DEVELOPMENT OF A WEB-BASED LEARNING RESOURCE PLATFORM FOR TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES-MANILA

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This thesis hereby entitled:

DEVELOPMENT OF A WEB-BASED LEARNING RESOURCE PLATFORM FOR TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES-MANILA

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ABSTRACT

Learning Resources are essential to every institution offering quality education for the masses. It includes learning materials that can help the students excel in their field of study. Through this research, the current number of available instructional materials in the University might be increased by using a web-based platform, which was the output of the study. The platform will help the students create specific notes and outlines on available educational contents in the platform. The system has the following features: login for limiting access to registered users; a dashboard which shows the key functionalities i.e. add, upload, browse, and print; a search function to browse through the available resources depending on what the user needs; File upload function for the user to upload their work into the system; a resource manager function to manage the resources added; and a print function for the resources inside the manager. The system was developed using PHP as server-side scripting language for web development, JavaScript as client-side scripting language, Bootstrap as user interface framework, MySQL as the relational database management system, and Adobe Photoshop CS6 for graphics editing. The system was evaluated by twenty (20) randomly selected respondents composed of Information Technology (IT) students and IT experts from Technological University of the Philippines using ISO 25010 evaluation instrument. Results of the evaluation proved that the developed web-based platform is highly acceptable especially in terms of performance efficiency which proves the usefulness of using the platform in managing some identified learning materials uploaded by their professors.

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Chapter 1

THE PROBLEM AND ITS SETTING

Introduction

Learning resources are fundamental for every institution that offers quality education and it aims to provide educational materials that can be used by every student that needs those resources for their studies. There are so many learning and teaching resources available in our respective schools that can help our fellow students improve their skills in researching and getting necessary information about their own topic.

Learning becomes meaningful when all the learners are framed to their familiar learning materials and environment. Educational resources are one of the most important building blocks of the institution provided by different departments and even students that are being offered to be used by everyone.

Background of the Study

A resource center that can be accessed by everyone is definitely useful specially for all the students that are currently studying. A web portal to check available learning resources that are open for getting necessary information about the certain topic and also materials that can be used for presentations in school premises. These resources are important for references for researches being conducted by students of the institution.

According to a research conducted by Learning Resource Management & Development System (LRMDS) (2008), access to quality learning teaching resources by divisions and schools are a pinnacle for learning for all the students and teachers alike. A major objective of the system is to provide a technical basis for assessing, acquiring,

adapting, developing, producing and distributing quality learning and teaching resource materials for students and instructional support materials for teachers.

As for the current system, College of Science displays all past thesis of the students for everyone to use as a guide and reference, books readily available for everyone to read if it regarding to their topic and resources that can be used inside the classroom and for presentation such as projector. Everyone can access these resources and it's both a good and a bad thing. It's a good thing because everyone inside the school can access these resources and can take it back whenever they want. On the other hand, it is a bad thing because there is no way of tracking this borrowed books/thesis. Resources are nowhere to be found when needed and have no slightest idea who have it. Looking by the title does not give all the information needed regarding to what is unreturned. The person must scan its pages one by one to know if that is the thesis/book that is being subjected. Availability is a struggle because of the inconsistent returning of the materials.

A platform that can show the availability of the most essential information regarding the resources, organize the resources according to their tier, an archive the theses readily available for access. A web-based resource center for the students to access and dynamic searching for related literature and studies that can be used based on the search created. To help create a comfortable way to access these resources whenever needed and it's compiled into one platform that can be accessed by everyone in the institution. A way to never lose the resources when you need it the most as you can find it in a secure place and in the same place that you found it. A platform friendly website that can be accessed using different devices for it is responsiveness.

The researchers decided to develop a Learning Resource Platform. The system's purpose is to ease the circulations of the resources and providing the essential information easily accessible to everyone that wants to use them.

Objectives of the Study

The general objective of the study is to develop a learning resource platform.

Specifically, the study aims to

1. Design a system with the following features:
    a. Mobile-Responsive interface
    b. Learning Resource Organizer
    c. Thesis Archiving
    d. Dynamic Search Capability
2. Create the system as a web-based application that can be used both the students and their instructors/professors;
3. Test and improve the system in terms of efficiency, maintainability, and accuracy.
4. Determine the level of acceptability of the developed system using ISO 25010 software evaluation instrument

Scope and Limitations of the Study

The study is focused on the development of a web-based resource particularly Learning Resource System, which allows students to search for available learning resources that are uploaded by their professors. It also helps the instructors to track and manage available equipment for teaching and be wary of the learning materials that the students are fond of.

