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Web-Based Extracurricular Management Information System at Smk Pertiwi

Fendi Hidayat
Department of Information System, Universitas Putera Batam, Indonesia

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ABSTRACT

SMK Pertiwi Batam has a desire to improve and develop students' extracurricular activities in order to increase their students' achievements. Extracurricular activities are activities that support the educational process carried out by students outside of teaching and learning time, these activities are carried out in order to develop students' interests, talents, hobbies and potential. So far, the extracurricular management process at SMK Pertiwi Batam has been carried out conventionally so it is difficult to track it, so it is necessary to create an extracurricular management information system so that data on extracurricular activities and participants can be well integrated. Previous research has shown that with an online extracurricular information system, the registration process and access to extracurricular data can run easily anywhere and anytime and the resulting data is more accurate, appropriate and up to date. The implementation of this research uses qualitative methods by conducting observations, literature studies and for system development using the waterfall method. From the results of the study, it can be concluded that the proposed information system can facilitate students in the registration process and administrators and teachers can easily manage extracurricular activities.

Corresponding Author:

Fendi Hidayat,
Email: fendihidayat@univbatam.ac.id

1. INTRODUCTION

The world of education plays an important role in human life to produce quality humans in the thoughts and understanding that are implanted in education. Therefore, education must be controlled both in terms of quality and quantity. Extracurricular activities are activities that support the educational process by participating in extracurricular activities at school. Students are expected to fulfill their potential by developing both the potential and talents that exist within them. Therefore, it is expected to help students achieve optimal learning outcomes. This extracurricular activity itself can be in the form of activities in the arts, sports and other activities that are indeed positive for the progress of the students themselves. Therefore,[1].

Extracurricular is an activity carried out by students outside of teaching and learning time,[2] This activity is carried out in order to develop students' interests, talents, hobbies and potential [3]. According toRahmanto & Fernando (2019) Extracurricular activities in education are designed to meet the needs of students, help those unfamiliar with the learning environment, and inspire them to be more creative. Indeed, many educational activities are not always carried out within limited school hours and it is possible to form groups of children outside of school hours to meet and meet the needs and interests of children. Extracurricular activities become more important because they are one of the factors driving student success, in addition to school pride in attracting students' interest[5]. These activities are carried out under the direction and supervision of the Education Unit. Extracurricular activities aim to develop maximally the potential, talents, interests, skills, character, cooperation and independence of students in order to help achieve national education goals.[6]. Student skills are developed by training in preferred activities. This is

useful for non-academic coaching and encourages students to continue to develop to achieve maximum results and goals[7].

SMK Pertiwi is one of the vocational schools in the city of Batam that has a desire to improve and develop students' extracurricular activities in order to increase their students' achievements. The results of initial observations made, management and registration of extracurricular activities at SMK Pertiwi still use the manual method, namely by filling out a printed registration form sheet, while data management such as achievement data and assessment data in each extracurricular has been using a computer but still in the form of files that are not integrated. one with the other. This resulted in extracurricular data management is not integrated with each other, so that extracurricular monitoring and evaluation is less effective and efficient.

According to Wirawan & Hamdan (2014)the use of a manual system will make it difficult for students to find information about all school extracurricular activities. Lack of communication is also one of the obstacles to the formation of good communication modalities in extracurricular activities. Extracurricular trainers, on the other hand, have difficulty assessing and reporting extracurricular activities so it is necessary to build an information system that can improve school performance in managing extracurricular activities. The same thing was also revealed byChaidir et al. (2016)that the application of a manual system in managing extracurricular will make it difficult for students to get information about all extracurricular activities in the school, in addition to extracurricular coaches also have difficulty evaluating extracurricular activities and reporting activities. So to overcome this problem, it is necessary to build a system that can manage extracurriculars that can manage extracurricular data, member data for each extracurricular, activity data and various reports required by the coach and school. According toMulyani & Fadilah (2015)With the existence of an online extracurricular information system, it can make it easier to register and access extracurricular data anytime and anywhere. With the extracurricular information system, it is expected to be able to produce or present data that is accurate, appropriate and up to date[10].

