Integrated Learning Components of Cloud System-Based Office Administration in Vocational High Schools

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Abstract. The role of organizations, businesses, and governments in achieving their goals is primarily determined by implementing activities through an office. Office workers in Indonesia who come from Vocational High Schools and Universities were majoring in Office Governance Automation. Along with the development of technological processes, it also impacts more effective office processes through office automation. However, the result of a very dynamic world of technological adaptation still cannot be followed by preparing an appropriate workforce in the office world. Based on this context, the research team initiated the development of an office administration simulation system based on cloud integrated learning which is present as an innovation that directly answers the needs in the field based on simulator applications to improve the quality of office vocational education, especially by using integrated learning technology that can answer the needs of the world of work.

Keywords: Cloud, Integrated, Office, Vocational.

1 Introduction

The role of the organization, business, and government in achieving its goals [1] is determined mainly by the part and function of services and the implementation of activities through an office [2]. This office has the role of planning, analysis, development, policy formulation, and accountability [3, p.]. Given the importance of the part of the office world for the sustainability of an organization, business, and government [4], the role of office workers is vital. Office workers in Indonesia who come from Vocational High Schools and Universities were majoring in Office Administration Automation (OTKP) [5].

Along with technological processes, it also impacts more effective office processes through office automation [6]. Still, the result of a dynamic world of adapting technology and information in organizations, businesses, and government [7] still cannot be followed by proper workforce preparation. Suitable for the office world [8]. This was proven directly by the research team, which took data in several cities in East Java, 76% of Office subject teachers stated that current learning was not following industry needs, and 86% indicated that they needed new media following the latest principles of recent press. There is.

This is on the unemployment rate that occurs in vocational school graduates, which is proven as a contributor to the highest unemployment rate reaching 11.24% because what is learned is still unable to answer the challenges of the world of work [9]. Solutions that already exist in the development of SMK media in the office sector [10]; [11] [12] in some essential competencies such as archives, documents, and digital simulations that are still not standardized

and have shortcomings that are not by the needs of the industrial world, these shortcomings include [13]: (1) Some of the solutions offered are offline-based; (2) Does not describe a simulation of the world of work; (3) Requires many computers for simulation; and (4) Vulnerable to the hijacking of local server data.

Based on this context, the research team initiated the development of an office administration simulation system based on cloud integrated learning which is present as an innovation that directly answers the needs in the field based on simulator applications to improve the quality of office vocational education, especially by using integrated learning technology that can answer the needs of the world of work.

The purpose of this research is to develop an office administration simulation system based on cloud integrated learning. The system developed has various features, such as collaborative integration of different office practicum subjects that have been standardized in one system and have been incorporated between subjects, so that they can learn from case studies of each integrated practicum subject, there is a collection of learning-based materials: management system, and evaluation. There is a forum feature between students and teachers to carry out communication on the same system.

2 Literature Review

2.1 Simulation Learning in Office Administration Learning

The simulation-based practical learning method is a method used in learning activities [20] that provides opportunities for students to imitate a work process that leads to daily activities [21] and is related to tasks that are the responsibility of the world of work later [21]. 22]. Implementing the simulation learning method is quite familiar in the office sector [23] because the practice-based subjects and curriculum are very supportive for conducting simulations by the needs of the world of work later [24].

Previous research on simulation-based office administration learning, one of which was research conducted by Muhimul in 2013 [25], in this study discussed the handling of incoming and outgoing mail with the simulation method in class XI students majoring in office administration at SMK Masehi PSAK Ambarawa. This study indicates an increase in student learning outcomes with an average effect of 79.2 with a student learning activity cycle rate of 78.3%. Furthermore, research conducted by Handayani, 2016 [26] was performed on a simulation of press conference subjects in Office Administration. Another similar study on the simulation method of office administration learning is Faisal's research, 2017 on handling office letters or documents at SMK Kristen 1 Surakarta; with the study results, the final average value of 79.74 with a percentage of 84.21% student activity [27].