The scope of the system includes the following properties like a mobile-responsive web interface that allows the users to access the system using whatever gadget they have connected to the internet. The output of the study which is the web-based platform was evaluated to determine its acceptability. The evaluation respondents were composed of randomly selected students and IT experts from TUP Manila. The evaluation instrument used adopts the ISO 25010 criteria to determine the quality of the software product.

The study serves as a reference and guide for the students in researching and getting necessary information about their own topic. It will also help students and instructors to have a deeper understanding about learning resources platform.

Chapter 2

CONCEPTUAL FRAMEWORK

This chapter includes the review of related literature and studies, conceptual model of the study, evaluation system, and operational definition of terms.

Review of Related Literature

In this section, the following information explains about the related technologies, theoretical and conceptual framework that helped the researchers to fully understand the research in the conceptualization of the study.

Web Development

Overview of Web Development

Web developers have been around ever since the introduction of internet to the whole wide world for people all over the globe to use. To further spread the popularity and usability of the internet, they created website for hosting ranging from simple or plain text pages to complicated web structures that is being used commercially.

Web development includes different tasks and processes associated in it these are web designing, web engineering, content creation, client or server-side scripting, security, network compatibility and specially the coding or programming that brings up the design into reality.

Brief History of Web Development

The rise of the internet requires a medium or a proper graphical interface for the attention of general population and notice the overwhelming potential of internet. In the

year 1980s websites gained attention for the use of businesses for their commercial potential and recognizing its use for future generations to come.

The first platform ever created for better development of websites is founded by Tim Berners-Lee in collaboration with the researchers from all over the world and is widely used up until today is the HTML or the Hyper-Text Markup Language serves as the foundation or the fundamental building block of web development.

Development Tools

HTML

HTML or Hyper-Text Markup Language founded by Tim Berners-Lee serves as the foundation and the fundamental building block of creating a website and up until today remains at the core of coding and infrastructure and enabled the coders to create and organize layouts that can be interacted and understood over different networks.
It is made up of elements, tags that can give texts different meaning whenever applied. HTML describes the web page structure and originally included signals or cues for the appearance of documents.

CSS

CSS or Cascading Style Sheets are used for how the elements of HTML are to be displayed on paper, screen, or other media. CSS is used to style and lay out web pages including font, color, spacing and size of the content of your webpage. CSS is also used for animations and other decorative features to bring up the best for your webpage.

CSS is designed primarily for the separation of presentation and the content, layout, colors, and fonts. It serves flexibility and control for the specification of presentation characteristics.

JavaScript

JavaScript developed in 1995 by Brendan Eichis a scripting language different from Java which is designed for more complicated programing serves as a client-side scripting language that is mainly used for enhancing the interaction between the user and the webpage.

In other words, JavaScript makes your webpage lively and interactable. It is a cross-platform, object-oriented scripting language and it allows an application to place elements and respond to the users' inputs and navigation.

Web Server

There are many kinds of server that the industry use for their everyday work and jobs and we'll be focusing only on one kind which is the web server. A web server is a computer system that processes requests and distribute it over the World Wide Web. Its primary function is to store, process, and deliver web pages to clients all over the world. Web servers can be referred to as a software or a hardware and even both of them working together. As a hardware, it works as a storage that stores website's components such as HTML documents, Cascaded-Style Sheets, images, and JavaScript files that delivers them to the end-users. As a software, it controls the users' access to hosted files..

CodeIgniter 3

CodeIgniter is an Application Development Framework or a toolkit that helps PHP programmers to fully commit their attentions to their projects by minimizing lines of code that are being used in the program. Debugging the program will be easier with the help of CodeIgniter for it is easier to find all the codes and components even the mistakes because it can be find in a single place.

