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DEVELOPMENT OF OFFLINE LEARNING MEDIA REPOSITORY

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Abstract

Currently the repository is a rich potential source of useful information, data, images and research results. Repositories are systems that enable institutions to store and manage digital documents as well as interact and collaborate between users within one institution. There are several digital library software available as "open source" or as "proprietary format". Open source software helps primarily in lowering initial and ongoing costs, eliminating vendor lock-in and allowing for greater application flexibility. The main advantage of open source software is that it is generally free to use such as the DSpace application. DSpace is an open source software platform for storing, managing and distributing collections in digital format. The DSpace application supports the generation of digital archives that are more permanent and shareable than analog archives. DSpace can support various kinds of artifacts, including learning media. Learning media is a physical tool, which is used by humans as an intermediary tool in conveying ideas about subject matter. The subject matter is related to real situations. Such as digital 3D scans (objects, photographic films, videos, research data sets). This research is a development with the R&D method. The first year (2022) Scheme Analysis, Design, Development, Implementation and Evaluations (ADDIE) Development Model produces an offline repository application prototype and the 2nd year (2023) model and implementation guide.

Keywords: offline learning, media repository

1 INTRODUCTION

Entering the era of the industrial revolution 4.0, all parties began to improve to make adjustments. Human resources are required to have 21st century skills in order to be able to compete in the industrial environment. Educational institutions are starting to apply 21st century learning methods to unlock the potential of every student.

The era of the Industrial Revolution 4.0 was marked by the increasing number of job automation using the internet, robots, and AI (Artificial Intelligence). Referring to this, it is predicted that several professions will disappear and be replaced by technology. Types of work that are quite vulnerable to being replaced are jobs that are repetitive in nature. This condition is quite threatening for workers with low levels of education who tend to work in repetitive lines of work.

This global problem encourages the need to formulate skills or skills that are needed to deal with this revolution. WEF or the World Economic Forum formulates a framework called 21st Century Education. This formulation is then used by educational institutions to form a 21st century learning model that can spark the potential of students so that when they graduate they can become superior human resources. Seeing the demands of the world of work above, the contribution of learning media is by utilizing repository applications in supporting learning processes that are relevant to current and future conditions.

Currently the repository is a rich potential source of useful information, data, images and research results. Repositories are systems that enable institutions to store and manage digital documents as well as interact and collaborate between users within one institution. There are several digital library software available as "open source" or as "proprietary format". Open source software helps primarily in lowering initial and ongoing costs, eliminating vendor lock-in and allowing for greater application flexibility. The main advantage of open source software is that it is generally free to use such as the DSpace application.

The ultimate goal of this research is to produce an offline learning media repository model with the following annual objectives:

1. analyze and map the needs of the application
2. develop models and implementation guidelines
3. developing policy briefs and recommendations, as well as testing application utilization

Stages of the development of DSpace, including:

1. Defining the DSpace Service Offering.

DSpace is a flexible and powerful repository system. Before building the technical infrastructure of the system, it is important to define exactly how to plan to use the system and what types of services will be offered.

2. Creating Service Support Infrastructure

Just as a technical staff builds DSpace's technical infrastructure, it is necessary to build DSpace's service infrastructure. Building a DSpace service requires input and planning from various sectors of the research institution such as staff and administrators.

3. DSpace Object Model (Building Communities and Collections)

DSpace is designed to make participation by depositors easy. Information systems are built around the idea of organizational “Communities”, natural sub-units of institutions that have the information management needs. Each community can adapt the system to meet specific needs and manage its own collection process. Items are arranged into a hierarchy which resembles items that are grouped and aggregated into collections of similar content. Community is the highest level of organizational content. Just like a collection that can enter into more than one community. Each item stored in the DSpace repository is made up of a binding of streams, so that files can be stored

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in a single digital object as many times as needed. Bitstreams follow the bitstream format that has been recognized by the previous system, and DSpace has the opposite behavior with different types of objects, for example an image can be displayed as a thumbnail when browsing the system.

4. DSpace metadata

Uses qualified Dublin Core metadata standards to intellectually describe items. Only 3 fields are needed, namely title, language, and submission date, the other fields are optional. There are fields for document abstracts, keywords, and technical metadata and rights metadata, among others. This metadata is displayed in the item log in DSpace, and is indexed for system browsing and searching (within collections, between collections, or between communities). For the Dissemination Information Package (DIP) of the OAIS framework, the system currently exports metadata and digital materials in a custom XML schema while metadata works with the METS community to develop the necessary extension schematics for technical metadata and permissions about digital formats. haphazard.

