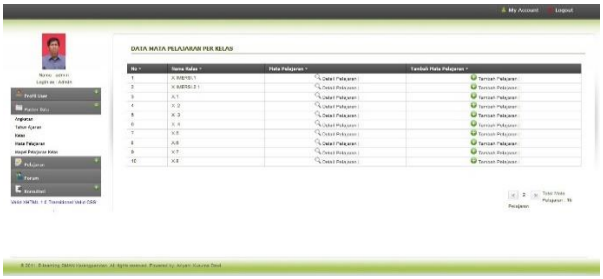

Figure 18. Study Subjects View per Class

l) Managing Class Study Subjects (Study Subjects Add Form). It is shown in Figure 19.

Figure 19. Study Subjects Add Form

6) Teacher Page Implementation

This page is the interface if the user is logged in as a teacher. On the teacher menu page there are several menus, including managing profiles user, managing lessons, managing forums, managing consultations.

a) Managing Material: It is shown in Figure 20.

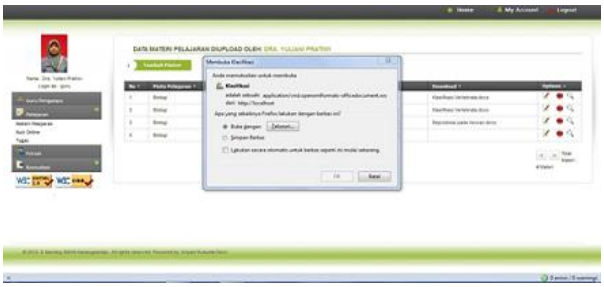

Figure 20. Managing Material

b) Managing Quizzes – Online Quiz Form View: It is shown in Figure 21.

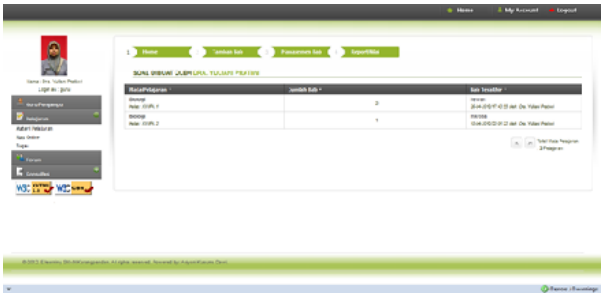

Figure 21. Online Quiz Form View

c) Managing Quizzes – Chapter Management: It is shown in Figure 22.

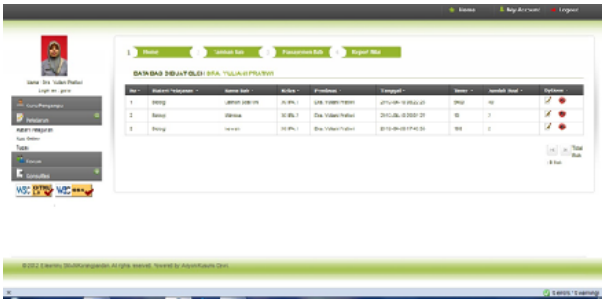

Figure 22. Chapter Management View

d) Managing Quizzes – View contents of the questions: It is shown in Figure 23.

Figure 23. View questions contents

7) Student Pages Implementation

a) View Questions Implementation

On this page students can work on problems by choosing answers to questions by marking the combo box. After the work is complete then select verification button to see the results. It is shown in Figure 24.

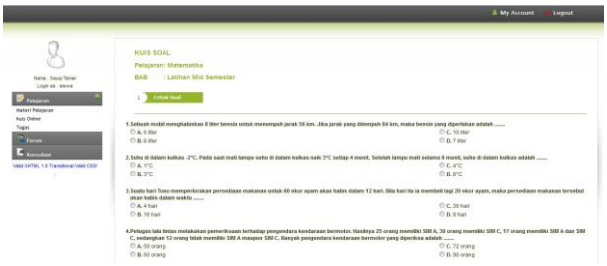

Figure 24. View questions implementation

b) Test Scores Report Implementation

This page is to display the score results of the questions done by students. Figure 25 shows this.

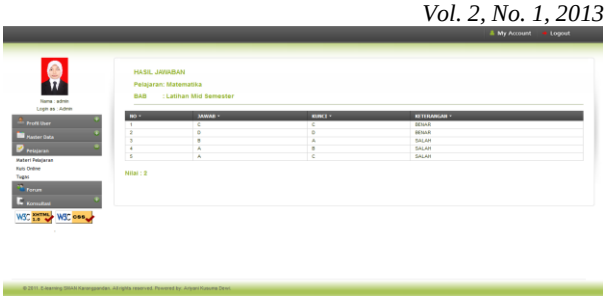

Figure 25. Test score report implementation

c) Forum Implementation – Forum View

This page in Figure 26 displays a list of existing forums.

