Researcher Title: **Development of Web-Based Student Research Output Repository System for the Institute of Mathematical Applications and Computing Sciences in Kolehiyo ng Lungsod ng Dasmariñas**

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TOPIC PRESENTATION

Topic No. 1

I. General Subject Area
Research Repository System

II. Specific Topic
Development of Web-Based Student Research Output Repository System for the Institute of Mathematical Applications and Computing Sciences in Kolehiyo ng Lungsod ng Dasmariñas.

III. Specifics of Research

A. Introduction

Research outputs can be stored, arranged, and made accessible through a centralized platform called a research repository. Repositories are essential for maintaining knowledge and promoting cooperation between teachers and students in educational institutions. More broadly, repositories are defined by Gupta (2023) as centralized storage systems that save all project data and resources in one location, guaranteeing their accessibility for later usage. According to Rosala (2024), a research repository improves knowledge-sharing capabilities by making user-research outputs and artifacts available throughout an organization.

In our world where information is vital, many types of repositories are emerging. It is a type of storage where you can store and retrieve files and data either physically or digitally. According to Rosala (2024), “Research Repositories organize user research in a central place, making research-related documentation easy to access and consume.”. Research repositories help users to find materials or documents related to their research topics easily.

The institution uses a manual approach in storing student Research Outputs. The Research Outputs will be distributed to three offices, the Dean’s office, the library, and the research coordinator’s office. It will be stored physically in each office’s cabinets and the library’s bookshelves and will be sorted or arranged by year. The library is where the student can request access to view the student research output and will also be in charge of safekeeping. The Dean will primarily handle the Research outputs to cope with the requirements of accreditors while the Research Coordinator is in charge of keeping the research outputs in line with their respective programs.

The motivation for conducting the project entitled "Development of Web-Based Student Research Output Repository System for the Institute of Mathematical Applications and Computing Sciences in Kolehiyo ng Lungsod ng Dasmariñas" comes from the need for a centralized and accessible platform to manage research outputs. This repository system aims to assist users in securely storing, organizing, and retrieving research projects, thus improving the accessibility and management of research outputs. Streamlining access will also support librarians, research coordinators, the Dean, and researchers in overseeing the research outputs. Furthermore, the system will foster collaboration and resource-sharing within the institution, allowing researchers to access past research for reference, which may inspire new ideas and strengthen the quality of upcoming projects. This initiative is intended to promote a culture of academic excellence and innovation at Kolehiyo ng Lungsod ng Dasmariñas, creating a long-term repository that contributes to the institution's growth and development in research capabilities.

B. Project Context

The Institute of Mathematical Applications and Computing Sciences of Kolehiyo ng Lungsod Dasmarinas consists of Professionals in Information Technology fields, graduates of Computer Sciences and Information Technologies. The Institute of Mathematical Applications and Computing Sciences faculty is located on the 6th floor of the first building of the Institution.

The Institute of Mathematical Applications and Computing Sciences is currently tackling and assessing different Research outputs and Research Proposals from both 3rd and 4th year of Bachelor of Science in Information System's students.

Systems for manual repositories current status significantly impact data management and overall efficiency. One of the primary issues is the risk of physical documents being damaged or misplaced, which can disrupt operations and result in the loss of critical information. Additionally, consolidating data outputs can be particularly challenging with physical storage, as it requires extensive manual organization and space management. The retrieval process for physical documents can also be challenging; locating specific files may take an excessive amount of time, thereby reducing productivity. Security concerns are another significant drawback, as physical papers are more vulnerable to theft or unauthorized access, increasing the risk of sensitive data being compromised. Finally, as the volume of documents grows, the demands for physical storage increase, often resulting in higher costs and limitations due to restricted space availability.

Objective of the Study

The general objective of this study is to develop a system entitled "Development of Web-Based Student Research Output Repository System for the Institute of Mathematical Applications and Computing Sciences in Kolehiyo ng Lungsod ng Dasmariñas" that will help the researchers, research coordinator, dean and librarian in storing, retrieving, viewing and accessing student research output.

