



Design and Implementation of Digital Collection of Past Questions Papers in Auchi Polytechnic Library

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Abstract

This paper presents an overview of the implementation and implications of an electronic repository of past question papers within a polytechnic library setting. The electronic repository represents a significant advancement in academic resource management, offering a streamlined and accessible platform for students and staff to access past question papers. Through intuitive interface design and robust search functionalities, users can efficiently navigate through vast collections of question papers spanning various academic disciplines, courses and semesters. The repository enhances accessibility by allowing users to retrieve materials remotely, thereby eliminating the constraints of physical visits to the library. Security measures ensure the integrity and confidentiality of question papers, while also promoting sustainability by reducing paper usage. The availability of a comprehensive repository of past question papers fosters a culture of academic excellence by empowering students to enhance their understanding of course material and improved examination preparation. Overall, the electronic repository of question papers signifies a transformative approach to information management within educational institutions, reflecting a commitment to innovation and efficiency in academic processes.

Keywords: Digitization, Past Questions, Repository, Library.

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I. Introduction

The digitization of library collections has been a subject of extensive study, with numerous reports highlighting the overwhelming progress in this domain (Alhaji, 2007). The digitization process has undoubtedly revolutionized how libraries manage and disseminate information. However, amid the commendable efforts to digitize entire library processes and convert collections into digital content, a critical aspect often overlooked is the preservation and digitization of past examination questions. This neglect stems from a potential oversight in recognizing the value of historical examination materials, leading to their gradual deterioration over time. As collections age and experience the natural shelflife, the consequences of this oversight become apparent, rendering these materials unavailable for future use.

While libraries invest significant resources in digitizing various materials, including books, journals, and archival documents, the oversight of past examination questions can have long-term implications. These questions serve as valuable educational resources, offering insights into the evolution of academic curricula, assessment methodologies, and educational trends. However, their neglect in the digitization process renders them susceptible to the natural degradation of physical materials. Unlike books or manuscripts, past examination questions have a shorter shelf life due to frequent handling and use, making them more prone to wear and tear.

As the physical condition of past examination questions deteriorates, their informational content becomes increasingly compromised. The risk of losing historically relevant assessment materials poses a significant challenge to academic institutions (Adeleke, 2019). Deterioration may result from factors such as exposure to environmental conditions, improper storage, or simply the passage of time. Without a concerted effort to digitize and preserve these materials, their potential as educational resources diminish, hindering the comprehensive understanding of academic progression.

To rectify this oversight, it is imperative for libraries and academic institutions to recognize the intrinsic value of past examination questions. Hampson, Pinfield and Upton (1999) strategic inclusion of these materials in digitization initiatives ensures their long-term preservation and accessibility. Collaboration between librarians, faculty, educational administrators, and digitization specialists is crucial to implementing targeted strategies for the digitization of examination question archives. This not only safeguards these materials from deterioration but also enhances their accessibility, enabling future generations of students and researchers to benefit from the historical insights they provide.

II. Literature Review

The digitization of educational materials, particularly past examination questions, has garnered attention in scholarly literature due to its potential to enhance accessibility, preservation, and educational outcomes. This review explores key studies and insights that shed light on the importance, challenges, and benefits associated with the digitization of past examination questions.

The literature consistently underscores the significance of digitizing past examination questions as a means of preserving institutional knowledge and facilitating access for both students and educators (Johnson et al., 2015). These materials serve as invaluable resources, providing insights into the historical evolution of curricula, instructional methods, and assessment strategies (Timotheou et al., 2023). Digitization is recognized as a way to ensure the longevity of these resources while addressing the challenges posed by the physical deterioration of paper-based archives (Adeleke, 2019).

Despite the acknowledged benefits, scholars have highlighted various challenges associated with the digitization of past examination questions. Alhaji (2007) discusses the overwhelming progress in library digitization but notes a tendency to neglect examination materials. Challenges include issues related to copyright, ethical considerations, and the potential loss of contextual information during the digitization process (Chowdhury & Chowdhury, 2003). These challenges emphasize the need for careful planning and ethical considerations in digitization efforts.

Several studies have proposed technological solutions and best practices for the effective digitization of examination question archives. The utilization of Optical Character Recognition (OCR) technology, metadata standards, and collaborative efforts between librarians and IT specialists have been suggested to streamline the digitization process (Obiora, et al. 2015; Chowdhury & Chowdhury, 2003;). These studies emphasize the importance of incorporating standardized practices to ensure the accuracy and efficiency of the digitization process.

