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# ERISE: A Web-Based Learning System for Digital Records Management in Vocational High Schools

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ERISE; Instructional Media; OMBS; Vocational High School

## Abstract

This study aims to develop the Electronic Record Information System for Education (ERISE) as a learning medium to accommodate practical learning of digital archive management at VHS OMBS. The research employed a Research and Development (R&D) method using the Richey & Klein model, consisting of three phases: design, development, and evaluation. The respondents in this study were 14 individuals, comprising seven teachers, five archival practitioners, and two media experts. Data were collected using questionnaires, focus group discussions (FGDs), and interviews, with instruments including a 5-point Likert-scale questionnaire, FGD guidelines, and interview protocols. Data were analyzed descriptively, with raw scores converted to a 5-point scale and the minimum media feasibility category set at a "B" rating. The results indicate that (1) the ERISE application has been developed as a web-based learning system for digital archive management practice by the needs analysis, design, and development stages; and (2) the feasibility test yielded an average score in the "Very Good" ("A") category. This learning medium is expected to make a concrete contribution to enriching vocational practice, particularly by facilitating the entire archiving process starting from receipt, recording, distribution, classification, retention, and digital signatures.

## How to Cite

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## INTRODUCTION

In the Industrial Revolution 4.0 era, the workforce in all fields must possess digital skills, including both technical and managerial personnel. (Mudzar & Chew, 2022). Zhou et al. (2021), in their paper, revealed that the Internet of Things (IoT), which involves advanced technologies such as 5G networks, machine learning, and edge computing, focuses on several significant aspects, such as machine learning intelligence, mission-critical communication, scalability, energy harvesting, interoperability, user-friendly IoT, and security. With these technological advancements, a new era has begun, where digital innovations have transformed, improving strategies in business and reshaping various industries around the world (Kumar & Sangtani, 2023).

Therefore, the educational process no longer focuses solely on the mastery of conceptual knowledge but also on equipping students with technical and digital skills. As emphasized by Gouda (2020), today's digital technology requires workers to possess literacy and skills in the digital field. Additionally, van Laar et al. (2020) highlight that collaboration skills, creativity, and critical thinking in digital contexts are essential in the current digital era. The combination of these skills will have a positive impact, making learners more competitive in today's world.

Consequently, schools need to focus on providing digital competencies, including general digital competencies and profession-based digital competencies (Starkey, 2020). Schools and competencies are two inseparable aspects. Given the complexity of competencies in the digital world, vocational education should be able to provide these skills through the learning process (M. Astuti et al., 2021). This is necessary to keep up with the rapid development of digital technology in today's industrial world. According to Branca et al. (2020), digital technology has successfully brought efficiency to industries, thus workers must be able to upgrade themselves to keep pace with advances in technology in the future.

Industry and vocational education are closely intertwined in creating graduates with practical skills that benefit both businesses and the academic world (Cheng & Zhou, 2022). This aligns with Irwanto (2021), who states that Vocational High Schools (VHS) are a level of education closely connected to industry. The strong correlation between the needs of the industry in the digital era and the skills of VHS graduates has become a critical issue today. The quality of VHS graduates must meet several criteria, including job readiness, specialized skills according to their vocational field, and digital competencies (Irfansyah et al., 2023; Mahmudah & Santosa, 2021).

Simply put, the goal of vocational education is to prepare graduates to be ready to work in specific fields, with the entire learning process directed toward achieving this goal (Paylova, 2009). General education and vocational education have differences. The principles of vocational education are outlined by Prosser & Quigly (1950), known as the 12 principles of vocational education. Some of these principles emphasize the development of excellent human resources through vocational education, meaning that the learning process must be designed according to real industry conditions. This includes practical environments, attitudes, teacher capabilities, and practical settings. This approach is intended to train students to work according to the conditions required by the industry so that, upon graduation, their knowledge, attitudes, and skills align with industry needs (Abdurrahman et al., 2022; Mahmudah & Santosa, 2021; Virodula & Fortino, 2021).

Office Management and Business Services (OMBS) is a secondary vocational education institution tasked with preparing skilled workers in the office management field. This includes managing digital office equipment, digital document management, information system management, and communication with customers (BSKAP, 2022; Sulistiowati, 2022). Implementing a new curriculum, known as the "Merdeka Belajar" curriculum, is

an innovation to prepare students for conventional office learning and digitalization. The expectation is that after graduation, OMBS students will be able to work in companies or government offices because they have been equipped with the skills required for the digital era. These skills include administrative staff, receptionists, assistant archivists, assistant secretaries, customer service representatives, and junior computer and office automation operators (BSKAP, 2022)

With increasingly complex industry demands and curriculum updates towards digitalization, the learning process must be adapted to the needs of the times. Additionally, effective learning must also be tailored to the characteristics of students in vocational schools, most of whom belong to Generation Z (Wijoyo et al., 2020). This aligns with Ouyang & Ye (2023) who state that successful learning that maximizes achievement outcomes is learning that aligns with students' readiness, interests, habits, and characteristics. In the current era of digital learning, it is crucial to base education on learning characteristics, student characteristics, and administration. These aspects play a significant role in the success of learning (Connelly & Miller, 2020). Therefore, adapting to the digital learning environment while considering the learning styles and preferences of Generation Z students can result in more effective and engaging educational outcomes.

