

Design for Cloud Learning Platform Integrated Office Management to Support the Adjustment of the Industrial World During the Covid-19 Pandemic

I Nyoman Suputra^{1*}, Andi Basuki², Ari Gunawan³

^{1,2,3} Universitas Negeri Malang

*Corresponding author. Email: nyoman.suputra,fe@um.ac.id

ABSTRACT

The role of organizations, businesses, and governments in achieving their goals is largely determined by the roles and functions of services and the implementation of activities through an office. The work environment during the COVID-19 pandemic experienced changes to employees in a company or organization. The impact of this is that during the Covid-19 pandemic the implementation of *work from home* for employees is expected to be able to maintain performance, this is evident from parts of the office such as archives, documents, and finance which are still not standardized and have significant shortcomings. not in accordance with the needs of the industrial 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. This application was developed using the method *design thinking process*, with several stages, namely *empathize, define, ideate, prototype, and test*. The results of the development carried out include several features such as the *homepage*, levels, regions, office practicum role playing, evaluation, *learning management system*, and features *virtual office*. After the media has been developed, the media is validated by material experts with the criteria for the presentation aspect of the simulation with an average score of 5 with very appropriate and effective criteria. After that, media expert validation was carried out with media presentation aspects with an average of 4.7 with appropriate and effective criteria.

Keywords: "Cloud Learning, Design Thinking, Industry, Simulation"

1. INTRODUCTION

The role of organizations, businesses, and governments in achieving their goals is largely determined by the roles and functions of services and the implementation of activities through an office [1]. This is because the office has the role of planning, analysis, development, policy formulation, and accountability [2]. Given the importance of the role of the office world for the sustainability of an organization, business, and government, the role of office workers is very important that cannot be separated from the management of employees in organizing organizations/companies from the smallest to the largest level because staffing is a liaison and reference for all activities in a company [3]

The work environment during the COVID-19 pandemic experienced changes to employees in a company or organization including the company preparing health protocols aimed at protecting employees from the dangers of Covid-19 starting from spraying disinfectants in the office area, providing masks for employees, as well as temperature detection.

. In addition, management needs a system that can provide convenience for the entire team to coordinate and ensure operational activities can run well. Changes that can be seen include the implementation of *work from home (WFH)*.

The impact of Covid-19 pandemic, the implementation of WFH for employees is expected to maintain performance [4]. The impact of this policy certainly occurs on employees due to differences in the situation *Work from Office (WFO)* with WFH, employees also have to adapt to a new environment or change in work culture while carrying out WFH activities. Almost all office activities have turned digital [5], such as archives, documents, and digital simulations, but the capabilities of employees during this pandemic have not developed and are still not standardized and have shortcomings that are not in accordance with the needs of the industrial world. , these shortcomings include [6]: (1) Some employees are still used to working *offline*; (2) The world of work is not described by WFH; (3) Less effective in solving

problems; and (4) Vulnerable to 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 human resources, especially by using technology *integrated learning* that is able to answer the needs of the industrial world.

2. LITERATURE REVIEW

2.1. Development of Office Management in the Industrial Revolution 4.0

The industrial world is now entering the era of the industrial revolution 4.0 or information technology has now become the basis of human life in the world of the fourth industrial revolution. Changes that occur as a result of the industrial revolution 4.0 cannot be avoided. The positive impact of the industrial revolution 4.0 is the effectiveness, efficiency, and simplification of business processes that occur on a large scale in almost all industrial sectors without exception [7]. The industrial world is required to improve the performance of various elements in the organization/company as a result of increasing business competition. One way that can be used in order to realize this success can be done by increasing the efficiency of the information system which aims to produce more efficient management in business processes and integrate the information system of an organization/company [8].

