Development of Integrated School Management Information System (Simset) Based on Digital at SDN 3 Suka Makmur, Gerung District, West Lombok Regency

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Abstract

The purpose of this study is to develop a product in the form of a digital-based integrated school management information system at SDN 3 Suka Makmur, Gerung District, West Lombok Regency. Through this study, researchers obtained information about the features and forms of development and the feasibility of using a digital-based integrated school management information system (SIMSET). This study uses the Research & Development (R&D) Level 3 method with the ADDIE model. The research stages start from analysis, design, development, implementation, and product evaluation. Validity testing involves application experts and material experts. In developing this product, researchers conducted validity tests and feasibility tests involving 11 users at SDN 3 Suka Makmur. The validity test of the application expert involved Google Certified Trainer, Kemdikbudristek Technology Ambassador and Microsoft 365 Trainer. While the validity test of the material involved the Head of GTK (Teachers and Education Personnel) Division of the Education and Culture Office of West Lombok Regency, school assistants and BAN S/M Assessors. The results of the application validity test are in the very valid category with an Aiken V validity coefficient value of 0.90. For the results of the material expert validity test, the Aiken V coefficient is equal to 0.93 with the category of very good validity test results. For the results of the feasibility trial, it shows that the digital-based integrated school management information system (SIMSET) is very feasible to be used in digital-based school management with a percentage value of 87.18%.

Keywords: SIMSET; Integration; Management and System

Introduction

The rapid development of Information and Communication Technology (ICT) allows all sectors of life to be able to adapt well so that they can benefit from this development. To support the implementation of school digitalization, in 2021, the Ministry of Education, Culture, Research and Technology (Kemdikbud Ristek) allocated funds of 3.7 trillion consisting of 1.3 trillion from the ABPN and 2.4 trillion from physical DAK assistance. Overall, Kemdikbudristek has allocated funds of 17.7 trillion for ICT equipment assistance until 2024 (Chaterine RN, 2024).

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*Chromebook*The government assistance can only be operated by logging in using a belajar.id account. The belajar.id account can be used to access learning applications and electronic-based services. Learning applications that can be accessed with belajar.id include Quizizz and Canva. Meanwhile, the services that can be accessed by this account are the Merdeka Mengajar Platform (PMM), SIMPKB, Tanya Bos, Rumah Belajar, Raport Pendidikan and others. To help improve and optimize the activation and utilization of learning accounts for educators, students, and education personnel, an Educator Community was formed at the Provincial level (Learning.id Captain) and at the Regency level (Learning.id Co-Captain). The Captain and Co-Captain will be the driving force and driver of empowerment, dissemination of activation and utilization of learning accounts and other innovative programs in each region as stated in the Letter of the Ministry of Education, Culture, Research and Technology with Number: 6351/JI/TI.02.00/2021 Dated December 28, 2021 Subject: Notification of the Captain and Co-Captain of Belajar.id.

The use of digital-based Information and Communication Technology (ICT) is now considered very useful in increasing efficiency, accountability and effectiveness in the governance of educational units. On August 21, 2024, the Head of the Education and Culture Office of West Lombok Regency issued a Circular Letter addressed to the Heads of State and Private Education Units throughout West Lombok Regency No. 800/3322-Skr/Disdikbud/2024 concerning the Transformation of Learning Utilization of ICT (Pemantik). The implementation of digital-based school management is closely related to the era of rapid development of information technology and has caused various efficiencies, effectiveness, and global competition, namely: (1) The era of data analysis and data-based decision making (Data Analytics and Data Driven Decision Making). (2) The Era of Communication and Collaboration; increasing effectiveness with data management that makes it easier for stakeholders to access educational information. (3) The Era of Increasing Competition, with IT-based management, school competitiveness will increase. (4) The Era of Efficient Administration and Management; The educational administration and management system will become more efficient by adopting digital technology.

According to Husen and Wibowo (Dewi, et.al., 2024) "A system is a set of interconnected components that function to collect, process, store, and distribute information to support decision making and supervision in an organization." Ludwiq Von Bartalanvy (Sidh, 2013) defines a system as a set of elements that are interconnected in an interrelationship between these elements and the environment.