MySQL

MySQL is one of the most used database engines. One of the reasons why it is preferred by developers and programmers is because it is free and open-source. There are many other reasons that developers choose MySQL and one is because of its capability. MySQL is a powerful software for it can handle the functionality of the most powerful and expensive database packages. MySQL is easy to learn because it uses the standard form of the already well-known SQL data language. It works perfectly when integrated properly with languages like: PHP, JAVA, PERL, C, C++, etc. and works perfectly with the web development language like PHP. MySQL or My Structured Query Language is Relational Database Management System (RDBMS) that is free. It is an open source RDBMS which uses Structured Query Language. MySQL is in the top three of most widely used RDBMS. MySQL holds 50 percent of the market share. It is because MySQL is free and open source that programmers tends to use it rather than any other RDBMS.

jQuery

jQuery is used for the easier integration of JavaScript into your website. It is a JavaScript library which is fast, small and feature-rich for it simplifies a lot of complicated things that is done in JavaScript. It is used to wrap a common task that uses many lines of codes and compile it into one method that can be called using a single line of code.

Bootstrap

Bootstrap is the most used development language when creating a mobile-responsive webpage using the most popular framework like HTML, CSS and JavaScript. It is a front-end framework that is free and open-source meaning everyone can use it and integrate into their project. It uses HTML and CSS tags for creating templates for buttons, forms, navigation, JavaScript extensions and other interface components. It is widely used by developers for it is easy to use and there are a lot of things that can be done.

Adobe

Adobe or Adobe Systems is a software company that is focused upon the creation of multimedia and creativity software products. It is widely known for their software like: Adobe Photoshop, Adobe Illustrator, Adobe Animate, Adobe Bridge and other applications that is being used for specific purposes.

Adobe Photoshop

Adobe Photoshop is a software application used for creating or editing pictures and visual materials depending on the user's mind. It is used to enhance photos and images

that can be used for personal purposes or even commercially depending on the intent and need. The user is directed into creating a canvass much like an artists' blank canvass where the user can create everything that comes into their mind and build their own art or masterpiece. It is widely used because it is portable and easy to use.

Adobe Illustrator

Similar to Adobe Photoshop, Adobe Illustrator is an application used for illustrations, cartoons, logos, charts, diagrams and anything that comes to mind that requires deeper attention with lines and vector drawings. Illustrator uses mathematical equations unlike bitmap images that stores information in grids to draw out the shapes meaning it is accurate and scalable without a loss of resolution.

Ajax

Ajax or Asynchronous JavaScript and XML is a client-side scripting language. With Ajax a webpage does not need to refresh every time he receives or send a data to the server or database. Ajax is responsible for the faster and immediate response of a web page. Ajax updates the web pages instantly and on the spot without restarting the web page. Ajax combines web programming tools including JavaScript, CSS, DHTML, and etc.

Related Studies

A study conducted by STI College Malolos concerning the creation of library system equipped with latest technology (Author, et. al., 2016). The library has only one librarian maintaining and recording 6000 books with a wide array of topics/subject. In the librarian perspective, managing databases, creating reports, monitoring overviews takes a lot of effort especially if you are working alone facing thousands of books and transactions. The study focuses on improvement and efficiency of the school's library transactions by adding barcode on the books and scanner for scanning purposes.

The system generates reports such as borrowed books, new books, damaged books, delinquent borrowers, and summary reports at the end of the month. Database was used to secure data and records all incoming transactions inside the library. Barcode technology is used for the students' ID as reference, also for the books to keep track of them in and go very similar to the planned system that we have in mind.

A similar study was conducted by a group of students from University of Cebu Lapu-Lapu and Mandaue (Author, 2017). The project entitled "University of Cebu Lapu-Lapu and Mandaue Library System with Electronic Access for Reservation and Notification", a web-based library system with SMS notification, book reservation, book search and inquiry of book availability as its feature. They also utilized a scanner in their project for easier tracking of the transactions. It also generates accurate reports.

The local library system of the university will be replaced with the web-based system they created. Users are required to create their online account to have access to the library

system. The system's main goal is to provide hassle-free transactions that will benefit both the students and library staff.

The study conducted by Pau (2015) focused on upgrading and innovating their library system in their school for the convenience of the librarian, students and teachers alike. Automation of recording of transactions made by the librarians that can sometimes cause inconsistency of data, Barcode scanner for the students borrowing books and recording their information into the database together with their books borrowed, Web-based library where they can check the availability of the books and their basic information so that the students won't go empty handed and their effort to waste because it can be easily seen in the site. Broadband access is already provided in their school so accessing the site won't be a problem for the students and it can be accessed at homewith ease because the server is well established. A book review in the site is also provided so that the students can know others opinion about the book that can help improve their work.

