

THE DEVELOPMENT OF PARENTING INFORMATION SYSTEM FOR KINDERGARTEN BASED ON SMS-GATEWAY

Halimah¹, Anggi Andriyadi²

^{1,2}Informatics and Business Darmajaya, Lampung,
Indonesia

^{1,2} Street Zainal Abidin Pagar Alam No.93, Gedong Meneng,
Bandar Lampung

*Corresponding author

Email :

halimahyunus@darmajaya.ac.id

anggi.andriyadi@darmajaya.ac.id

Abstract

Kindergarten is a second home for a children for about 5 – 7 years, it is accroded from national constitution No.20 year 2003 article 8 about early education for children. Based on it, kindergarten management should be able to coordinate with the parents in order to giving a centralized information to avoiding false information from unresponsible person. Delivering an Information to the parents is always be an issued whereas the parents is not available to be contacted by the management, for instance when the students go to the kindergarten for the half of day, the management could not contact the parents due to limited communication, therefore the students is going home alone. The teacher also have an issues to communicate with the parents regarding the development of their children, the development of sensor motoric, and the development of social life of their children. Given the background, it need a centered information system based on short message service (SMS)-gateway by using waterfall a method which using Life Cycle Development System. The system which will be develop will help a parents to gathering centered information from Kindergarten Management, therefore, if there is newest information regarding schedule of holiday, event, study, the parents will be informed soon and well.

Keywords: Short Message Service, Gateway, System Development Life Cycle

1.0 INTRODUCTION

According to data from the National Bureau of Statistics (BPS) Nasional, in 2013/2014 there are 4,174,783 students who attend in 74,982 kindergartens school in Indonesia. Kindergarten as the first educational gateway in Indonesia, has the obligation not only to undertake education but also has an obligation to provide of security to the students. This is due to the frequent occurrence of children kidnapping, child sexual abuse (pedophilia) and child abuse cases. According to data from the National Commission for Child Protection (KOMNAS PA), in 2007 - 2008 there were 5,334 cases of violence against children such physical violence 1,382 cases, sexual harassment 1,858 cases and 2,094 psychological violence. One cause of the occurrence is due to lack of communication between parents and the teachers.

TK Taruna Jaya Bandar Lampung is one of the Private Kindergarten in Bandar Lampung which was established since 1986. It has 1 principal, 12 teachers, 1 cleaner with 6 classrooms each consisting of 2 class A and 4 class B, each class consists of 30 students with 2 teachers who responsible with the class.

Based on pre-research conducted at TK Taruna Jaya Bandar Lampung, there are some cases where the management of TK. Taruna Jaya was not able to contact the parents when there was some important information, for instance school schedule. Teachers are were also

hard to communicate with parents regarding with child development, achievement, complaints, hobby, interest and talent, motoric development of children, socialization with friends and environment.

Given the background, a research was conducted to minimize the incident by building a parent-child information system based on SMS gateway. Thus parents will get direct information from the Kindergarten manager if there is the latest information about their children in kindergarten. Therefore, parents could monitoring the activities of their children even though they are home or still in working.

In this study referenced from some previous research that is Ratna Astiti, Rhyca Princess Ardy, Riske Atista. 2011. SMS Gateway Based Values Reporting System at SMAN 1 Kebumen Defense. Jurnal Universitas Dian Nusantara.1-7. Putu Satya Saputra (2017). Journal: Child Development Monitoring Information System At Kindergarten-Based School. Rhyca Princess Ardy, Riske Atista, Antonius Wahyu Sudrajat (2011). Journal: Utilization of SMS Gateway in information service Activities of kindergarten students Xaverius 5 Palembang.

1.2 Problem Formulation

Based on the description of the background diatas, then the formulation of the problem that can be concluded is how to build a parent child information system as a centralized information media, so that parents can still monitor the activities of children and also so as not to get bias information from people who are not responsible .

1.3 Objectives and Benefits of Research

The purpose of this research is to:

1. Implementing a sms gateway-based information system to help parents and Kindergarten managers.
2. This research is intended to minimize crime against children, with child development, child achievement, children's complaints, children's hobby, interest of interest and child talent, motoric development of children, development of socialization of children with the environment and friends.

The benefits of this research are:

1. Parents will get centralized and reliable information because it will get information from one system.
2. Kindergarten management will be easier to contact and provide information to parents.
3. Parents will still be able to help school children activities.

