



One-Gate Digital Archive for Elementary School Digitalization

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Abstract: Archive management is an aspect that schools must manage yet still receives a lack of attention despite its importance. This lack of attention to management can be seen in elementary schools, which only rely on one school operator to manage the archives because of a lack of employees. As a result, much data is unarchived, damaged, lost, and unorganized. This study aims to produce a web-based one-gate digital archive utilizing the belajar.id account feature that educators and educational staff in Indonesia own. A one-gate digital archive is created to improve the school's archive management and increase school digitalization to increase educational services. This research uses Plomp's model development research. The advantage of using a one-gate digital archive is that it allows schools to easily change the web's appearance and features at a low cost. The result showed that the developed one-gate digital archive was valid and reliable, with an average score of 4,7, in the excellent category. The one-gate digital archive is expected to help the principal and teachers manage the archive. This research still needs to examine the effectiveness of this one-gate digital archive, so further research is required.

Keywords: archive management, digital archive, learning account, school digitalization;

Recommended citation: Dewi, K. P., Ismanati, C., & Murti, R. C. (2023). One-Gate Digital Archive for Elementary School Digitalization. *Journal of Innovation in Educational and Cultural Research*, 4(1), 81-88.

INTRODUCTION

The rapid development of technology and information affects many aspects of the world, including education. We can find innovative products developed with sophisticated technology at schools, especially during the COVID pandemic. Archive management is one of the school management activities that technology can improve. Archive management is critical because it is a form of a school's performance report to the stakeholders and is related to school accountability (Sholikah & Hermanto, 2021; Oktarina et al., 2016). Besides that, archives consist of various data and information about learning processes and school management that will impact the quality of the teaching and learning process (Putra & Merliana, 2021). Because the archive contains valuable information and applications, it must be stored systematically so that it is easy to find when needed (Gie in Risparyanto, 2021). Good archive management can also help a leader, such as a school principal, make decisions or policies based on the data (Putri, 2018).

With the development of technology, school archives management, which was initially paper-based, began to change with digital archive management. Harries (2009) argued that managing digital archives is unavoidable and essential for institutions to adapt to developments and meet policy compliance. A digital archive management system is implemented because the school found several shortcomings in the paper-based archive management system. Technological developments make information spread faster, making people want instant and fast access without going through complicated procedures (Harries, 2009). As explained by Rosmaniah et al. (2022), the shortcoming of paper-based archives is that they are bound by space and time. It means that access to archives is limited to only during working hours and only when there is sufficient space to store paper-based archives. Digital archives are different because it is more accessible. Moreover, paper-based archives are difficult to preserve since they can be easily damaged and dirty. Therefore, paper-based archives require high maintenance and cost (Rifauddin, 2016).

This digital archive management provides many conveniences and benefits that are not available in paper-based archive management. The following are the benefits of digital archive management, according to Putranto (2017): 1) it can be shared easily to minimize duplication, 2) the sending and sharing process is faster, 3) saving storage space, and 4) providing more concise access for users. A digital archive is also intended as a backup of conventional archives if the physical condition of the archive is damaged (Rohmawati & Puspasari, 2020). These advantages do not indicate that digital archive management does not have disadvantages. The school will undergo a transitional period full of challenges in implementing this system, such as infrastructure and the readiness of human resources (Putranto, 2017). Digital archive management is also instrumental in accelerating archive discovery. In conventional archive management, the archive retrieval process is more difficult because the manager has to look for the documents one by one in the drawer. Even though the documents have been classified, the large number of existing documents makes the time needed to find the archives longer. In fact, according to Gie (In Diani & Suwanto, 2018), the ideal archive retrieval process is under

one minute. The difficulty of discovering these archives can also be influenced by the unclear preparation of archives, the lack of facilities and infrastructure, and the lack of archive management officers (Ramanda, 2015). Berisha (2015) defines digital archiving as managing and storing archives using computer media and their supporters. Digital archives are stored and processed using computer devices (Muhidin et al., 2016). To manage digital archives, Muhidin et al. (2016) revealed two stages: the archive storage and retrieval stages. The archive storage stage begins with transferring media and progresses to the data organization on new media. The media transfer process changes the form from physical data into digital data using a scanner or photo, then organizes them into folders on the computer or the data storage platform.