5. User Interfaces

DSpace's current user interface is web-based. There are several interfaces, one for collectors and another involved in the collection process, one for end-users who want to find information, and one for system administrators. Both end-user and public interfaces support searching and receiving of items by browsing or searching the metadata (all fields now, and certain fields in the future). Once the item is placed in the system, receipt can be completed by clicking on the link which will cause the archived material to be downloaded to the user's web browser. "Web-native" formats (which will display directly in a web browser or with a plug-in) can be viewed directly, other formats must be saved to the user's local computer and viewed in a separate program and can interpret the file (for example a Microsoft spreadsheet Excel, SAS datasets, or CAD/CAM files).

6. Technology Platforms

DSpace was developed to be open source, and in this case institutions and organizations with minimal resources can run it. The system is designed to run on the UNIX platform, and includes middleware and other open source tools, and programs written by the DSpace team. All original code is written in the Java programming language. Other connected technologies include relational database management system (PostgreSQL), web server and Java servlet engine (Apache and Tomcat, both from Apache Foundation), Jena (RDF toolkit from HP labs), OAICat

from OCLC, and several other useful libraries . All leveraged components and libraries are also open source software.

7. System Architecture

The DSpace architecture is a straight 3-layer architecture, which includes the storage, business, and application layers. Each uses the API documentation to allow for customization and future additions. The storage layer is implemented using a file system, as well as database tables managed by PostgreSQL. The business layer is where DSpace's specific functionality resides, including workflow, content management, administration, and module discovery. Each module has an API that allows DSpace adopters to override and add to that functionality as desired. Furthermore, the application layer overrides the interfaces of the system: the web UI and the batch loader, to a certain extent, but also on the OAI support and server handles to resolve persistent identifiers on DSpace items. This layer will receive a lot of attention regarding future releases, such as adding web services for new features (eg to support interoperability with other systems) and defining government services across institutional reach by adopting DSpace.

8. DSpace

In a purposive system, perhaps the most critical aspect of the system is how data enters the system. This appears in DSpace in 2 ways. UT's web base for the software allows its users to submit items to collections as long as they are logged in as a registered user. When users log in, they are passed through a configurable workflow where they can upload and describe their collected items. DSpace Ingest Process Alternatively, DSpace Administrators who have content to be imported in large-scale batches can take advantage of the system's import/export functionality. Item importer is a command line tool that comes bundled with the system and allows the user to import a collection of content into the system archive_directory/ item_000/ dublin_core.xml — qualified Dublin Core metadata contents — text file containing one line per filename file_1.doc — files to be added as bitstreams to the item file_2.pdf item_001/ dublin_core.xml contents file_1.prg. DSpace's Simple Archive Format for Importing and Exporting. The item importer uses the DSpace archive format, which is a simple directory that stores items to be imported into the system (An example of a simple archive is shown in Figure 4 above). A top-level archive directory contains unique directory names, each containing everything needed to import a single item. Each sub-folder is required to store 2 files, in addition to the actual content to be imported. The required file “dublin_core.xml” contains an XML representation of the qualified Dublin Core element names

and textual content containing metadata notes, including author, title, and so on. A flat text "content" file has one line containing the filenames of each file that will be included in the digital object. When this structure is put in place, the import command can be executed immediately and all content will be imported into the repository. The tool provides a “map file” after run, which describes all imported items and their new location in the system, this file can be useful in the future for exporting or removing imported contentAlur Kerja DSpace

The DSpace collection system workflow is a critical part of the DSpace architecture allowing the collection, processing, and eventual addition of content to an existing repository. The model owned by DSpace, including EPeople, is a user who is registered with the system and has certain authorizations, roles, rights, and privileges that translate the ability to complete certain tasks in the DSpace system. Collection usually begins with the system asking the user a few questions about the digital documents to be added to the repository and some of the files associated with the collection. The system leads the user through several steps:

Description 1.

Describe Users enter metadata about the documents they collect, including the author, title, keywords, and description

Description 2.

Upload Users select and upload files present on the local machine that they will upload as part of the submission. Each file type is identified by the system and the user verifies it.

Description 3.

Verify Here an overview of all the details of the collection is given, including a summary of the metadata that has been entered and the files associated with the collection.

Description 4.

License The user is shown and must agree to the license the system administrator has assigned to collect content for this collection.

Description 5.

Complete The user action in the collection process has been completed. Based on the defined workflow steps for collection, items may be added immediately to the collection or must be reviewed by a system administrator prior to addition to the collection.

9. Deployment Items that have been collected and archived into DSpace digital library repository

Can be distributed and accessed by users via the internet and browsers. DSpace provides its users with the ability to search for DSpace items in a simple, easy, and sophisticated way. From the DSpace home page, users can see all the items in DSpace by category of author, title, or publication date.