Specifically, it aims to:

A. Design a system that is capable of:

1. Implementing Role-based Access Control RBAC accounts for different users (researchers, dean, research coordinator, librarian) with different access restrictions.
2. Implementing login interface for users to improve security.
3. Organized storage and categorization of research outputs in acentral database.
4. Providing search engines with advanced search features to findspecific student research output.
5. Displaying the number of views for specific research output.
6. Secure authentications (password hashing)
7. Provide a system that only accept PDF file format for studentresearch outputs.
8. Implements a comment and notes section for dean, research coordinator, and IMACS faculty members for collaboration.
9. Provide a citation generator for researchers.
10. Implement a user account features (password recovery, profile updates, and secure password storage).
11. To handle increasing number of users and research outputs
12. Easy navigation and a responsive design that works on a variousdevice.
13. Separate dashboards customized for different user roles (librarian,coordinator, dean)

B. Develop the system using different hardware and software requirements

1. Computer
2. Laptop Internet
3. Intel i3 3rd Gen, AMD Athlon 3000G
4. 4-8GB RAM
5. **HTML**: HTML5
6. **CSS**: CSS3
7. **JavaScript**: ECMAScript 2023
8. **PHP**: PHP 8.3
9. **XAMPP**: 8.2.4
10. **Laravel**: 11.x
11. **MySQL**: MySQL 8.1

C. Test the system using unit testing, integration testing, system testing,acceptance testing, and performance testing;
D. Evaluate the system and align ISO 25010 standard; and
E. Prepare an implementation plan for the deployment of the system.

Purpose and Description

The study, titled “Development of Web-Based Student Research Output Repository System for the Institute of Mathematical Applications and Computing Science in Kolehiyo ng Lungsod ng Dasmariñas” aims to develop a system that will store student research output that will benefit the following users;

Institute of Mathematical Application and Computing Science (IMACS)—These includes faculty members and the Dean. They will benefit by having full access to student research outputs, digitalized repository system that can easily access various research outputs, and will also serve as a backup or soft copy of the student research outputs.

Research Coordinator—will benefits by having full access to the digitalized repository system that can easily view, store, and retrieve student research output streamlining productivity.

Researchers—The Researchers will benefit from the system by having access to Academic Outputs which include Research Titles and abstracts of the Academic Outputs.

Librarian—The librarian will benefit from the system by having a system that can store student research outputs digitally and have access to the full version of academic outputs.

Scope and Limitation of Study

The purpose of this study Development of Web-based Student Research Output Repository System for the Institute of Mathematical Applications and Computing Sciences is to make it easier for academic institutions to organize, store, and make available student research outputs. The proposed system is intended for four users; System Administrator, librarian, IMACS faculty members and researchers.

System Administrator—the responsible for this role is the research coordinator. The System Administrator is responsible for user management within the system. This role includes uploading student research outputs, creating new user accounts, updating account, activating or deactivating user access, and generating reports.

Librarian—grants permission to view the full content of student research outputs in the proposed system. The proposed system can be access fully through library computers. This ensures security, confidentially, and privacy of research outputs.

Researchers—Researchers can search for and view research outputs in the system to aid in their studies or further research. However, access to the full copies of outputs is restricted and requires permission. They may request access through the Librarian and are expected to adhere to usage guidelines, maintaining the integrity and confidentiality of the information accessed.

Dean and IMACS faculty Member—the Dean and IMACS faculty Member can search and view the full content of various student research output, as well as having a history of recent viewed student research outputs.

Brief discussion of Modules

User Account Management Modules—This module handles everything related to the user's accounts and restrictions. This includes creating, password and account recovery, and deactivating accounts

Research Management Module—This includes all the specifics of the student research outputs. This includes the author, date, title, program, and categorized general subjects such as Internet of Things (IOT), Artificial Intelligence, Augmented reality, Web-Apps, Mobile application

Record Management Modules—this module includes all record-keeping within the system, including the number of submitted student research outputs, user details, research submissions, and keywords related to the student research outputs. This module is the one responsible so there is will be no duplicate research output can be found in the system. This module acts as a search feature to find specific research topics in collaboration with the Research Management Module.

