Development of Students Results Monitoring System Model

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Abstract : *Information technology has a huge role in today's life. Development of Information Technology will be used by the users to help with the work. Application of Information Technology in education is to have good aim, in the world of information technology education can help all the activities and the learning process can also generate reports very quickly. This study focused on the development models of monitoring parents to students results. In this research method used is OOAD (Object Oriented Analysis Design). The results of the research that has been done is to help the process of monitoring the learning process effective and efficien.*

Keywords : Information Technology, Monitoring System, OOAD (Object Oriented Analysis Design), efective and efisien

I.   INTRODUCTION

Almost all programs in business require students to take a course in something called *information systems.* Information technology refers to all forms of technology applied to processing, storing, and transmitting information in electronic form. The physical equipment used for this purpose includes computers, communications equipment and networks, fax machines, and even electronic pocket organizers. Information systems execute organized procedures that process and or communicate information. We define information as a tangible or intangible entity that serves to reduce uncertainty about some state or event [6]. Another definition of information has been suggested: "Information is data that has been processed into a form that is meaningful to the recipient and is of real perceived value in current or prospective decisions [7]. A fundamental change is taking place in schools around the globe as they respond to rapid advances in new technologies.

Technological tools are coupled with the requirements for accountability, data-driven decision-making, and instant communication between educational institutions and their communities. Schools generate a massive amount of data, effective use of which can promote pedagogical goals and change patterns of educational management.

Digital educational databases manage student information and learning content as well as support pedagogical communication within teaching staff and between teachers, students, and their parents. School databases are both a tool for student data management (e.g., storing and monitoring student function data, assessments, state test results, and custom reports) and a platform for building courses, sharing learning content, communicating and collaborating with students and parents[8].

The development of the Internet facilitates e-learning in the form of applications and reduces the boundaries to learning and compliments traditional teaching methods[16].

E-learning is an approach that facilitates and enhances learning through the use of computer and communication technology, such as personal computers, Digital Televisions, Mobile Phones, Internet, email, and collaborative software. It can be synchronous, asynchronous, instructor-led or computer-based or a combination. Facilitation of learning in such environments is enhanced and made possible through the use of computer technology and communication technology that include learning management systems, learning content management systems and virtual classrooms[11]. Higher education institutes such as universities suffer from a range of issues in managing their academic records and relevant digital contents. Many universities nowadays use specific software applications for their effective mechanism in records management. Higher education institutes such as universities suffer from a range of issues in managing their academic records and relevant digital contents[19].

II.   LITERATURE STUDY

"Information systems are combinations of hardware, software, and telecommunications networks that people build and use to collect, create, and distribute useful data, typically in organizational settings. The Components of Information System are: hardware, software, data, people and process[4]. New IT developments are important to all business disciplines because they trigger changes in marketing, operations, e-commerce, logistics, human resources,finance, accounting, and relationships with customers and business partners. Nothing about business or **corporate strategy** is untouched by IT. Corporate strategy is the collection of activities and actions a company chooses to invest in and perform, and those it chooses not to invest in or perform[5]. Design and the design-science paradigm in IS are arguably presented as being about the IT artefact—that is, elements of the innovative combination of hardware and software. Information systems development (ISD) researchers and practitioners have similarly embraced the

importance of attending to the 'soft' aspects of development, by adopting user-centred design approaches such as prototyping[13].
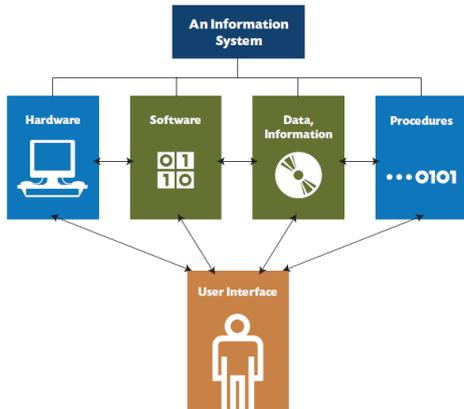

