

Academic Information System Design For Vocational High School in Web-Based 2013 Curriculum

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Abstract— The system is developed in order to assist Vocational High School for 2013 Curriculum Assessment, since the assessment of current 2013 curriculum still use lot of papers and cause difficulties for teachers and student. On the other side, in 2013 curriculum assessment, there many aspects assessed, start from knowledge aspect (exam, assignment, daily, mid semester exam, and final exam score), skill aspect (for work, project, and portfolio), and attitude aspect (Observation, Self- Assessment, Friend Assessment). The system is developed with Waterfall Model. Steps taken are requirement analysis, system design, implementation, integration and testing, and the last step is operation and maintenance. Information System Fitur developed are Administrator, teacher, head master, student, and parent log in . The aim of this academic system are (1) facilitating teacher to evaluate their student, (2) student evaluate another student, (3) saving papers and documents of assessment, and (4) assessment system will be integrated with student report.

Keywords—2013 curriculum, waterfall model, academic system

I. INTRODUCTION

2013 curriculum implementation on Vocational High School must be implemented periodically. In 2013, there are 1.270 Vocational High School spread across 33 provinces and 295 government regency/ city [1]. 2013 curriculum assessment including 4 main competencies type called with KI-1 for Spriritual Attitude Main Competency, KI-2 for Social Attitude Main Competency, KI-3 for Knowledge Main Competency and KI-4 for Skill Main Competency. Those sequence in accordance with the sequence mentioned in The Act of National Aducation System Number 20 Year of 2003 said that the competencies is including attitude, knowledge and skill competency.

Based on the observation done by one teacher of Networking and Computer Technique in a Vocational School in Malang, revealed that in processing the score, teachers use manual assessment technique with assessment sheet which the result will be stored in software of numerical processor (Mc. Exel) and Ms. Word. When the assessment sheet is well-fulfilled by student and teachers, it will be stored in archive

storage roo. Score processing takes a long time and is not efficient .

Related Research which already developed is “ Web-Based Student Report Information System Development for 1ST Gondang Junior High School in Mojokerto” by Khoirudin Asfani. The Product produced from this research is Web-based student report information system that can assist school parties in quality, effectiveness and efficiency of school management improvement, especially on student academic management at school [2].

According to the explanation above, the researcher will develop “ Web- Based Academic Information System in Vocational High School “ which adopts 2013 curriculum. With thys system, expected can improve the recapitulation assessment efficiency, effectiveness to be in use for Student Competency Achievement Report, and able to improve academic management quality in Vocational High School wholly.

II. LITERATURE REVIEW

A. 2013 Curriculum Assessment

2013 Curriculum Assessment said that each lesson supports all competencies (attitude, skill, and knowledge) with different emphasize. In specifically, (1) a lesson is arranged in relation of one another and have basic competency bind by main competency of each class, (2) Indonesian Language is communication tool and carrier of knowledge, (3) all the lessons taught in the same approach, that are scientific approach by observing, questioning, trying and reasoning, (There is no concentration in Senior High School. There are main lesson, interest, inter-interest, interest enrichment, (5) Senior High School and Vocational High School have similar main lessons related into the basics of knowledge, skill, and attitude; and (6) Majoring/Concentration in Vocational High School is not that much detail (until the study field), there are interest grouping and enrichment grouping inside [3].

B. Information System

According to Albert, System refers to a arrangement and cohesiveness including functional components (with functional unit/ specific duty) that are together related in order to fulfill a defined process/ work [4].

According to John W. Satzinger, Information System refers to a horde of some part that related each other and collecting, processing, storing and providing as the result of information- needed to finish a job [5].

Information System is an integration of organize way in collecting, inputting, processing the data, controlling, and revealing the information in accordance with manual process or computer process to achieve information goal and objective [6].

Based on the review above, Information system refers to the system provides an information for management in decision making and carrying out the organization operational, where the system is the combination of people, information technology and procedures that are organized. While Academic Information System belongs to the system which provides information either in collecting activities, inputting, and processing the score of the student in order to result the informations that are related with learning result from generally learning.

C. Web

Word Wide Web (WWW), mostly known as web, refers to a service got by computer user which is linked to the internet. In the beginning Web is an information room in the internet, using hypertext technology, the user is led to find the information by following the link provided in web document shown by browser web [7].