Report Management Module—this module generates reports such as list of research outputs based on academic year, general subjects such as Internet of Things (IoT), Artificial Intelligence, Augmented reality, Web-applications, Mobile application, most viewed research outputs, and number of recorded research outputs.

Limitation

The proposed system does not include the research output of the faculty members. The proposed system is limited only to approved research output of IMACS students. The student research output cannot be downloaded in any platform. The researchers can only view the full content of student research output in the school Library with the Librarian permission. The proposed system requires internet to function. The proposed system only accepts PDF file format that does not exceed to 300mb per file uploads.

Conceptual Framework

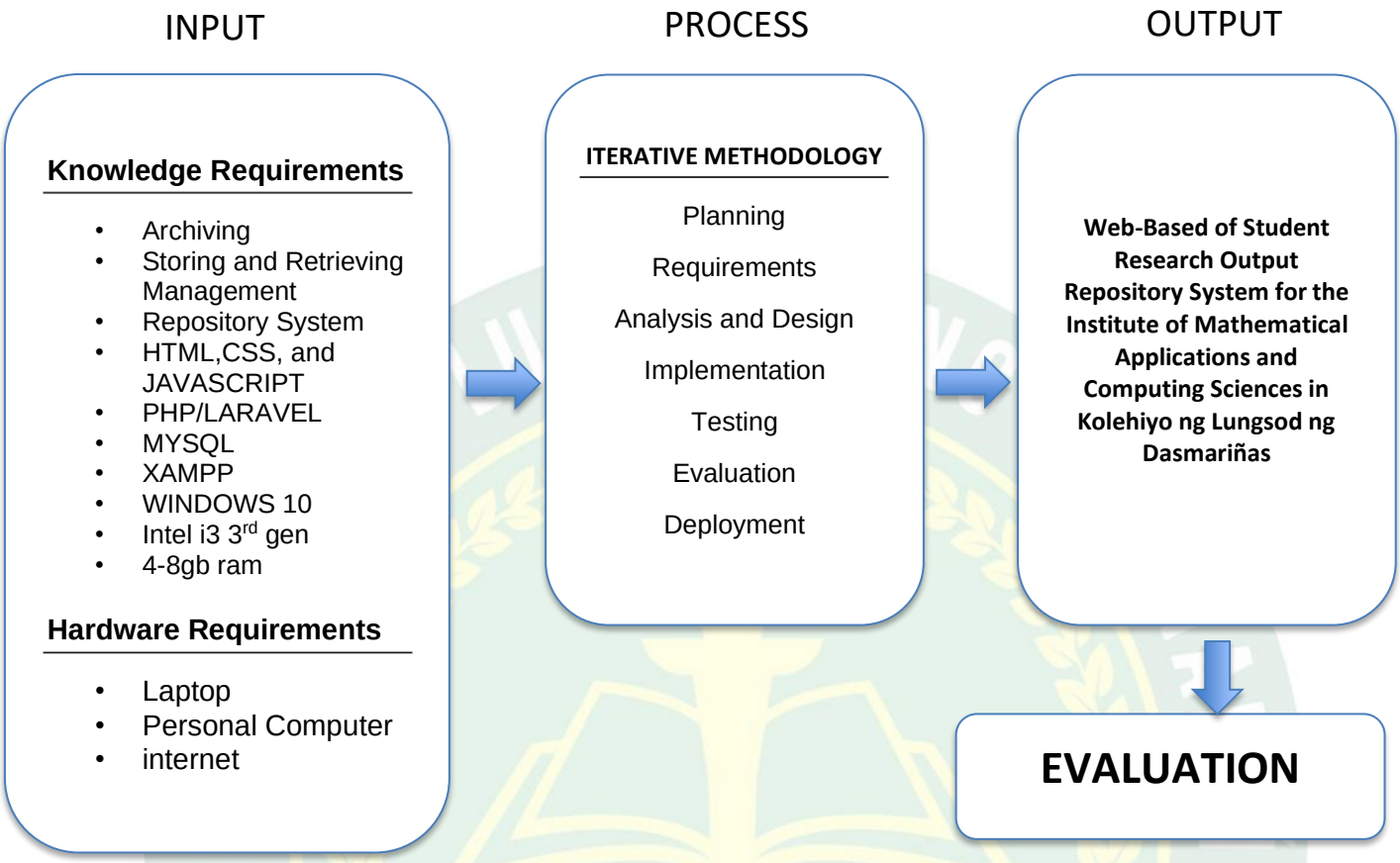

FIGURE 1: CONCEPTUAL FRAMEWORK OF "DEVELOPMENT OF WEB-BASED STUDENT RESEARCH OUTPUT REPOSITORY SYSTEM FOR THE INSTITUTE OF MATHEMATICAL APPLICATIONS AND COMPUTING SCIENCES IN KOLEHIYO NG LUNGSOD NG DASMARIÑAS"

The figure 1 illustrates the IPO Model (Input-Process-Output) for the development of a Web-based Student Research Output Repository System for Institute of Mathematical Applications and Computing Sciences in Kolehiyo ng Lungsod ng Dasmariñas.

The Input section highlights the knowledge requirements and hardware requirements needed for the project. These include knowledge in archiving, storing and retrieving data management, and repository systems, and programming languages and tools such as HTML, CSS, JavaScript, PHP/Laravel, MySQL, and XAMPP. The system requires a computer with at least an Intel i3 3rd Gen processor, 4-8 GB RAM, and Windows 10, along with access to a laptop, personal computer, and a stable internet connection.

The Process section presents Iterative Methodology, an approach that includes planning, requirements gathering, analysis and design, implementation, testing, evaluation, and deployment. These steps ensure a systematic and thorough process for developing the repository system. Each phase allows for continuous refinement, ensuring that the system meets user needs and functions effectively.