SIMSET is an acronym for Integrated School Management Information System. Which means building an information system that can combine several administrative needs into one place and is done online. The existence of SIMSET is considered appropriate and in accordance with the needs of schools to organize digital-based school administration management by utilizing school assets in the form of internet networks and the Google ecosystem contained in the belajar.id account (Indri, 2023). SIMSET was developed by utilizing Google Workspace for Education (GWE) which consists of various features including Google Site, Google Docs, Google Spreadsheet, Google Meet, Google Drive, and Google Form which can be used in developing SIMSET according to management needs at SDN 3 Suka Makmur.

Based on the background description, it is necessary to conduct research to develop, refine, test the effectiveness, and practicality of SIMSET in supporting digital-based school administration management. Therefore, the researcher conducted a study entitled "Development of Digital-Based Integrated School Management Information System (SIMSET) at SDN 3 Suka Makmur, Gerung District, West Lombok Regency.

Research Methods

This research was conducted at SDN 3 Suka Makmur, West Lombok Regency from December 2024 to May 2025. This research uses a research and development model or better known as the Research

and Development (R&D) model. The Research and Development (R&D) research model is a research model used to produce certain products and test the effectiveness of these products (Sugiyono, 2015). The researcher used the Research and Development (R&D) method at level 3 using the ADDIE model. The ADDIE model has several stages, namely Analyze, Design, Develop, implement and Evaluate (Juliana R., Jaelani AK, & Nurhasanah, 2025).
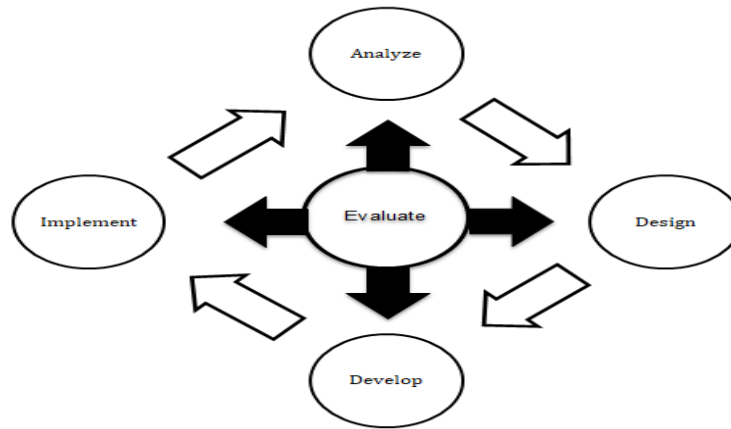

Figure 1. ADDIE Development Model Steps (Waruru, 2024)

*Data*Validation test in this study consists of validation test data by application experts and material experts. Application validation is obtained from validation test instruments that have been by 3 (three) Google Certified Trainers who have obtained Training Skill Assessment (TSA) certificates. Material validation is carried out by the Head of the GTK Division of the West Lombok Regency Education Office, school assistants and school assistants who are assessors at BAN S/M. The score data from the validation results by the experts then need to be analyzed for validity. In this study, validity analysis was carried out using the Aiken V (1985) validity test using the following formula:

$$V = \Sigma\, S\, /\, [n(C\text{-}1)]$$

$$S = R - Lo$$

Information:

V = Aiken index

S = score given by the assessor minus the lowest score in the category

R = score given by the assessor

Lo = lowest assessment score (1)

C = highest assessment score (5)

n = number of validators (raters)

The calculation results obtained from the formula are then converted into validity criteria. The criteria intended to state a question item is said to be valid according to Aiken (1985) must have a V value ranging from 0-1, as in the following table:

Table 1. Aiken V Validity Coefficient Classification (Source: Retnawati, 2016)

No.	Aiken Validity Coefficient Value (v)	Validity
1	$0 < V \leq 0.4$	Less Valid
2	$0.4 < V \leq 0.8$	Valid
3	$0.8 < V \leq 1$	Very Valid