TABLE I. 2013 CURRICULUM ASSESSMENT

Numb	Assessment type	Subject	Time
1.	Authentic Assessment	Teacher	Continuously
2.	Self Assessment	Student	Every time before the exam
3.	Project Assessment	Teacher	In the last chapter of the lesson
4.	Regular Exam	Teacher	Integrated with learning process
5.	Mid and Final Semester Exam	Teacher	During the Semester
6.	Competency Grade Exam	School	Every competency grade out side National Exam
7.	School Exam	School	In the end of learning stage

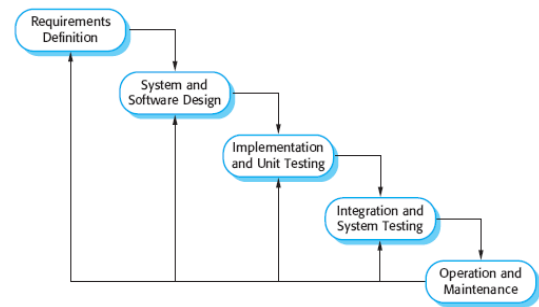


Fig. 1. Waterfall Model [8]

III. SYSTEM DESIGN

Vocational High School’s Student Academic Information System Design in 2013 web-based curriculum, in its design will be performed this following review .

A. Information System Development Model

Development Model will be performed by using Waterfall model including 5 steps needed to be taken. Waterfall Model Step can be seen on this Figure 1.

The explanation of every step is followed.

- *Requirements Analysis and Definition*
Collecting the need completely the analyzed and defining the needs that must be understood by the software which will be built.
- *System and Software Design*
Needs Searching Process defined and focused on the software.
- *Implementation and Unit Testing*
Program Design Translating into codes by using programming language that has been given..
- *Integration and System Testing*
The implementation of each step in technically will be done by the programmer. The unification of programme units then wholly examined (*system testing*).
- *Operation and Maintenance*
In this step all software function must be examined, thus the software is free from error, and the result must suit with defined needs.

B. Specification System

In this step, the developer performs an identification towards all needs and software outline made. This matter taken in order to understand the limitation and the specification of decision support system in determining Industry Work Practice Result. The information got will be reprocessed into a guidelines for academic information system making that will be developed .

TABLE II. HARDWARE NEEDS ANALYSIS

No	Hardware	Minimum Needs
1.	Processor	Intel Pentium 4, 1.6 GHz
2.	Hardisk	320 GB
3.	RAM	1 GB
4.	VGA	Intel HD Graphics 128 MB dedicated
5.	Monitor	14 inci
6.	Periferal	Mouse, Keyboard, Printer, internet access

TABLE III. SOFTWARE NEEDS ANALYSIS

No	Software	Minimum Needs
1.	Operation System	Microsoft Windows (XP, 7, 8) and Linux
2.	Web Browser	Mozilla Firefox, Google Chrome and Opera

1) Functional Needs

Functional needs that must be included in academic information system are:.

- Having 5 grades of user, i. e administrator as system, teacher, head master, student processor and parent as system user..
- Having service facility in student score filling that used in inputting student’s score with diver aspects included in 2013 curriculum..
- Having service facility in student score filling that used in providing colleague and friend assessment.
- Showing overall scores after passing academic information system computerization process .
- Able in exporting in to file-formated (doc, pdf, dan xlsx).
- Having monitoring facility that may be seen by head master and parent and able to send a message.

2) Non-Functional Needs

Non-functional needs analysis performed in order to understand system needs specification. Needs specification engages hardware analysis, software analysis, user analysis.

C. Database and Flowchart Design

1) DFD

Data Flow Diagram (DFD) design has a purpose to understand data transformation process from document input until becoming the output in student score report form.

2) ERD

Database design in this application is shown with ERD (Entity Relation Diagram). ERD belongs to a chart used in

reflecting database system used in ERD including Table, view, and relation. The following are ERD of the system.