Digital document management is a competency that requires students to be technologically literate, utilize technology, and adapt to industry demands. In reality, there is still a significant gap between the needs of industry and educational institutions (Angelina & Kaur, 2023). Research Soelistiyono & Feijuan (2022) indicate that unemployment among male vocational graduates has doubled compared to that of females. Meanwhile, in general, Indonesia's unemployment data is still dominated by VHS graduates, totaling 7.2 million people (BPS Indonesia, 2024). On the other hand, the overall quality of education in Indonesia is declining. Specifically, when looking at competencies, particularly in Office Management, which has now been renamed Office Management and Business Services (OMBS), it ranks fifth in open unemployment, with 155,672 individuals affected.

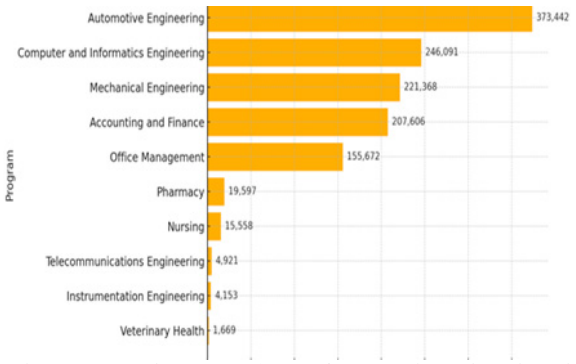



**Figure 1.** The Number of Vocational School Unemployed based on Selected Skill Competencies (Pusat Penelitian Kebijakan Badan Penelitian dan Pengembangan dan Perbukuan Kementerian Pendidikan, 2021)

Supported by Rusdiman et al. (2023), education in Indonesia focuses more on certification and accreditation activities than on enhancing knowledge and skills. In addition to the issues mentioned above, the quality of teachers in vocational education is another issue highlighted by Tuah et al. (2021) and Wahyuni (2018), who note that teachers, especially in vocational fields, still have low levels of proficiency in information and communication technology. Furthermore, Suharyat et al. (2022) emphasize that many teachers lack professional competencies. This aligns with findings by Dwihartanti et al. (2021), indicating that most vocational teachers in OMBS do not have strong skills in utilizing technology-based learning media.

Compounding this issue, archival education, which should emphasize the use of information technology, is still largely manual (Sutirman et al., 2017). In line with this, Oktafia et al. (2023), Puspitasari et al. (2021), and Rismanto & Pahlevi (2022) have revealed that many archival management lessons do not align with curriculum guidelines. Learning methods remain manual, despite the requirements for digital management. These com-

bined issues have several implications, including low competency levels among graduates, which affects their limited work opportunities according to industry needs.

In the learning process, learning media play a crucial role in supporting the achievement of learning objectives (Dayton & Kemp, 1985; Gagné et al., 1992; Mayer, 2014). The use of media can encourage students to learn optimally through the experiences they undergo during the learning process. In line with Hidayat & Suryad (2023); Lubis et al. (2023); Salam et al. (2020); Suryani et al. (2022), using media can enhance interest and motivation in learning. In the long term, this will improve the chances of achieving favorable learning outcomes, whether in knowledge or skills.

One expert in media, Krathwohl & Anderson (2010) states that the role of media is not only as a communication tool between teachers and students but also as a means for students to enhance their understanding of the subject matter. Furthermore, Mayer (2017), mentions that multimedia is far superior to teaching with text alone. Generation Z students, who dominate in VHS, must be accommodated with suitable media. The use of technology-based media can make Generation Z more motivated and bridge the gap between teachers, who are mainly from Generation X and Y, and Generation Z students (Tafonao et al., 2020). Therefore, the most appropriate learning method for the current era is digital-based learning, which is more enjoyable and engaging for students because younger generations are more adaptable to technological advancements (Ndihokubwayo et al., 2020).

The gap between teachers who have not mastered technology in developing and using media (Dwihartanti et al., 2021), records management learning that remains manual (Rismanto & Pahlevi, 2022), and the gap between industry needs in vocational education and vocational graduates' competencies (Pusat Penelitian Kebijakan Badan Penelitian dan Pengembangan dan Perbukuan Kementerian Pendidikan, 2021) are urgent problems that need to be addressed.

Records management learning should be facilitated using media that not only covers knowledge but also skills. The "Merdeka Belajar" curriculum in the field of MPBL has been designed to focus on digital archival management learning. (Kementrian Pendidikan dan Kebudayaan, 2020). This study aims to develop a web-based learning media, specifically an electronic archival management system tailored to the "Merdeka Belajar" curriculum. This system is designed to support the digital archival management learning process in VHS OMBS.

Website-based practical learning focusing on project-based learning is a perfect combination to enhance students' skills in line with vocational school learning demands (Chatwattana & Nilsook, 2017). Barisone et al. (2019) emphasize that website-based learning can bridge the gap between theory and practice in health education. Furthermore, Aksoy et al. (2019) assert that students who learn through websites perform better than those who do not.

Previous studies have confirmed that web-based learning has been empirically proven to enhance instructional quality. Ningrum et al. (2024) found that using a website as a learning medium improved student test scores and satisfaction. Salihah (2022) further demonstrated empirically that there were significant differences in performance between classes that used a website as their primary learning platform in elementary school. Conversely, Susanti & Suripah (2021) Web-based instruction was ineffective in facilitating online mathematics learning at the junior high school level.