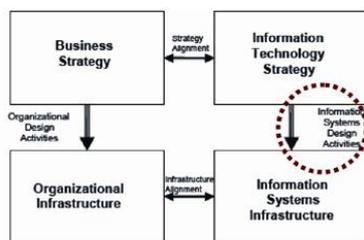Figure 1. Components of information systems

Figure 1. Organizational Design and Information Systems Design Activities (Adapted from J. Henderson and N. Venkatraman, "Strategic Alignment: Leveraging Information Technology for Transforming Organizations," IBM Systems Journal (32:1), 1993.)

Figure 2. The focus of design interest in IS according

We use the term information to distinguish information architecture from data and knowledge management. Data is facts and figures. Relational databases are highly structured and produce specific answers to specific questions. Knowledge is the stuff in people's heads. Knowledge managers develop tools, processes, and incentives to encourage people to share that stuff. Information exists in the messy middle. With information systems, there's often no single "right" answer to a given question. We're concerned with information of all shapes and sizes: web sites, documents, software applications, images, and more. We're also concerned with metadata: terms used to describe and represent content objects such as documents, people, processes, and organizations. and agile systems development in order to reduce usability problems and capture emerging user requirements[18].

Table 1. Differences between books and web sites

IA concept	Books	Web sites
Components	Cover, title, author, chapters, sections, pages, page numbers, table of contents,	Main page, navigation bar, links, content pages, sitemap, site index, search

	index	
Dimensions	Two-dimensional pages presented in a linear, sequential order	Multidimensional information space with hypertextual navigation
Boundaries	Tangible and finite with a clear beginning and ending	Fairly intangible with fuzzy borders that "bleed" information into other sites

Component of information systems is *process.* A process is a series of tasks that are completed in order to accomplish a goal. A business process, therefore, is a process that is focused on achieving a goal for a busines. Organizations that are serious about improving their business processes will also create structures to manage those processes. Business process management (BPM) can be thought of as an intentional effort to plan, document, implement, and distribute an organization's business processes with the support of information technology[3].

New IT developments are important to all business disciplines because they trigger changes in marketing, operations, e-commerce, logistics, human resources, finance, accounting, and relationships with customers and business partners. Nothing about business or **corporate strategy** is untouched by IT. Corporate strategy is the collection of activities and actions a company chooses to invest in and perform, and those it chooses not to invest in or perform.
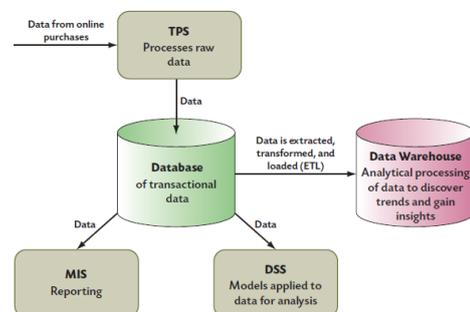
Organizations have various types of information systems that collect and process data, distribute reports, and support decision making and business processes. Data are extracted from the database and organized into reports using **management information systems (MIS)**[4].

Figure 3. Diagram Showing The Relationships Among Information Systems

IT infrastructure today is composed of five major components: computer hardware, computer software, data management technology, networking and telecommunications technology, and technology services. These components must be coordinated with each other [14].
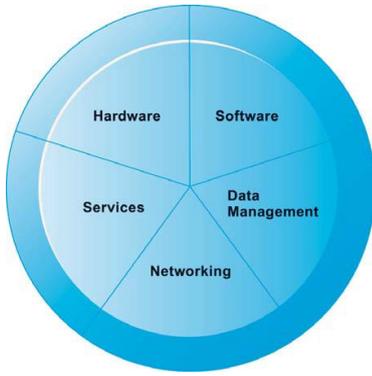
Figure 4. A firm's IT infrastructure is composed of hardware, software, data management technology, networking technology and technology services.