A similar study conducted by Jiawei (2011) focused on a web-based library management system that is created and based using PHP and MySQL with a purpose of reducing the cost of management and convenience for the users. The web-based library management system involves the most commonly used features and most popular components such as, administration, book finder, leasing and E-Mail. It was tested on some of the most popular browsers at the time to test its usability and reliability.

Similarly, a study conducted by Caligagan (2012), entitled “An Online Library Management System with Online Publishing, Retrieval and Searching of Electronic Researches” developed a system that automated the handling and management of resources, monitoring, book searching and publishing of materials. The system includes an online reservation, RFID technology for the resources, an interface for users to send their reviews and feedbacks, and barcode reader for the ease of borrowing and recording of resources.

A similar study conducted by Rameshgavva (2012) focused on developing a web-based library management system using PHP and MySQL that will be used for the mobility of operation when the administrator is out of the institution. All the resources such as books, articles, journals, and publications can be viewed and updated using the website. A log is maintained that holds all the transaction that can be sort by date, day, week or month or by the span of a specific time period. The software was developed using PHP and MySQL for database and modeling techniques like UML.

Conceptual Model of the Study

The study uses Input-Process-Output diagram to depict the conceptual model of the study as shown in Figure 1.0.

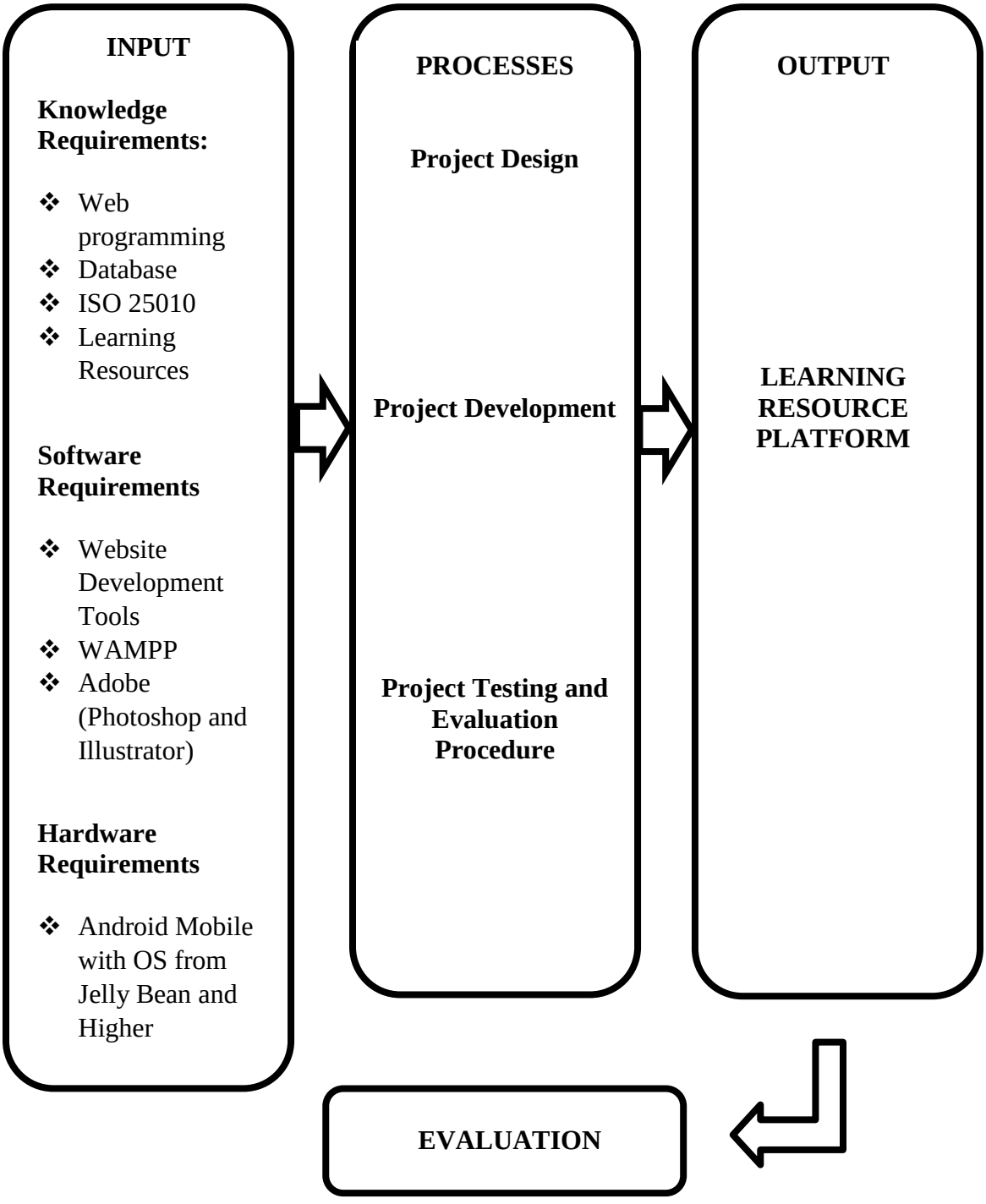


Figure 1.0. Conceptual Model of the Learning Resource Platform

Input

The input serves as the foundation of the study. The required inputs to conduct the study are grouped according to knowledge, software and hardware requirements. Under Knowledge requirements are Programming Languages for Web Development, Database management for files and fields, Python language for the programming of the hardware to be used and evaluated using ISO 9126. Under software requirements are website development tools like HTML, CSS, JavaScript, XML, etc. Finally, under the Hardware Requirements are any desktops. Smartphones or tablets that can browse through the internet with an Android OS with a version of Jellybean and Higher.