2.0 THEORETICAL

2.1. Theory is related to the object of research

In Government Regulation No. 27/1990 on Preschool Education Chapter I Article 1 Paragraph (2) states that "Kindergarten is one of the forms of preschool education that provides an early education program for children aged four to enter primary education."

In principle, SMS Gateway is a software that uses computer assistance and utilizes mobile technology that is diintegrasikan to distribute messages generated through the information system via SMS media in hendle by cellular network. The SMS Gateway utilizes the modem for SMS delivery server. SMS utilizes mobile network for SMS sending, service gammu as SMS Gateway software, and mysql database integrated with database. (Rhyca Putri Ardy, Riske Atista, Antonius Wahyu Sudrajat, SMS Gateway Utilization In Service Student Activity Information In Xaverius 5 Palembang Kindergarten).

The use of SMS Gateway is chosen in the business world because there are several advantages, including:

- a. The cost is relatively cheap, delivery is guaranteed up to the destination number with the note of the number in active circumstances other than that, the delivery time is also fast, when compared using postcards.
- b. Using this SMS service, users can send messages in a flexible way. In other words, users can send messages whenever and wherever.
- c. Easy to use.

System Development Life Cycle (SDLC) is a system development method. The cycle or life cycle of system development is a form used to describe the main stages and steps in the stage in the development process (Muslihudin, 2016). In the systems life cycle, each part of the system development is divided into several stages of work. Each of these stages has its own characteristics. The main life cycle of system development can consist of system planning stages, system analysis, system design (system designs), system selection, system implementation and system maintenance (Jogiyanto, 2005).

2.2. Theories system used

According to Daud Edison Tarigan (2013) Gammu is an application that can be used to manage various functions on mobile phones, modems and other similar devices. Functions that can be managed by Gammu include contact number function (phonebook) and SMS function. However, for this developed application will be more use SMS function from Gammu (Ratna Astiti, SMS Value Based Reporting System Gateway at SMAN 1 Kebumen Defense, Dian Nuswantoro University).

MySQL is a Relational Database Management System (RDBMS) that supports a database consisting of a set of relations or tables. Relations and tables have the same meaning (Kasiman, 2006). Many Relational Database Management System (RDMS) are available, but MySQL is particularly well suited for working with PHP with some considerations. A relational database is a database that organizes data in tabular form (Fauzi, 2012).

MySQL uses a well-known standard SQL language data format. MySQL is released with an open source license, and is available free of charge. MySQL works on various operating systems, and many languages. MySQL works quickly and well with large data. PHP provides many functions to support MySQL database.

PHP stands for PHP Hypertext Preprocessor which is used as a server-side scripting language in web development that is embedded in HTML documents. PHP's use enables the Web to be dynamic so that website maintenance becomes easier and more efficient (Kasiman, 2006). PHP programming languages always require a server to run every code written in PHP. This server is used to translate all logic and algorithms written in PHP programming language (Larry Ulman, 2008). How to work in PHP programming language with Server is as follows:

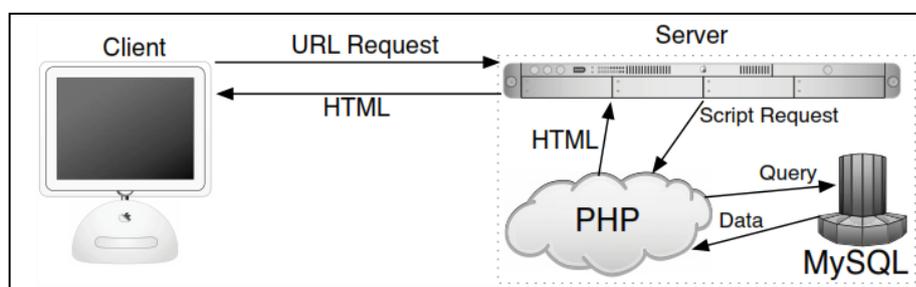


Figure 2.1 Working Process PHP and Server

From Figure 2.1 can be explained that when the client request a PHP-based website, then the request will be brought to the Server, then there is an algorithm processing and logic

that is in the PHP code. Furthermore, if there is a database it will be processed in the server. When all the data is complete, the request will be returned to the client and the website display will be displayed on the client desktop.