In this process, the researcher involved 9 educators, 1 administrative staff and the principal of SDN 3 Suka Makmur to conduct a trial of practicality and effectiveness. To determine the level of practicality and effectiveness of the application, the data scores from the user trial results were quantitatively analyzed and calculated using the following formula:

P=f/N x 100%

Information:

P　= Percentage number

f　= Score obtained

N　= Maximum Score

The calculation results obtained from the formula are then converted into the following criteria:

Table 2. Practicality and Effectiveness Level Criteria

No.	Percentage	Practicality Category
1	86% - 100%	Very good
2	76% - 85%	Good
3	66% - 75%	Pretty good
4	56% - 65%	Not good
5	<56%	Very Poor

The SIMSET application development research is considered successful if the application validity value and material validity value obtain a minimum valid value (Aiken V validity value = $0.4 < V \leq 0.8$) and obtains a practicality and effectiveness value based on user trials reaching a good value (76% - 85%).

Results and Discussion

This research focuses onDevelopment of Digital-Based Integrated School Management Information System (SIMSET) at SDM 3 Suka Makmur, Gerung District, West Lombok Regency.

Features of the Digital-Based Integrated School Management Information System (SIMSET)

Based on the results of interviews and observations at SDN 3 Suka Makmur, researchers obtained initial data based on the analysis of potential and needs as follows.

1.Potential Analysis Results

Some of the results of the information analysis related to the analysis of the potential of SDN 3 Suka Makmur, namely: SDN 3 Suka Makmur has an internet network with a speed of 50 Mps so that it is

possible to carry out digital administration. The school has 15 Chromebook devices that can be used by teachers and students to carry out digital administration and learning management. Has 9 education staff, 1 operator and 1 principal with SI qualifications who already have an active belajar.id account.

2. Needs Analysis Results

Based on the results of interviews conducted by researchers, there are 9 features that will be developed in the SIMSET application. The 9 features are Profile, Shortcut, SPMB, Classroom, Imtaq Activities, Education House, PUSDIG, Suggestion Box, Need help. These features consist of Google features and platforms from the Ministry of Primary and Secondary Education and the Education and Culture Office of West Lombok Regency and the State Civil Service Agency. The integration is carried out to make it easier for students, educators and education personnel to carry out administration and collaborate. This is in line with the definition put forward by Kurniawan and Chazar (2016) integration is a technology platform that allows companies/institutions to integrate and coordinate business processes or activities they have.

Form of Development of Integrated School Management Information System (SIMSET) Based on Digital

The features developed in SIMSET can be described as follows.

1. User Interface (UI) Interface Display

For the User Interface display, it was developed using Google Site. To display the UI in SIMSET, users can access it via the website page. https://www.sdn3sukamakmur.sch.id orhttps://s.id/sdn3sukamakmurwith the following page display: the use of colors is adjusted to the User Interface (UI) components such as color, font, layout and buttons (Meileinaeka, 2023). For the User Interface image, it can be seen in the image below:

Figure 2.SIMSET Home Page

2. School Profile

Schools use profiles as a source of information, promotional tools, communication media, self-evaluation materials, official documents, building a positive image and attracting student interest. Seeing the great benefits of the school profile, researchers have included it as one of the features in SIMSET. In line with research conducted by Fitria, Iryanie E, & Priyougie (2024) at SDN 4 Alalak Tengah Banjarmasin, that the school website can be a form of communication with the community to speed up information from the school and vice versa. According to Syifa Fadiyah (Fitria, Iryanie E, & Priyougie 2024). Furthermore, it can be seen in the image below:

Figure 3. School Profile Features

3. Shortcut

In this processing feature there are buttons which are a form of administration consisting of an agenda.letter, meeting activities, and complex activities, then buttons were added for report card and diploma documentation as a form of development and as a need for SDN 3 Suka Makmur. In its development, it uses Google features in the form of (1) Google form to collect data embedded in the button, (2) Google spreadsheet for data recapitulation and (3) Google Drive as a place to store data.

4. SPMB

SPMB (New Student Admission System) will be used in the academic year: 2025/2026. This feature consists of 2 main buttons, namely the button to access the new student registration form and the registrant recapitulation check button. The registrant data entered in the registration form has been adjusted to the data required in Dapodik.