At present the development of the office industrial system is leading to the world of technology 4.0. As for some of the developments in several studies, such as the first development of a cloud system for archives where this development uses a cloud system to collaborate on work in the field of archives in an office by using a cloud system to streamline storage, activate system security, and also effectiveness in terms of management. filing system [9], the second is employee attendance with a cloud system that has been used in several companies in several studies carried out this increases effectiveness in terms of detection of employee conditions and also absenteeism carried out by cloud systems and the development of the office industry with technology 4.0 [10], the next is the automation of the financial system, namely by managing an automated HR system based on employee attendance and also doing taxation automatically for both employee payroll and financial aspects others, such as shopping and others [11].

2.2. HR Development Methods that have been carried out to deal with the latest industry

Human resource development (HR) must be carried out not only for business owners, but also for

their employees. Human resources (HR) in the industrial world really need an increase in their quality, especially in the field of HR competencies such as skills, knowledge, attitudes and abilities. Improving the quality of human resources (HR) by conducting training and evaluation of employees for a period of time or every week, as well as including training or courses for employees who excel [12]. Human resource development can be done by transforming knowledge to leaders with senior employees to employees who have junior status. The success of existing human resources is also supported by appreciation in the form of procurement of promotions and salary increases. This is done with the aim of motivating employees to continue to improve the quality of performance. Effective human resource management can help to achieve organizational goals [13].

Furthermore, there are several human resource studies carried out to improve the ability of human resources towards industrial technology 4.0 including the first theoretical office management training and training in offices in training on digital archives as well as about doing digital petty cash bookkeeping, in This training has several shortcomings, such as trainers who have not been certified and are also not in accordance with conditions that exist in the real world [14], next is training using offline electronics. used offline does not describe the world of work and also data piracy and there is no conception of the industry in the end, offices through this training [15].

3. DEVELOPMENT METHOD

The method used in this research is *Design Thinking Process* (Rowe, 1987). This research and development aims 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 the process of realizing a solution. Based on the development research procedure that has been described by [16] there are 5 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 in turn 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 is needed. Placing developers on the side of users can really understand user conditions through methods *customer discovery*, observation, and other.

3.2. Define

After requirements *user*, 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 be able to produce a final product that is suitable to overcome the problems faced, it is necessary to have a process of collecting data and supporting information to be used as material for product development planning. The information 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 the field of human administration related to the development of human resources on the latest office technology.

3.3. Ideate

Through needs analysis, developers describe solutions through an idea development, this includes team evaluation with development to cultivate creativity. Based on data and information obtained from activities in 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

Through the development of the resulting ideas, the manufacture of-based products *prototype* for testing, it is necessary to produce real products and possible scenarios use based on *minimum viable product* [17]. In the development of this media that is sustainable, then the development with the method *incremental model* is a very suitable choice [18].

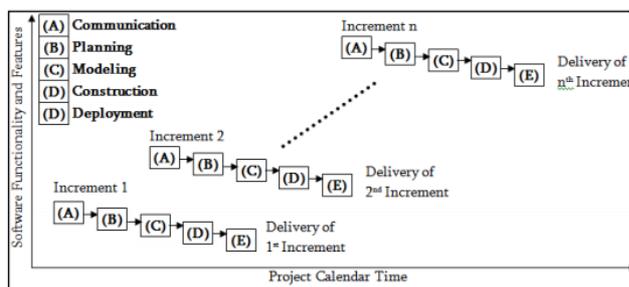


Figure 2. *Incremental Model*

Source: [19]

According to Rodrigues et al., 2017 the *incremental model* is a regular and iterative sequence process and software development. Based on developments in a linear sequence can result in developments in working software that can be used. In the *incremental models* it earliest is often called the *core product*. *Core Product* is the need of the *user*, sometimes the many needs 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 [20]:

1. *Communication*: at this stage a needs analysis is carried out on the needs of software development and formation.
2. *Planning*: At this stage, you will make an initial draft of the task, the time required, the technical task, and the required resources;
3. *Modeling*: Formation of design in making software and design 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

Product test is carried out for the basis of knowing the efficiency, effectiveness, and products made. In this trial, there are 3 main designs, including: (1) trial design, (2) subjects, and (3) types of data.