The advantages of PHP include:

- a. PHP is focused on making server-side scripts.
- b. PHP can be used on all operating systems.
- c. PHP is not limited to HTML output.
- d. PHP can be used to create a dynamic application

3.0 METHODOLOGY

In this research, the data collection used this method:

1. Interview

In this step, Interview is conducted to the management of TK Taruna Jaya. Interviewees include: Headmaster and Teacher at Taruna Jaya Kindergarten Bandar Lampung. This interview technique is conducted to get information about the stage of the process of delivering information on the development, achievement, complaints related to the children in Taruna Jaya kindergarten Bandar Lampung and to find out the problems in TK Taruna Jaya Bandar Lampung.

2. Literature Review

This method is to searching and studying the related literature review about SMS Gateway application and software (Software) and hardware (Hardware) needed.

3. System Development

This system is developed by using Waterfall Life Cycle method, this method is to analyzing of problem in business process at TK Taruna Jaya Bandar Lampung and to analyze process of information delivery at TK Taruna Jaya therefore the solution for the problem could be arranging. The laststage is to test the system that has been developed to ensure the system works properly.

System Development Life Cycle (SDLC) is a system development method. The cycle or life cycle of the system development is a form used to describe the main stages and step steps in the stage in the development process(Muslihudin, 2016). In the systemslife cycle, each part of the system development is divided into several stages of work. Each of these stages has its own characteristics. The main stages of system development life cycle can consist of system planning stages, system analysis, system design, system selection, system implementation and system maintenance (Jogiyanto, 2005).

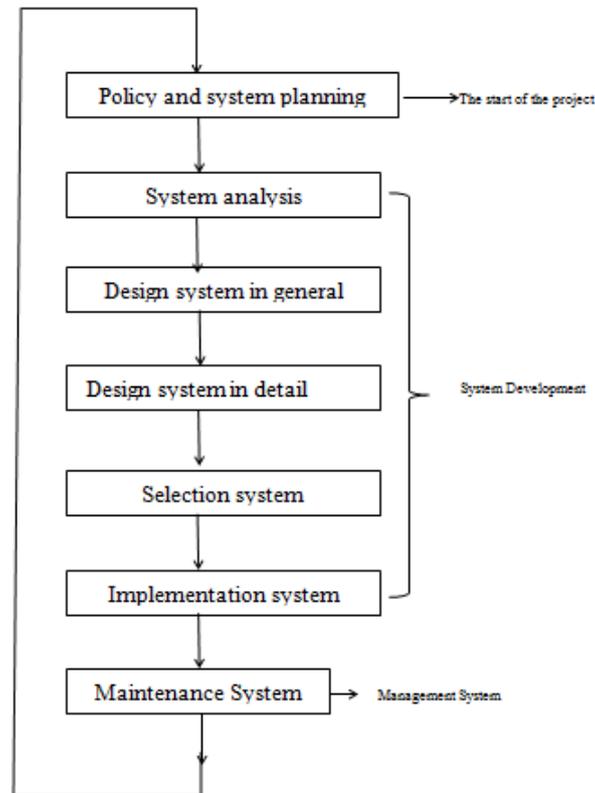


Figure 3.1 System Development Life Cycle

4.0 RESULTANTS AND DISCUSSION

4.1 Analysis of Design

This system is using structural programming, it used Data Flow Diagram and Entity Relationship Diagram analysis.

A. Data Flow Diagram Level 0

At DFD Level 0 it gives an overview of what processes will be performed with existing external entities. The main image can be seen in Figure 4.1. The SMS Gateway application will have 7 modules:

- a. User Management
- b. Phone Book Management
- c. Contact Management
- d. Inbox management
- e. Outbox management
- f. Sent Inbox Management
- g. SMS management to create SMS format.

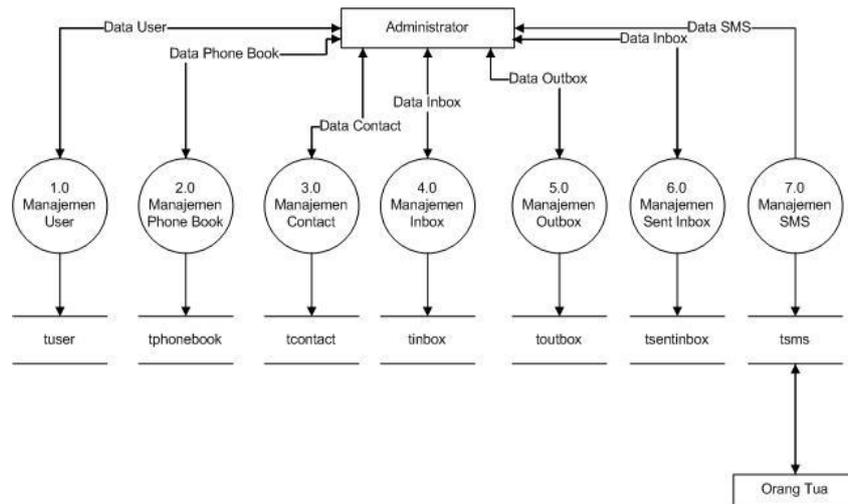


Figure 4.1 DFD Level 0

B. Data Flow Diagram Level 1 Process 1: User Management

Data Flow Diagram Management User shows the process admin able to do the process of adding user, View User, Change User, Delete User, and then the data will be stored in the database. The process can be seen in Figure 4.2.