Digital archiving is already implemented in schools as stated in the following studies: (1) Digital Archiving as a Form of School Lettering Audit Management Optimization (Sunarni et al., 2020); (2) Assistance in Digital Archive Management using Arteri Application at SD Muhammadiyah Pandes Bantul (Sholeh et al., 2020); (3) E-archive for Muhammadiyah School as Digital Documentation (Pramono et al., 2021); (4) Microsoft Access-Based Dynamic Archive Management Information System at Elementary School in Pekanbaru City in 2020 (Dwiyantoro & Junandi, 2021). Indonesian Ministry of Education also provides schools and teachers with a Google learning account that can help in school digitalization, such as digital archiving, as a response to technology development (Kementerian Pendidikan dan Kebudayaan, 2019). In the Secretary General's Regulation No. 16 of 2021, it is written that all teachers, education staff, and students registered in the DAPODIK will get *belajar.id* account, and their accounts will be active as long as they are registered in the DAPODIK. The *belajar.id* account has been running effectively and is used with *Google Classroom*, *Google Form*, and *Google Meet* as the most used application (Wahyudi & Suwandana, 2022).

Applications in the *belajar.id* account facility can be used as a digital archive. The use of these applications in storing digital archives has been implemented as stated in the articles: Improving Teacher Performance in School Administration Management Using Online Sharing Facilities (Astuti et al., 2020) and Development of Learning Media for Google Sites: Writing Poetry with a Contextual Approach to Class X Students of SMA Negeri 16 Medan (Ansari & Adisaputra, 2021). One of the advantages of Google Workspace for Education as one of the *belajar.id* account features is that it has many users and is easier to use. According to De Vynck and Bergen (2020), Google controls 60% of the computer market in education. Google itself reported that more than one hundred and seventy million students and educators worldwide depend on Google's features (Sinha, 2021). In addition, the *belajar.id* account is an accessible government facility, so schools can make low-cost digital archives with unlimited cloud storage (Fatimah, 2021). Based on the background described, the one-gate digital archive needs to be developed to help the school manage the archives to improve the learning process and data-based decision-making. This development is a new thing in elementary school. Thus, this research needs to be carried out to increase the effectiveness of digital archives management at elementary schools.

METHODS

This study used a mixed-methods approach, with the type of research and development defined as the process for validating or developing a product (Borg and Gall, 1998). The research and development research model adopted in this study is the Plomp model, composed of three stages: preliminary research, prototyping, and assessment (van den Akker et al., 2006). Due to time, the assessment stage in this study was limited only to implementing the product without further study on its effectiveness. Therefore, this study is classified as research and developmental research level 1 (Sugiyono, 2019).

The study was conducted in Sukabumi. The preliminary research was in the form of interviews, observation, and literature study to gather information regarding problems faced by elementary schools in archive management by choosing principal and school operator staff as informants and products that can be developed or optimized to solve a problem based on study literature and school's resources. The prototyping stage was conducted with several steps: product development, practitioner and expert test, and revision until the product is valid. Research and development study products must be tested before being widely implemented. This study used one school as the initial subject and four validators consisting of two practitioners and two experts.

The instrument in this study was a questionnaire with a Likert scale. Data was also obtained from comments and suggestions from validators on the assessment sheet provided by the researcher. The questionnaire was based on Webqual 4.0 indicators: usability, service quality, information quality, and visual quality. Each indicator contained several statements. Practitioners and experts ticked the questionnaire based on their experience using the one-gate digital archive. The scale is from 1 to 5, with 5 being the highest score. The data collected through the questionnaire was analyzed using quantitative descriptive analysis. The scores were calculated as an average number and interpreted according to the criteria in Table 1.

Table 1. Product Validity Criteria

Score Mean	Qualification	Description
$4,51 \leq x \leq 5,00$	Excellent	Valid
$3,51 \leq x \leq 4,50$	Good	Valid
$2,51 \leq x \leq 3,50$	Fair	Revised
$1,51 \leq x \leq 2,50$	Poor	Revised
$1,00 \leq x \leq 1,50$	Very Poor	Revised

Source : (Arikunto, 2014)

RESULT AND DISCUSSION

Preliminary Research

Archive management in elementary schools is still not considered a priority activity, so assistance in archive management is needed to help the school (Nuryantiningasih et al., 2021). As a result, schools run less effective archive management because they do not have storage areas for archives, and many documents are scattered, lost, and piled up aimlessly. Such a situation made data finding take a long time. This research found that the absence of an archivist and shared access reduced the school's service quality. For example, when stakeholders, such as students' parents, need documents from school and the archives manager is absent, the parents need to come back another day to get the documents because the archive manager can only access the documents, even for general documents. In addition, the absence of an archive storage center and standard operational procedure also prevents the archive manager from monitoring if the archive is incomplete or lost. This ineffective archive management is caused by (1) archivists' lack of ability, (2) inadequate infrastructure, and (3) the absence of operational standards in archive management (Ramanda, 2015; Oktarina et al., 2020; Suharti et al., 2020). The lack of ability of archivists can also be caused by insufficient resources in Indonesia (Bramantya & Prasetyo, 2019; Agustina, 2021) to assist school institutions in managing their archives and make teachers or school operators need to learn to manage archives without a mentor.

