

## Website-Based School Information System Design and Evaluation at Sma Negeri 1 Marga Tabanan-Bali

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### Abstract

*At the moment SMA Negeri 1 Marga has developed a website which can be accessed anywhere and everywhere, by whomever, including the students and teachers, as well as it is open for public to access. The information, for example, announcement of the school's activities, students enrollment (PPDB) and so on, can now be done through the Internet. The website can benefit everyone who uses it and can give more accurate information, simple to access yet effective. The aim of this research was to conduct an evaluation of the recently developed website. After it is evaluated, the result of validation and testing phase said that the developed website or school information system is adequate to be used, in which this means that the system is categorized as 'Good'. It is based on the resulting evaluation from the content expert which was 3.9 (good), design expert 3.8 (good), teachers 4.2 (good), employees 3.7 (good), students 3.8 (good) and public 3.9 (good).*

*Keywords: information system, website, students enrollment.*

## **1. Introduction**

Along with advances in the field of science and technology, the development of technology is currently running faster. Almost all aspects of life can not be separated from information technology. Currently, there are many organizations, such as companies, hospitals, government agencies and schools that use information technology to support their organizational activities. Sutarman in [1] stated that the use of information technology today is an important part because: (1) the increasing complexity of management tasks, (2) the influence of the international economy, (3) the need for faster response times, and (4) pressure result of business competition.

The use of information technology cannot be separated from the internet. Through the internet, various information can be searched more quickly and easily, such as those related to the field of education [2-5]. Rikanika [6] stated that the management of information systems in educational institutions, in this case schools, by utilizing the internet application as a medium can be used as a forum for providing information and good school data storage. One type of application in question is a website-based internet application. Currently, this type of website-based internet application has begun to be used by schools both at the elementary level [7,8], junior high school [2,3], and high school / vocational school [6,9]. However, due to various reasons, there are still many schools that still do not use the internet as a medium for conveying information and storing data, one example is SMA Negeri 1 Marga.

Based on the results of an interview with one of the teachers at SMA Negeri 1 Marga, information was obtained that SMA Negeri 1 Marga does not yet have a website-based school information system that can be accessed anytime, anywhere and from anywhere by the school and the general public. Information on data collection of students, teachers, employees and data collection of alumni every year is still carried out using the old system, namely by manual recording in books and computer applications such as Ms. Excel whose processes have not been automated. In addition, the delivery of announcements related to school activities, announcements of new student admissions and so on is also still being carried out, such as through announcements via loudspeakers and or through leaflets on bulletin boards. Registration of new students or formally called the acceptance of new students (PPDB) from year to year is also still done conventionally, namely where prospective students must come directly to school with all the necessary documents. The system is less effective when viewed from the rapid development of information technology today.

Based on the problems above, the authors are interested in conducting research by developing a website-based school information system application for SMA Negeri 1 Marga. This is done so that later the information system that is built can provide convenience for all stakeholders in accessing information, both information about schools, students and activities organized by the school, as well as making it easier for prospective students to register at SMA Negeri 1 Marga.

## **2. Research Method**

The type of research carried out in this research is a research and development model. The development model used is the Borg and Gall model [10] which has been modified by Sugiyono [11] into 10 stages, namely: Potential and Problems, Data Collection, Product Design, Design Validation, Design Revision, Product Trial, Product Revision, Usage Trial, Product Revision and then Mass Production. In practice, the systematic research on the development of website-based school information systems that we do consists of eight (8) stages according to field and research needs. The eight stages of developing a website-based school information system that we implemented are: (1) Potential and Problems, (2) Data Collection, (3) Product Design, (4) Design Validation, (5) Design Revision, (6) Product Trial, (7) Product Revision and (8) Mass Production. The explanation for each stage is as explained in the following sub-chapter.

### **2.1 Potentials and Problems**

At this stage, a needs analysis is carried out by conducting initial observations by coming directly to SMA Negeri 1 Marga, so that it is known the potential it has and what problems are faced related to the school information system that will be developed. The potential possessed by the school is a computer lab connected to the internet network, adequate internet access speed, IT

teachers who have expertise in the field of information and communication technology. The problem is that the utilization of these potentials has not been maximized.