Previous studies have shown that there is still a gap in the use of web-based learning media in both primary and secondary schools. However, the development of websites for skill-enhancement learning remains limited. Therefore, this study aims to develop a web-based application as an information system to support the practical learning of digital archive management at VHS OMBS.

This application is named Electronic Record Information System for Education (ERISE). The development of such an information system–based learning medium is urgently needed to ensure that VHS OMBS graduates are better prepared to face the demands of the Industry 4.0 era. Additionally, digital learning media is expected to enhance students' motivation and learning outcomes, making them more competitive in the job market. This study seeks to significantly contribute to improving the quality of vocational education in Indonesia and preparing students to meet the challenges of the digital era.

## METHODS

This study employs a Research and Development (R&D) approach, in line with its objective of developing an information system to support practical learning of digital archive management at VHS OMBS. The development model used in this study is the one proposed by Richey & Klein (2005) which consists of design, development, and evaluation (see Figure 2).

### Research Procedure

The initial phase is design, which includes a needs analysis and program design. This was done via a focus group discussion (FGD) to gather data on the VHS OMBS curriculum and the practical teaching of digital archive management. Additional data were collected on industry-standard archival processes. Participants included teachers of digital archive management and archival practitioners from organizations. Next, a discussion with media experts was held to draft the system flowchart and user-interface designs that address the requirements for teaching digital document management.

The development phase began with programming to realize the approved designs and storyboards. Once programming was complete, the website underwent a conformity test. Finally, a summative evaluation (feasibility test) of the system and its content was conducted, involving two media experts and two archival experts.

In the research and development study, participants are those involved in the development process. The following table presents the number of respondents who participated in this study. Table 1 shows 14 respondents in this study, including teachers, archival practitioners, and lecturers.

**Table 1.** Number of Respondents in the Study

| Participation Type | Number of Respondents | Purpose |
|---|---|---|
| Teachers | 5 | Learning needs analysis |
| | 1 | Content validation |
| Archival Practitioners | 5 | Learning needs analysis |
| | 1 | Content validation |
| Lecturers | 2 | Media validation |
| Total | 14 | |

Source: Processed data (2024)

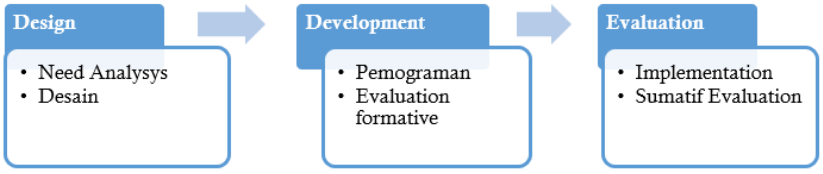



**Figure 2.** Program Development Stages

This research is limited to the development stage due to the time and personnel constraints faced by the researchers.

**Data Collections**

The instruments used for data collection include FGD guides, interview guides, and questionnaires. The FGDs and interviews are employed to gather data on how archival practice is taught and what the learning needs are at VHS OMBS; in addition, they explore how archival processes are conducted in an organizational setting. Next, the questionnaires are used to assess the feasibility of the developed website. Table 2 shows the FGD and interview guides. The questionnaire uses a rating scale from 1 to 5. The grid for the questionnaire for program and content validation activities is presented in Table 3.

The material validation instrument grid is critical in ensuring the quality and effectiveness of the instructional content related to record management and archival procedures. This grid is meticulously designed to evalua-

**Table 3.** Validation Instrument Indicator Program

| No | Aspect | Indicator | Item |
|---|---|---|---|
| 1 | Program | Program Display | 1, 2, 3, 4, 5, 6 |
| | | Navigation | 7, 8, 9, 10 |
| | | Ease of operation program | 11, 12, 13, 14 |
| | | User interaction with program | 15, 16, 17 |
| 2 | Content | Picture | 19, 20, 21, 22 |
| | | Animation | 23, 24 |
| | | Text | 25, 26 |
| Item Total | | | 26 Items |

Source: Processed data (2024)

**Table 2.** FGD and Interview Guides

| No | Aspect | Sub Aspect | Narasumber |
|---|---|---|---|
| 1 | Curriculum | Learning objectives | Teacher |
| | | Learning materials | Teacher |
| 2 | Instruction | Learning objectives for digital record management | Teacher |
| | | Needs for practical learning media | Teacher |
| | | Types of practical learning media | Teacher |
| 3 | Instructional practice | Digital record management practicum process | Teacher |
| | | User requirements in digital record management practicum | Teacher |
| 4 | Organizational record management | Incoming record process flow | Archival Practitioners |
| | | Incoming record process flow | Archival Practitioners |
| | | Archive appraisal process | Archival Practitioners |
| | | Archive appraisal process | Archival Practitioners |
| 5 | Access Control | Account types in digital record management | Archival Practitioners |
| | | Access control in digital record management | Archival Practitioners |

Source: Processed data (2024)

te various aspects of the learning process and the specific procedures involved in archival management. The instrument is divided into two main aspects: the Learning Process and Archival Procedures, each with its own set of indicators and items to be assessed.

