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Sistem Pengurusan Data Program Pemulihan Khas (spd): Enhancing the Remedial Education data Management

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ABSTRACT

Sistem Pengurusan Data Program Pemulihan Khas (SPD) is a web-based application that focuses on data management of remedial education programs in 28 primary schools across Cameron Highlands, Pahang. It is a computerized system that is intended to replace the unsystematic manual system using Microsoft Excel form to manage pupils' information. The features of the system would keep track of the pupils' academic progress and provide the data for the upper management level for the purpose of decision making. This system is designed for remedial teachers to manage their pupils' information, school authorities to monitor the program in the respective schools, and Pejabat Pendidikan Daerah Cameron Highlands (PPDCH) education officers to manage the remedial data at the district level. In this project, a system prototyping development methodology was adopted to manage the project. First, the functional requirements were gathered through a series of meeting with clients. Next, based on the requirements acquired, the SPD prototype was created, and a field study was conducted to assess the prototype's usability. The results of the evaluation suggested that SPD is straightforward and easy to use. The respondents were also satisfied with the functions offered by SPD. Consequently, the study contributes towards an understanding of the system requirements and user interface of the web-based application to manage information and data related to remedial education.

INTRODUCTION

The developments of various ICT innovations have made a significant impact, especially to systematically record all types of information in educational institutions (Adeola, 2015; Simin, 2015). Nowadays, the nature of educational management has already shifted due to rapid technological advancement. This phenomenon is not only happening in universities, higher education institutions, or secondary schools, but also at the primary school level. Considering the vital role of early childhood

education, primary schools must also have their own management system. Therefore, there is an urgent need for educational institutions to have a systematic data management system to manage remedial data easily and without stress (Shalabi, 2020). The use of a web-based application is a good solution to fill the gap, due to its ability to automatically generate data, thus, the procedure becomes more efficient and time-saving. As compared to the manual system, the computerized system would totally upgrade and improve the current data management practice. This includes the data of teachers, schools and pupils, which are useful for various purposes, especially at the decision-making level like Pejabat Pendidikan Daerah Cameron Highlands (PPDCH). As a result, a system called Sistem Pengurusan Data Program Pemulihan Khas (SPD) is developed to improve the current manual data management practice in PPDCH. The current manual system only lets remedial teachers to keep data and records of their pupils manually by filling in existing template forms in Microsoft Excel, as depicted by Figure 1.

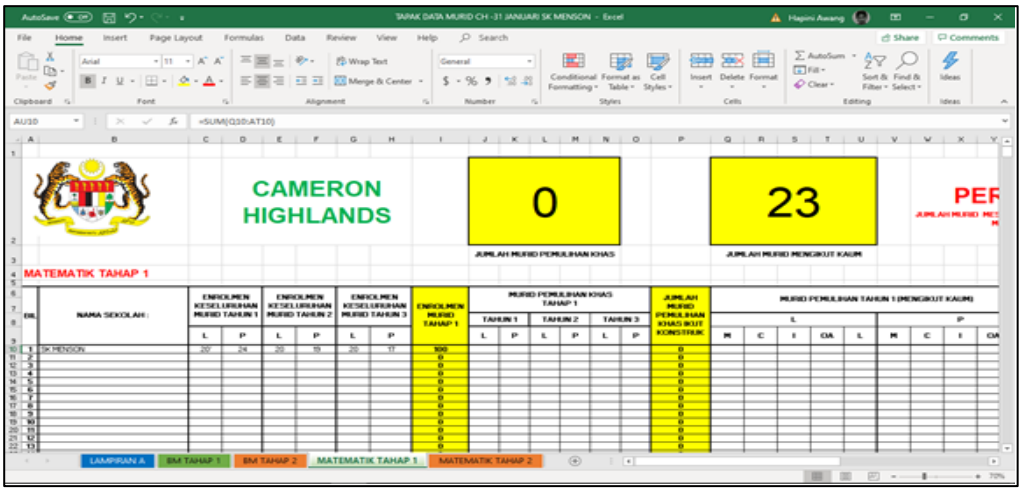

Figure 1. The Current Manual Remedial Data Collection Using MS Excell Form

By all means, data management is crucial in education (Mohammad et al., 2018). Due to current ramifications in remedial data management, there is an urgent need for a mechanism that could record data efficiently. The use of a web-based application is a good solution to fill the gap, due to its ability to automatically generate data, thus, the procedure becomes more efficient and time-saving. Therefore, a system called SPD is developed to improve the current manual data management practice. The use of this system is hoped to facilitate the users, which are education officers, school authorities and teachers in remedial data management as well as making decisions. Figure 2 depicts the example of Interface Design of Login Account in SPD.

Figure 2. Interface Design of Login Account

MATERIAL AND METHODS

The development method that is used for building this web-based system is prototyping. Prototyping allows users to evaluate the prototype and try it out before the real implementation. It also helps to understand the user-specific requirements which might not be considered by the developer during product design (El et al., 2015). Following the development of SPD, a usability evaluation was conducted on 30 respondents, consist of 17 remedial teachers, 3 PPDCH officers and 10 school officers. The instruments used for the evaluation comprise the tutorial video, user manual and a post-task questionnaire. The post-task questionnaire consists of 8 items in two sections. Section A asked the user satisfaction based on closed dichotomous questions where only two possible responses are recorded; Yes or No, while section B asked the user suggestions about the system in an open-ended question to collect any feedback or suggestions. The respondents pursued the following steps for the evaluation process: (i) watch the tutorial video, (ii) read the user manual, and (iii) answer the post-task questionnaire.