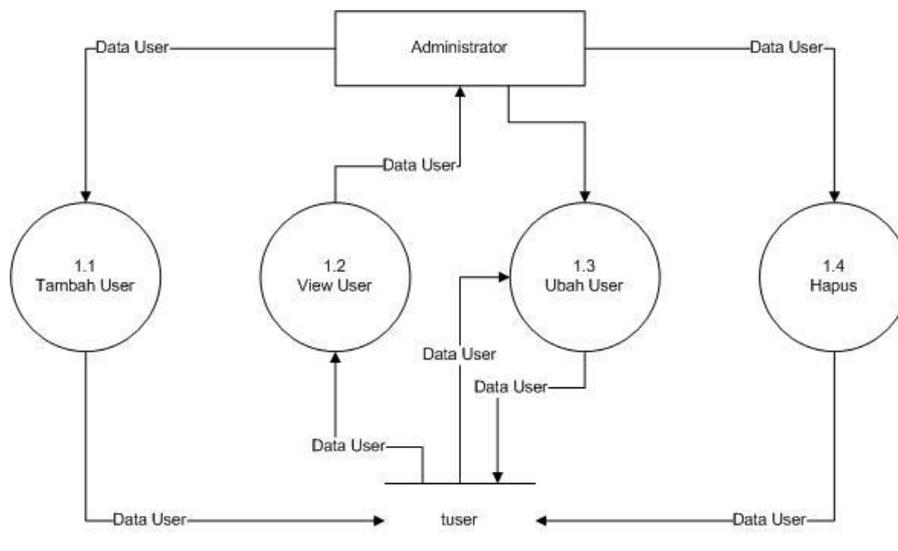


Figure 4.2 DFD Level 1 Process 1

C. Data Flow Diagram Level 1 Process 2: Phone Book Management

Data Flow Diagram Level 1 Process 2: Phone Book Management shows the process admin able to do the process of adding phone book, View phone book, Change phone booke, Delete phone book, and then the data will be stored in the database. The process can be seen in Figure 4.3.

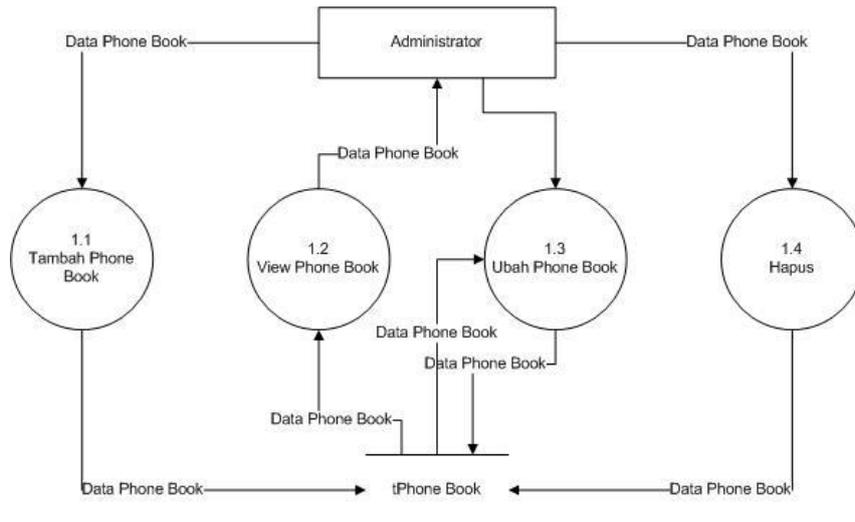


Figure 4.3 DFD Level 1 Process 2

D. Data Flow Diagram Level 1 Proses 3: Manajemen Contact

Data Flow Diagram Level 1 Proses 4 Manajemen Contact shows the process admin able to do the process of adding contact, View contact, Change contact, Delete contact, and then the data will be stored in the database. The process can be seen in Figure 4.4.