Timotheou et al. (2023) highlights the potential for increased accessibility, enabling students to engage with a wealth of historical examination materials to enhance their understanding of course content and assessment expectations. The digitization of these resources has the potential to contribute to improved learning outcomes, better examination preparation, and a deeper understanding of academic progression (Johnson et al., 2015).

Nyambi and Maynard (2012) assessed the operational concerns that might be influencing the establishment of institutional repositories while examining the existing status of institutional archives in Zimbabwe as well as the obstacles and facilitators for institutional growth using a quantitative research approach. The researchers believed that Zimbabwe's political and economic circumstances had a significant impact on the state of the repositories there at the moment.

Recent literature suggests future directions for the digitization of past examination questions. Researchers recommend a collaborative approach involving librarians, educators, and IT specialists to address challenges and ensure the comprehensive digitization of examination archives (Hampson, Pinfield & Upton; 1999). Additionally, ongoing research is needed to explore the evolving role of digitized examination materials in shaping pedagogical practices and educational policies (Timotheou et al. (2023).

Similarly, Sewe (2016) conducted an investigation on "Assessing the prospects of digitization at the University of Ghana Library System". The main goal of this investigation was to investigate the University of Ghana Library System's (UGLS) potential for digitization. A case study research design was used, and the study took a qualitative approach. A comprehensive review of the literature was done. The main goal of the literature was to provide guidance for future research on the issues and goals related to digitization so that it might be understood in terms of its dynamism and complexity. Due to their direct engagement in the UGLS digitization effort, six staff members were purposefully selected for in-depth interviews. To gather data, semi-structured interviews were subsequently held with the present IT and digitization operations staff, as well as UGLS digitization managers.

Although, digitizing library resources is not new, researchers often neglect digitizing past examination questions, as a result, it is important that this aspect of Library resources is critically examined. Some researchers have undertaken steps to digitize past examination papers using different methods for easy access by the academic community.

Parthasarathy and Ananthasayanam (2012) conducted a study on the development of a question bank with the intention of enhancing assessment, student learning and response abilities, instructor questioning strategies, and curriculum designers' examination designs. The researcher employed web-based design to ensure the materials are available anywhere, anytime to users.

Adeleke (2019) narrated the events that culminated into the creation of a digital library of past examinations question papers at Tekena Tamuno Library (TTL), Redeemer's University, Ede. It involved the digitalization of printed examinations papers and presenting them as printable document format (PDF) files. Maistrovskaya & Wang (2020) discussed the procedures and infrastructure needed to enable the methodical gathering, granting of access to, and repository administration of previous test papers. The authors presented the University of Toronto configuration, which consists of a specialized DSpace instance, batch metadata generation and ingest scripts. Also, the authors discussed the workflows for submission and retention that consider the diverse requirements of the university's three campuses' stakeholders.

In the ever-evolving landscape of library digitization, it is essential to acknowledge and address the oversight regarding past examination questions. As valuable educational artifacts, these materials contribute significantly to understanding the evolution of academic practices. Recognizing the urgency of preserving and digitizing examination question archives is not only a step toward comprehensive library digitization but also an investment in the educational heritage of academic institutions. Through collaborative efforts and strategic planning, libraries can ensure the longevity and accessibility of past examination questions, enriching the educational experience for generations to come.

III. Method

The primary objective of this research is to establish a centralized digital platform for storing, organizing, and accessing past examinations question papers. This repository serves as a comprehensive resource for the Auchi Polytechnic library users, facilitating easy access to academic materials. In order to achieve the said objective, PHP programming language and MySQL database management system was used.

PHP is utilized for developing the backend logic and functionality of the digital repository. PHP is well-suited for web development tasks, offering a robust set of features and libraries for building dynamic web application while MySQL serves as the underlying database management system (DBMS) for storing and managing past examinations question papers and associated metadata. MySQL provides scalability, reliability, and performance for handling large datasets and concurrent user access.

The interface of the digital repository is designed to be responsive and compatible with various devices, including desktop computers, laptops, tablets, and smartphones. This ensures accessibility and usability across different screen sizes and resolutions. Also, the interface of the digital repository is intuitively designed to facilitate easy navigation and interaction for users. Key features include search functionality, browsing by categories or subjects, sorting options, and user authentication for restricted access.