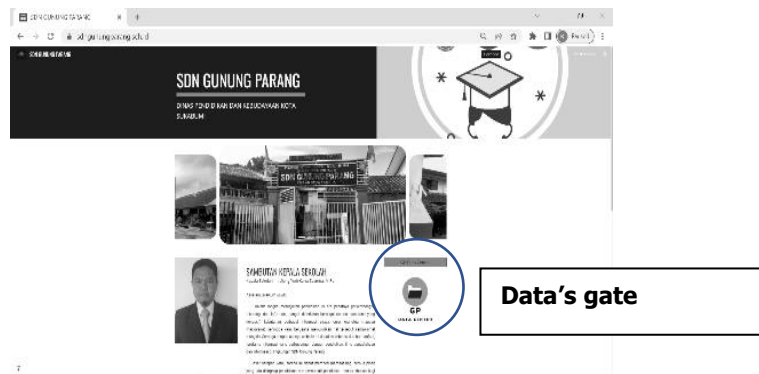
Archives is one of the schools' management components that has a significant relationship with the school's goal accomplishment (Okon et al. 2020). Institutions need fast and accurate information to make good decisions, so ICT integration is unavoidable (Kholis et al., 2021; Oktarina et al., 2020). The change in the school's accreditation system also requires schools to have digital archives (Dinihari et al., 2021). Providing schools with digital access can strengthen archival practice and the learning process for students and teachers (Lyons, 2002; Hendry, 2007). An attempt to use hard drives to store archives is already implemented in schools, but it has limited sharing access. Top (2013) stated that hard drives would eventually fail and usually happening randomly, resulting in the loss of files.

Elementary schools in Indonesia have a learning account facilitated by the Indonesia Ministry of Education, which consists of a few ICT-integrated applications to enhance school digitalization performance. Unfortunately, not all schools use that account well and use several applications such as Google Classroom, Google Form, and Google Meet (Wahyudi & Suwandana, 2022). In comparison, applications in a *belajar.id* account can be combined and used for many benefits. Google Drive is a cloud storage application that can be used for storage and *belajar.id* users have unlimited space to save their data (Fatimah, 2021), which is a considerable benefit for the school. Cloud storage users such as Google Drive can also effectively make service design decisions (Burda & Teuteberg, 2016) because the data-finding process is more manageable. With cloud storage, users can remotely and conveniently archive their data without the burden of local data storage (Armbrust et al., 2010; Wang et al., 2013). Google Drive can be combined with Google Sites to display the category link for each archive. The use of Google sites is based on the finding that schools usually share Google Drive's link in social media groups like WhatsApp, and after a few days, the link cannot be found or even deleted. Therefore, Google Sites can be a medium to gather the link to the data we need, and the school's teachers and staff can still access the data. A password must be added to ensure data security, and the sharing status must be restricted to users only. A Google form can also be used in this product because, besides saving archives, schools also need to collect data.

Prototyping Phase

One-gate digital archive development produces a website containing pages of classified school data and documents called GP Data Centre. This product was developed as a website to increase collaboration, data sharing, and easy access to general documents. The gate used to access the data is merged into the school's website (Figure 1) and protected by a password to access the digital archive storage. A password is used because some confidential archives can only be seen and used by internal people of the schools. To maintain privacy, other *belajar.id* users can only access the data. The digital archive is developed using applications included in Google Workplace for Education. This product is classified into four categories: (1) curriculum data,

(2) student data, (3) facilities and infrastructure data, and (4) teacher data. The classification is intended to shorten the time it takes to locate the archive (Suharti et al., 2020). The archives here are classified by subject and arranged according to the informational content, making it easier for knowledge workers to find information based on subject matter or topics (Smallwood, 2013). The advantage of using this product is that schools can modify the category when needed.



Source: Researcher's data

Figure 1. Digital archive gate button

After completing the initial design, the researchers then tested the feasibility of this one-gate digital archive in archive management at elementary schools. The validation indicator used in this study is the Webqual indicator. Web-qual is a measurement method used to measure website quality based on user perceptions and is obtained from an instrument consisting of four variables: usability, service quality, information quality, and visual quality (Nada & Wibowo, 2015). The validation results are presented in Table 2.