10. DSpace Observations

Provides a way to organize research and publication materials in professionally organized repositories to provide great visibility and accessibility over time. It can help to:

a. Get research results quickly, to a worldwide audience
b. Reaching a worldwide audience through its openness with course management systems
c. Archiving and distributing material that can be placed on personal websites
d. Save examples of student projects (with approval)
e. Displaying student thesis (with approval)
f. Keeps track of personal publications/bibliographies
g. Have a strong network identifier to work with, which will never change or get corrupted.

2 METHODOLOGY

Analysis, Design, Development, Implementation and Evaluations (ADDIE) Development Model Research and development methods or in English is Research and Development is a research method used to produce certain products, and test the effectiveness of these products (Sugiyono, 2017). Model development can be interpreted as an effort to expand or bring a condition or situation on a regular basis to a better situation or condition (Trisiana and Wartoyo, 2016). This research and development is longitudinal (in stages), because in producing a particular product research is used which is needs analysis in nature and in producing product effectiveness so that it can function in society it is necessary to test the effectiveness of the product. This research and development produces a product in the form of media. The ADDIE development model is a model used to design and develop learning programs that contain analysis, design, development, implementation and evaluation.

1. Analysis (Analysis) The analysis phase is the initial stage in the development of the ADDIE media model. Trisiana and Wartoyo (2016) state that the analysis stage is a process of defining what the participants (students) will learn, namely conducting a needs

assessment and conducting a task analysis. At this analysis stage, it is necessary to analyze the existing problems in the field, namely needs analysis and performance analysis. This research is focused on the problem of learning models/methods that have been applied. After the problem is identified, then the right product development plan is carried out to overcome the problem. At this stage the researcher will also analyze the feasibility and requirements for product development that can overcome these problems.

2. Design (Design) The design stage is the product or media design stage that will be used. The product design process begins with designing storyboards, creating materials, questions and answer keys, selecting backgrounds, images and backsounds. This is in line with Pribadi (2016) in the design stage what needs to be done is to design a program and determine a format in the form of competencies, methods, media and evaluation of learning outcomes. The design at this stage is still conceptual and serves as the basis for the subsequent development process.
3. Development Development in the ADDIE model is in the form of realization of the product design that was carried out in the previous stage. At the development stage, the conceptual framework will be realized into a product. Product testing is carried out by validating experts to assess the feasibility of learning media before it is implemented.
4. Implementation (Implementation) At the implementation stage, the product that has been developed will be used in class for the learning process. The implementation can be done in several stages, including: Small group trials According to Sadiman (in Imunandar and Mardiyah, 2016) the number of small group trial subjects was 9-20 students and 30 students in field trials. At this stage a trial was carried out by 20 students with different student characteristics. In this trial it was intended to find out the opinions and input from students as a basis for further product evaluation and revision. b. Large group or field trials. This trial was conducted by 15-36 students. Researchers monitor the course of activities as long as learning media are used by students in class. At this stage questionnaires were also distributed to assess media responses, apart from students, teachers also distributed teacher response questionnaires.
5. Evaluation Evaluation is the final stage of developing the ADDIE model. Evaluation is carried out to assess whether product development is in accordance with the expected specifications or not. The purpose of this evaluation is to provide feedback and revisions if needed to the developer.

System Development Stages

In the development of information systems there is a system life cycle, which is to describe the process of building an information system in a structured and orderly manner. Several systems development frameworks are based on the systems development life cycle. O'Brien (2009) stated, "SDLC (System Development Life Cycle) is a cycle that describes the software being built". Fatta (2007) System Development Life Cycle (SDLC) is a framework that describes the activities carried out at each stage of making a software. Mulyani (2016) argues that, "SDLC is a logical process used by a system analyst to develop an information system". Rosa and Shalahudin (2015) concluded that, "SDLC or software development life cycle or often called the system development life cycle is the process of developing or changing a software system using models and methodologies that people used to develop previous software systems." . From the description of some of the opinions above, it can be seen that the system development life cycle is a framework or description of the activities that will be carried out to carry out system development. The seven stages in the systems development life cycle proposed by Kendall and Kendall (2007), namely,

a. Identification of problems, opportunities and goals.
b. Determination of user information requirements.
c. Analysis of system requirements.
d. Recommended system design.
e. Software development and documentation.
f. Test and maintain the system.
g. System implementation and evaluation.