2.2 Digital Learning in Office Administration

Learning media is a form of intermediary used to convey learning in ideas, ideals, and opinions [28] by bringing messages or information to achieve learning objectives [29]. Along with the development of technology and data, learning media are also affected by the renewability to transform through digital learning media that now exist [30]. Digital learning media is quite massively developed in Indonesia, especially during the Covid-19 pandemic era

[31], because it has various advantages such as being accessible anywhere and anytime, faster, and accommodating the complexity of learning on a large scale [32].

The development of office administration digital learning media has also been widely carried out, such as research by Wirawan et al. 2017 [33] in the form of digital archival learning media to improve student learning outcomes at SMKN 3 Surakarta, with experimental results reaching 80.59 when compared to the control class 77.97. Another study by Rumangkan et al. in 2020 [34] about the influence of android-based digital media with the lecture method on the learning interest of Office Administration students at SMKN 2 Tondano with the results showing a reasonably strong relationship between android digital learning media and lectures. Another study by Utami et al. 2016 [35] on the development of interactive multimedia for class X office administration procedures, with research results in media feasibility from media experts and material with excellent categories.

2.3 Integrated Learning Cloud-Based Education

Cloud-based integrated learning is a new thing in the world of education that combines the factors that support learning media in the digital era, namely integrated learning [36] and cloud-based learning or cloud computing [37] [38]. Cloud integrated learning was first published by El-Attar, et al. in 2019 [39] with the title "Integrated Learning Approaches based on Cloud Computing for Personalizing e-Learning Environment" to improve e-learning services on a broad scale and effectively the world. Education.

This type of learning media was chosen in the practicum field because it supports a digital-based simulation environment with cloud computing to adjust the content, unique materials, and practicum experience, and focuses on reusability, interoperability, adaptation, and personalization to overcome the passive role of students in their transfer into interactive media. [39]. Several cloud-based integrated learning has been implemented, such as by Ruangvanich et al. in 2019 [40] regarding sustainable learning models in higher education institutions. Another study was by Al-Sammarraie et al. in 2018 [41] about cloud collaborative learning with a blended-learning environment collaboration.

3 Research Methods

The method used in this research is Design Thinking Process [42]. This research and development aim to produce a product, namely a website based on integrated learning for integrated subjects for office practicum. To create a problem solving technology-based, it requires a way of developing guidelines for realizing a solution. Based on the development research procedure that has been described by [42], there are five procedural steps of-based research design thinking. The procedural stages of this development research are explained as follows:

3.1. Empathize

At this stage, the researcher will identify the problems to be overcome, which will produce products to overcome these problems. When you have determined the target user to be addressed, an analysis of the user's experience, situation, and emotional state are needed. Placing

developers on the side of users can understand user conditions through customer discovery, observation, and others.

3.2. Define

After the user of the requirement, the development design needs to draw an idea from the user's point of view that forms the basis for technology-based product development. This is done by dividing the list of user requirements and solving problems with technology according to needs. To produce a final product that is suitable to overcome the issues faced, it is necessary to have a process of collecting data and supporting information to be used as material for product development planning. The data collected by researchers in this study is in the form of journal literature related to the conditions of problems in the world of education in Indonesia in office administration associated with the development of human resources on the latest office technology.

3.3. Ideate

Through needs analysis, developers describe solutions through idea development. This includes team evaluation with development to cultivate creativity. Based on data and information obtained from journals and literature for the development process of education, which requires media development to absorb material optimally. From this information, this product will be designed or created using several computer programming languages such as front-end web developers.