**Table 4.** Material Validation Instrument Grid

| No | Aspect | Indicator | Item |
|---|---|---|---|
| 1 | Learning Process | Record management theory | 1, 2, 3, 4, 5, 6, 7 |
| 2 | Records Procedure | Input process | 8, 9, 10, 11 |
| | | Disposition of letters | 12, 13, 14, 15 |
| | | Clasification | 16, 17, 18, 19, 20 |
| | | Incoming/ outgoing mail | 21, 22, 23, 24, 25 |
| Item Total | | | 25 Items |

Source: Processed data (2024)

**Table 5.** Assessment Criteria

| Rank | Criteria Level | Criteria |
|---|---|---|
| A | Excelent | $42 < X$ |
| B | Good | $3{,}4 < X \leq 4{,}2$ |
| C | Fair | $2{,}6 < X \leq 3{,}4$ |
| D | Poor | $1{,}8 < X \leq 2{,}6$ |
| E | Very Poor | $X \leq 1{,}8$ |

Source: Processed data (2024)

**Data Analysis**

The data analysis technique used is a descriptive analysis technique with a quantitative and qualitative approach. The steps in data analysis include: (a) collecting raw data; (b) scoring; (c) the scores obtained are then converted into scores on a scale of 5 using the conversion reference from Mardapi (2016). The minimum standard for suitability of the media used is to obtain a Good (”B”) grade. So, if the resulting media does not get a B score, revisions are made to the media and then retested on students. After the feasibility test produces a minimum result of B or good, the media development process has been completed.

## RESULT AND DISCUSSION

**Design**

First, Need Analyst. The FGD activities have been conducted twice and have featured speakers such as the OMBS VHS teacher and an archival practitioner from the organisation. The results of the FGD were presented according to the objectives, which are to analyse the problems and needs in learning digital archive management at VHS OMBS and to understand how digital archives are managed in the organisation. The results of the first FGD, it can be concluded that: (1) the process of learning archival management at VHS aims for students to understand the concept of archival management in organisations, and students to be able to practice both manual and digital archival management; (2) In the practice of digital archiving, special media for digital archiving practice based on applications or web are required; and (3) In the digital archiving practicum, it starts with the processes of recording, distribution, storage, and disposal.

Meanwhile, the results of the second FGD with archival practitioners yielded the following results: (1) the process of managing incoming archives starts from recording, distribution, storage, and disposal: (2) the process of managing incoming archives starts with the creation of a letter draft, recording, creation of outgoing letters, distribution, and depreciation; (3) The type of media in archive management should ideally use web-based systems because they will be more accessible from anywhere and at any time; (4) The roles of users should include leaders, secretaries, archivists, and archive managers; (5) The database for incoming and outgoing letters must be integrated for efficient tracking; (6) The process of creating outgoing letters must be integrated into the system to avoid the need for manual

typing in word processors; and (7) The developed application program must include an archive retention schedule, and the application must accommodate digital signatures.

Next, curriculum analysis activities are carried out by researchers by reading and reviewing the existing curriculum. Based on the curriculum review, the needs for the archival management program were identified as follows: (1) The material to be discussed includes digital mail management as one of the elements of digital document management. This includes receiving letters, data entry into the system, disposition, response, and storage procedures; and (2) The learning media developed should be more contextual to enhance students' independent learning. Contextual learning should be facilitated with appropriate media so that students can engage in enjoyable learning, participate with high enthusiasm, and be actively involved in the learning process (Norra, 2018). Furthermore, the ERISE program will proceed to the next stage according to the flowchart design

Second, Design. The first design is in "Flowchart Design". The next stage is creating a program design based on an analysis of program needs. Based on this input, ERISE has six users: Supervisor, Secretary, Administrative Unit, and Archivist. Based on the input, the researcher created a program flowchart presented in Figure 3.

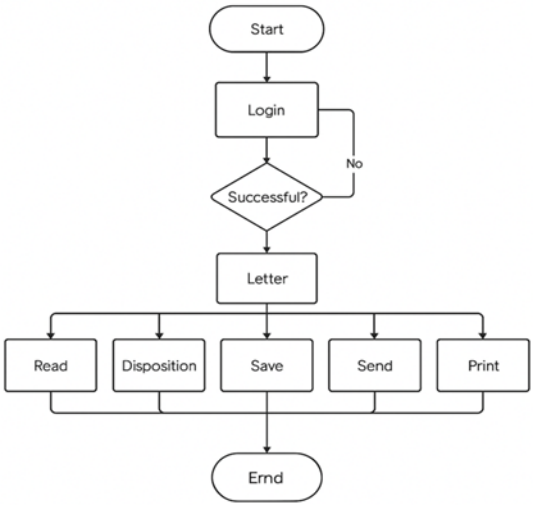



**Figure 3.** Flowchart for Supervisor User (2021)

In managing incoming mail through the program, senior users can read incoming mail, distribute/disposition, carry out the storage process, and send and print incoming mail.