The Output of the process is the development of the Web-based Student Research Output Repository System. This system is designed to archive and manage research outputs, providing storage and retrieval capabilities for the institution. The model also includes an Evaluation phase to assess the system's performance and ensure it meets the objectives and expectations of its users.

Operational Definition of Terms

Archiving - Long-term storage and preservation of records.

CSS - Stylesheet language for web design and layout.

Dean - Oversees the quality of stored research in academia.

HTML - Standard language for structuring web pages.

Internet - is a set of interconnected networks.

JavaScript - A programming language for interactive web features.

Laravel - PHP web framework used for building robust, scalable web applications. It provides tools for routing, authentication, and database management, making development faster and more organized.

Librarian - Manages access to research documents.

Modules - Sections of a system for specific functions.

MySQL - A database system for storing and managing web data.

Php - A server-side scripting language used to create dynamic web pages.

Repository - is a type of centrally located storage where you can keep all your project's files and resources according to Gupta, V. (2023).

Research Coordinator - Evaluates and approves research for storage.

System Administrator - Manages system functions and user accounts.

XAMPP - A local server package that includes Apache, PHP, and MySQL for web development.

IV. References

Shahibi, Mohd. (2017). The Influence of Internet Usage on Student's Academic Performance. International Journal of Academic Research in Business and Social Sciences. 7. 10.6007/IJARBSS/v7-i8/3301.

Rosala, M. (2024, November 4). *Research Repositories 101*. Nielsen Norman Group. https://www.nngroup.com/articles/research-repositories/

Gupta, V. (2023, February 7). *What Is a Repository?* Built In. https://builtin.com/software-engineering-perspectives/repository

V. Appendices

Interview questions

Dean and Research Coordinator

What are the processes involved in the repository?

What is the flow or process of a repository system?

Who will manage the repository system?

Who will handle the research outputs of students after approved student research output?

What is the role of the dean, research coordinator, faculty members, and librarian?

Librarian

How does the student research output store in the library?

How does the librarian permit researcher to borrow Research outputs.