### **2.2 Data Collection**

This stage is the basis or foundation in planning the development of a website-based school information system. The data collected is related to school information and new student admission requirements entirely from the school. While other data such as articles, journals and books that will be used as reference material in system development comes from researchers.

### **2.3 Product Design**

In the product design step, several stages are carried out including starting with domain registration and hosting, installing the CMS needed in website creation, setting up website applications, selecting designs, setting up and filling out content on the website and finally checking the website independently so that it can be known later that the system website-based information for SMA Negeri 1 Marga is ready to be validated by material experts and design/interface/interface design experts.

### **2.4 Design Validation**

The design validation stage is carried out to determine the feasibility of the developed/made information system. Validation of this design is done by giving questionnaires to 2 experts, namely (1) design/interface/interface display expert who is tasked with providing assessments/suggestions/input related to the design/display of the developed information system, and (2) content/content experts who tasked with providing assessments/suggestions/input related to the content/content of the developed information system.

### **2.5 Design Revision**

At the design revision stage, what was done was to improve the website-based school information system which was developed in accordance with the suggestions/inputs given by the two experts at the time of design validation before proceeding to the next stage, namely product testing.

### **2.6 Product Trial**

At the product trial stage, this product was carried out in a limited manner, namely by involving several research subjects who could represent the population or all stakeholders. The research subjects were students, employees, teachers and the community/parents of students. All research subjects will be given the opportunity to use the developed product, namely a website-based school information system, then each will be given a questionnaire to provide an assessment and input/suggestion on the system that has been developed. The results of the assessment and input/suggestions from the research subjects will be analyzed and used as a reference for revising the final product.

### **2.7 Product Revision**

At this stage what needs to be done is to revise according to suggestions / input from the research subject, so that in the end a system will be obtained that is in accordance with the initial goal, namely the development of a website-based school information system that can provide all information about schools, providing convenience in terms of new student registration. quickly and accurately and appropriate for school residents and society in general.

### **2.8 Bulk Products**

After validating the design and testing the product and making revisions in accordance with the suggestions given by experts and other users, the product made/developed will be declared eligible for use if the overall assessment results are in the minimum category B (good).

### 3. Findings

The implementation of research for the development of a website-based school information system is in the odd semester of the 2019/2010 school year. The location of the research is SMA Negeri 1 Marga, which is located on Jalan Wisnu Marga, Tabanan-Bali. The research subjects were 3 staff/employees, 30 teachers, 30 students, and 10 community members/parents.

The flow chart or flowchart of the website-based school information system developed is as shown in Figure 1. As presented in the flowchart, the user will be faced with 5 main menus after accessing the main page, namely: (1) Home menu which displays information in the form of remarks from the Principal and other information about students and activities organized by the school, (2) Profile menu which displays information about the school in the form of the vision and mission of SMA Negeri 1 Marga, (3) Directory menu which displays information on student, teacher and student data. employees in general, (4) PPDB menu which displays information on new student admissions, and (5) Gallery menu which displays photos of activities held by SMA Negeri 1 Marga.