Based on previous research conducted Manu & Tugil (2020)with the title Web-Based Extracurricular Management Information System Design (Sime) resulted that a web-based information system that allows teachers, members and school leaders to collect data on the performance of extracurricular activities and monitor these activities in an appropriate way. The results of testing the developed software get a functional value of 1 (good) and the results of testing the usability aspect of 94.66% (very qualified). Other research conductedHermawan (2014)on the Development and Analysis of the Quality of Information Systems for Extracurricular Activities At SMK Negeri 1 Pandak, the system designed has the following features: Management, teacher management and student management in extracurricular activities. 2) The test results of the developed software produce a functional value of 1 (good), reliability testing produces results of 1 or 100% (good), and the usability test application has an alpha cronback consistency of 0.947 (high) and has a score of 82.7% (good) , performance tests showed 96.3 for Yslow, 92.4% for page speed (Class A), and 7,538 response times (approved). The maintenance aspect test resulted in a maintainability index (MI) of 68.

Therefore, in this study, a research will be conducted with the title Web-Based Extracurricular Information System at SMK Pertiwi. This study aims to analyze, design and implement a Web-Based Extracurricular Information System at SMK Pertiwi. So that it can help schools, to help facilitate the management of data and information on extracurricular activities at SMK Pertiwi. It is hoped that this research will be able to help the administrators of extracurricular activities to facilitate the administration and assessment of extracurricular activities and students can get information in the implementation and access the value of extracurricular activities.

2. RESEARCH METHOD

In this study, qualitative methods and software development methods (SDLC) used are waterfall. The stages used in conducting this research are conducting literature studies, observation and software development in accordance with the stages in the waterfall stage. The waterfall method was chosen because it makes it easier for the team to develop the system and has several advantages over other models[13].

2.1. Qualitative Research

Qualitative research processes usually use cyclical, nonlinear and hypothetical, experimental, experimental, behavioral, nomosetic, atomic, and universal research approaches. In qualitative research, the research cycle begins with the selection of a research project. Then ask questions related to the research project, then collect data related to the questions above, then edit and analyze the profile of the collected data. This process is repeated several times, depending on the breadth and depth required for the question being investigated[14].

2.2. Study of literature

Literature study is carried out by collecting books and scientific works/journals related to the theme of this research. According to Nazir (2014) in[15]explained that the use of literature study is needed to see and know how far the science related to research has progressed, how many conclusions and inferences you can draw, and get the required situation. The sources used in this research are:

1. Well written and published book.
2. Scientific journals of research results and seminar results.
3. Periodical or scientific magazines which are published periodically by the Institutions.

Activities in literature study are collecting, reading, literature/books[16]. Things that need to be considered in heritage studies are as follows:

1. Literature research stage.
2. Research methods of data collection and reading, document processing and library equipment to prepare research.
3. Its usefulness makes it easier for researchers to study it.

2.3. Observation

Hopkins (1993) in [17]explained that observation means observing for a particular purpose. So in this study, the observation technique was carried out to find out the various problems that exist in the extracurricular management system at SMK Pertiwi. Then from the results of these observations formulated the functional requirements of the system to be developed by following the rules that exist in a good software development method.

2.4. Software Development

System Development Life Cycle (SDLC) according to Sukamto and Salahuddin (2013) in [18]is a software development process using methods and models that people use to develop software systems based on best practices or methods. Sriadhi (2016) explained that SDLC is a commonly used model in information system design. SDLC has a complete cycle required for the process of building an information system based on user requirements[19]. In software engineering, the concept of SDLC underlies many types of software development methodologies. The software development models are waterfall, prototype, iterative, spiral, rapid application development (RAD), and many more[20]. The stages of SDLC according to Sarosa (2017) in[21] is as follows :

1. Proper study.
2. System research and investigation.
3. System analysis.
4. System design.
5. Application.
6. System evaluation and maintenance.

2.5. Waterfall

According to Oruh (2013) in [22]explained that the waterfall method is a software development process that resembles the flow of a waterfall that continues in stages. The waterfall method is a systematic and sequential approach to software development from the system level to analysis, design, coding, testing, and maintenance[23].