Process

Under this component are methods that were carried out to develop the software “COS Learning Resource System”. The method includes the Project design and System Creation.

Output

The output gives the result of the processes conducted. Given the required inputs and by following the process components are needed to come up with the fully-functional and acceptable desired output “Learning Resource Platform”.

Operational Definition of Terms

To better understand the study, the following terms are operationally defined.

Learning Resources refers to the materials contributed by the users.

Webpage refers to the document that is being display through the website.

Website refers to collection of related web pages that can be accessed through internet. In likewise refers to the output of the research.

Internet refers to interconnected network that a person can use.

Mobile-Responsive Webpage refers to a webpage that can be properly seen in any medium such as Mobiles, Tablets and other gadgets that can access the internet.

Android refers to the Operating System being used by most mobile phones.

Database refers to the storage and collection of information or data where the records in the “Learning Resource Platform” are managed

Chapter 3

RESULTS AND DISCUSSION

This chapter presents the review of results and discussion of the study. It includes the project design, project development, operation and testing procedure and evaluation procedure.

Project Design

Figure 2.0 shows the project design of the developed system using context diagram for data modeling. The project design shows the different tools and diagrams used for better understanding of the flow of data, and the input output process.

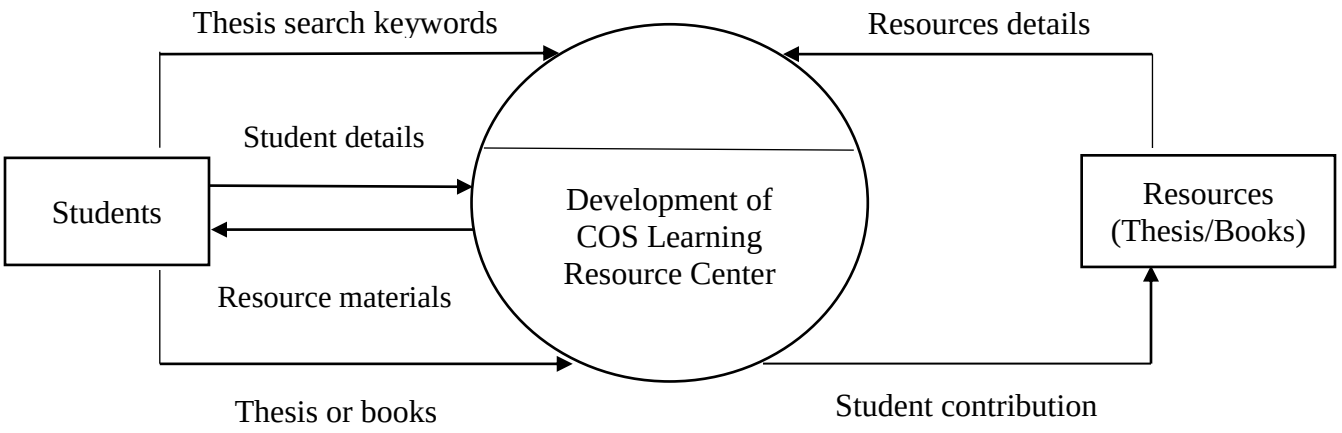


Figure 2.0. Context Flow Diagram

Figure 3.0 shows the system flowchart of the “Learning Resource Platform” and introduces the step by step process for the usage of the system. The user must first register to the system to access the modules in which they can browse or upload depending on their needs.