The term database refers to a collection of data that is multidimensional in the sense that internal links between its entries make the information accessible from a variety of perspectives[9]. A database is a collection of related files containing records on people, places, or things. One of the most successful databases in modern history is the telephone book. The telephone book is a collection of records on people and businesses who use telephones. The telephone book lists four pieces of information for each phone user: last name, first name, address, and phone number. It also contains information on businesses and business categories, such as auto dealers or plumbing suppliers. The telephone book draws its information from a database with files for customers, business classifications, and area codes and geographic regions. Prior to the development of digital databases, a business would use large filing cabinets filled with paper files to store information on transactions, customers, suppliers, inventory and employees. They would also use lists, laboriously collated and typed by hand, to quickly summarize the information in paper files.

A DBMS includes capabilities and tools for organizing, managing, and accessing the data in the database. The most important are its data definition capability, data dictionary and data manipulation language. DBMS have a data definition capability to specify the structure of the content of the database. It would be used to create database tables and to define the characteristics of the fields in each table. This information about the database would be documented in a data dictionary. All people that use database, so they will integrated by system, for example e-learning. In e-learning people (lecture and student) can build communication with system, all activity in system then save in database. Digital educational data management has become an integral part of school

practices. Accessing school database by teachers, students, and parents from like learning web in school[8]. Blended learning has been considered as an important alternative approach that can overcome various limitations related to both face-to-face and online learning, there is relatively limited empirical studies on blended learning approach in teacher education programs. teacher education programs[10]. A data dictionary is an automated or manual file that stores definitions of data elements and their characteristics[15].

With Technology Information we can combine with Managament of Business Process and Management Information System (MIS). We would suggest that there are

two aspects to operational management of business processes[12]:
1. Management of business processes as an integral part of 'management'
2. Management of business process improvement.

Figure 5. Management of Bussiness Process

HCI and information systems development (ISD) have evolved from similar backgrounds, via largely independent paths, to a common point of intersection [17]. This chapter is the first of four in which we introduce some of the 'foundations' of HCI human Computer Interaction). We start with the human, the central character in any discussion of interactive systems. The human, the *user*, is, after all, the one whom computer systems are designed to assist. The requirements of the user should therefore be our first priority. Implicit in the terms groupware and CSCW is that


we have two or more participants and that they are communicating with one another. We begin by looking at systems which support this direct communication. This is called *Computer-Mediated Communication* (*CMC*), and is an important part of CSCW. However, good communication is not sufficient – the participants must be able to cooperate about their work [2].

In this research used Object Oriented Analysis Design (OOAD). OOAD we can called actor for human that do all activity in system. development project. The *systems analyst* role focuses on the IS issues surrounding the system. This person develops ideas and suggestions for ways that IT can support and improve business processes, helps design new business processes supported by IT, designs the new information system, and ensures that all IS standards are maintained. The systems analyst will have significant training and experience in analysis and design and in programming. In this reseach have some steps for build the system, the steps are :
a. Planning
b. Analysis
c. Design
d. Implementation
The name of step is SDLC (System Development Life Cycle)
Figure 6. The System Development Life Cycle
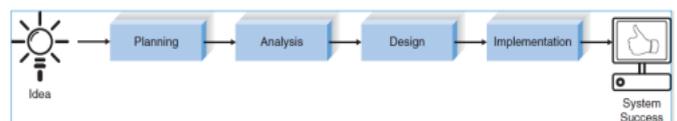
III. METHOD

in this research used OOAD (Object Oriented Analysis Design, with OOAD we have some steps n this research, this steps are :

a. Planning

In planning step focus to project identification (actor or user that used this system) and make structure this project

b. Analysis

In analysis step focus to develop analysis strategy (document analysis and use case diagram)

c. Design

In design step focus to design architecture, design interface design program and design database)

d. Implementation

In implementation step focus to delivery and support of completed system, installed system, maintain system and post implementation system)

in first step is planning, in planning we have to make condition user. This step, have 6 actor in system, they are:

a. Super Admin
b. Administrator
c. Head of Schhool
d. Lectures
e. Parents
f. Students