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

The 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 role and carrying out the role. 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 feature as follows:

A. Homepage

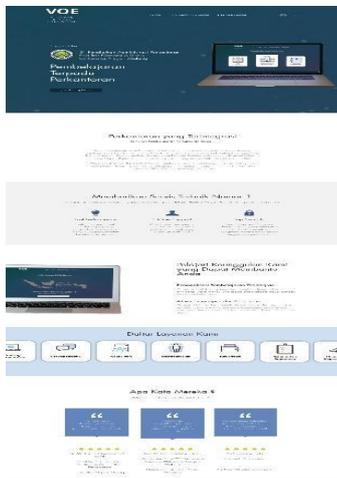


Figure 4. Display The *Homepage*

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

B. Selection of Levels



Figure 5. Selection of Levels

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

C. Selection of Virtual Office Areas



Figure 6. Selection of Virtual Offices

Selecting virtual office areas, after this 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 7. 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 developed.

E. Running an Office Simulation

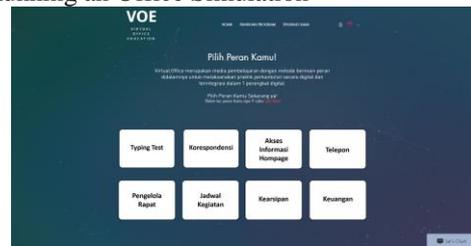


Figure 8. Running an Office Simulation

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 in accordance with the chosen role 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 where in this feature there are the same features but it has been integrated with the office system that can be directly monitored by superiors which is in accordance with the original office features so that the industry can directly 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 Results

Through the media that has been created, and visualized, it will be validated by material experts. Material expert validation is used to assess the implementation of the existing practicum simulations on a-based simulator *website*. There are several aspects of the assessment such as aspects of the presentation of simulations, practical exercises, and simulation illustrations. This aspect is assessed

because the implementation of the simulation must be in accordance with curriculum needs.

Validation of experts conducted by questionnaire using Likert scale with 5 possible answers, i.e. 1,2,3,4, and 5. The results of the validation experts as follows:

1. Presentation Simulation Aspects

Table 1. Results Validation Expert Presentation Simulation Material Aspects

No.	Aspects rated	Score	Category
1	Compliance view simulating the learning needs	5	very appropriate, very effective, very detailed, very clear, and very easy to understand
2	Clarity of the text on the media simulation	5	very appropriate, very effective, very detailed, very clear, and very easy to understand
3	Clarity The language used in the simulation media	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
4	The content of the simulation media with practical needs	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
5	Display programs sequentially and sequentially as needed	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
6	Font type and size used according to needs	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
7	Media display attracts users' attention	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
Total		35	
Average		5	Very appropriate, very effective, very detailed, very clear, and very easy to understand

Based on table 4.1, the results of the validation in the aspect of presenting the simulation there are 7 indicators, obtained from the aspect of presenting the simulation. The total score on the aspect of presenting the simulation by the material expert is 35 with 7 indicators through the average of the assessment results and from the material expert is 5. Through the table the results of the validation in the **aspect of presenting the simulation are Very appropriate, very effective, very detailed, very clear, and very easy understood.**

2. Aspects of Practical Exercises

Table 2. Aspects of Assessment of Practice Exercises

No	Aspects assessed	Score	Category
1	Conformity with practicum subjects	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
2	Conformity of practice with learning objectives	5	Very appropriate , very effective, very detailed, very clear, and very easy to understand
3	The the practice media with the Basic Competition	5	compatibility of Very appropriate, very effective, very detailed, very clear, and very easy to understand
4	Easy to understand the practice	4	Appropriate, Effective, detailed, clear, easy to understand
5	Clarity of the simulation process	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
6	Interactivity with users	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
Total Score		29	
Average		4.83	Appropriate, Effective, detailed, clear, easy to understand