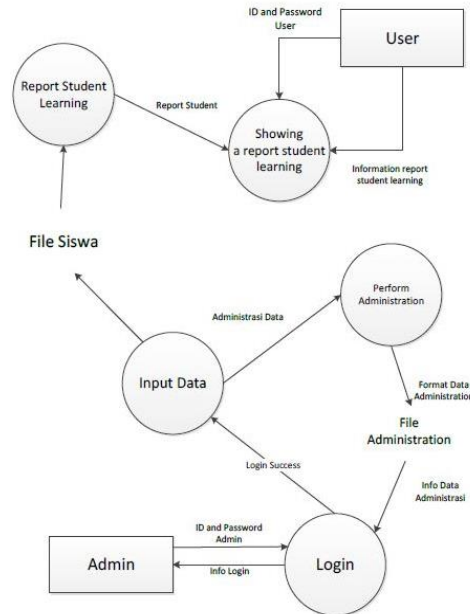


Fig. 2. Data Flow Diagram

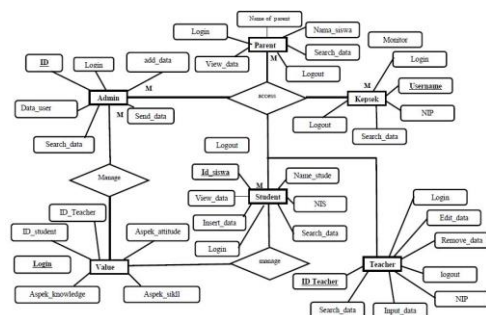


Fig. 3. Entity Relation Diagram

3) Flowchart

The purpose of this flowchart making is to facilitate the readers and system maker itself in understanding every single step as well as the possibilities of some decisions [9].

D. Process Design

1) Administrator

Administrator is a person who manages the programme in general. Administrator also may act as user, which is as the person who inputting the data.

2) Head Master

Head master in this system refers to the person who inputting the data of demography service, the following system flow are shown on Fig 6.

