WEB BASED LIBRARY MANAGEMENT SYSTEM FOR POLYTECHNIC COLLEGES OF REGION 1

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Chapter I

INTRODUCTION

Project Context

Nowadays, computers become essential part of people's lives. Almost organizations are now using high-tech records controlling system of processing data. Industry Association are now compatible to the latest trend of Computer Technology in Managing data conveniently for a business organization (Tran, 2001). Data Managing System are really great help to any business commercial or even organization like schools, hospitals, malls, company and even other government agencies Data Management System establishments have succeed in attaining their goals/objectives (Saito, 1999). This technological advance benefits people, as it bring future innovations. Use of the internet has many purposes. First, sending and receiving of messages process through the electronic mail. Second, there are discussion groups with wide range of topics which people can join. Finally, people are free to browse vast collection of resources though the use of World Wide Web (Brian Blake, etc. 2002).

Data management is a useful process to facilitate all kinds of work in an organization, as it is common now for everybody to use advance technology worldwide. Through Advanced technology, information can be transmitted anywhere and anytime (Halevy, 2004).

As the internet and the World Wide Web expanded so fast, digital libraries have brought an efficient and effective way to access digital contents, share the experience gained from establishing a process and a supporting architecture for the Web-based Library Management system too share the architecture of the project that supports the smooth implementation of the process. The architecture of the digital library system has been arrived at after considering factors like high performance, scalability, availability and economy. Its features a familiar and well thought-out, an attractive user interface, combined with strong searching insertion and reporting capabilities. The report generation facility of Web-based Library Management system helps to get a good idea of which are the books borrowed by the members, makes users possible to generate report's hard copy.

Information Technology has revolutionized the life of human beings' and has made the lives easier by the kinds of application. In the light of the rapid changes with the use of IT, there are many tools, technologies and systems have been produced and invented. In the modern world, time is short so if there are many processes taken place at same time within a place there is a need for integration of all the processes, creation of paperless environment also efficient task management.

Librarians currently operate all its administration using handwritten forms or slips. The handwritten information may also cause some clashes in the records such as missing a particular slip or maintaining the records in large libraries. It is also difficult to search a particular record from a bunch of records. In order to avoid these problems, they must have an automated system that keeps a track of all the records and related information's needed.

This case study of Web-based Library Management system gives us the complete information about the library. The librarian can enter the record of the new books and retrieve the details of books available in the library. Books can be issued to the students and maintain their records and can also check how many books are issued and stock available in the library. This system will develop a function that will help the borrowers to find a book they need. Furthermore, this library management system will develop a page that they will see the list of the books.

The library of Polytechnic Colleges of Region 1 (PCR) is managed by a librarian. They have a 1,485 Book References. The arrangement of the books is Dewey Decimal Classification (DDC). When students borrowed books they will sign in in the log book and give their ID to the librarian.

The rules and of the library are: (1) A student who will borrow any book shall present his/her school Identification; (2) Books for overnight

reading must be returned on the next day; (3)Take good care of the books for longer use; (4) If the book is lost or destroyed while in the possession of the borrower, he/she is liable to replace the book; (5) Open-shelves facilities are provided for accessibility to the students, faculty and personnel.

The record keeping of the PCR-1 library is paper-based manual processing which can be improved through the use of a computerized library system.

Purpose and Description

The Library Management System software is used to monitor and control the transaction in a library. The project " Web-based Library Management system can be used on basic operations in a library like adding new member, new books, and updating new information of books and students, searching books and members and facility to borrow and return books. The system that was develop benefit the following:

Students. It would help the learners to find the book they need easier and faster.

Library Coordinators. It would help the coordinators to retrieve and save files and records. The system will also provide the coordinators easy access of any information needed for the Library operation.

Proponents. The proponents could apply the knowledge and skills they learned. It also enhances their skills, ideas, and knowledge on how to design, analyse, program, and develop a system for the good of the college.