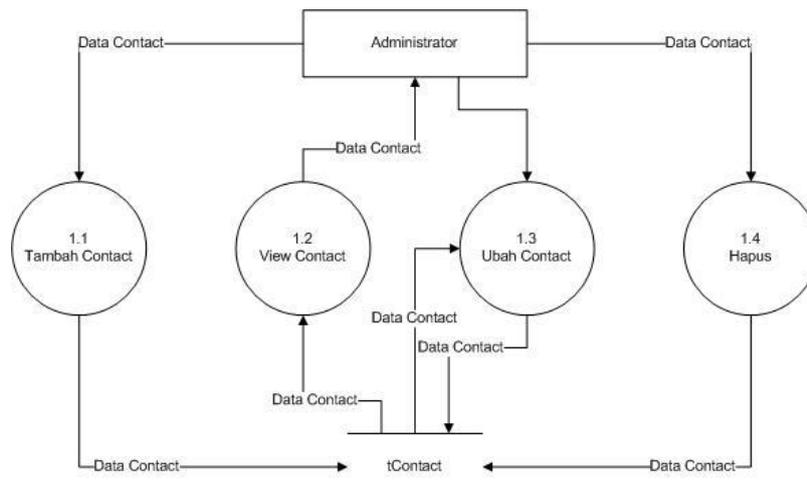


Figure 4.4 DFD Level 1 Process 3

E. Data Flow Diagram Level 1 Process 5: Inbox Management

Data Flow Diagram Level 1 Process 4: Inbox Management shows the process admin able to do the process of adding inbox, View inbox, Change inbox, Delete inbox, and then the data will be stored in the database. The process can be seen in Figure 4.5.

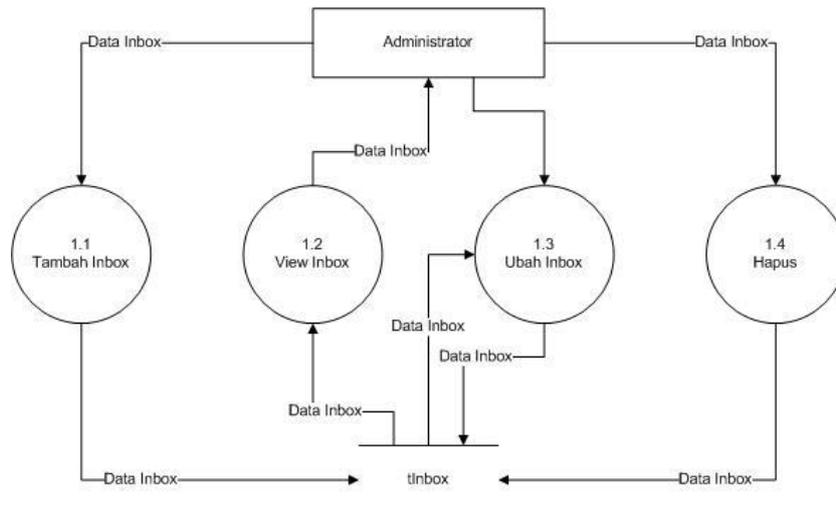


Figure 4.5 DFD Level 1 Process 4

F. Data Flow Diagram Level 1 Process 6: Outbox Management

Data Flow Diagram Level 1 Proses 4: Outbox Management shows the process admin able to do the process of adding outbox, View inbox, Change inbox, Delete inbox, and then the data will be stored in the database. The process can be seen in Figure 4.6.

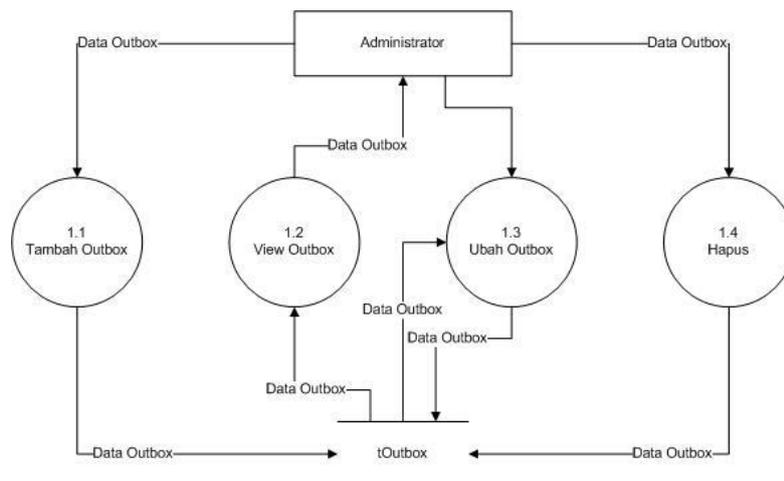


Figure 4.6 DFD Level 1 Process 5

G. Data Flow Diagram Level 1 Process 6: Sent Inbox Management

Data Flow Diagram Level 1 Process 6: Sent Inbox Management shows the process admin able to do the process of adding sent inbox, View semt, Change semt, Delete semt. and then the data will be stored in the database. The process can be seen in Figure 4.7