3.4. Prototype

By developing the resulting ideas, the manufacture of-based products prototype for testing, it is necessary to produce actual products and possible scenarios use based on minimum viable product [43]. In the development of this media that is sustainable, then the result with the incremental method model is a very suitable choice [44].
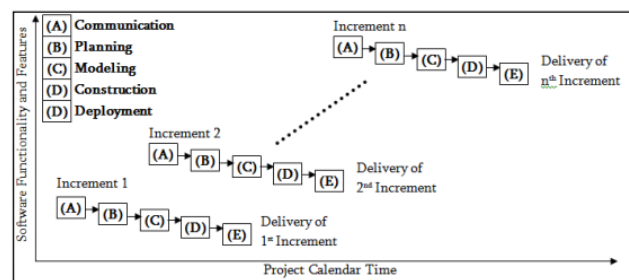
Figure 1. Incremental Model

According to [45], the incremental model is a regular and iterative sequence process and software development. Based on actions in a linear sequence can result in consequences in working software that can be used. In the incremental models, it is earliest often called the core product. Core Product is the need of the user. Sometimes the many conditions make not all can be conveyed in the initial development. Based on this, the core product can be used as a

development plan for the increment next by modifying the product to meet user needs. The stages of development incremental process are as follows [46]:

1. Communication: at this stage, a needs analysis is carried out on software development and formation needs.
2. Planning: At this stage, you will make an initial draft of the task, the time required, the technical job, and the needed resources;
3. Modeling: Formation of design in making software and design for software;
4. Construction: In this stage, the programming performs testing to test the suitability of the user and determine the evaluation to be improved
5. Deployment: At this stage, the developer provides documentation on the features that have been built and receives feedback from the software that has been formed.

A trial product has been created, used in an experiment, and an evaluation of product usage is obtained, and an evaluation program for improvements to existing products is obtained.

3.5. Test Product/Trial Test Product

The test is carried out based on knowing the efficiency, effectiveness, and products made. In this trial, there are five main designs, including: (1) trial design, (2) subjects, (3) types of data, (4) instruments, and (5) data analysis.

A. Trial Design

Carry out trial activities to determine the effectiveness, efficiency, and feasibility of the product. From the test results, it is used for the process of product revision and improvement.

B. Trial Subjects

The subjects used for this research are Media and Material Experts consisting of media and design experts on application development and office management experts.

C. Types of Data

data obtained from this study are quantitative data. Quantitative data were obtained through a questionnaire using a Likert scale, difficulty, and the results of trials on experts.

4 Results and Discussion

4.1 Media Development Results

Based on the results of the development that has been carried out through the method that has been used, namely design thinking, which is a digital office simulation with a cloud cloning platform, it has been successfully created with various features, such as features that simulate the world of digital offices that later it can help the process of adjusting human resources in the office world, especially during this covid-19 pandemic.

As for the existing flow in this application system, the first is to start the media by going to the homepage and selecting the user level, then selecting the virtual office area and entering the virtual office and selecting the office entry date and playing roles and case studies and having a function and carrying out the part. And virtual, then there are virtual office work features, namely features that simulate the office world digitally, which can later help the

process of adjusting human resources in the office world, especially during this covid-19 pandemic. The following is a description of the features that have been described through the flow accompanied by a face-to-face description of each element as follows:

A. Homepage
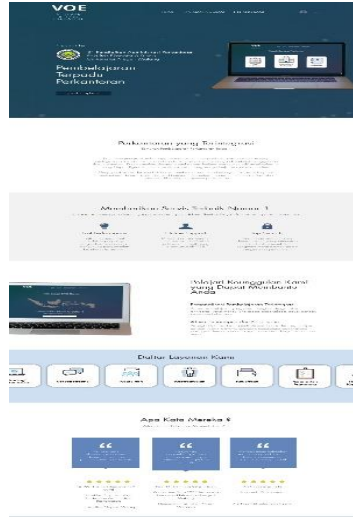
Figure 2. Display The Homepage

The homepage is a feature to introduce the existing media and instructions on this system.

B. Selection of Levels

Figure 3. Selection of Levels

These levels are used to separate degrees or groups of office simulation learning, both at the vocational high school level and those already at the industrial level, to match the needs of the field.