For future Researchers. The result of this study will would serve as their guide and reference in developing related projects.

Literature

A library is a room, building or an institution where a collection of books and other research materials are kept. It is a collection of sources, resources, and services, and the structure in which it is housed. There can be no doubt that much of the literature in this area speculates on the future role of libraries – none of which is particularly clear. Since, Tenopir calls the "post web world" (2003), libraries have been seen as in danger of "substitution" (Tenopir, 1995).

The web is becoming "a ubiquitous source of information" giving an "illusion of depth and comprehensiveness" that leads to a questioning of the value of libraries and their collections. This review will not speculate on these future roles, but will focus instead on the certainty of changing technology, increasingly digital information resources and societal shifts that have changed user expectations of library services.

In recent years, research concerning online libraries has focused on questions of website design, information provision and information retrieval. Online library research draws mainly from computer science, information science, library and information studies. Scholars have examined the usability of online libraries both in terms of general information seeking and browsing including system's ability to facilitate user's "information journey" (scholar.google.com, 2019).

Different types of users will have variable needs and these needs are likely to change over time. A digital library management system must take proactive steps to accommodate changes, it cannot be a "passive warehouse of static information" and should "support users' overall information work in context". Browsing behavior, which is often associated with less specific user needs, is also vital to the information seeking process. Browsing allows for serendipity and gives the information seeker an opportunity to re-think and re-evaluate an information need. Research demonstrates how the usability of an online library management system is enhanced when an information seeker has the option of combining searching with browsing and can browse online resources by more than one type of metadata. The publication impact of online library materials has been assessed as well as critical issues concerning preservation and sustainability. Society as a whole benefits when digital information is preserved both effectively and affordably. Research institutions have better opportunities for long-term cross-

disciplinary collaboration, especially if collaborations depend on scientific data that are impossible to reproduce. Archives, museums and libraries can protect and conserve cultural memory, and in situations where accountability is crucial, hospitals, clinics and other public institutions are in a better position to guarantee the authenticity and integrity of digital materials over time.

From a computer perspective there has been a growing concern with online security and the enhancement of digital library visuals. Online libraries are situated in unique environments, thus environmental factors have also been examined for their impact on users' awareness, acceptance and use habits. Often the social contexts or domains surrounding an online library are very different, for instance, clinical versus academic. Some developers demonstrate why it is important within academic contexts to market an online library as a learning resource, but to show users within a clinical domain (e.g., a health care setting) how an online library system can support evidence-based medicine with information that is "paramount" to decision making (clinical.domain.com,2011).

In this thesis, the proponents present the core elements of the manifesto and introduce central aspects of the online library framework. The discussion begins with an examination of the three types of relevant "systems" in this area: Online Library, Online Library System, and Online Library Management System. It also explains how they interrelate. The

discussion then moves on to examine three other core topics: the key concepts that characterize these systems encompassing content, user, functionality, quality, policy, and architecture; the range of roles that actors play in digital libraries from application developer to administrator, to designer, and finally to end-user; and clarification of the different levels of abstraction that help us to talk intelligently about the DL Universe. In this proposed thesis we must have the digital materials stored in a particular place. These digital materials can only be accessed at the library, the materials in question is not properly catalogued, the internet access is almost not working but the new web based online library gives institutions access to the library anywhere provided there is an internet access. The new library provides round the clock availability to users. It is purely an improved technology used to enhance learning in higher institutions.

The Library management system is mainly utilized for the borrowing/returning of books. Library management system can also have a personal account of students to determine the borrower, and the administrator/librarian can monitor the books borrowed and student's details. Any basic knowledge of computers is required for operation of Library Management System as it has user-friendly application interface.

Usability of the websites plays a central role in establishing a healthy communication between the university and its stakeholders. The healthy communication between the university management and the

stakeholders can undoubtedly contribute to well governance of the university (Yusof etc. al., 2010).

