International Journal of Advanced Computing Science and Engineering ISSN 2714 - 7533
Vol. 1, No. 3, December 2019, pp. 162-168

Kindergarten Registration Management System (KREMS)

Amirah Ibrahim [a,*], Hasiah Mohamed [a,1]

[a] Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA (UITM) Terengganu, 23000 Dungun, Terengganu, Malaysia
[1] hasia980@tganu.uitm.edu.my*; [2] Email Second Author; [3] Email Third Author (9pt)
* corresponding author

ARTICLE INFO

Article history
Received October 2019
Revised November 2019
Accepted December 2019

Keywords
KReMS
RAD
Interface
Usability
evaluation

ABSTRACT

Kindergarten Registration Management System (KReMS) is a system that has been developed for one of the kindergarten in Dungun. This system is proposed to be developed in order to help the management of the kindergarten to manage the registration process. The user for this system can be divided into four which are parent, admin, staff and teacher. KReMS basically have eight modules which are student registration, fees payment, generating report, announcement to parent, updating vacancies in the kindergarten, upload receipt and important documents, update status, and record parent, staff and student information. The methodology used to develop KReMS is Rapid Application Development (RAD). KReMS is evaluated by experts and users. The evaluation of KReMS is done with four experts based on five criteria which are flow of the system, interface, efficiency, ease of use and user experience. From this evaluation, the result shows that most of the experts agree that KReMS the interface of KReMS is attractive. Apart from that, user's evaluation that involved 30 respondents has been conducted. Questionnaire is distributed to the respondents and the respondents evaluated the system based on six constructs which are interface, usability, efficiency, satisfaction, ease of use and user experience. Result shows that most of the respondents agreed that the system will be able to improve the efficiency of their works with the highest mean which is 4.36 (SD= 0.62). As for the future enhancement, one of features that can be added is ability of the system to record student attendance

1. Introduction

Kindergarten basically is a place where children learn to build their basic skills and also for them to prepare themselves before they enter their formal school [1,2,3]. In order to produce excellent children, there are many supporting elements need to be incorporated in the kindergarten. The teacher, staff and parents should play their part in nurturing the children. On top of that, the management process in the kindergarten needs to be properly managed, for example children registration. Basically, registration is done by fill in the application form that was provided by the kindergarten management manually.

Most of the kindergarten is still using manual system in managing the data and information. All the information or data often record on the paper and keep it in the file [4,5,6]. This method has led to many problems to the management especially when all the information is require in a short time [5,6,7]. Besides that, the management needs to prepare registration form using paper for the intake of new children. With this current process, sometimes the registration form is not well managed

(misplaced) and need to be keyed in one by one that led to consume lot of time for the persons in charge.

Therefore Kindergarten Registration Management System (KReMS) is proposed to be developed after some research and study were conducted. The organization that is used as a case study in this project is Tadika Yayasan Islam Terengganu (TYIT). An interview was made with the headmistress of the TYIT. This system is developed in order to help the management at TYIT manage their data more efficient and effectively. The KReMS basically an online system that can help parent registers their children after they check the vacancies in the kindergarten. KReMS allows parent to keep track fees payment.

2. Methodology

After some study was made, a Rapid Application Development Model has been chosen in the KReMS development method. RAD model consist Requirement Planning, User Design, Construction and Evaluation. The purpose why RAD Model is chose because it is a model where it provides system development much faster [8]. Therefore by using this model, KReMS can be developed faster. Table 1 shows the flow each phases adapted of RAD Model during development of KReMS

Table 1 Phases in RAD Model

Process	Method	Outcome
Required Planning	- Gather information - Interview - Analysis - Observation	Identify problem, objective, possible solution
User Design	- Identify the flow of the system	Designing Context Diagram, ERD, Database, Process Flow Diagram, Functional Hierarchy Diagram and User Interface Diagram
Construction	- Development - Get user feedback - Testing by using test plan	Fix and debug the error
Evaluation Phase	- Meet the experts to evaluate the system - Distribute questionnaire	Evaluate the system to get comment and suggestion

2.1 System Design

Design is the phase where system requirements are translated into initial details design. Based on those requirements that have been gathered during analysis activity in Requirement Planning Phase, it converted into system design. The purpose of this phase is to make sure that flow of KReMS is more understanding. Diagrams that is used are Context Diagram and ERD.

First diagram is Context Diagram. The purpose is it helps to define the scope and the boundary of the system and to identify the element in the environment of the KReMS. The entities for KReMS are parent, teacher, staff and admin. Figure 1 shows the Context Diagram of KReMS.