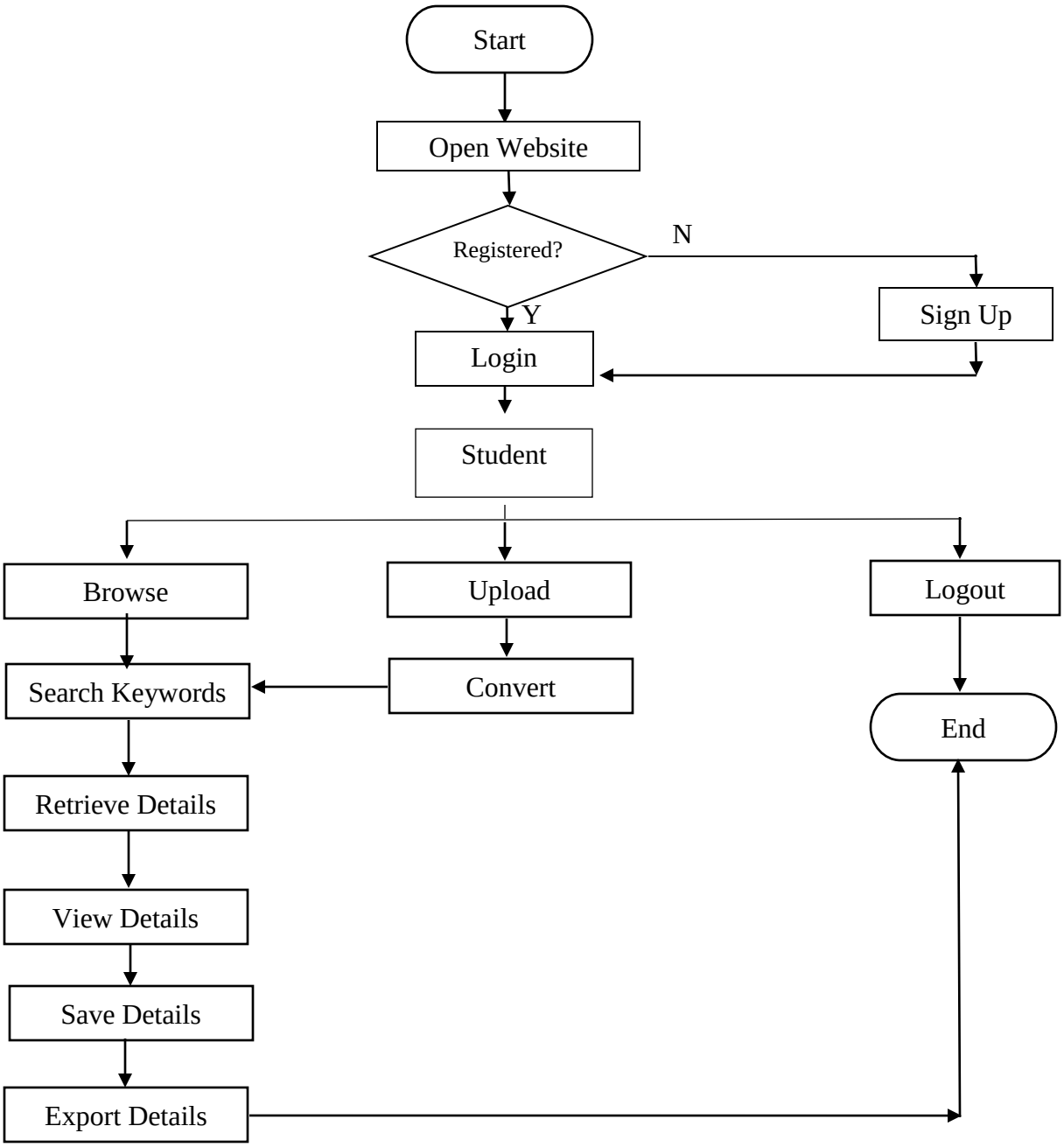


Figure 3.0. System Flow Chart

Figure 4.0 shows the Hierarchical Input Process Output (HIPO) of the “Learning Resource Platform”. This diagram shows the hierarchy of modules inside system and provide information on how it can be used. The user can search for materials to either add or view and lastly print the information they desire.