Since staff and students of Auchi Polytechnic will be able to access the repository anywhere, anytime, security measures are implemented to protect the integrity and confidentiality of past examination question papers and user data. This includes user authentication and authorization mechanisms, data encryption, and access control policies to prevent unauthorized access or misuse of the repository.

The project was designed with two categories of users i.e. administrator and users.

The administrator is responsible for managing the repository and the users while users access the repository from any location.

IV. Login Interface

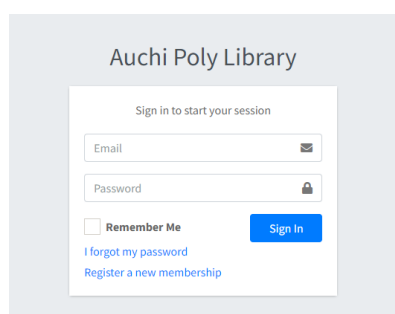


Figure 1: *Login Interface*

Each category of users is expected to login after successful creation of an account. Unless a user is authenticated, there is no access to any of the facility on the portal.

4.1 Dashboard

The dashboard provides easy access to the services available on the portal, each category of users has different actions they can perform. This is clearly shown on the dashboard. Figure 2 shows the dashboard for administrator while Figure 3 shows the dashboard for other category of users

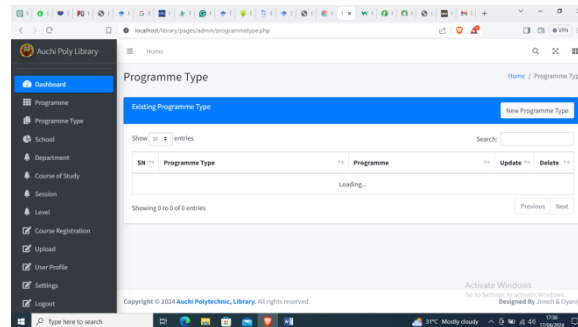


Figure 2: Administrator's Dashboard

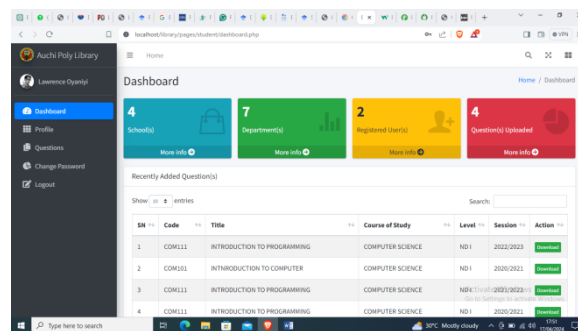


Figure 3: User's Dashboard

4.2 Question Paper Upload

Only the administrator is permitted to upload question papers to the repository. The interface in Figure 4 permits the administrator to upload question papers to the repository.

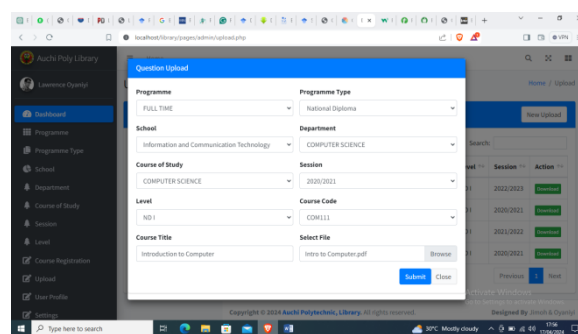


Figure 4: Question Upload Interface

4.3 Question Paper Metadata

Before any past question paper is uploaded, important information about the question paper is gathered to form question paper metadata. Each question paper is uniquely identified on the database using the metadata. The project clearly defined how each data is stored to avoid duplication and redundancy. The term "metadata" (also known as "metainformation") refers to "data that provides information about other data," not the actual data itself (Gonzalez-Perez & Gonzalez-Perez, 2018). The past question paper metadata is used to store and identify each question paper. Each question paper has the following properties:

1. A question paper is for a programme i.e. National Diploma/Higher National Diploma.
2. Each question paper belongs to a course of study
3. Each examination question paper is taken in a particular session i.e. 2021/2022, 2022/2023, etc
4. Each question paper is taken by students in a particular level i.e. ND I, HND II, etc
5. Each question paper belongs to a particular course i.e. COM 111, GNS 101, etc.