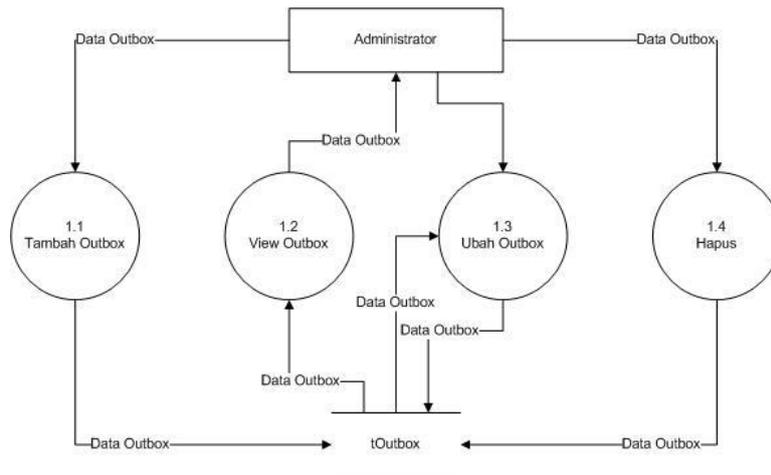


Figure 4.7 DFD Level 1 Process 6

H. Data Flow Diagram Level 1 Process 7: SMS Management

Data Flow Diagram Level 1 Process 7: SMS Management shows the process admin able to do the process of adding ssms, View sms, Change sms, Delete sms. and then the data will be stored in the database. The process can be seen in Figure 4.8.

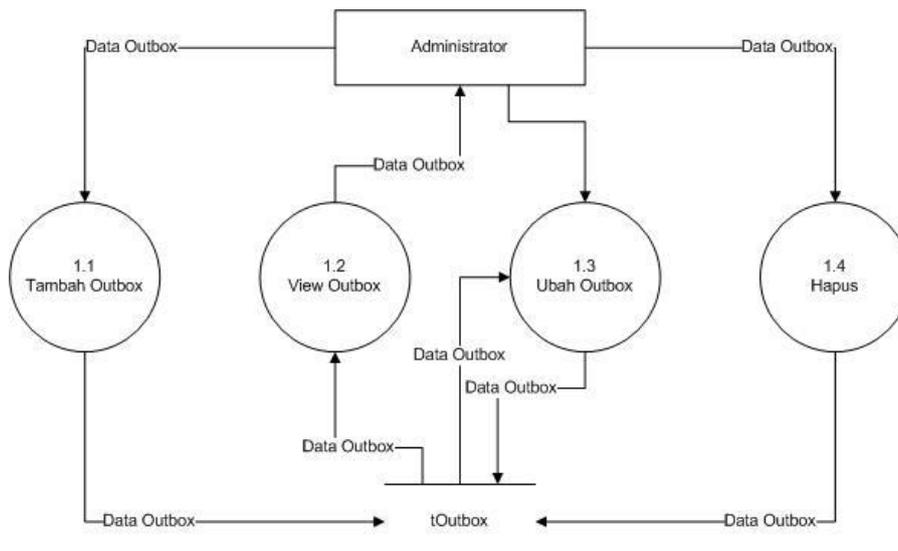


Figure 4.8 DFD Level 1 Process 6

I. Entity Relationship Diagram

For the ERD, the result is, Contact entity is related with SMS Entity, Inbox, outbox, sent, and phone book entity, as seen in figure 4.9.