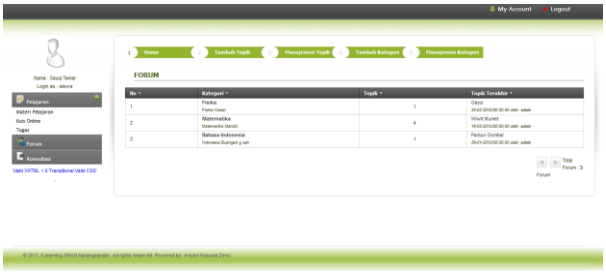

Figure 26. Forum implementation

d) Forum Implementation – Comments

This response page in Figure 27 is a page for displaying topics in the forum and users can respond.

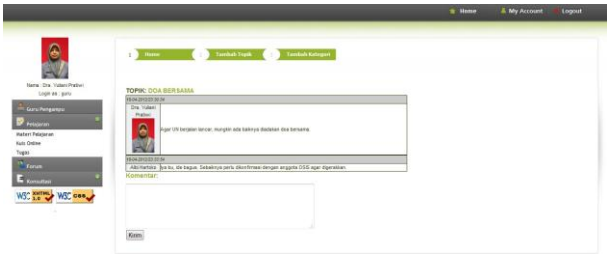

Figure 27. Forum implementation - comments

8) HTML Validator Implementation

Html Validator is a plug-in from the browser that is used to help web standardization processes. The advantage of using this is it is easier to know the mistakes in writing a script without having to online visit http://validator.w3.org. Figures 28 and 29 show it.

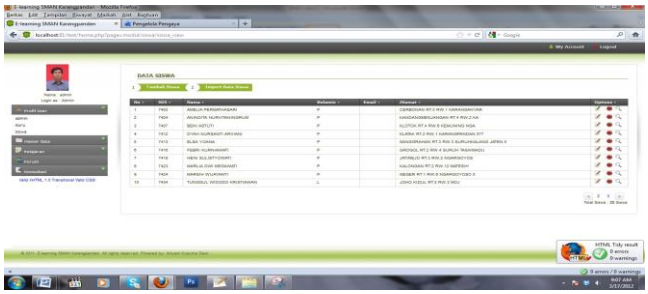

Figure 28. W3C Standardized page

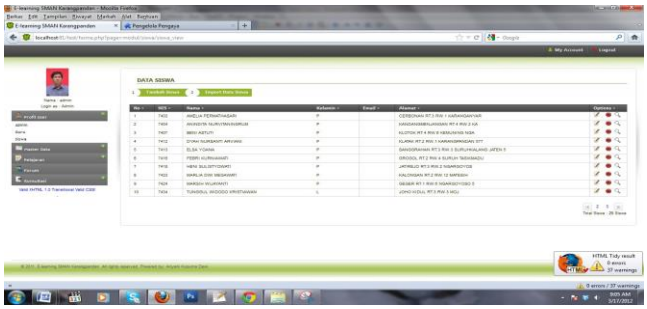

Figure 29. Unstandardized page

B. *Testing*

From the results of testing the system based on the functional system, it can be concluded that the majority of users stated that functional functions well. Data from the functional system test results showed 99.2% stated functional functioning and 0.8% stated functional did not function.

From the results of testing the system based on the interface and access when viewed in the Mozilla Firefox browser, it is concluded that most users agree with the system that has been made. The system test data shows that 38.89% expressed strongly agree, 70.83% stated agree, 0% stated disagree, and 0% stated strongly disagree.

From the results of testing the system based on the interface and access when viewed in the google chrome, it is concluded that most users agree with the system that has been made. The system test data shows that 20.83% expressed strongly agree, 79.17% stated agree, 0% stated disagree, and 0% stated strongly disagree.

From the results of testing the system based on the interface and access when viewed in an internet explorer browser, it is concluded that most users agree with the system that has been made. The system test data shows that 26.39% expressed strongly agree, 70.83% stated agreed, 2.78% stated disagreed, and 0% stated strongly disagree.

From the results of testing the system based on the interface and access when viewed in the opera browser, it is concluded that most users agree with the system that has been made. Data from the system test results showed that 29.17% stated strongly agree, 69.44% stated agreed, 1.39% stated disagreed, and 0% stated strongly disagree.

Based on the above conclusions, it can be concluded that the e-learning web-based school application is feasible to use, but there is still a need for further system development in order to obtain more optimal results.

CONCLUSIONS

Based on the research conducted by the author regarding the design and implementation of Karangpandan High School E-learning, the following conclusions can be drawn.

1) Development of the system e-learning school uses the PHP programming language with standardized W3C (World Wide Web Consortium) so that it can be accessed through various versions of the browser properly.

2) From the test results it can be seen that the functions provided by the software Karangpandan High School E-learning school run correctly and in accordance with what is expected so that it can be used by the academic community.

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