- The digital repository has experienced a steady increase in usage since its launch, with an average of 200 unique visits per week.
 - The most frequently accessed materials include question papers from core courses and popular subjects across various disciplines.
2. **User Satisfaction:**
 - Feedback surveys conducted among students indicate high levels of satisfaction with the availability and accessibility of past question papers.
 - 95% of surveyed students reported that the repository has been helpful in their examination preparation, citing convenience and ease of access as key benefits.
 3. **Impact on Academic Performance:**
 - Preliminary analysis suggests a positive correlation between the use of the repository and academic performance, with students who accessed past question papers demonstrating higher average grades compared to those who did not.
 4. **Faculty Engagement:**
 - Faculty members have been supportive of the initiative, contributing past question papers and encouraging students to utilize the repository as a study resource.
 - Continued collaboration with faculty members is crucial for maintaining the repository's relevance and ensuring the availability of updated materials.
 5. **Technical Performance:**
 - The digital repository has demonstrated reliable performance, with minimal downtime and fast loading times even during peak usage periods.
 - Regular maintenance and updates have been conducted to address any technical issues and improve user experience.

VI. Recommendations

Having successfully designed and implemented digital repository of past examination question papers for the use in Auchii Polytechnic library, it is pertinent to make the following recommendations based on experience gained during the design:

1. **Content Expansion:** Continue to expand the repository's content by adding new examination question papers, sample exams, and study guides for additional courses and subjects.
2. **User Engagement:** Implement strategies to increase user engagement and promote awareness of the repository among students and staff.
3. **Accessibility Improvements:** Enhance accessibility features to ensure that the repository is usable by all students, including those with disabilities or special needs.
4. **Feedback Mechanism:** Establish a formal feedback mechanism to gather ongoing input from users and stakeholders, allowing for continuous improvement based on user needs and preferences.
5. **Integration with Learning Management System (LMS):** Explore opportunities to integrate the repository with the institution's LMS platform, providing seamless access to past question papers within course modules.

VII. Conclusion

The digital repository of past examinations question papers has proven to be a valuable resource for students and staff at Auchii Polytechnic, Auchii. Through its user-friendly interface, comprehensive content, and reliable performance, the repository has facilitated examination preparation and contributed to academic success. By implementing the recommendations outlined in this report, the institution can further enhance the repository's effectiveness and ensure its continued impact on student learning outcomes.

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Reference

- [1]. Adeleke, A.A. (2019), "Resolving staff-patron conflicts with digitization: one library's experience", *Library Hi Tech News*, 36(20)17-20. <https://doi.org/10.1108/LHTN-09-2018-0060>
- [2]. Alhaji, I. U. (2007). Digitization of past question papers, dissertations and theses: A case study of 30 Nigerian university libraries. *The International Information & Library Review*, 39(3-4), 228-246.
- [3]. Chowdhury, G. G., & Chowdhury, S. (2003). *Introduction to digital libraries*. London: Facet Publishing.
- [4]. Gonzalez-Perez, C., & Gonzalez-Perez, C. (2018). Metainformation. *Information Modelling for Archaeology and Anthropology: Software Engineering Principles for Cultural Heritage*, 181-189.
- [5]. Hampson, A., Pinfield, S. & Upton I. (1999) Digitization of exam papers. *The Electronic Library*, 17(4), 239-246

- [6]. Johnson, L., Becker, S. A., Estrada, V., & Freeman, A. (2015). NMC horizon report: 2015 library edition (pp. 1-54). The New Media Consortium.
- [7]. Maistrovskaya, M., & Wang, R. (2020). Creating and managing a repository of past exam papers. *Information Technology and Libraries*, 39(1).
- [8]. Nyambi, E., & Maynard, S. (2012). An investigation of institutional repositories in state universities in Zimbabwe. *Information Development*, 28(1), 55-67.
- [9]. Obiora, K. U., Okeke, I. E., & Onwurah, B. (2015). Digitization of library resources in university libraries: A practical approach, challenges and prospects. *Madonna University Journal of Research in Library and Information Science*, 3(2), 36-47
- [10]. Parthasarathy, M., & Ananthasayanam, R. (2012). Web-Based Question Bank in Indian Higher Education: An Open Educational Resource. *Journal of Educational Technology*, 8(4), 9-14.
- [11]. Sewe, K. B. (2016). Assessing the Prospects of Digitisation at the University of Ghana Library System (UGLS) (Master's thesis, University of Pretoria (South Africa)).
- [12]. Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., Monés, A. M., & Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and Information Technologies*, 28(6), 6695–6726. <https://doi.org/10.1007/s10639-022-11431-8>