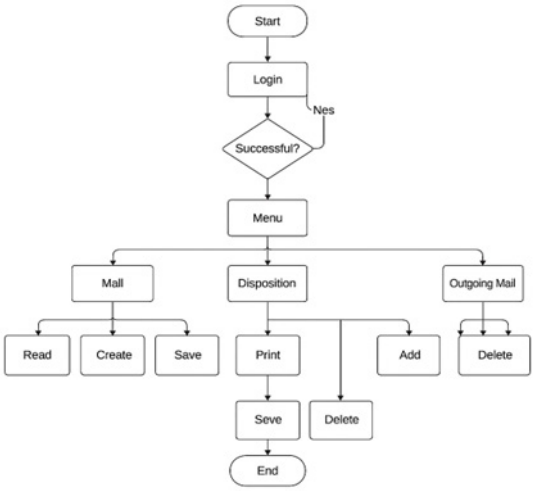



**Figure 4.** Flowcart For Secretary User (2021)

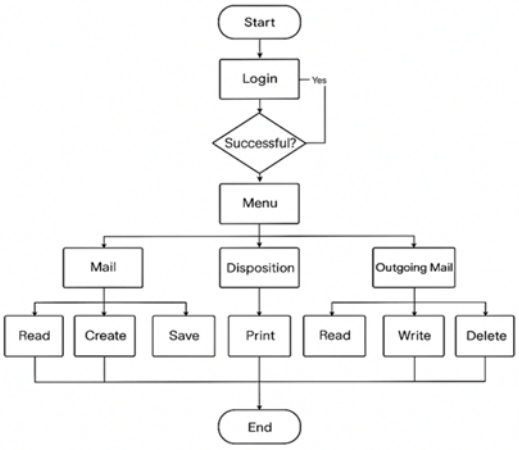



**Figure 5.** Flowcart for Administration Unit User (2021)

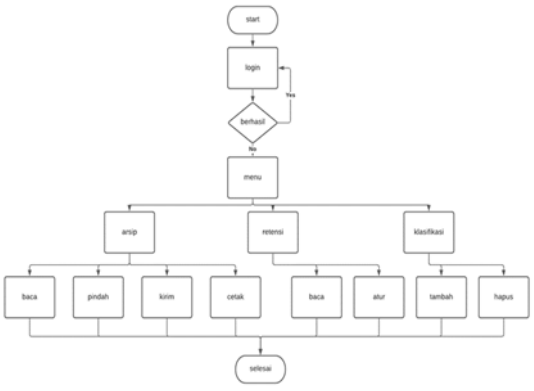


**Figure 6.** Flowchart For Archivist User (2021)

Secretary users have many accesses, namely: (1) managing letters, including reading incoming letters, distributing/ disposing, carrying out storage processes, sending letters, and printing incoming letters; (2) Dispositions can create dispositions, read and send dispositions; and (3) Create and delete mail classifications.

Administration unit users have similarities with Secretary users, namely: (1) managing letters, including reading incoming letters, distributing/disposing, carrying out storage processes, sending letters, and printing incoming letters; (2) Dispositions can create dispositions, read and send dispositions; and (3) Create and delete the classifications.

Archivist users have several access rights, namely: (1) managing archives, including reading incoming letters, moving, sending, and printing records: (2) The letter retention process, namely, reading and setting the letter retention date to create an archive retention schedule; and (3) Add and delete the classifications.

The second design is "Interface Design". The definition of a user interface is a mechanism for receiving information from the user and providing information back to the user to help direct the flow of investigating the problem until the solution is obtained (Griffin & Baston, 2014). The aim of designing a program interface is to estimate the user experience. User experience or user experience contains at least the user's perceptions and responses as a reaction to using a product, system, or service process (Yohanes et al., 2021).

Creating program interface design using Adobe Photoshop CS6. Adobe Flash CS6 software is very suitable for media creation because it can create attractive digital content for the younger generation (Bishop & Hartman, 2013). In the process of creating the interface design for ERISE, following the needs analysis that has been made. The following is the user interface design of the program that has been designed: Login page, Creating Process, Distribution Process, Disposition.

The login page is the interface used by users to access the system using valid credentials. This program utilizes 2 credentials, namely username and password. The purpose of the login page is to provide additional security to the system, ensuring that only authorized users can access the available data and features. Furthermore, the login page allows the program to track individual user activities, providing an audit trail that is useful for monitoring and managing system security


**Figure 7.** Login Page Design

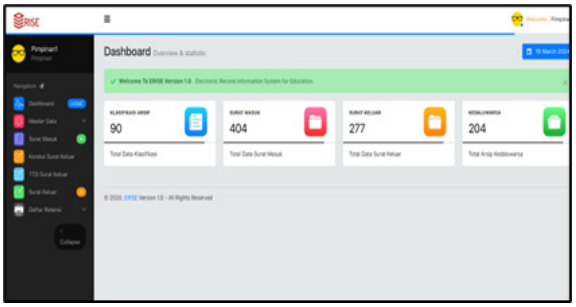



**Figure 8.** Dashboard Page Design

Creating a process, in the process of managing letters digitally, a master data or a letter management database is needed. This database consists of letter number, letter date, letter type, sender, subject, brief content, and letter file in PDF format. This database serves to track, send, dispose of, and retain letters.

After the letter database input process, the incoming letters will then be uploaded in PDF form. The following is the interface design for the process of uploading incoming letters and determining the classification of incoming/outgoing letters.

In the incoming mail database, users must determine the classification of incoming mail first, classification or coding is the most important thing in the mail handling process (Siswanto & Salam, 2022). Apart from

the process of managing incoming mail, the program also accommodates the process of creating outgoing mail through an automatic system. Users simply fill in the available columns according to the concept of the desired outgoing letter.