Figure 4.SPMB Features

5. Classroom

Classroom is a free Google feature to create online classes. Its main features include conducting video meetings, managing classes, assignments, and assessments online and without paper, integrating various learning materials from other platforms, and more.

Figure 5. Classroom Features

6. School Activities

SDN 3 Suka Makmur is one of the schools that received the school mover program in West Lombok Regency. In its implementation, it requires efficient and effective management. For that, SIMSET provides 8 sub-menus from the main menu of school activities.

Figure 6. School Activities Features

7. House of Education

Rumah Pendidikan is an application that unites 98 previously separate digital education applications into a single application that can open up opportunities for easy access for around 98 million people.

Figure 7. Educator House Features

8. PUSDIG

By using a digital library, educational units gain 4 main benefits (Suliatiani H., et al 2022), namely ease of sharing collections between institutions, reducing the need for printed materials at the local level, increasing electronic access for users, and the potential for long-term cost savings in terms of maintaining and storing collections.

Figure 8. PUSDIG Features

9. Suggestion Box

The digital suggestion box is a feature designed in SIMSET to manage the collection, storage, processing and reporting of suggestions and criticisms online through the school website. In making this suggestion box, researchers used 3 Google features, namely Google Forms as a tool for collecting data,
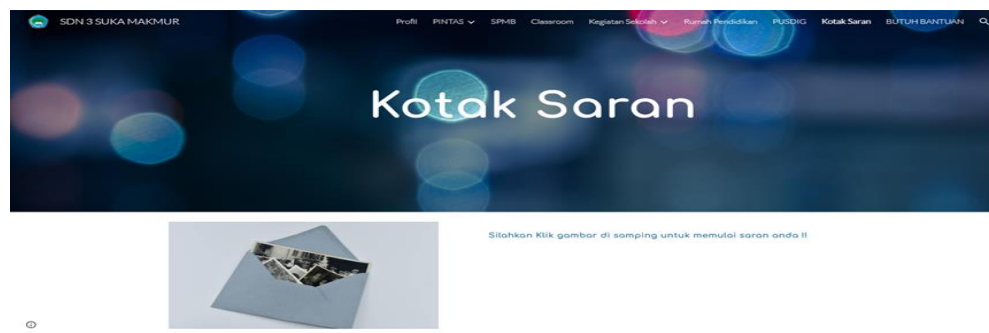

Figure 9. Suggestion Box Feature

10. Need help

The need help feature is a feature provided by the application developer to convey the obstacles faced related to the use of the SIMSET application. Users can contact the developer by clicking the WhatsApp icon in the main SIMSET feature. Furthermore, they can convey obstacles through the WhatsApp application directly to the developer. The use of the WhatsApp application for the need help button is because PTK is very familiar, easy to use and available on mobile phones. Embedding the WhatsApp application, researchers link the number in the URL: https://wa.me/.... Furthermore, users will be able to conduct a dialogue via the WhatsApp application.

Feasibility of Digital-Based Integrated School Management Information System (SIMSET)

1. Expert Application Validity Test Results

The application expert validity test involved 3 people from Google Certified Trainer and Microsoft Trainer.365, and the Technology Ambassador of the Ministry of Education, Culture, Research and Technology of NTB Province. They were involved as an application expert team because this information system was developed using the Google ecosystem as explained in CHAPTER III. After validation by the Application Validation Expert Team on 2 aspects, namely software engineering and visual communication aspects.