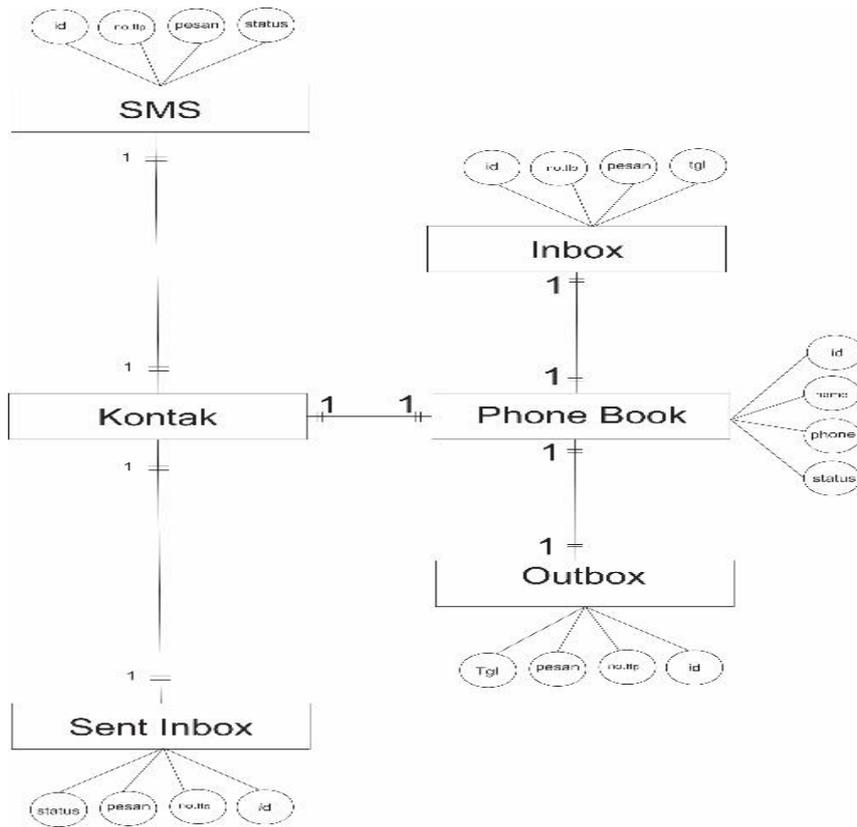


Figure 4.9 ERD

4.2 Program Implementation Results

A. Inbox

The Inbox page serves to receive and manage incoming messages.

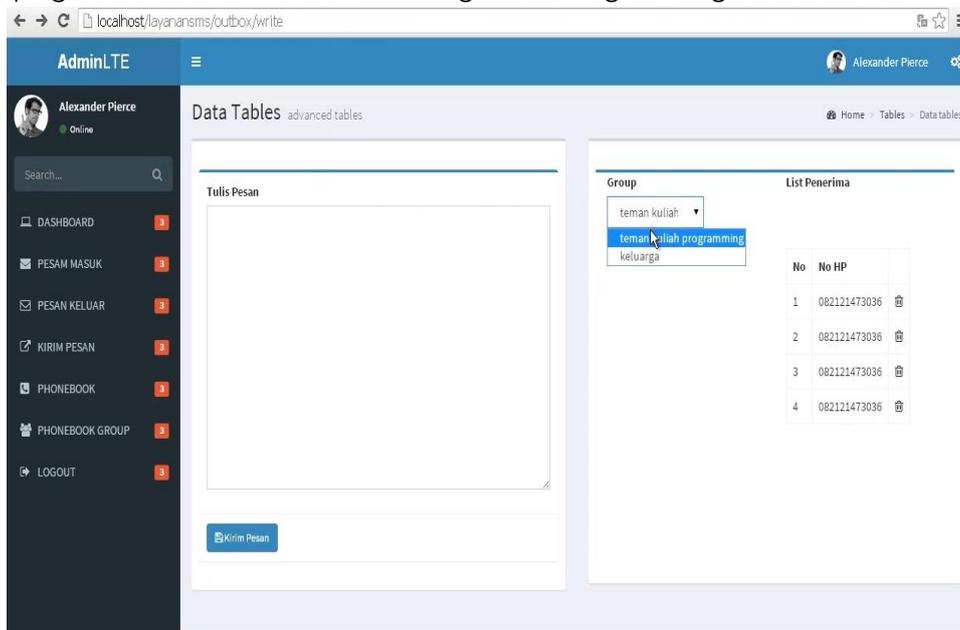


Figure 4.10 Inbox

B. SMS Broadcast

SMS broadcast page is to send bulk SMS to student's parents.