The questionnaire has been used successfully by many companies around the world, as part of several dissertation projects, the development of the questionnaire is not yet over. For the reasons cited, this is an excellent starting point. The norms that have developed over the years have been useful in determining its sufficient usability to enable success in the market. To truly develop a standardized instrument, however, the items should be taken through a complete psychometric instrument development process. This study simultaneously uses the USE Questionnaire and other questionnaires like SUMI or QUIZ to evaluate applications. Once a publicly available (i.e., free) standardized questionnaire is available that applies across domains, a variety of interesting lines of research are possible. The USE Questionnaire should continue to be useful as it stands; the researchers hope that the best is yet to come.

Objectives of the Study

The purpose of this study was to develop a Web-Based Library Management System for Polytechnic Colleges of Region I to improve the monitoring capability and generation of reports on the library materials information while less effort on searching desired library materials for the library users. Specifically, it aimed to achieve the following:

a. To determine the current process of managing library resources and users of PCR 1.

b. To design and develop a web based library management system.

c. To test and deploy a web based library management system.

Scope and Limitation

This study is focused in the design and development of a Library Management System for Polytechnic Colleges of Region 1 that shall help in improving the processes or transactions in the library through a more organized and faster system.

The developed Library Management System covered the major processes in the Polytechnic Colleges of Region 1 namely viewing of the books details, student details, maintenance and adding of new member, new books, searching books and members to borrow and return books.

The proposed system would include the collection of fines and payments of the students due to overtime take home/borrowing of books.

Likewise, establishing a connection for outside the school campus and network access is not valid because the said system would be only available inside the Polytechnic Colleges of Region 1.