Table 3. Application Expert Validation Results Table

Aspect	Indicator	Application Expert 1		Application Expert II		Application Expert III		∑S	V Value	V Value Per Aspect	V Value Application Expert
		R	S	R	S	R	S				
Software engineering	1	4	3	5	4	5	4	11	0.92	0.91	0.90
	2	4	3	5	4	4	3	10	0.83		
	3	4	3	5	4	5	4	11	0.92		
	4	5	4	5	4	5	4	12	1.00		
	5	4	3	5	3	5	4	11	0.92		
	6	4	3	4	3	5	4	10	0.83		
	7	5	5	4	4	5	4	11	0.92		
	8	4	3	5	4	5	4	11	0.92		
Visual Communication	9	4	3	5	4	4	3	10	0.83	0.90	
	10	5	4	5	4	5	4	12	1.00		
	11	5	4	5	4	5	4	12	1.00		
	12	4	3	5	4	4	3	10	0.83		
	13	5	4	4	3	5	4	11	0.92		
	14	4	3	5	4	5	4	11	0.92		
	15	4	3	5	4	5	4	11	0.92		
	16	4	3	5	4	5	4	11	0.92		
	17	4	3	5	4	5	4	11	0.92		
	18	4	3	4	3	4	3	9	0.75		
	19	5	4	4	3	5	4	11	0.92		
	20	4	3	5	4	5	4	11	0.92		

For the software engineering indicator, the validity test result is 0.91. Based on the Aiken V validity coefficient classification, the range of validity values for the software engineering aspect is in the range of $0.8 < V \leq 1$. With a coefficient value in that range, the software engineering aspect is very valid. Based on the Aiken V validity coefficient classification, the range of validity values for visual communication is in the range of $0.8 < V \leq 1$. With a coefficient value in that range, the visual communication aspect is very valid. In the application expert validity test, there are 20 instrument indicators with a validity test result of 0.90. Based on the Aiken V validity coefficient classification, the range of validity values for the application expert test is in the range of $0.8 < V \leq 1$. With this coefficient value in that range, the application expert validity results are very good.

2. Results of the Material Expert Validity Test

For the aspect of administrative accuracy consisting of 3 (three) indicators, the Aiken V coefficient value is 0.94. Based on the Aiken V validity coefficient classification, the range of validity values for the aspect of administrative accuracy is in the range of $0.8 < V \leq 1$. With a coefficient value in

this range, the results of the validity of the material expert for the aspect of administrative accuracy are very good. The aspect of school administrative interests has 2 (two) indicator items. From the results of the validity test by the material expert, the value is 0.83. With this Aiken V coefficient value, the aspect of administrative interests is in the range of $0.8 < V \le 1$. With a coefficient value in this range, the validity results are at a very good level. The Aiken V coefficient value for the aspect of completeness of school administration from the results of the material validity test from the expert validator is 0.96. With this coefficient value, the aspect of completeness of school administration is in the range of $0.8 < V \le 1$ with a very good level. The results of the material validity test for the aspect of suitability to needs get a value of 0.94. With this value, the aspect of suitability of needs is at level $0.8 < V \le 1$ with a very valid value.

From the description of each achievement value of each aspect for the material validity test with a value of 0.93. This value is in the range of $0.8 < V \le 1$ with a very valid level. According to Ariawan (Fahrozi S., 2024), administration is understood as a series of routine activities in the secretarial field which includes recording, managing correspondence as a whole, documenting activities, and preparing reports. This series of administrative activities is ideal for implementation through SIMSET. This fact is supported by the results of the material expert validity test which showed a very good assessment.

3. Practicality and Effectiveness Test Results

To find out the practicality and effectiveness of using SIMSET in managing management at SDN 3 Suka Makmur, researchers conducted a user trial. This trial involved 1 (one) principal, 1 school operator and 9 class teachers and subject teachers. The user trial consisted of 5 aspects, namely the aspect of user convenience, the aspect of efficiency, the aspect of effectiveness, the aspect of user satisfaction, and the aspect of support availability.

Table 4.Practicality and Effectiveness Test Results

No	Users	Ease of Use Aspect				Efficiency Aspect				Effectiveness Aspect				User Satisfaction Aspects				Support Availability Aspects			
1	User 1																				
2	User 2																				
3	User 3																				
4	User 4																				
5	User 5																				
6	User 6																				
7	User 7																				
8	User 8																				
9	User 9																				
10	User 10																				
11	User 11																				
Amount		8	8	1	7	7	7	9	2	5	8	9	7	9	0	7	5	8	1	9	2
Average		.4	.4	.6	.3	.3	.3	.5	.7	.1	.4	.5	.3	.5	.5	.3	.1	.4	.6	.5	.8
Percentage		7%	7%	3%	5%	5%	5%	9%	5%	2%	7%	9%	5%	9%	1%	5%	2%	7%	3%	9%	6%
Percentage Per Aspect		88.18%				88.64%				85.91%				86.82%				86.36%			
Overall Percentage		87.18%																			