The advantages of using a layered approach are as follows[24]: 1) The sequence of workflows using this method becomes smoother from step to step; 2) From the user's point of view, you can plan and prepare as much data and processing requirements as you need, so that it is more profitable for you; 3) Planning is more uncertain because you can be sure that you can plan every process. Have a clear understanding of the objectives of completing program development. You can be sure to see the progress of each step in a clear order.

There are several weaknesses of the waterfall model[25]are as follows: 1) A continuous linear step cannot be reduced to the next step; 2) Demand changes that occur during the system development phase are not flexible; 3) Almost zero tolerance for failure. Especially at this stage of planning and design.

3. RESULTS AND ANALYSIS

In this study, the initial step was to observe the process of managing student extracurricular activities at SMK Pertiwi Batam. During the observation process, an interview process was also carried out to further explore the problems found during the observation process as well as to confirm and validate the findings. From the observations made, it can be seen that the current extracurricular management is still not optimal and the data is not well integrated, so that extracurricular activity reports and activity data recapitulation are not managed properly. Furthermore, a literature study was carried out by studying journals, books related to the development of extracurricular management information systems.

The next process after observation and literature study is to develop a system using the waterfall method with the development flow determining system requirements, making system design, system implementation, system testing and system maintenance. The results of the system development process will begin with the system analysis process. According to Sarosa (2017) in[26]explained that the analysis stage was carried out to find out the current system and its shortcomings and find out solutions to existing deficiencies. In this research, the analysis and design process will be made using the Unified Modeling Language (UML). According to Tristianto (2018) in[27]that UML is a tool used to make system designs using the concept of Object Oriented (OO). Furthermore, several things will be explained in the system design using the UML method using use case diagrams, database design and the results of the application display that has been developed.

3.1. Use Case Diagrams

Use case diagrams can be used to explain scenarios or descriptions of system use and their interactions with processes or functions that exist in the system. It reveals what the system needs to do, but doesn't go into implementation details like data structures and algorithms. In other words, it reveals who is actually using the system to be built[28]. The use case diagrams designed in this study are as follows:

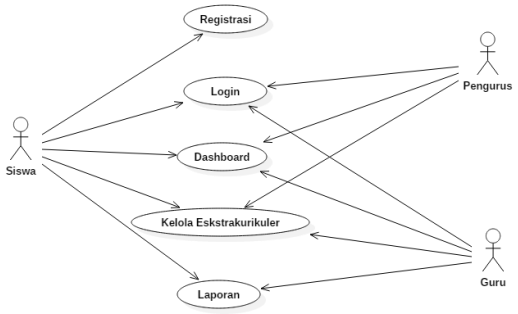

Figure 1. Use Case Diagram of Extracurricular Management Information System at SMK Pertiwi Batam

In the description of the use case diagram above, it can be seen that in the proposed system there will be 3 (three) users, namely: students, administrators and teachers as coaches. While the main processes in this system will be grouped into 5 (five) processes, namely registration, login, dashboard, extracurricular management and reports. The scenario of the existing system in the use case diagram is as follows:

1. Student users must register with the system first to get an account to see the activities and types of extracurriculars available.
2. After registering and verifying, the student then logs in using the account that was previously registered.
3. If the username and password are valid, the student will then be displayed on the dashboard menu for students.
4. Students can also see the activities and types of extracurricular activities at SMK Pertiwi Batam
5. Students can also view reports on the progress of extracurricular activities that have been running.
6. Managers and supervisors must also log in first to access extracurricular activities.
7. After logging in, you can only manage extracurricular activities and view reports from extracurricular activities according to the section.