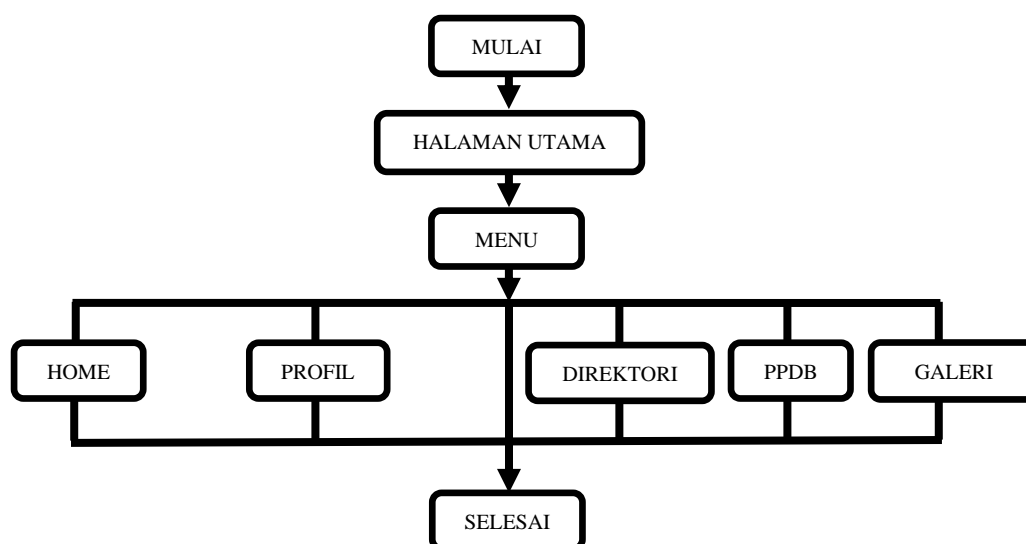


Figure 1. Image of website-based school information system flowchart design.

The flow of data on the system, namely in the form of Data Flow Diagrams (DFD), can be seen in Figure 2 and Figure 3. In Figure 2, namely the Context diagram, it is clear that the main system is connected to two external entities, namely: 'admin' and 'guest'. The 'admin' entity has the function to input data, including managing data. Meanwhile, the 'guest' entity can only view information available on the system, including PPDB information.

Figure 3 presents a Level 1 DFD from the previously presented Context Diagram (Figure 2). In this Level 1 DFD, the main system and the flow of data and information in and out are seen more clearly, where the SMA Negeri 1 Marga Website is, in general, divided into 7 processes, namely: Login, Manage PPDB, Manage Student Data, Manage Tendik Data, Manage Photos, Manage Posts and Settings.

Figure 4 shows the relationship between tables on the system database that was built. It contains 7 interrelated tables, including the student data table, post table, settings table, accounts table, ppdb table, photo table and student data table.

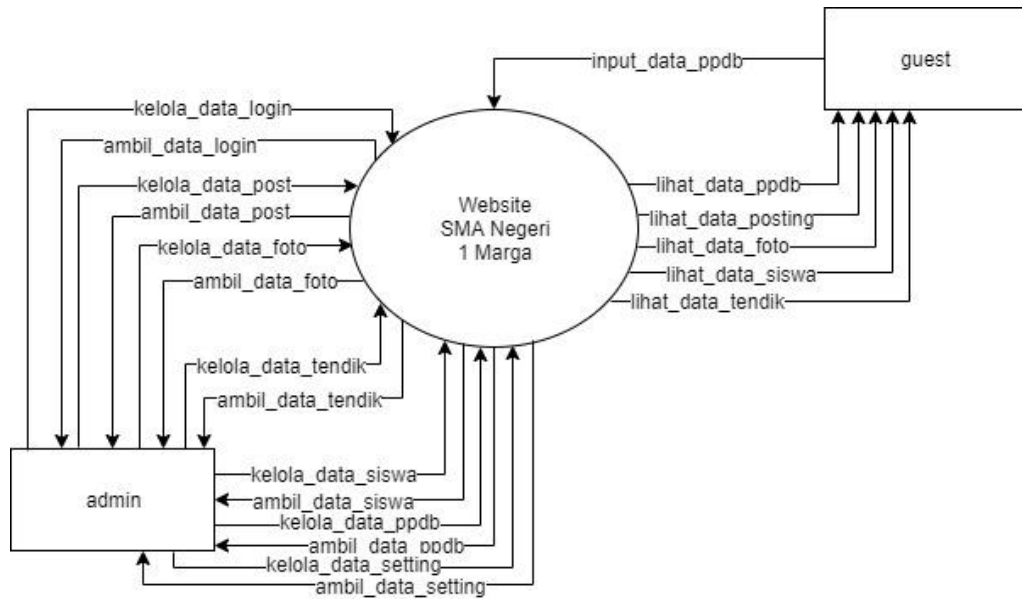


Figure 2. Context Diagram for Data Flow Diagram of SMA Negeri 1 Marga website.

