Design and Implementation of a Web-Based Research Studies Archive of Regional High School for Region 1

A proposal submitted in partial fulfillment of the requirements
for the Degree of Bachelor of Science
in Computer Science

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1. **TITLE**
   Online Library Management System for Students of Regional Science High School for Region 1.

2. STATEMENT OF THE PROBLEM

This study aims to develop a web application that will cater the needs of the students at Regional Science High School for Region 1 and the school itself. The web application proposes a solution by providing an exclusive platform specifically designed for Regional Science High School for Region 1 and its students. This web application offers several key features, including:

- **Student Log-in Portal**: Restricted access ensures the platform caters exclusively to the school's student body.
- **Admin Portal**: An administrator can manage the research archive by adding, editing, and removing manuscripts. Also, they can grant students an access to the platform.
- **Search and Download**: Students can search research journals by title or by category of the research journal. Also, students can download the pdf version of the research journal for them to access online.

This platform will empower students to effectively navigate the research archive of the school, search efficiently for relevant studies, and will also serve as a valuable tool for promoting academic excellence within Regional Science High School for Region 1.

3. BACKGROUND AND HISTORY

The rapid advancement and widespread adoption of information and communication technologies (ICT) are driving a significant transformation of libraries around the globe (Masrek & Gaskin, 2016). This transformation gave way to the rise of digital libraries. The rise of the internet and digital technologies fueled this change by providing cost-effective and readily accessible platforms for information storage and retrieval. The development of digital storage solutions, search engines, and indexing tools revolutionized information accessibility, paving the way for vast online repositories of texts, audio, and video materials (Willinsky, 2013). Concurrently, user needs and preferences evolved, demanding convenient and on-demand access to information from anywhere, anytime. Traditional libraries, with their physical limitations and restricted hours, struggled to meet these demands. The shift towards personalized learning and research further fueled the digital transformation, as online platforms offered tailored experiences through recommendations, advanced search options, and user-friendly interfaces that resonated with modern learning styles (Dempscy, 2014).

According to Mansoor (2012), a digital library is social institution with a stated mission to collect, organize, preserve, and provide access to digital information for a clearly defined community of users. Also, the American Library Association describes digital library as a collection of digital objects that can include text, still images, audio, video, digital documents, or other digital media formats accessible electronically.

In the past five years have witnessed a significant surge in the accessibility of digitalized academic monographs within the humanities and social sciences (Humphreys et al., 2018). The traditional methods of maintaining libraries are no longer dynamic and efficient, leading to the need for modern techniques in library management systems. The Online Library Management System (OLMS) described in the paper utilizes various technologies such as MySQL, HTML, CSS, PHP, JavaScript, JQuery, Ajax, and Bootstrap. The OLMS consists of two modules: External Pages Module and Internal Pages Module, providing functionalities like viewing, searching, registration requests, storing, searching, viewing, borrowing, downloading, and more (Ayo et al., 2023).

According to Komara et al. (2023), the concept of the system is to combine conventional library management systems with existing technology, ultimately facilitating library management. However, the system is designed to have a data processing system for outgoing and incoming books, which facilitates faster and easier book data management.

Therefore, digital libraries are not merely repositories of information but dynamic tools that empower researchers across the academic spectrum. From enhanced

accessibility and information retrieval to increased efficiency and collaboration, these platforms are fundamentally reshaping the research landscape, paving the way for a more open, interconnected, and ultimately, productive scholarly ecosystem.

4. JUSTIFICATION OF THE PROBLEM

Currently, students at Regional Science High School for Region 1 face significant challenges in accessing and utilizing the school's research archive. While the physical archive in the school library offers a wealth of potential research materials, traditional methods of manually searching through physical manuscripts are time-consuming and inefficient, often leading to students missing relevant studies or struggling to identify high-quality materials. The sheer volume and lack of effective search tools can make efficiently locating relevant manuscripts for specific research projects a significant challenge. This can hinder their research progress, limit their access to valuable insights, and potentially affect the overall academic performance of both the students and the school.

By addressing the forementioned issues above and by providing solutions catered towards the school body, this study will be able to:

- Improve the efficiency of searching research journals significantly.
- Store and preserve existing research journals created by the student researchers of the school.
- Contribute to the ongoing cycle of academic excellence by providing their own manuscripts to be viewed and continued by other students.
- Promote deeper engagement of student bodies.
- Stimulate knowledge sharing.

On the other hand, this study will also be beneficial to the people behind the creation of the solution by:

- Gaining valuable insights into the research process by understanding the user needs and behaviors helping the developers design a user-friendly interface.
- Enhancing communication and collaboration skills by working with each other as developers which will then be used for future projects.
- Contributing to the community by creating a system that improves the efficiency and effectiveness of the research studies of the students.
- The developers will gain experience with new technologies by using ReactJS, ExpressJS, and other libraries designed for web development. This will also improve the developers' technical proficiency.
- Gaining and improving the problem-solving skills of the developer.

5. LITERATURE REVIEW

One study stated that technology can help organize learning around real-world challenges and project-based learning – using a wide variety of digital learning devices and resources to show competency with complex concepts and content.

Libraries offered Web-based catalogs, bibliographic and full-text databases, electronic journals, and eventually electronic books through the Web. Patrons no longer had to go to the library to do a significant amount of their research, as it was more efficient and eased their access and search. The pursuit of electronic resources by libraries was driven by the core values of library science. It is possible to recognize in Ranganathan's five laws of library science the motivation that drove libraries to incorporate electronic resources into services and collections (Bhardwaj & Sharma, 2015).

Guajardo et al.'s research at the University of Houston Libraries investigates the evolution of discovery systems in academic libraries. The study emphasizes the growing emphasis on tailoring search experiences to user needs and optimizing access to e-resources. Notably, the University of Houston Libraries' response to this trend involves exploring options like open-source tools, federated search, and dual-index systems.

Digital libraries have become popular and are accessed through query interfaces. However, obtaining random samples from these libraries can be challenging. An iterative and incremental approach using a query-related graph model has been proposed to obtain high-quality samples efficiently (Liu & Su, 2018).

Also, the CNIB Library recognized the opportunity to create more content faster, provide more choice and accessibility, and to streamline and revolutionize processes by building the Integrated Digital Library System (IDLS) in partnership with industry technology leaders. Publishers are moving closer to supplying usable files, and conversion routines are being developed to support transforming these files to DAISY format, resulting in the creation of more books and magazines from a single source file (McGrory et al., 2007).