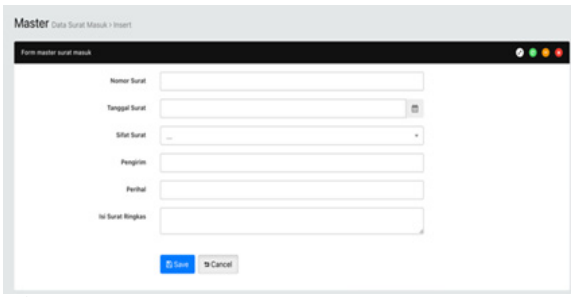



**Figure 9.** Input Income Letter Page


**Figure 10.** Browse Letter File Design Interface

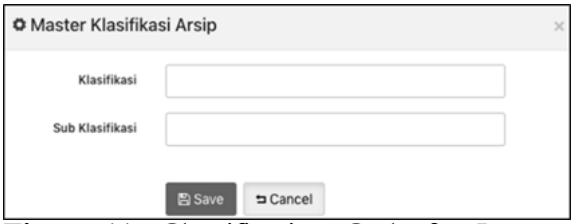



**Figure 11.** Classification Code for Income Letter

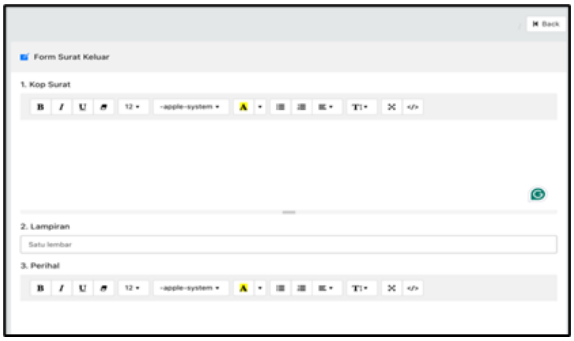



**Figure 12**. Disposition Process Input Design

Distribution process, in the concept of digital archive management, is a process that is no less important than stated by Read & Ginn (2011), is the letter distribution process. The letter distribution process involves distributing letters to the department that will process the letters systematically. In the program concept, the disposition/distribution of letters can be sent to all users, including leaders, secretaries, processing units, and archivists. Users can write disposition orders in the disposition contents according to the incoming letter that has been received.

Disposition, in the archive disposition process, begins with the process of preparing an archive retention schedule. In initiating an archive retention schedule, the user must be sure that the mail that has been processed is complete because the retention process cannot restore archives to be processed if they are already in retention status. The user must select a date in the active and inactive year columns according to the archive retention schedule. Then, in the information column, are three statuses: destroyed, permanent, and reassessed. This is the same as the retention schedule for all incoming and outgoing letters.

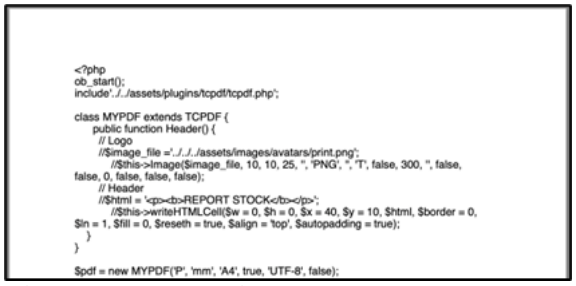

**Figure 13.** Input Distribution Process Design


**Figure 14.** Retention Input Process Design

## Development

The development stage of the ERISE program consists of programming and formative evaluation. First, Programming. At

this stage, the researcher begins to combine the flowchart that has been created with the interface design and programming language. When creating a web-based database system, you can use PHP with the system language, MySQL. MySQL is a database server program that is capable of receiving and sending data very quickly, for multiple users, and uses standard SQL (Structured Query Language) commands, and can be used both as a client and server (Elisa et al., 2019).



```
<?php
ob_start();
include'../../assets/plugins/tcpdf/tcpdf.php';

class MYPDF extends TCPDF {
    public function Header() {
        // Logo
        //$image_file ='../../../assets/images/avatars/print.png';
            //$this->Image($image_file, 10, 10, 25, '', 'PNG', '', 'T', false, 300, '', false,
false, 0, false, false, false);
        // Header
        //$html = '<p><b>REPORT STOCK</b></p>';
            //$this->writeHTMLCell($w = 0, $h = 0, $x = 40, $y = 10, $html, $border = 0,
$ln = 1, $fill = 0, $reseth = true, $align = 'top', $autopadding = true);
    }
}

$pdf = new MYPDF('P', 'mm', 'A4', true, 'UTF-8', false);
```

**Figure 15.** Screenshot PHP Program

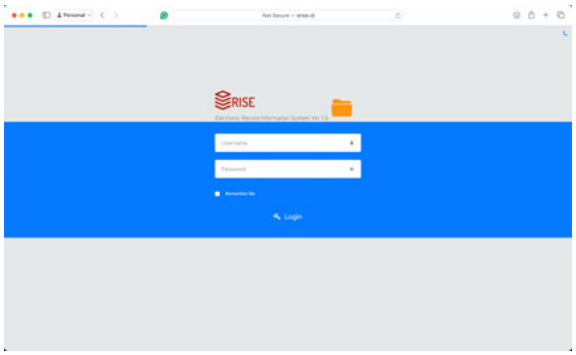



**Figure 16.** Log In Page

The login page was designed to meet the planned project-based learning approach's initial requirements involving small teams' collaboration. This streamlined login process also ensures that users cannot access documents to which they are not entitled. This aligns with the system security principle articulated by Hariyadi & Prakasa (2023) that requiring login, access to sensitive documents and data is granted only to authorized users, thereby enhancing data security and preventing unauthorized access.