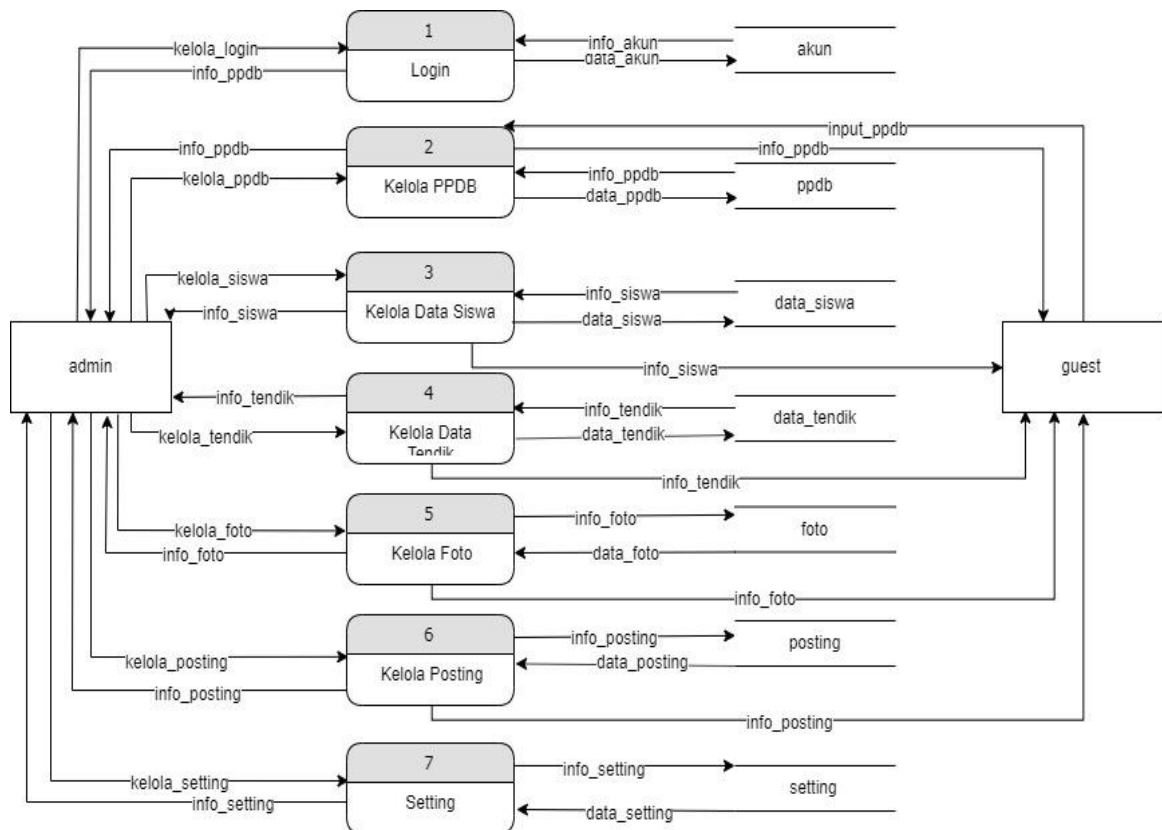


Figure 3. DFD Level 1 for SMA Negeri 1 Marga website.