Source Code Editor

This system is developed using Visual Studio Code. Visual Studio Code is a free and fast code editor that provides all the tools needed for a web-based application. It is an open-source code editor software developed by Microsoft. Meanwhile, the tools that are used to build the interfaces are PHP, HTML and JavaScript. PHP is chosen as the programming language as it is one of the most adaptable languages of website development (Bansal, 2020). Visual Studio Code allows the developer to view the code of the website pages, see the result of the coding and edit the code directly if necessary.

Google Form

Database Management System that is used in SPD is phpMyAdmin. It supports a wide range of operations on MySQL. It offers an intuitive and easy way to manage databases through the browser. MySQL database server is fast, reliable and provides a rich and useful set of functions (Gera, 2020).

Source Code Editor

After the development, the study has conducted a usability evaluation to examine how good the SPD is, compared to the existing manual system using Microsoft Excel form. The questionnaire was used as the primary source for data collection. This usability evaluation was conducted using Google Form on 30 respondents. The questionnaire is divided into two sections. Section A represents the role of the respondents and user satisfaction. On the other hand, Section B is designed to collect suggestions and comments regarding the SPD from the respondents using two open-ended questions. After that, the responses gained through the evaluation were analyzed and a conclusion is made.

RESULT AND DISCUSSION

From the analysis in Table 1, it is clear that the majority of respondents agreed that SPD presents the desired information nicely (n=29, 96.7%), easy to be used (n=28, 93.3%), and properly integrates all the necessary functions (n=27, 90.0%). Moreover, almost all of them would like to use SPD for remedial data management (n=28, 93.3%). A large number of respondents also believe that SPD is more convenient compared to the current practice of remedial data management using MS Excel form (n=22, 73.3%). Nonetheless, SPD still fails to get a total agreement on these aspects of usability evaluation. This indicates that there is plenty of room for improvement before SPD can be fully implemented. The analysis of Section B also suggested that the system should be upgraded gradually,

might add the graph to represent the data and the interface design need to be improved. However, in general, the respondents reported that SPD is user-friendly, straightforward and easy to navigate.

Table 1: Result of the Post-Task Questionnaire

The post-task questionnaire items	Yes n (%)	No n (%)
Is all information well-presented?	29 (96.7)	**1 (3.30)**
Is it easy to use this system?	28 (93.30)	**2 (6.70)**
Are all the functions of this system well integrated?	27 (90.00)	**3 (10.00)**
Do you prefer to use this system in the future?	28 (93.30)	**2 (6.70)**
In your opinion, which system is more convenient?	22 (73.30)	**8 (26.70)**

CONCLUSION AND RECOMMENDATION

SPD is a web-based system designed with three different modules for different target users. The three modules are each for remedial teachers, school authorities and PPDCH officers. As the issue of excessive workload among education practitioners becomes more salient nowadays, the remedial data collection procedures should not add salt to the cut (Awang et al., 2018; Awang, Zahurin & Wan Rozaini, 2018). Thus, the management of remedial data using SPD should be the preferred method to ease their burdens. Remedial data is vital for upper-level management to make the right decision and further come out with a proper strategic plan to improve the quality of remedial education. It is hoped that a systematic data management using SPD would facilitate all stakeholders in PPDCH remedial education program, may they be teachers, education officers, or school authorities. In the future, the functionality of SPD will be expanded by providing more functions according to the client's needs. Overall, this system has been developed in order to improve the efficiency and productivity of education officers, school authorities and teachers to manage information and data related to the remedial program in PPDCH.

CONCLUSION AND RECOMMENDATION

This study was conducted only based on the factors of gender, school location, teaching experience, options and frequency of using Didik Hibur education only. It does not generalize about other factors in detail that influence knowledge, skills and attitudes among teachers. Therefore, it is suggested that future studies of demographic factors can be further developed by considering other factors such as age, education level and state. This study is only an exploratory study involving a very small sample size of 160 rehabilitation teachers only. Therefore, the researcher suggested to future researchers to add a large number of samples where done to all teachers not only remedial teachers. This is because a larger number of subjects is important to provide a comprehensive picture of the study conducted among teachers. The researcher would also like to suggest that future researchers can conduct a personality study with the knowledge, skills and attitudes about this approach to Didik Hibur Education Entertainment towards teachers of other subjects. This is because, environmental factors also contribute to the results of the study conducted later and so that the findings obtained are even clearer. The researcher would like to suggest that future researchers use other methods such as experimental methods that are rarely used by local researchers so that more new findings are found. While researchers conducting this study, we can see the tools used in this study is limited to only those who can understand, read and write in English. Difficulties existed for Chinese and Indian students to understand the questions of the distributed questionnaire. Therefore, it is suggested that the use of multilingual translation tools, namely Chinese and Tamil, can be carried out so that the results of the study can be generalized to this population. The researcher also wants to make a proposal to the school administration to hold a program or camp that can improve the knowledge, skills and attitudes about Didik Hibur education entertainment among teachers in schools according to the subjects

offered in schools. These programs or camps can also have an impact on academic achievement, and even include the positive development of the teacher's personality, discipline and self -behavior.

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