System Analysis

System analysis is carried out to study and understand the running system and the problems that are currently occurring in the old system so that it can provide a solution to the problematic system. Sutabri (2004) put forward a definition of system analysis, namely, a report that can describe systems that have been studied and known problems to determine new directions and strategies, as well as develop alternative solutions to problems that arise in order to make specifications in decision making. According to Kendall & Kendall (2007) system analysis is the decomposition of a complete information system into its component parts with a view to identifying and evaluating problems, opportunities, obstacles that occur and expected needs so that from the analysis results can be proposed improvements to the system. that information. According to

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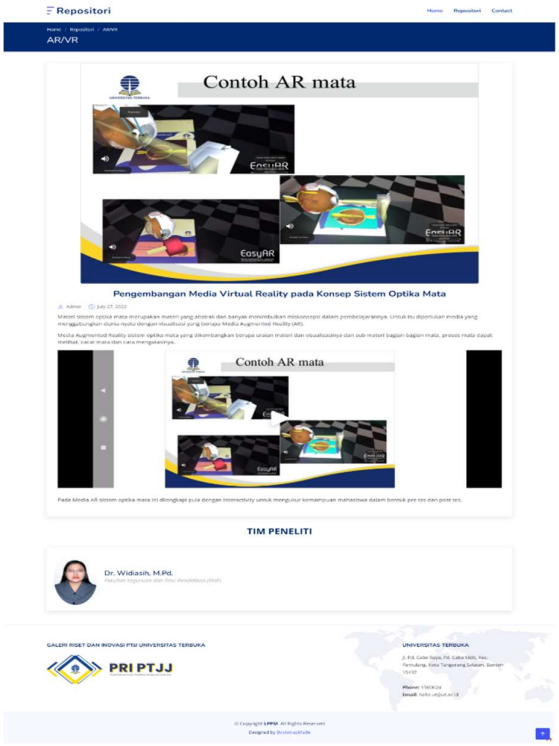
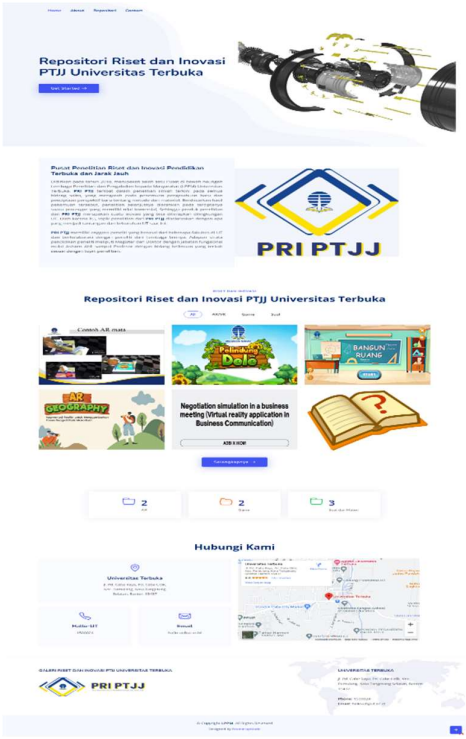
Laudon (2010) states that, "system analysis consists of defining problems, identifying causes, determining solutions, and identifying information needs that must be met with system solutions". McLeod and Schell (2007) stated that, "system analysis is research on existing systems with the aim of designing new systems or updated systems".

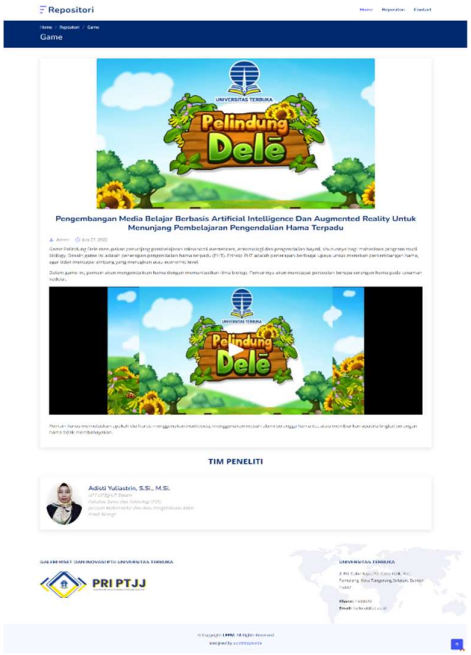
Previous research on Repository Design has been done before by other researchers so this research is not a new research. Research title on Design of Institutional Repository System for High School of Agricultural Agribusiness Plantation Medan by Dewi Suriani in 2016 with the type of research namely descriptive qualitative research, the results obtained for designing a repository system at STIPAP-Medan, namely based on system requirements analysis carried out found 3 (three) points The main requirements for their system are

1. The type of repository collection currently in STIPAP
2. Procedures for managing repository collections
3. Repository service

Product development results:







3 CONCLUSION

Research related to the creation of Institutional Repositories with various platforms, including:

1. The offline-based repository development program helps in providing a very massive variety of materials
2. The media repository that has been developed uses an application
3. One of the materials included in this offline repository application consists of learning materials and access UT
4. The results of application trials show various problems in storing material and require conditions of adjustment to the available application loads and the need for further development

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