They can use monitoring system, such as:

a. Super Admin, they can manage content of system such as:
    1. Manage content of user (admin, head of scholl, lectures, parents and students).
    2. Manage of Master Study (time of schedule, course, class and Report of Learning)
b. Administrator, they can manage content of system such as:
    1. Manage content of user (lectures, parents and students).
    2. Manage of Master Study (time of schedule, course, class and Report of Learning)
c. Head of school, head of school can used his system for see some reports, such as:
    1. Report of students
    2. Report of lectures
    3. Report of attendance students
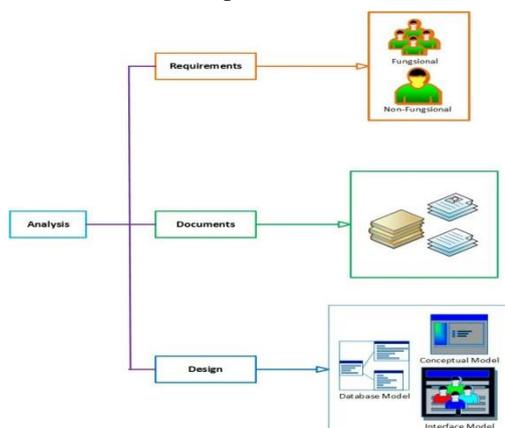
4. Report of score

d. Lectures, they can used this system for:
    1. Manage of attendance class
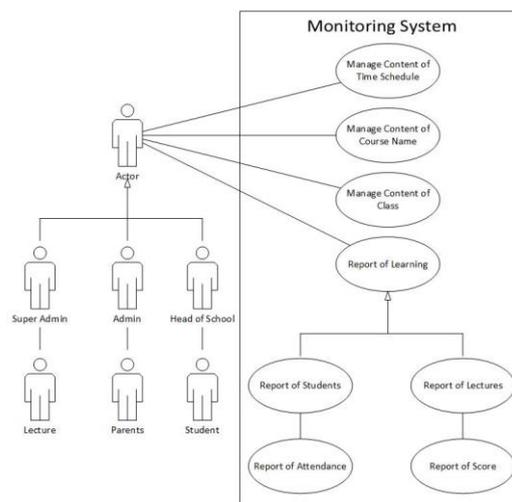
2. Manage of score
3. See some reports (report of attendance students and reports of score)
e. Parents and Student have activity such as:
    1. View time schedule of course
    2. View score of study
    3. View lecture of courses

All user (actor) can use this system, they can use anywhere and anytime.

Figure 7. Scheme of Analysis

In scheme of analysis has 3 steps: Requirements (Fungsional and Non-Fungsional), Documents and Design (Database Model, Conceptual Model and Interface Model). Analysis in this research focus to develop analysis strategy, analysis strategy used in this research is with use case diagram, This is use case diagram of montiroing system.

Figure 6. Use Case of Monitoring System

Story of use case are:

In design system have 6 (six) actor or user can used system. They are Super admin, admin, head of school, lecture, parents and students. They are can used system. Before the used this system, first step is they should login with input username and password and choose category login. In login we have condition, if login sucess (username and password) correct, then they can used this system. But if login unsucess(username and password) incorrect, then they can't used this system. After they sucess for login, then they can manage oll of content inside system. Focus in research is parents, parents can see all activity of students, parents can see result study of their child (students). Parents can login with id (username and password of students). So, parents can see all activity study of students such as (time of course, score of study and name of teacher). From here, parents can monitoring result of learning. And after make analysis strategy in system, then focus to development design system. For develop design of system, have to focus from use case diagram, because this research want to build monitoring system. Develop this system integrated by internet, where, all data of activity saved in database. This is design of monitoring system.
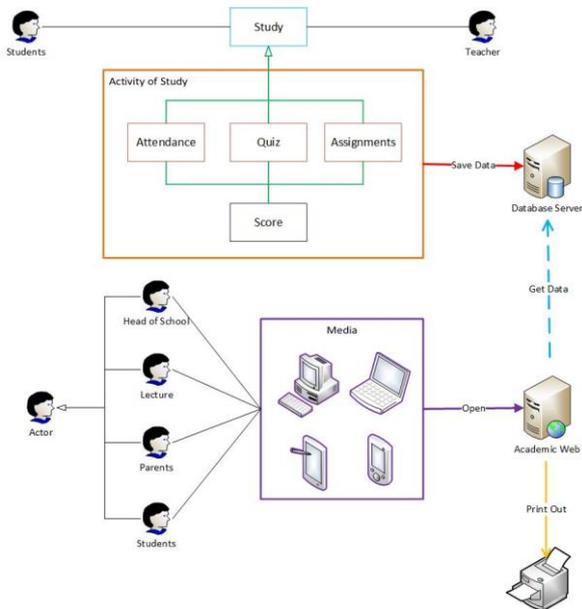
Figure 7. Conceptual Model of Design Monitoring System

Story of this figure is, system can used 6 (six) actor or user. Students and teacher have relationship for learning and study, where activity in study and learning are: attendance of course in class, quiz and asignments. Lectures can give score with condition if student do that all (come to class or attendace for study, lecture give some quiz and assigments then students do it) and lectures will giving scores of their courses. Result or score of their course then by lectures saved in system, system integrated with database. Then such as head of school, lectures, parents and students can see all result of study. From here parents can see all score or result study of students. In design model, we can need design of database structure. This is design of database structure:

Table 2. attendance_table

Field	Type	Length	information
id_attend	int	5	PK
id_stud	varchar	10	FK
id_class	varchar	4	FK
date	date		
information	enum		P, NP, S

Table 3. year_table

Field	Type	Length	information
id_date	varchar	10	PK
name_date	varchar	10	

Table 4. lecture_table

Field	Type	Length	information
id_lecture	varchar	10	PK
lect_name	varchar	30	
sex	enum		M, F
religion	enum		M, B, Ch,H
address	text		
telp_no	varchar	13	
photo	varchar	100	
user_lect	varchar	50	
pass_lect	varchar	100	

Table 5. schedule _table

Field	Type	Length	information
id_schedule	varchar	20	PK
id_date	varchar	10	FK
id_lecture	varchar	10	M, F
id_course	varchar	10	FK
id_class	varchar	4	FK
day	varchar	10	
id_time	varchar	20	FK

Table 6. time_table

Field	Type	Length	information
id_time	varchar	10	PK
time_course	varchar	30	

Table 7. class_table

Field	Type	Length	information
id_class	varchar	4	PK
name_class	varchar	20	

Table 8. score_table

Field	Type	Length	information
id_score	int	4	PK
id_stud	varchar	10	FK
id_class	varchar	4	FK
id_year	varchar	10	FK
id_course	varchar	4	FK
quiz_1	int	3	
quiz_2	int	3	
quiz_3	int	3	
mid_exam	int	3	
fin_exam	int	3	
final_score	int	3	

Table 9. course_table

Field	Type	Length	information
id_course	varchar	10	PK
name_course	varchar	30	
id_class	varchar	10	FK

Table 9. student_table

Field	Type	Length	information
id_stud	varchar	10	PK
stud_name	varchar	30	
sex_stud	enum		M, F
religion_stud	enum		M, B, Ch,H
address_stud	text		
telp_no_stud	varchar	13	
photo_stud	varchar	100	
user_stud	varchar	50	
pass_stud	varchar	100	

Table 10. year_table

Field	Type	Length	information
id_year	varchar	10	PK
name_year	varchar	30	
semester	enum		O, E