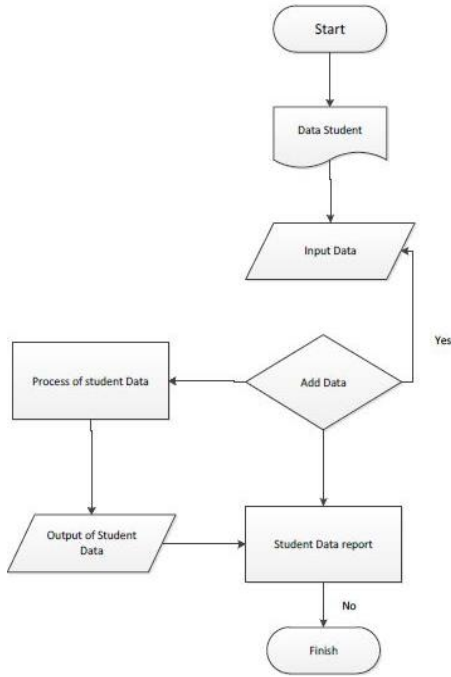


Fig. 4. Flowchart Academic Assessment System

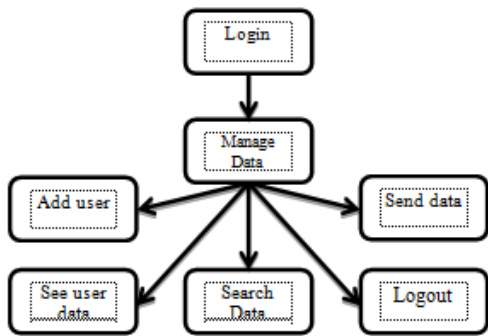


Fig. 5. Flow System of Administrator

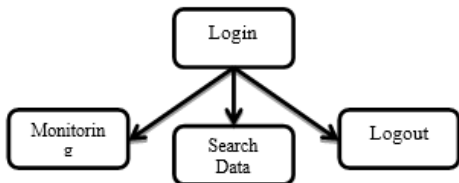


Fig. 6. Flow System of Head Master

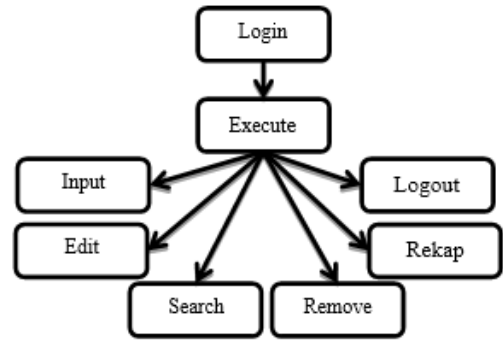


Fig. 7. Flow System of Operator

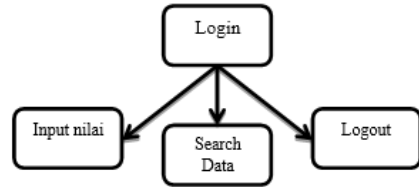


Fig. 8. Flow System of Student

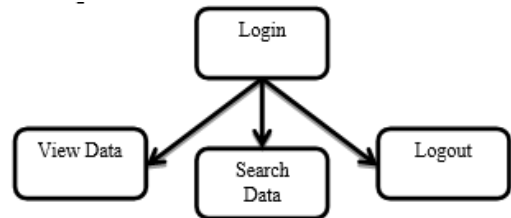


Fig. 9. Flow System of Parent

3) Teacher

Teacher as operator, operator refers to the person who manage student academic assessment data. The following operator system flow is shown on Fig. 7.

4) Student

Student in this system as the user whu evaluate their friends from attitude aspect. The following student flow may be seen on Fig. 8.

5) Parent

Parent may see their children score data improvement that are shown at chart form or graphic. Parent flow may be seen on Fig. 9.

E. System and Software Design

Design step (modeling) will translate the needs into a software design that may be estimated before made into coding. This step focus on data structure, software architecture, design interface and algorithm detail design [10]. This step will result a documents called as hardware needs. The following figures in system shown in Block chart below.

According to system flow on Fig. 11, then for further explanation is shown on Figure 10-1..