Based on the table of the results of the practicality and effectiveness trials above, it can be described as follows. The highest percentage was achieved by the Efficiency aspect with a percentage of 88.64% which after being converted was at the level of 86% - 100% with a very good category of practicality and effectiveness. SIMSET as an Integrated School Management Information System

application that is designed to be used online and web-based so that it can be used from anywhere and anytime. This will save time and costs in inputting, processing, and storing data at school.

The effectiveness aspect obtained the lowest score in the practicality and effectiveness test, namely 85.91%. After being converted to the 75% - 86% criteria, it is in the good criteria. In the effectiveness aspect, there are 4 indicators, namely (1) the SIMSET application accelerates the registration of correspondence, (2) the SIMSET application accelerates the reporting of school activities, (3) the SIMSET application accelerates the management of school administration, (4) the SIMSET application accelerates the ease of schools to meet school administration needs. This is in line with research conducted by Tumiran, et al., (2024) that the challenges in optimizing digitalization are still constrained by a number of factors, such as minimal technological infrastructure, uneven distribution of internet access, and limited availability of hardware, increasing digital competence for educators and education personnel, increasing infrastructure, lack of digital training, and lack of school policies that support digitalization.

4. Data Security

According to Fadila (Pratama AM, Syaiful, & Rahman MF, 2024) The main purpose of data and information security is to protect organizational data through systematic steps. This protection aims to prevent unauthorized access, misuse, and damage to data by individuals inside and outside the organization. In addition, data and information security also includes securing the system from illegal data changes or destruction as well as protecting computers from cyber threats and other risks.

5. Product

In this development research, researchers produced a product in the form of a digital-based application called SIMSET. SIMSET is an acronym for Integrated School Management Information System. Where this application was created with the aim of helping schools that run school administration management online. The SIMSET application is registered with the Ministry of Law and Human Rights to be recognized as a product with Intellectual Property Rights (IPR) in the form of a patent in the form of an invention in the field of technology. According to the Provisions of Article 1 number 1 of the Patent Law in conjunction with Law 65/2024, it is explained that a patent is an exclusive right granted by the state to an inventor for his invention in the field of technology for a certain period of time so that he can use his invention or give permission to other parties to use his invention (Online Legal Team). According to Damian (Online Legal Team, 2024) states that intellectual property can be interpreted as intangible property resulting from human thought or creativity that produces a creation or invention in the fields of art, literature, science and technology that has economic benefits.

Conclusion

Based on the findings of research that has been carried out through interviews, observations, anddocumentationregarding the Development of Integrated School Management Information System (SIMSET) Based on Digital in SDM 3 Suka Makmur, Gerung District, West Lombok Regencyso thatthe following conclusions can be drawn:

1. Integrated School Management Information System (SIMSET) Based on Digital provides various features that can be used to implement school administration more efficiently, effectively and in real time. SIMSET provides administrative management features and also integration of several personnel applications from the Ministry of Education and Culture and the State Civil Service Agency (BKN). SIMSET features and accessed via https:www.sdn3sukamakmur.sch.idor through https://s.id/sdn3sukamakmur. SIMSET is equipped with 9 main features, namely profile, processor, SPMB, classroom, school activities, education house, PusDig, suggestion box, and

need help. From the main features, there are several sub-features that are placed according to their groups. The grouping aims to facilitate searching.

2. SIMSET development uses Google features, namely (1) Google Sites, (2) Google Drive, (3) Google Forms, (4) Google Sheets, (5) Google Meet, Gmail and (6) Google Documents. In addition, there are also several features that are an integration of personnel services and the Ministry of Education and Culture such as MFA, Si-Umpeg, education homes, MyASN, Cloud Digital, and Quality Reading Books from the Ministry of Education and Culture.

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