Chapter II

METHODOLOGY

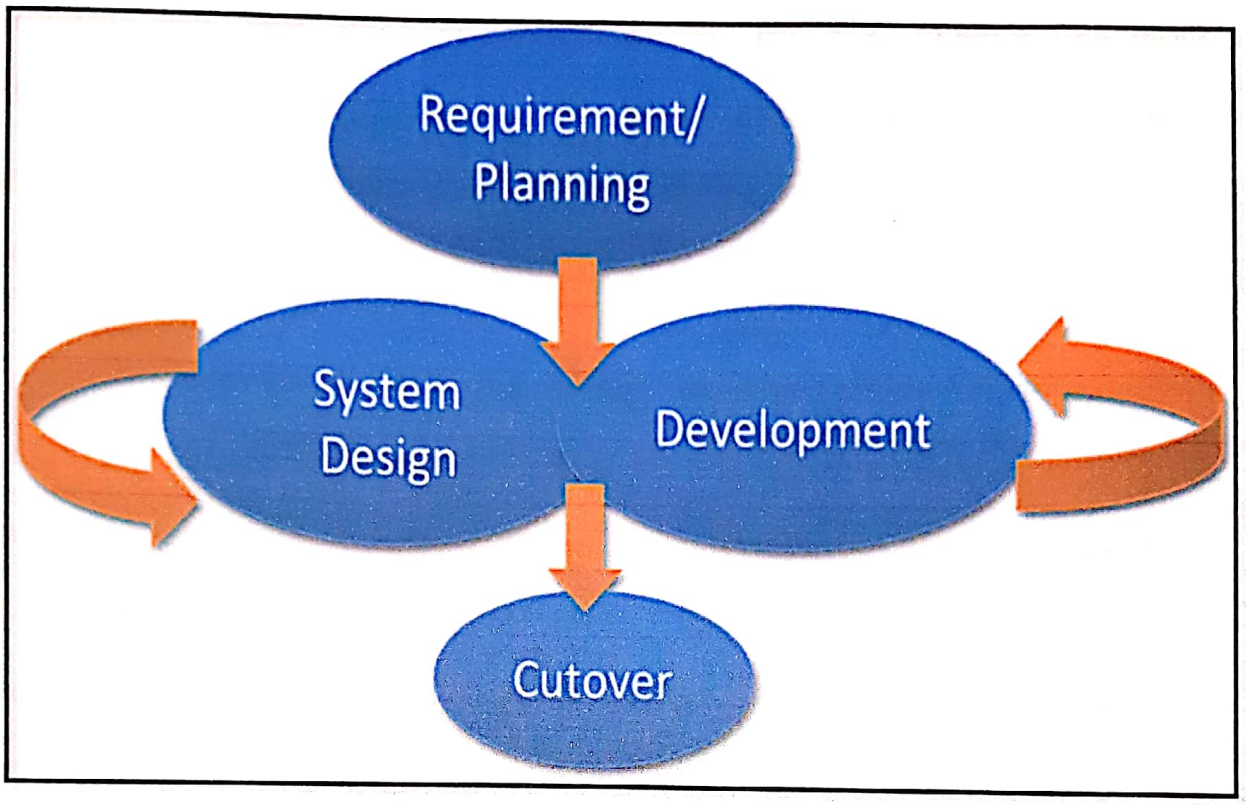

Figure 1.Rapid Application Development Model

Rapid Application Development (RAD) Model is similar to incremental model and waterfall model. In RAD Model, development should be done in specified time frame. RAD Model is suitable for the small project where all the requirements are gathered before starting development of the project and no any concrete plan required Development starts as soon as requirement gathered and delivered initial working prototype to the client to get the feedback. Once client gives the feedback, based on the client's feedback other changes are done.

This process goes parallel with co-operation with client and developers. Each prototype is delivered to the client with working functionality and changes made based on the client's feedback. Development moves faster in RAD Model with minimum errors. RAD Model follows the incremental delivery of the modules. The main goal or RAD Model is to make the reusability of the developed components.

Requirements planning phase. In this phase of development planning should be designed based on the information available from different activities. Before it starts the development there should be a complete modules of activities process functionality. It ends when the team agrees on the key issues and obtains management authorization to continue.

User design phase. During this phase, users interact with systems analysts and developed models and prototypes that represent all system processes, inputs, and outputs. The RAD groups or subgroups typically used a combination of Joint Application Development (JAD) techniques and CASE tools to translate user needs into working models. *User Design* is a continuous interactive process that allows users to understand, modify, and eventually approved a working model of the system that meets their needs.

Construction phase. Focuses on program and application development task similar to the SDLC.

In RAD, however, users continue to participate and can still suggest changes or improvements as actual screens or reports are developed. Its tasks are programming and application development, coding, unit-integration and system testing.

Cutover phase. Resembles the final tasks in the SDLC implementation phase, including data conversion, testing, changeover to the new system, and user training. Compared with traditional methods, the entire process is compressed. As a result, the new system is built, delivered, and placed in operation much sooner.

Project Plan

Project planning is a discipline for stating how to complete a project within a certain timeframe, usually with defined stages, and with designated resources.