3.2. Database

In database design, the first thing to do is to determine the entities associated with the system. Entity identification is the initial stage when designing a database, because an entity is something whose data will be stored and each entity also has attributes[29]. The database design in the extracurricular management information system at SMK Pertiwi is as follows:

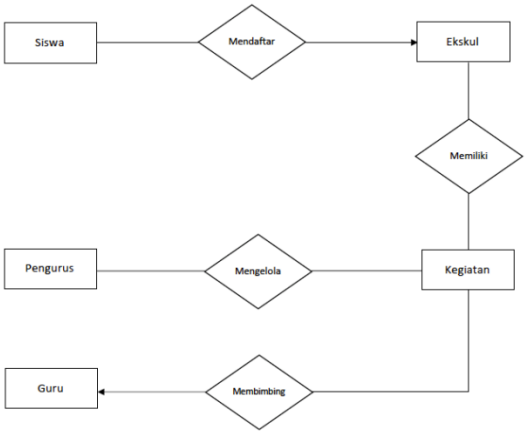

Figure 2. Entity Relation Diagram Extracurricular Management Information System at SMK Pertiwi Batam

From the picture above, 5 (five) entities will be recommended for the extracurricular management system at SMK Pertiwi. The 5 (five) entities are Students, Teachers, Management, Extracurricular and Managing Activities. The scenario from the ERD above is that students register for extracurricular activities where all extracurricular activities have activities and some activities are managed by extracurricular administrators and one teacher can guide some of the activities in the extracurricular activities. The ERD design will then be converted into a table in the system database.

3.2. System Interface

In the interface of this system, several views of the recommended extracurricular management information system at SMK Pertiwi Batam will be explained. In the new system, the technical development uses the PHP programming language and the database management system uses MySql and is simulated on a localhost.

3.2.1. Registration

In the registration form, the user will be asked to enter username, password, NIS, full name, address, no. Phone and Gender. After entering the data, the system will save the data to the database. The display of the registration form is as follows:

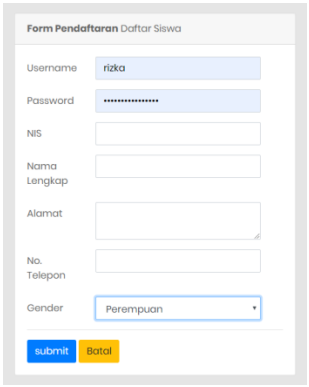

Figure 3. Registration Form

The user must enter the correct data and there must be no blank fields. From the picture above there is also a cancel button to cancel the data entry that has been previously entered. The data will be saved to the database. Furthermore, after registering, users can continue the next process, namely logging into the application.

3.3.2. Manage Extracurricular Activities

In the proposed new system, the management manages extracurricular activities online and extracurricular activities will be stored in the database and displayed on the system.

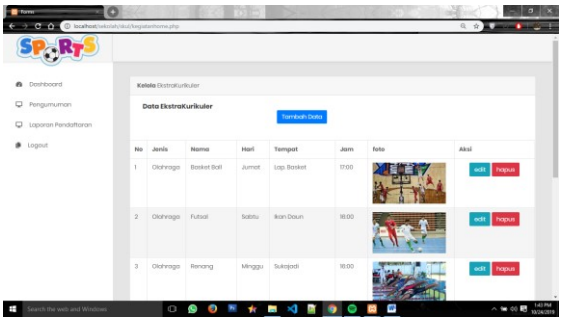

Figure 4. Display Manage Extracurricular

On the Manage extracurricular page above we can see photo documentation of each activity. Then the administrator can add data on activities carried out by each extracurricular. On the left side bar we can see that there are dashboard menu options, announcements, reports and logout. So that administrators can manage and display reports and announcements easily and quickly. If you want to complete the activity, the administrator can press the logout option to exit the administrator's dashboard.

4. CONCLUSION

After going through the process from analysis, design to system implementation, the conclusions that can be drawn include:

1. Can make it easier for students to join the desired activity.
2. Can make it easier for extracurricular administrators and teachers to record students who want to join activities.
3. The school easily receives reports from activities in existing schools.

The Web-based Extracurricular Information System at SMK Pertiwi is expected to continue to be developed. The suggestions for developing this information system are:

1. Programs should be made more user-friendly.
2. Other financial statements can be added.
3. Sports extracurricular activities can help increase students' motivation to learn physical education.
4. In each lesson the teacher should provide activities or methods that are varied, which aims to increase student participation and motivation.

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