Second, The Formative Evaluation. The feasibility test stage consists of a validation stage by program and media experts. This stage is carried out to obtain input regarding program aspects and program content. Figure 17 presents the results of the first phase validation.

Figure 17 shows that the assessment results by media experts from the program aspect were 4.19, while from the content aspect, it was 4.3. The overall assessment for program validation obtained an average score of 4.534, or the predicate "A", or excellent. Based on the results of the validation stage I, the program that has been developed received an A rating, so that it can be continued in validation stage II. Several revisions were suggested by the media experts regarding the developed program: (1) There are no manual/instructions for using the system. (2) Remove the button in each panel. (3) You should be given a "confirmation dialogue" when logging out.

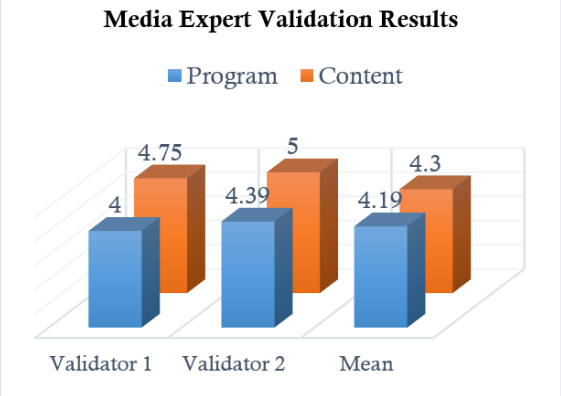



**Figure 17.** Media Expert Validation Results

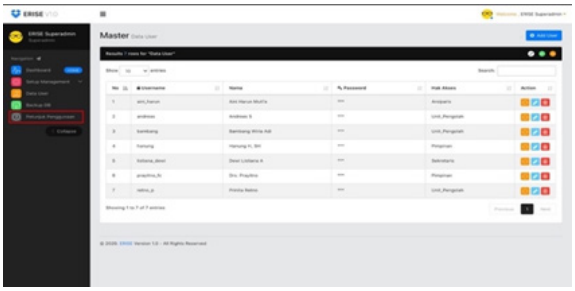


**Figure 18.** Adding Manual Guideline on Dashboard

The next stage is the validation by subject matter experts. The validation process by subject matter experts is conducted to gather input regarding the flow of digital letter management materials. The results of Phase II validation are presented in Figure 20.

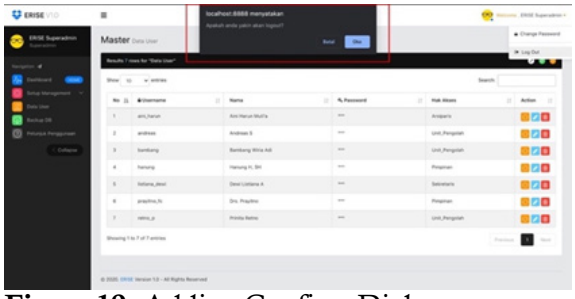


**Figure 19.** Adding Confirm Dialog

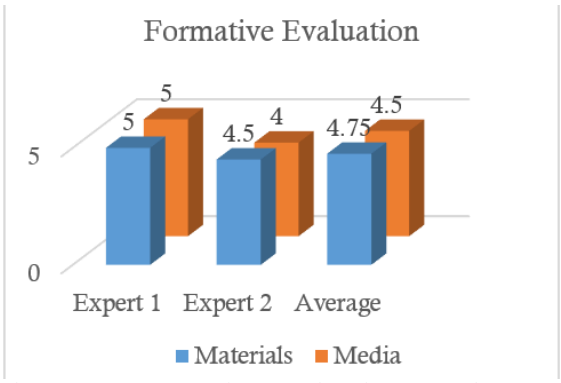



**Figure 20.** Formative Evaluation Results

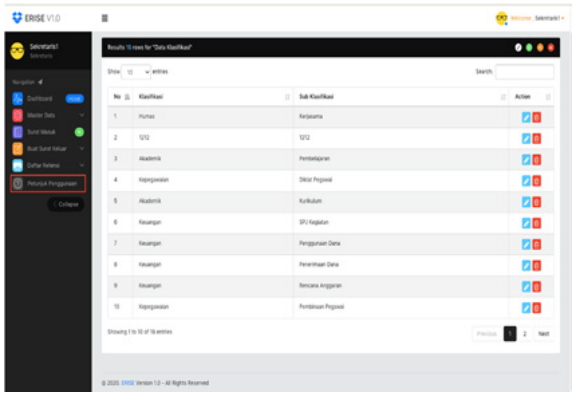


**Figure 21.** Detailed Letter Database After Revise

Figure 20 shows that the assessment by subject matter experts in terms of the theoretical readiness aspect received an average score of 4.50. In contrast, regarding the content aspect, it received an average score of 4.75. The overall assessment for media validation resulted in an average score of 4.525 or predicate "A". Based on the results of Phase II validation, it is concluded that the media aspect of the program received an "A" rating, or excellent, and is deemed suitable for implementation. To complete the feasibility testing process, subject matter experts have some suggestions for improvement for program perfection, such as the initial appearance in classification, incoming letters, outgoing letters, etc., which are not detailed. Users must navigate through menus first.