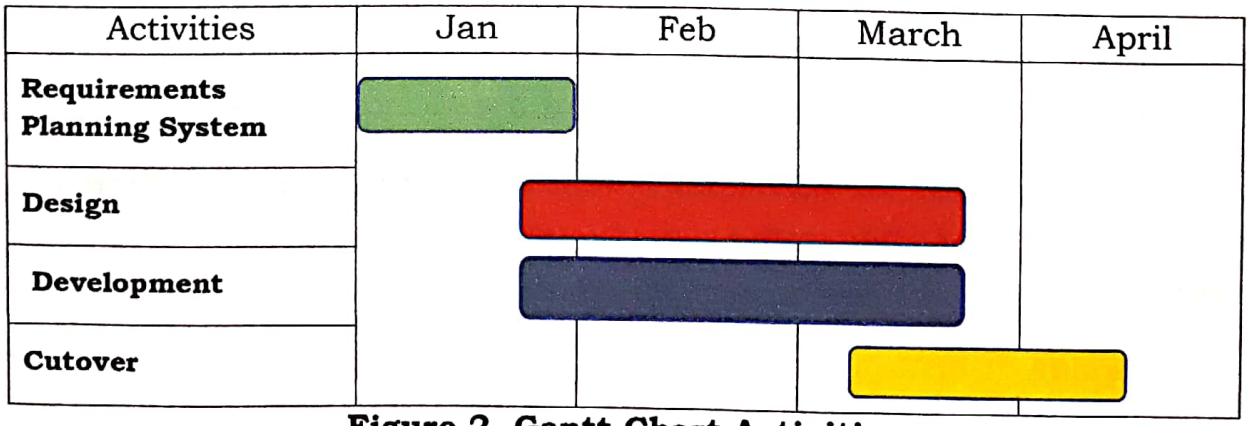

Figure 2. Gantt Chart Activities

The figure shows the activities which were undertaken by the proponents. The proponents started the project in January 2018. User design and construction took the longest weeks because in user design the user who will employ the proposed system will analyze how the data affect the operations from the system and how the data was used. User design is one of the toughest part in creating a system because the researchers and designers must create and design a system that can use by the librarian and students.

Next is the construction. In this phase the system was executed for developing and testing so that the developer will know what to do if your system is functioning or not. It completes the construction of the physical application system develop users aid and build the conversation system. After completing the development of the system, it was tested for errors and determine if the processing operation are accurate and the outputs are correct. The shortest weeks takes the system in the cutover because this is the point new software has been finalized and installed.

Requirements Analysis. The proponents collected the needed information about the system and use it to determine the requirements of the proposed system. Based from the requirements, a logical model of the proposed system was developed. This activity was done two weeks.

User Design. The design phase was completed in five months focused on designing the physical aspects of the system to support the

needs of the organization. The construction of the system was followed using SDLC.

Construction. Construction phase, took five months to complete, is the stage where the system that will be developed is to be implemented.

Cutover. Resembles the final tasks in the SDLC implementation phase, including data conversion, testing, changeover to the new system, and user training. Compared with traditional methods, the entire process is compressed. As a result, the new system is built, delivered, and placed in operation much sooner.

Project Staff and Functions

Table 1. Project Staff and Functions

Lead Persons	Task	Description
Ronalyn C. Quitazol	Project Manager	The one who will lead the group.
Ronalyn C. Quitazol Emelyn Quervacio Lalaine E. Calanno Lesly Ann Caballes	Programmer/System Designer	The one who will design and develop the system.
Ronalyn C. Quitazol Emelyn Quervacio	System Analyst	The one who will analyze the skills and features of the system.
Lalaine E. Calanno Lesly Ann Caballes	Documenter And Technical Writer	The encoder and the researcher.

Project Manager is the one who will lead the group for the improvement of the research stock. Programmer/System Designer the architect who shares smooth implementation that supports the process

of the system. System analyst is the one with the needed ideas, concepts and information prior to the preparation of the system.

Data Gathering Procedure

Data gathered were obtained from the office where the proposed system will be offered. The personnel and the head of the said office were the persons whose experience were credible enough.

Different methods of data gathering procedures were employed in the project undertaking to secure the data necessary and to come up with factual information.

Interview. The proponents conducted an interview to the Librarian at Polytechnic Colleges of Region I. An interview guide was created for the person in charge of the project to gather an important information as evidence for the development of this project.

Observation. Based on observations, the records were prepared manually using forms to be submitted to higher concerned authorities. It will be also concluded that the practice of preparing and submitting reports are time consuming.

Survey. The researcher used USE case questionnaire which is standard questionnaire to determine the usability of the system project proposed USE.

Internet Searching. The researcher used and explored the internet to gather an important details for the library management system.

Data Categorization. Below is the data categorization as the scale, statistical range and descriptive rating.

Table 2. Data Categorization

Scale	Statistical Range	Description Rating
5	4.21-5.00	Strongly Agree
4	3.41-4.20	Moderately Agree
3	2.61-3.40	Agree
2	1.81-2.60	Moderately Disagree
1	1.00-1.80	Strongly Disagree

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