Table 2. Validation Result

Indicator	Score	Description
Usability	4.8	Very Good
Service quality	4.7	Very Good
Information quality	4.6	Very Good
Visual quality	4.3	Good
Mean	4.7	Very Good

Table 2 shows that the average score is 4.7, which means that the product is feasible to use. Indicator number one, usability, shows the highest score of 4.8, with a very good description. The service quality scored a 4.7, and the information quality scored a 4.6; Both have very good descriptions. The indicator with the lowest score is visual quality due to the limited features on the Google site to explore the website's visual appearance. The practitioners said that classification on the records needs to be improved and that subject classification needs to be combined with periodical classification on the folders. The practitioners and experts suggested a regular password change to improve data security. Data sortation is also important because the data management expert stated that the archive should not just consist of students' progress but also the school's progress, such as the school's education report and quality report. Those reports should be shared with the teachers and staff as a reflection of work performance and the start of a new solution to solve problems faced by the institution.

Findings from this study showed that the use of Google Workspace for Education for school archive management is easy to learn and understand. It is because the one-gate digital archive has Google Site as the main application. A Google site is a website-based application that enables users to share information in pictures, videos, text, or links (Mukti & Anggraini, 2020). So far, this application is mainly used as a learning medium (Waryana, 2021; Bhagaskara et al., 2021; Kaban et al., 2021). In contrast, this application has the potential to be used as a digital archive management medium. Schools are familiar with Google-based applications; therefore, it does not take long for teachers to use other applications (Bhagaskara et al., 2021). The Google site was chosen because this application is one of the Google Workspace for Education services connected to other Google-based applications (Bhagaskara et al., 2021) and optimizes sharing access.

The benefit of the sharing function of Google workspace can also be found in this one-gate digital archive. Practitioners and experts gave a perfect score for easy access and convey a sense of community in the questionnaire. Everybody in the community who has the password can access and help to manage the archives. A one-gate digital archive stores schools' archives and helps principals do e-supervision. The principal can monitor

a teacher's administrative work and teaching report. Technology integration in the supervision process can improve the teacher's performance (Andani et al., 2017) and ICT skills (Guntoro et al., 2016). Using a one-gate digital archive can also reduce time spent on sharing and finding links because it is integrated into one digital storage.

The sharing function of the one-gate digital archive also helps the school to give the best service to parents and students. The practitioners and experts also thought that this one-gate digital archive can make a positive change at schools. With this one-gate digital archive, schools will have a better chance to respond faster with more accurate data, and the proposed data currency will also be easy to use, which reflects the quality of the information system (Mustakini, 2007). Schools with good services usually have good responsiveness (Tjiptono, 2005). They will not let stakeholders wait without an apparent reason because it can create a negative perception of the school (Lupiyoadi & Hamdani, 2006). A common problem in elementary schools is that no specific person is assigned to manage the archives. The archive of the transfer of students, teachers, or principals will be hard to track because the school does not have an archive of documents that the previous teachers or principals had. This study found that sometimes schools ask the students or parents to meet the previous teacher and make another copy of the documents needed. The document that students and parents often ask for is the student's diploma. With this one-gate digital archive, schools can have a digital copy and a list of students that have already taken their diplomas. Therefore, schools can track and provide copies of their diplomas to stakeholders who need them even though teachers or principals have been transferred to other schools. The quality of service of schools is crucial because schools are public organizations engaged in services that demand quality and stakeholder satisfaction (Al-Refai et al., 2015), and to do that, schools have a responsibility to improve service tools and maximize the role of existing personnel (Ilias et al., 2008).

Although the one-gate digital archive has benefits that can improve the quality of management and services in schools, there are also several challenges schools have to face to implement them. The first challenge in implementing digital integration in archive management is resistance. Making innovation in an institution is not easy. Schools frequently get opposition from their members. It takes time for all the members to accept and get used to the innovation. Therefore, a school principal must have an attitude of persistence. The second challenge is creating a learning community because not all teachers have the same ICT skills. Some teachers may have inadequate ICT skills and need guidance in using a one-gate digital archive. This different level of skill can decrease the confidence of members who have inadequate skills and ultimately find it difficult to accept the integration of ICT in schools.

CONCLUSION

The one-gate archive management developed in this study is an alternative infrastructure that schools can use to manage archives digitally. As most Indonesian elementary schools do not have staff specialized in managing archives, the product can increase the effectiveness in data finding, sharing, collecting, and uploading within the school staff. Besides that, the product can also optimize school resources on upgrading school digitalization in terms of school management. One gate digital archive developed in this study still needs further research, such as improvement of data security and product visuals.

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