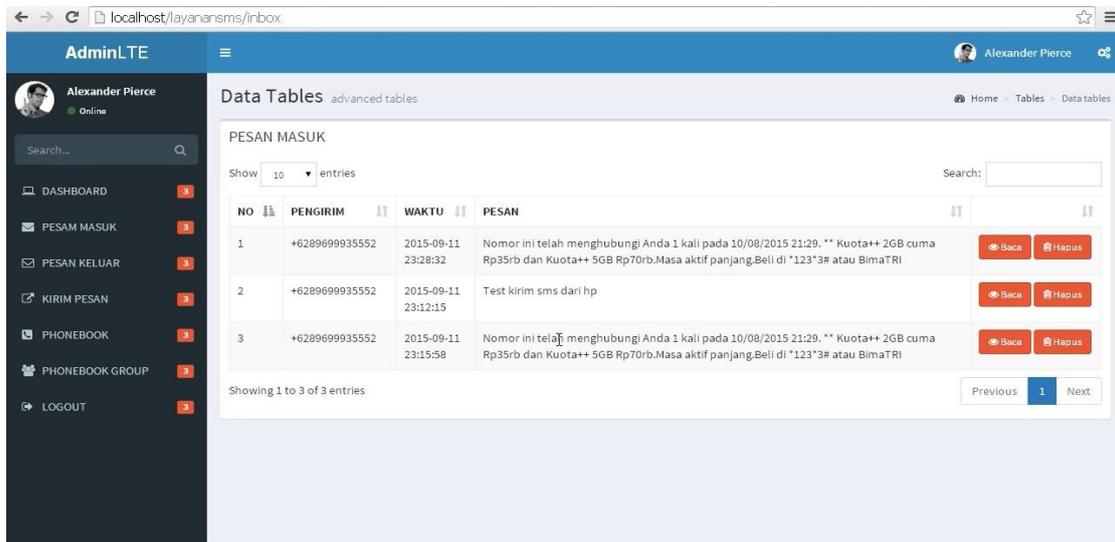


Figure 4.11 Broadcast

SMS outbox page to manage all outgoing messages.

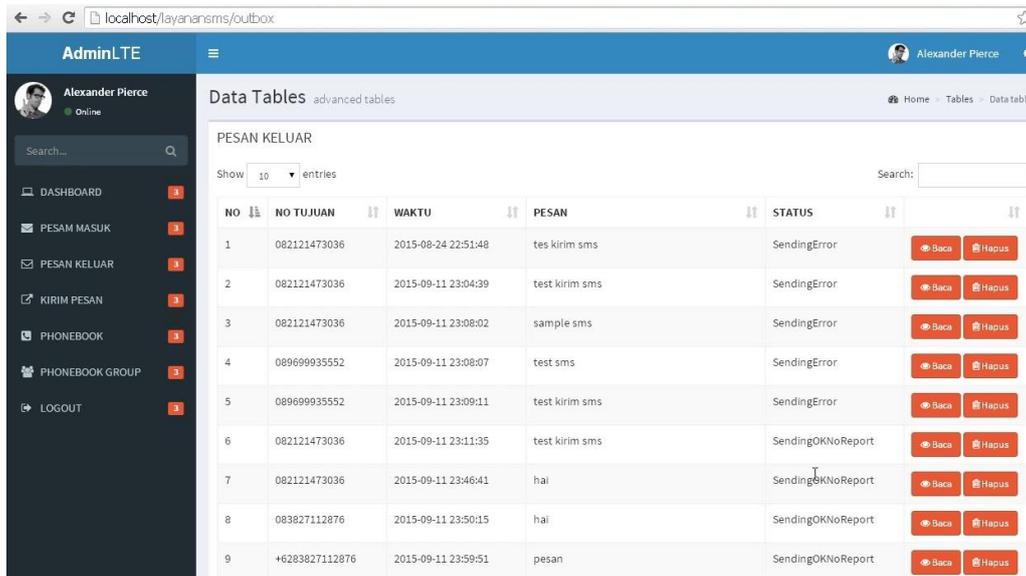


Figure 4.12 Outbox SMS Page

5.0 CONCLUSION

5.1. Conclusion

SMS Gateway system has been done field testing to convey information to parents of students in TK Taruna Jaya Bandar Lampung. Every parent only gets an official message from Taruna Jaya kindergarten from 1 number that has been submitted to Parents. So that will minimize the act of fraud and crime against children and parents. In addition, the SMS

Gateway System can also report on the development of children's system to parents, so that can be a foundation to help grow children.

5.2. Suggestion

This system can evolve into more advanced technologies, such as the development of the system via mobile technology android and ios, so that the information process is delivered better.

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