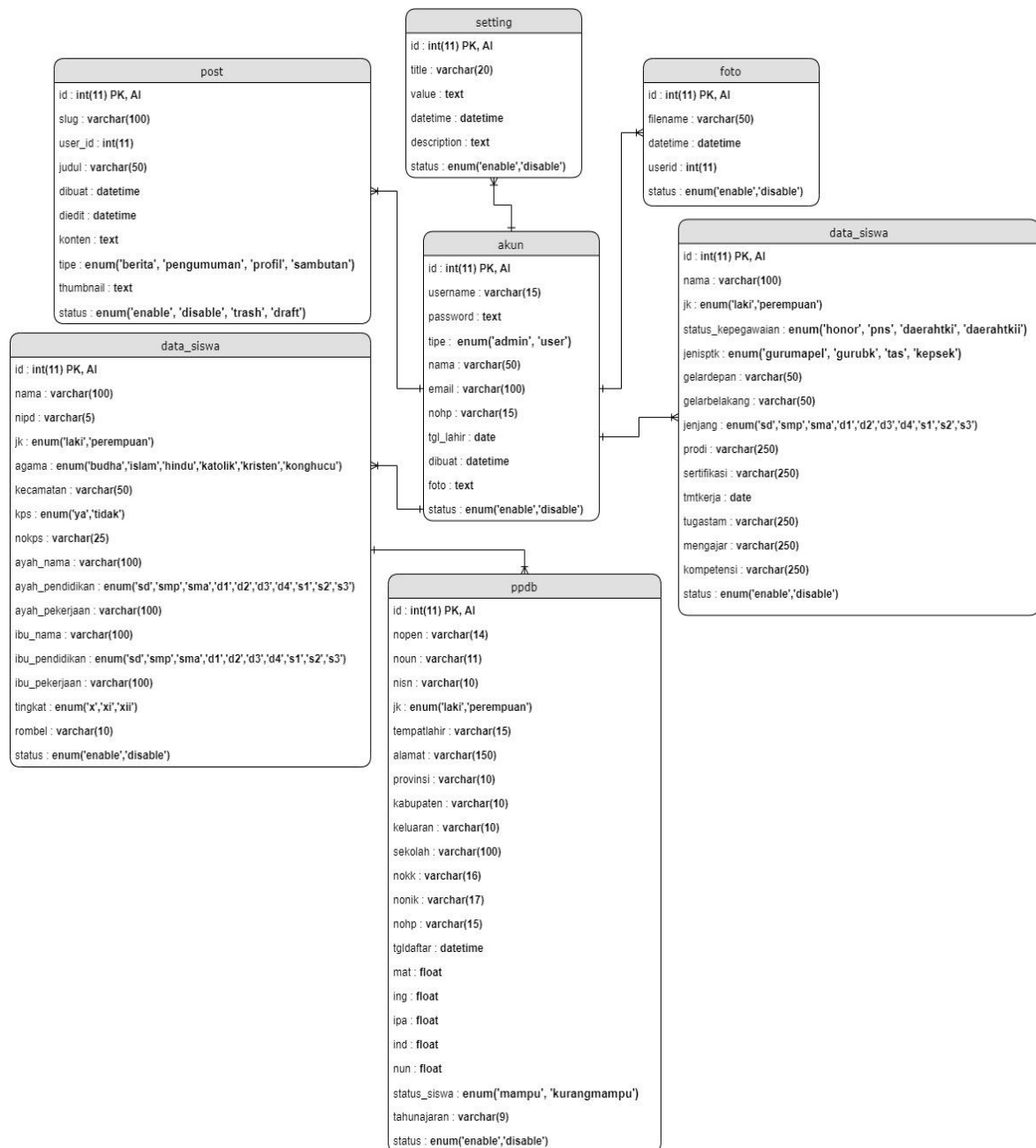


Figure 4. Relationships between tables for the SMA Negeri 1 Marga website

Furthermore, the interface design was carried out by receiving input from various related parties, such as the Principal and staff at SMA Negeri 1 Marga. The design is then implemented into a complete website, with the main page display as shown in Figure 5, and one example of another page, namely the PPDB page as shown in Figure 6.



Figure 5. The main page interface of the SMA Negeri 1 Marga website.



Figure 6. The interface of the PPDB page on the SMA Negeri 1 Marga website.

The URL and more complete information from the SMA Negeri 1 Marga website can be accessed at the address: <https://www.sman1marga.sch.id/>.

In its implementation, the development of this website uses the MySQL database and the PHP programming language.

### 3.1 Design Validation

Qualitative data in the form of criticisms and suggestions put forward by media experts, material experts, staff/employees, teachers, students and the community were collected and summarized as guidelines for improving the developed information system.

Quantitative data obtained from the assessment of media experts, material experts, principals, staff/employees, teachers, students and the general public were analyzed using

qualitative descriptive statistical methods. The results are then converted into qualitative data with 5 scales, using the conversion reference from Sukardjo [12] as presented in Table 1.