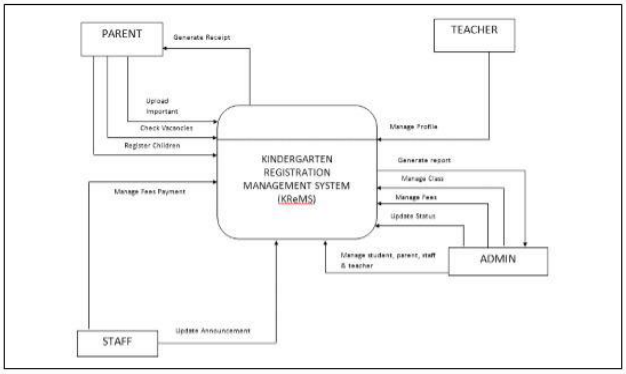

Figure 1 Context Diagram of KReMS

Second diagram would be the Entity Relationship Diagram (ERD). ERD is very important to design because it gives a clear picture of the database structure. ERD help to organize the data in the KReMS into entities and it can clearly define the relationship between those entities [8]. Each of the entities is connected to each other. There are eight entities. The entities are *ibubapa, kelas, guru, pelajar, pentaftaran, pengumuman, staff* and *yuran*. Figure 2 shows the ERD of KReMS.

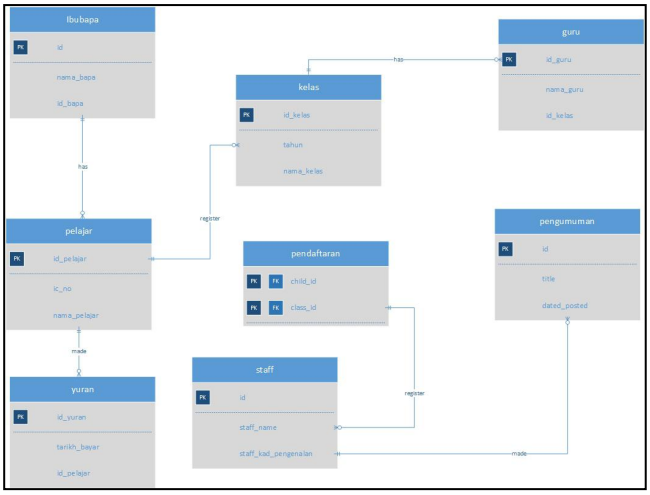

Figure 2 ERD of KReMS

3. Result And Discussion

The interface of KReMS is designed based on minimalist concept, simple and 'less is more'. This to make sure the interface is not too crowded and follows Human Computer Interaction (HCI) rules. The design and color of the interface should suitable with the kindergarten concept. The outcome is shown in Figure 3.

Figure 3 Selected Screenshots of KReMS

3.1 Expert Evaluation

In order to evaluate the KReMS, expert evaluation and user evaluation are conducted. The purpose for expert evaluation is to get comment and suggestion from the experts regarding a few identified criteria. KReMS was evaluated by four experts. Experts have been define as having more than 5 years' experience in kindergarten and/or have experience in system development. Table 2 shows the experts post and their experience.

Table 2 Expert Profile

Expert	Post	Experience
Expert 1	Staff	More than 5 years working
Expert 2	Headmistress	More than 5 years working
Expert 3	Teacher	More than 10 years teaching
Expert 4	Lecturer	Experience in System Development

Experts evaluated this system based on five criteria which are flow of the system, interface, efficiency, ease of use, and user experience. Table 3 shows part of expert evaluation result which is interface of the system.

Table 3 Comment and Suggestion for Interface of the KReMS

Expert	Comment	Suggestion

1	The interface is good and attractive.	The interface should be more cheerful suitable for kindergarten concept. Provide more pictures related with the kindergarten, for example latest activity in the kindergarten.
2	The home page of the system is too many text.	

3.2 User Evaluation

The next evaluation process is user evaluation. A set of questionnaire is distributed to 30 respondents. The questionnaire consists of six construct which are interface, usability, efficiency, satisfaction, ease of use and user experience. From the 30 of respondents; 70% is female and 30% is male; 33.3% age between 18-20, 56.7% age between 21-23 and 10% age between 24-26; 40% are diploma holders and 60% are degree holders; and 77% most of them is had experience in using online registration system before and only 30% are never had experience in using online registration system before. Table 4 shows the demographic profile in details.