The positive contribution of technology to improving instructional quality in education is a concrete example that deserves highlighting (Teoh et al., 2022). This is supported by current trends showing that many students are shifting from conventional learning methods to computer and internet-based digital media (Anggrawan et al., 2021; Nickl et al., 2022). Developing a website for practical digital archive management instruction is one of the key demands of modern vocational education. The results of this study indicate that the development process of the digital archive management website for VHS OMBS students has successfully progressed through the needs analysis, design, and development stages, according to the model proposed by Richey & Klein (2005).

The needs-analysis phase for the ERISE program was conducted by examining the curriculum, instructional practices, and industry requirements related to digital records management. The results indicate that the developed website can accommodate digital records management by supporting incoming and outgoing letter handling, recording, distribution, and retention processes defined by Sutirman (2020), as comprising receipt, registration, distribution, and retention. This development also aligns with general corporate document-management concepts, Hidayat (2020) studied the incoming mail workflow at PT KAI, which begins with mail identification, registration, media conversion, distribution, and archiving, followed by outgoing mail inputs, document numbering, file preparation, delivery to the originating unit, media conversion, and final archiving.

With clearly defined access controls to facilitate usability, the program's user accounts are tailored to specific needs. User roles include Supervisor, Secretary, Archivist, and Processing Unit. This conforms to Rah-

ma & Mayesti (2019) who assert that electronic records management must satisfy security regulations—namely, access control by restricting access to certain features, limiting access to specific records, enforcing time-based usage constraints, and governing which functions each role may perform. Such measures ensure the secure handling of records and simplify their use according to intended purposes. Consequently, the implementation of an archival application or system within an organization has been shown to ease record retrieval greatly (Prasetyo & Husna, 2021).

Furthermore, the programming process has ensured that the managed database comprises both incoming and outgoing mail, covering all stages from receipt through retention for each type. Web-based learning can increase student engagement, enhance problem-solving skills, stimulate critical thinking, and foster collaborative skills (Mora et al., 2020; Rosen et al., 2020; Unal & Cakir, 2021).

Based on the outcomes of the development phase, we decided to incorporate features for automatic reply-letter generation and digital signatures by the supervisor, in line with institutional and industry records information management systems (Abraham et al., 2018; Kriswanto & Fitriyadi, 2020). The legal validity of digital signatures has also been recognized nationally through the Electronic Information and Transactions Law (UU ITE) and has seen growing adoption following the COVID-19 pandemic (Dermawan, 2021; Kurniawan & Mumpuni Arti, 2021).

The next stage is the program-design phase, which builds directly on the media-needs analysis conducted in the first activity. In this phase, program design is formalized using flowcharts, an approach common to both the Bell & T.A (1976) the waterfall development model is the same as the Richey & Klein (2014). development model. Flowcharts are charts with a flow describing the steps in solving a problem. In the manufacturing process. Flowcharts use certain symbols or charts (Charts) to describe the sequence/process flow (Flow) in detail and the relationship between a process (instruction) and other processes in a program (Khoiriyah & Marisa, 2017). Visual programming using a flowchart system allows programmers to write and compile computer programs without needing to remember programming language syntax, making it easier to use and effective for beginners (Charntaweekhun & Wangsiripitak, 2006).

The development phase aimed to build and verify that the ERISE program was ready for trial in a learning environment. It began with programming and integration of the flowchart, interface design, and code to produce the ERISE application. Next, a formative evaluation was conducted to assess feasibility. The results showed that ERISE met technical requirements and contextual knowledge criteria as a learning medium for digital archive management practice, earning a "Very Good" rating. These findings align with prior studies that applied feasibility tests to web based learning media and similarly achieved "Very Good" ratings (Astuti et al., 2020; Rosyadi et al., 2023; Salihah, 2022).

Although the results were positive, revisions based on the validators' feedback were still carried out. This revision process ensures the program can be used effectively during field implementation. The formative evaluation stage is a crucial step in the research and development process to determine whether the project is feasible(Perdana et al., 2022). This website development phase not only tests functionality but also its ability to support learning, unlike most web information systems, which undergo only Black-Box performance testing (Sari et al., 2022).

With formative evaluation by experts, the program must now be tested in a real world setting. According to Milheim (2012), computer-based instructional media should be evaluated for effectiveness in the learning process. Therefore, ERISE will proceed to the effectiveness evaluation stage to determine whether it can positively impact students' digital archive management practice.

## CONCLUSION

Learning in the digital era must always be aligned with industry needs and learner characteristics. Websites are among the most suitable learning media for today's digital context. The study's findings indicate that: (1) the ERISE application has been developed as a web-based learning system for digital archive management practice, following the prescribed design, and development stages; and (2) formative evaluation of ERISE gain an average score in the "Very Good" ("A") category. ERISE is expected to make a tangible contribution to enriching vocational practice, particularly by facilitating the entire archiving workflow from receipt, records, distribution, classification, retention, and digital signatures.

This research remains limited to the development phase, in which only formative evaluation has been conducted. Therefore, implementation and summative evaluation are still required to assess its impact on actual learning environments. Such steps are essential to obtain empirical data on whether the ERISE application effectively enhances the quality of vocational education.

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