C. Selection of Virtual Office Areas

Figure 4. Selection of Virtual Offices

After this, it is selecting virtual office areas is the separation into areas that can be accessed according to the office area that uses this training. This is used to separate the characteristics of offices in each region to suit their needs. Needs.
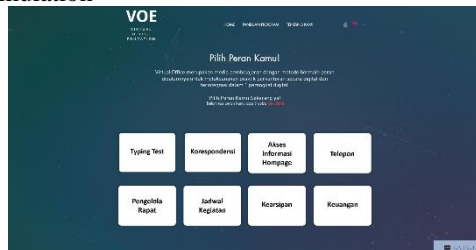
D. Selection of Virtual Office Dates

Figure 5. Virtual Office Dates

After selecting a location, users enter the virtual office and choose the appropriate date because each date will have different challenges according to the curriculum development.

E. Running an Office Simulation

Figure 6. Running an Office Simulation

Next, role-playing and case studies are used here, using the method life-based learning, which implements existing roles in the office that can be selected by the user or employee who is conducting training and completing case studies following the chosen part so that later it can be seen the increase in the ability of the simulation employees that has been carried out.

Next is the virtual office feature wherein. This feature there are the same features, but it has been integrated with the office system that can be directly monitored by superiors who are following the original office features so that the industry can now use this service as a dashboard of their own when the company wants to use the virtual system that has been provided so that this feature can help the office industry in providing a platform for its employees in one complete standardized platform.

4.2 Discussion of Trial Result

a. Usability Testing Product Testing Phase

In the development of technology-based learning products, usability testing products must be carried out (Riihiaho, 2017) to find out the fluency of users after understanding the guide so that it can be seen that the feasibility of using media has been very well tested by novice users who are just learning the use of technology, for the assessment process, uses a scale on product usability testing with the following details [47]:

-           0-0.5 = Very Poor
-           0.5-1 = Enough
-           1-1.5 = Not fluent
-           1.5-2.0 = Doubtful
-           2.0-2.5 = Smooth
-           2.5-3.0 = Very smooth

The results of the usability testing of this product are as follows:

Table 1. Assessment of Usability Testing Product

No	Aspects assessed	Total Score	Average	Category
1	page display *Login*	21	3	Very Smooth
2	display *dashboard* Initial	20	2.9	Very Smooth
3	User addition display	20	2.9	Very Smooth
4	View user account	21	3.0	Very Smooth
5	view *dashboard* Advanced	21	3.0	Very Smooth
6	Add file view	19	2.7	Very Smooth
7	View archive view	20	2.9	Very Smooth
8	Advanced file search view	21	3.0	Very Smooth
9	File borrowing view	19	2.7	Very Smooth
10	Display of archive borrowing data	19	2.7	Very Smooth
	Total	**201**	**28.7**	
	Average	**20.1**	**2.9**	**Very Smooth**

Based on table 1, the results of the usability testing of the product contained ten indicators. The total score on this aspect by users is 28.7, with ten hands through which the average rating from users is 2.9. The product gets very smooth criteria through the table of usability testing results, which means that development has been carried out according to user needs.

b. Test Results Post-Test Design Only

1. Experimental Procedure This

The test uses a quasi-experimental method. Quasi-experimental is a method that provides treatments, outcome measures, and experimental units but does not use random placement [48]. This test was designed using a post-test design only, using 1 group given treatment and given a post-test.

The first test is to determine the sample used for research and form a group into a test class. The next stage is the experimental group learning with disruptive learning media. The final stage is given a post-test to determine the increase in students' knowledge and skills.

2. Implementation of post-test design only

The post-test implementation process is carried out online or online by creating a post-test instrument derived from the syllabus of digital archival subjects on the competence of office governance automation expertise. The tests carried out were divided into two groups, totaling ten students, with five people in the experimental class and five people in the control class.

The implementation of the post-test design the only test was carried out to determine the effectiveness of the application of disruptive learning media on the knowledge and skills of

users, in this case, prospective teachers or students of the S1 Study Program of the Office Administration Education State University of Malang.