IV. RESULT AND DISCUSSION

After develop planning, analysis and design, then final step is implementation. In step of

implementation we can see result of analysis. In this result of analysis have 6 design.
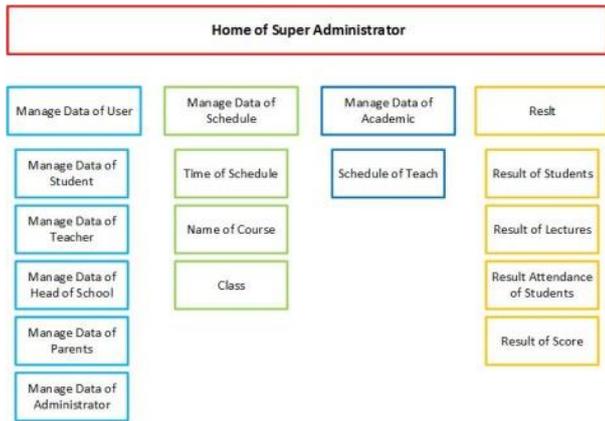

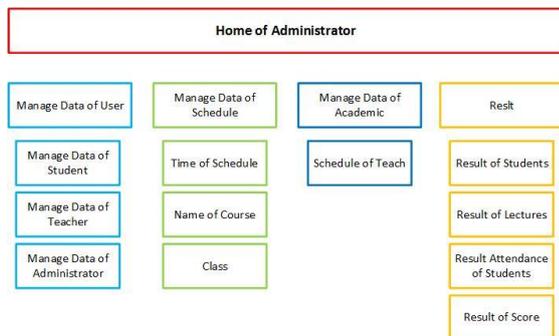Figure 8. Conceptual Model Home Super Administrator

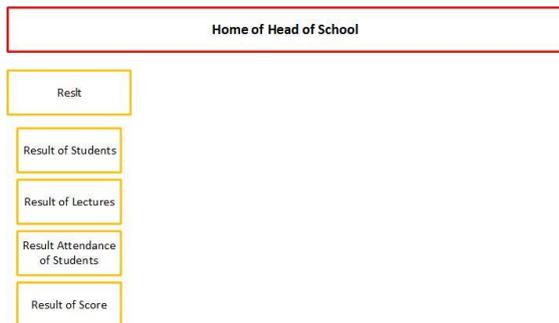Figure 9. Conceptual Model Home Administrator
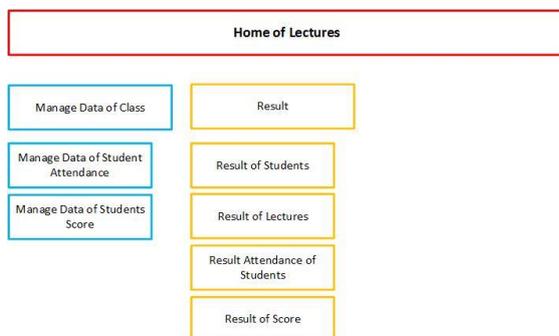

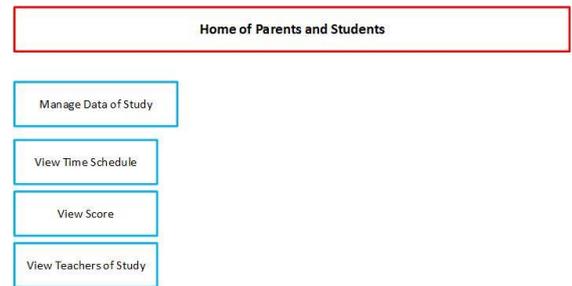Figure 10. Conceptual Model Home Head of School

Figure 11. Conceptual Model Home of Lectures

Figure 11. Conceptual Model Home Parents and Students

V.   CONCLUSIONS

In this research have conclusions, with monitoring

system results of students, parents can see all activity of activity students. Parents can see report about study such as reports of attendance, reports of schedule and reports of scores.

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