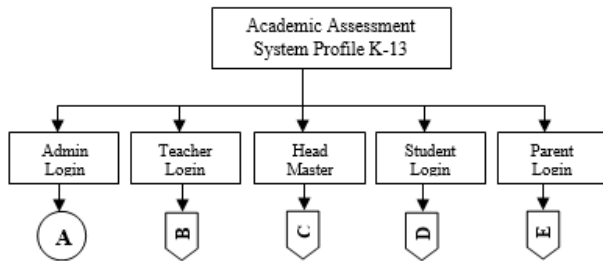


Fig. 10. Flow System for Academic Information 2013 Curriculum

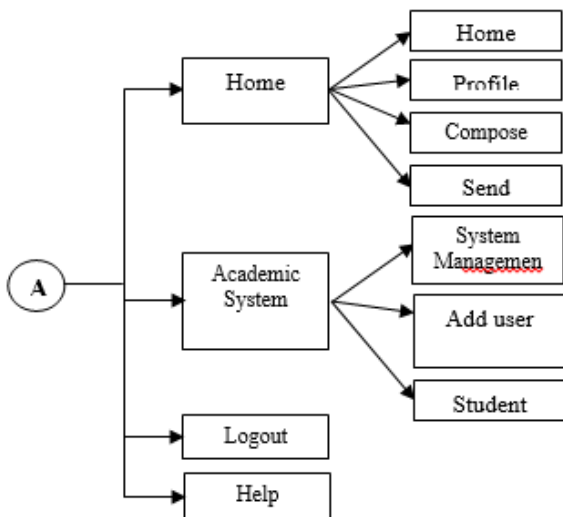


Fig. 11. Block Chart for Admin Figure

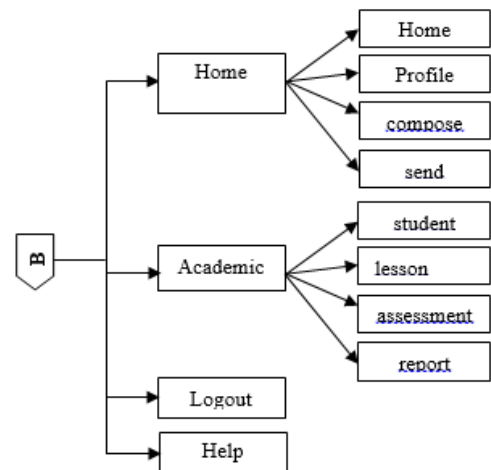


Fig. 12. Block Chart for Teacher Figure

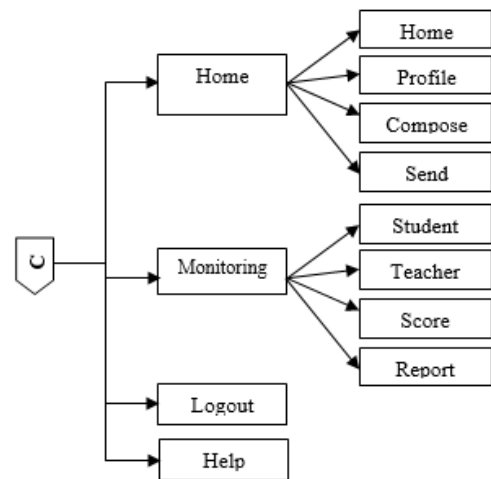


Fig. 13. Block Chart for Head Master Figure

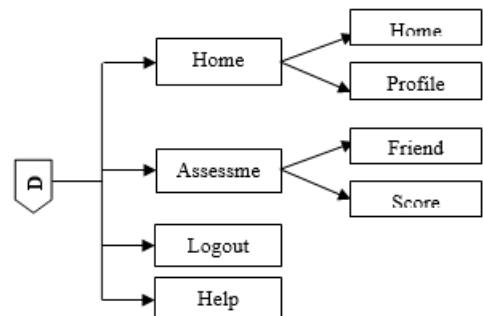


Fig. 14. Block Chart for Student Figure

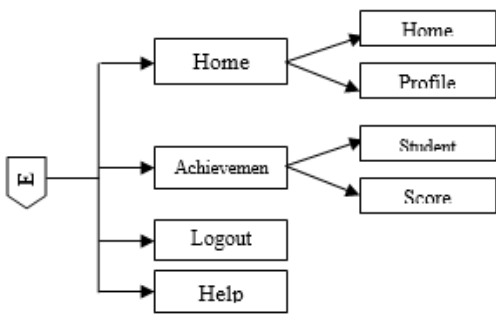


Fig. 15. Block Chart for Parent Future

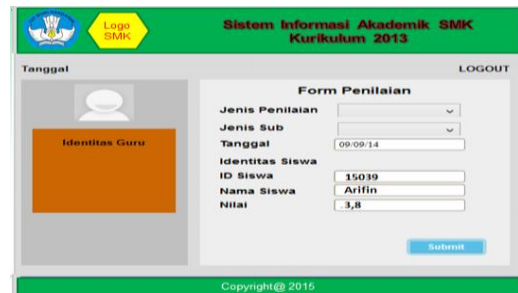


Fig. 19. Display Student Page

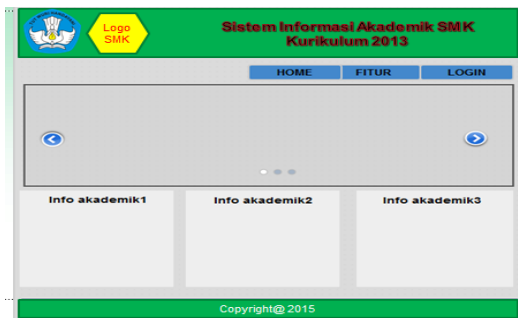


Fig. 16. Display Main page

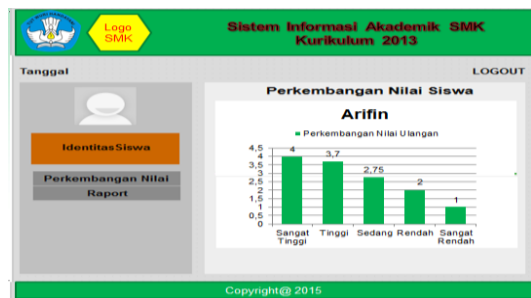


Fig. 20. Display Parent Page

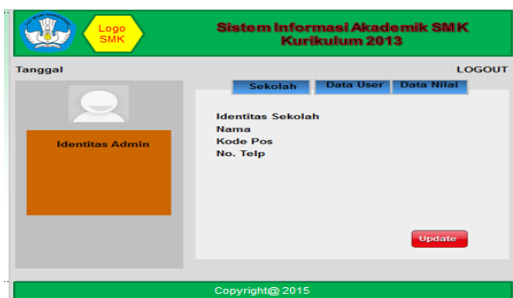


Fig. 17. Display Administrator page



Fig. 18. Display Head Master Page

For website interface design modeling of academic information system which will be developed is shown in Fig. 16-20.

IV. CONCLUSION

With Academic System Design in defining Vocational High School study report in 2013 web-based curriculum, expected to be able facilitating score data processing for teacher, student and academic information spreading to parent well-monitored. On the other hand, with this system, expected to be able to minimize sheet of paper needed and archive stacks at school.

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