3. Research Results

Tests were carried out using the experimental method, which was carried out in two groups: experimental and control. Each research subject is described in the following table:

Table 2. Distribution of Research Subjects

Number	Group	Total of Subjects
1	Experiment	5
2	Control	5

In the group with practical information, learning is given through digital archive simulator media based on disruptive media, and the control group using conventional media in the form of books digital archival learning. In this test, the researcher obtained post-test data from students who were divided into two groups. This test helps measure the effectiveness of the developed product on learning outcomes on the essential competencies of digital archives.

4. Assumption Test

Based on the description of this study to determine the results of the parametric statistical t-test. Before carrying out the test, an assumption test is carried out, which includes normality and homogeneity, which will estimate the data test results in actual conditions.

a. Normality

Test This test aims to determine the distribution of variables in normal conditions or not. This test uses the chi-square formula in calculations using SPSS 22 [49]. Parameters are used to determine whether data is standard or not. If sig>0.05, then the information is standard, but if it is in a position <0.05, it can be abnormal. The results of the calculation of the normality of the data on the results of digital learning archives for undergraduate students of Office Administration Education are as follows:

Kontrol * Eksperimen Crosstabulation

Count

		Eksperimen		
		90	100	Total
Kontrol	50	0	1	1
	60	1	0	1
	70	1	1	2
	80	0	1	1
Total		2	3	5

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.917[a]	3	.405
Likelihood Ratio	3.958	3	.266
Linear-by-Linear Association	.026	1	.873
N of Valid Cases	5		

a. 8 cells (100,0%) have expected count less than 5. The minimum expected count is ,40.

Figure 7. Chi-Square Data Normality Test Results in The results of the data normality

Test of the research variables showed a Pearson chi-square number of 0.405, which means sig > 0.05 so that the data belonged to a normal distribution.

b. Homogeneity Test

After testing the normality of the data, the assumption test stage is a homogeneity test to show statistical data equality in the initial conditions of the two groups. This test also aims to

find out about the variants of the groups compared in the comparative trial, which will be identical or not. Homogeneity test using homogeneity of variances method with ANOVA in SPSS 22 software with sig > 0.05 comparison [50]. The test results are as follows:

Test of Homogeneity of Variances

Hasil Belajar

Levene Statistic	df1	df2	Sig.
2.326	1	8	.166

Figure 8. Data Homogeneity Test

From the following figure, the results of the data homogeneity test are known to reach 0.166 where the levene value is >0.05, so it can be concluded that this test has the same or homogeneous variance.

c. Hypothesis Testing

The t-test was used for parametric testing at the hypothesis testing stage, using the independent sample t-test by using the calculation process through SPSS 22. The results of the independent sample t-test analysis of the post-test results using website-based disruptive learning media and students who only use conventional methods aim to know whether there is a significant difference in the post-test scores of which uses disruptive media methods with traditional methods [51]. The conclusion of the research on hypothesis testing can be declared significant when the p-value < 0.05. The following is a summary of the post-test t-test from students who are part of the experimental class and control class.

Table 3. Summary of Post-test Test Results

Class	Average	t-test	Sig.	P
Experiment Class	**96**	**10.606**	**0.166**	**0.001**
Experiment Class	**66**			

Based on the table above, it is known that the t-test value is 10.606 with p = 0.001 with a significance of 1%. This shows that t is significant (p < 0.01). Based on this, students' learning outcomes between the two control and experimental groups differed significantly [52]. So the ability to understand digital archives in terms of cognitive and psychomotor between the control and practical classes there is a difference.

From this test, the post-test summary has an average experimental class of 96 with a standard deviation of 5.47 and an average of 66 for the control class with a standard deviation of 11.40. Based on this, it can be concluded that the average cognitive and psychomotor understanding of digital archives using disruptive digital archive media is 33, which means it is better than conventional methods.

5 Conclusion

Based on the description in this research paper, the purpose of this research has been achieved, namely the development of a cloud-based office administration simulation system with several standardized collaboration features. And in accordance with the hypothesis tested in this study is the effect of differences in learning outcomes on the use of this media for the better.

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