Total of validation scores for material experts in the Practical Exercise aspect is 29 with an average of 4.83, based on the table, the assessment on the Practical aspect **Exercise** is **Appropriate, Effective, detailed, clear, easy to understand.**

3. Aspects of Simulation Illustrations

Table 3. Aspects of Simulation Illustrations

No	Aspects assessed	Score	Category
1 The	media developed can describe simulations in the real world in management	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
2	This media makes it easy students in imagining the implementation process	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
3 The	use of this media can reduce students' understanding of the concept	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
	Total Score	15	
	Average	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand The

Total of validation scores for material experts in the simulation illustration aspect is 15 with an average of 5, based on the table the assessment on the aspect **practical training** is **Very appropriate, very effective, very detailed, very clear, and very easy to understand.**

Validation in the media field is carried out to assess products developed from a scientific focus on media development. Aspects assessed include the aspect of media presentation, which assesses in terms of presentation concepts, color combinations on simulator media, and image objects on simulator media buttons. The next aspect is the presentation of the practicum simulator, which will assess the presentation technique of the simulator, the suitability of the type and size *font*, the suitability of the color of the buttons and navigation, and the suitability of images and *icons* to facilitate practicum Furthermore,

the effectiveness aspect is to assess the student's interactivity response, increase students' motivation to learn simulation, and the clarity of the simulation program. In media validation using a Likert scale questionnaire, with 5 alternative values, namely 1,2,3,4, and 5. The results of the media expert validation are as follows:

1. Aspects of Media Presentation

Table 4. Aspects of Simulation Illustration

No	Aspects assessed	Score	Category
1	The concept of presenting the simulator media	4	Appropriate, Effective, detailed, clear, easy to understand
2	The color combination of the simulator media	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
3	The object of the media simulator button image	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
	Total Score	14	
	Average	4.7	Appropriate, Effective, detailed, clear, easy to understand The

Total of validation scores for material experts in the simulation illustration aspect is 14 with an average of 4.7, based on the table the assessment on the aspect **Media Presentation** is **Appropriate, Effective, detailed, clear, easy understood.**

2. Aspects of Presentation of Practical Simulator

Table 5. Aspect of Simulation Illustration

No	Aspects assessed	Score	Category
1	Simulator presentation technique	4	Appropriate, effective, detailed, clear, easy to understand
2	Appropriateness of font type and size	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand

3	Colorbuttons and navigation	5	compatibility of Very appropriate, very effective, very detailed, very clear, and very easy to understand
4	Compatibility of images and icons to facilitate practicum	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
Total Score		19	
Average		4.75	Appropriate, Effective, detailed, clear, easy to understand The

Total of validation scores for material experts in the simulation illustration aspect is 19 with an average of 4.75, based on the table, the assessment on the aspect **Practicum Simulator** is **Appropriate, Effective, detailed, clear, easy understood.**

3. Aspects of Presentation of Effectiveness

Table 6. Aspects of Simulation Illustration

No	Aspects assessed	Score	Category
1	Able to respond to student interactivity	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
2	Increase students' learning motivation	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
3	Clarity of program simulation	5	Very appropriate, very effective, very detailed, very clear, and very easy to understand
Total Score		15	
Average		5	Very appropriate, very effective, very detailed, very clear, and very easy to understand The

Total validation score for material experts in the simulation illustration aspect is 15 with an average of 5, based on the table the assessment on the aspect **Practicum Simulator** is **Very appropriate, very effective, very detailed, very clear, and very easy to understand.**

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the development carried out, a cloud-based integrated learning office learning media has been tested for validity with the categories of simulation, practical, and design assessment aspects in the categories of effective, detailed, clear, and easy to understand.

The recommendation for further research is to test the use of media on a small scale and on a field scale to obtain test results for direct target users.

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