Value	Category	Score	
		Formula	Calculation
5	Very Good	$\bar{X}_i + 1,8 Sd_i < X$	$4,21 < X$
4	Good	$\bar{X}_i + 0,6 Sd_i < X \leq \bar{X}_i + 1,8 Sd_i$	$3,40 < X \leq 4,21$
3	Enough	$\bar{X}_i - 0,6 Sd_i < X \leq \bar{X}_i + 0,6 Sd_i$	$2,6 < X \leq 3,4$
2	Less	$\bar{X}_i - 1,8 Sd_i < X \leq \bar{X}_i - 0,6 Sd_i$	$1,8 < X \leq 2,6$
1	Very Less	$X \leq \bar{X}_i - 1,8 Sd_i$	$X \leq 1,8$

Table 1. Eligibility Assessment Criteria for Website-Based School Information Systems.

Provision:

average ideal score :  $1/2$  (ideal maximum score + score  
ideal minimum)

Ideal Standard Deviation :  $1/6$  (ideal maximum score – score  
ideal minimum)

X-Ideal : Empirical score

Where, in this study, the minimum value of the website-based school information system was determined to be "B", with the Good category.

### 3.1.1 Content Expert

The content expert selected for the development of a website-based school information system is one of the ITB STIKOM BALI lecturers who is in charge of the Database Systems, Information System Design and Web Programming courses. In the content section of the website, there are 9 indicators that are assessed. Based on the assessment of content experts, an average of 3.9 (good category) was obtained, so that, in terms of content, it was declared feasible as a website-based school information system.

### 3.1.2 Design Expert

The design expert chosen for the development of this website-based school information system is one of the ITB STIKOM BALI Information and Systems Development staff. In the website design section, there are 19 indicators that are assessed. Based on the assessment of content experts, an average of 3.8 (good category) was obtained, so that, from a design perspective, it was declared feasible as a website-based school information system.

## 3.2 Product Trial

### 3.2.1 Teacher

The product trial was conducted by 30 teachers of SMA Negeri 1 Marga. Based on the teacher's assessment of the website-based school information system, an average of 4.2 (good category) was obtained so that, from the assessment side by the teacher, it was declared eligible as a website-based school information system.

### 3.2.2 Employees

The product trial was carried out by 10 employees of SMA Negeri 1 Marga. Based on the employee's assessment of the website-based school information system, an average of 3.7 (good category) was obtained, so that, from the employee's point of view, it was declared eligible as a website-based school information system.

### 3.2.3 Students

The product trial was carried out by 30 students of SMA Negeri 1 Marga. Based on the student's assessment of the website-based school information system, an average of 3.8 (good category) was obtained so that, from the assessment side by students, it was declared eligible as a website-based school information system.

### **3.2.4 Society**

Product trials were carried out by 10 general public from various villages. Based on the community's assessment of the website-based school information system, an average of 3.9 (good category) was obtained, so that, from the assessment side by the community, it was declared feasible as a website-based school information system.

Thus, after the results of the assessment were processed according to the score criteria in Table 1, the results stated that in general the system that was built was considered to be in category B (Good) and was suitable for use by all stakeholders, such as students, school officials and the community. general. The information presented on the website is also obtained from primary data, so its accuracy is guaranteed.

## **4. Conclusion**

### **4.1 Conclusion**

Based on the results of the design implementation, it can be concluded several things as follows:

- a) the use of websites for school information systems can be used as a solution in terms of delivering information that is not limited by time and place,
- b) the website-based school information system developed can assist the school in conveying various kinds of important information quickly and easily,
- c) the existence of a website-based school information system can provide convenience for the community, especially in terms of finding information about schools, PPDB announcements and even PPDB registration,
- d) from the results of design validation and product testing, it was found that the website-based school information system developed was declared eligible with a good category. This is in accordance with the assessment by content experts of 3.9 (good), design experts of 3.8 (good), teachers of 4.2 (good), employees of 3.7 (good), students of 3, 8 (good), and the community is 3.9 (good).

### **4.2 Suggestions**

After the website-based school information system is declared feasible and ready to be used by everyone, the next stage is required usability testing with certain methods to determine the ease of use of the website-based school information system.

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