Table 4 Part of Expert Evaluation Result

Item	**Percent (%)**
Age :	18-20= 33.3% 21-23=56.7% 24-26=10% 27-Older=0%
Gender :	Male= 30% Female= 70%
Level of Education :	Diploma= 40% Degree=60% Master=0% PhD= 0%
Experienced Using Online Registration System :	Yes= 77% No=23%

4. Result

Figure 4 shows the result of the six constructs based on users' evaluation. Result for each constructs are as follows; mean for interface construct is 4.28 (SD=0.67), mean or usability construct is 4.27 (SD=0.61), mean for efficiency construct is 4.36 (SD=0.62), mean for satisfaction construct is 4.29 (SD=0.64), mean for ease of use construct is 4.28 (SD=0.65), and mean for the last construct which is user experience construct is 4.35 (SD=0.61). The highest mean for all the constructs is 4.36 (SD=0.62) which is construct efficiency. Respondents agree that with the use of KReMS it will improve their efficiency in managing kindergarten record.

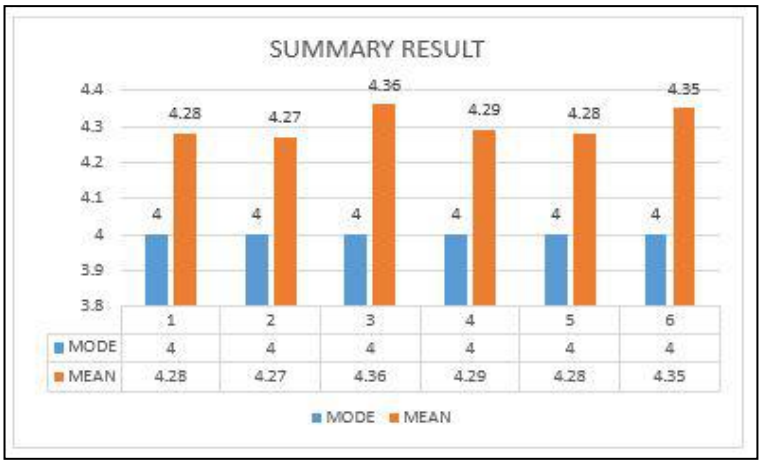

Figure 4 Summary of User Evaluation Result

After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper; use the scroll down window on the left of the MS Word Formatting toolbar.

5. Conclusion

As a conclusion, problem with the current process in managing kindergarten record has been highlighted and an online registration and management system is proposed to be developed. The online system (known as KReMS) is develop using RAD model. Once the development process is completed, experts and users evaluation were conducted. Result shows that experts gave good comments and suggestion on how to improve the system. Users evaluation shows that all of respondents agrees on the constructs used in evaluation. Although there have some limitation in the system, suggestions and comments form on experts can be implemented if the system is to be used by Tadika Yayasan Islam Terengganu, Branch Dungun in managing their registration process.

Acknowledgement

Thank you to UiTM Terengganu for supporting this project.

References

[1] Education Act 1996. (2013). The Commissioner of Law Revision, Malaysia Retrieved from http://www.agc.gov.my/Akta/Vol.%2011/Act%20550.pdf.

[2] Early Childhood Care and Education Policy Implementation Review 2007. (2008). Retrieved from http://www.tadika.org/Malaysian_ECCE_Policy_Review_24_Jan_2008.pdf.

[3] Headley, N. E. (1968). The kindergarten:Its place in the program of educatiom: center for Appied Research in Education.

[4] Othman, N. B. (2006). Online Nursery Information System. (Bachelor of Computer Science (Software Development)), Kolej Universiti Teknikal Kebangsaan Malaysia. Retrieved from http://library.utem.edu.my/index2.php?option=com_docman&task=doc_view&gid=4105&Itemid=113.

[5] Sadiran, N. A. B. (2011). E-Kindergarten System. (Bachelor of Computer Science (Software Development)), University Teknikal Malaysia Melaka. Retrieved from http://eprints2.utem.edu.my/7352/1/Kindergarten_Management_System_24_Pages.pdf

[6] Yacob, A. B. (2012). Kindergarten Management System for Taska Anakku Comel. (Bachelor of Computer Science (Software Engineering)), University Malaysia Pahang. Retrieved from http://umpir.ump.edu.my/5126/1/CD6519.pdf

[7] Nordin, N. I. B. B. (2011). E-Kemas Management System (Bachelor of Computer Science (Database Management)), University Teknikal Malaysia Melaka. Retrieved from http://eprints2.utem.edu.my/6349/1/E-Kemas_Management_System_%28e-KMS%29_-_24_pages.pdf

[8] Gary B. Shelly, H. J. (2012). Analysis and Design for Systems