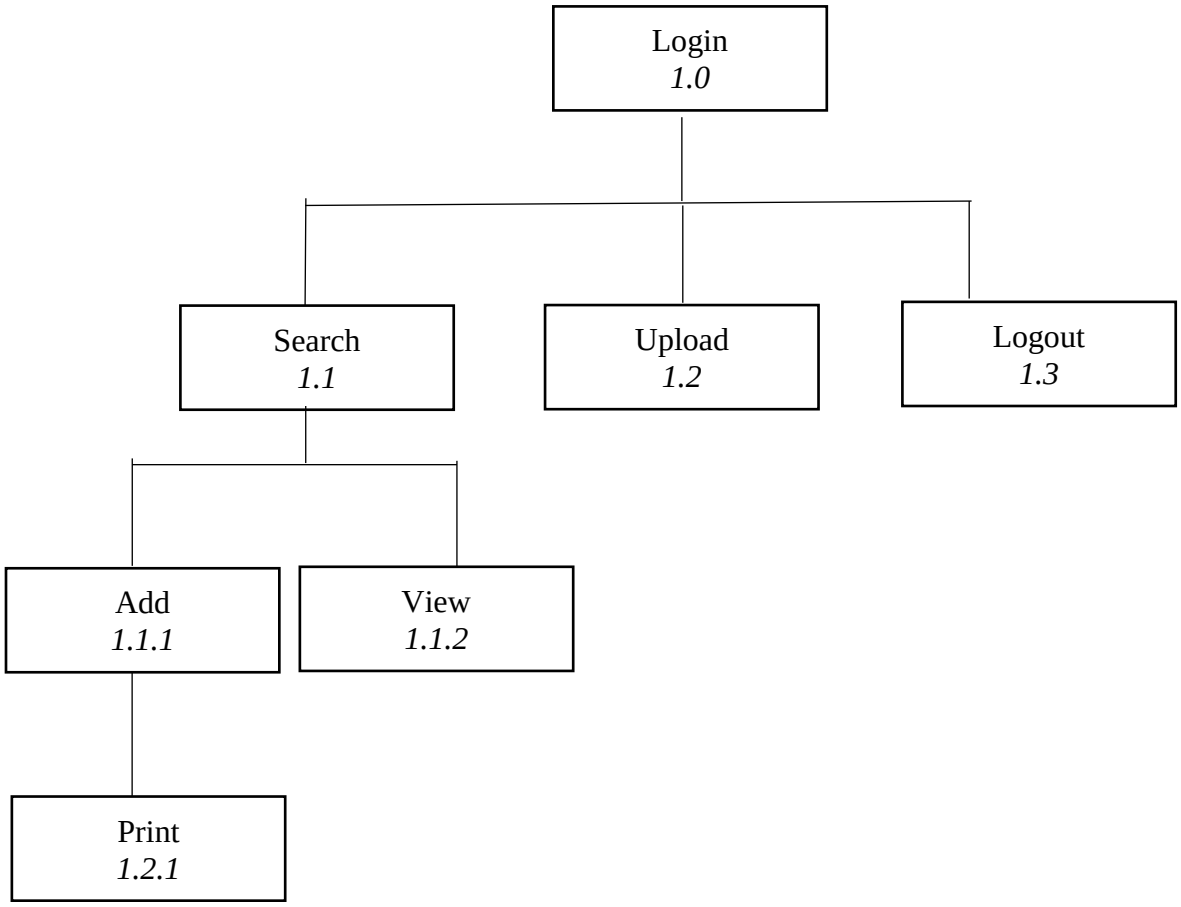


Figure 4.0. HIPO Chart

Figure 5.0. shows The Use Case Diagram of the “Learning Resource Platform” and it describes how the user can access the modules provided inside the system.

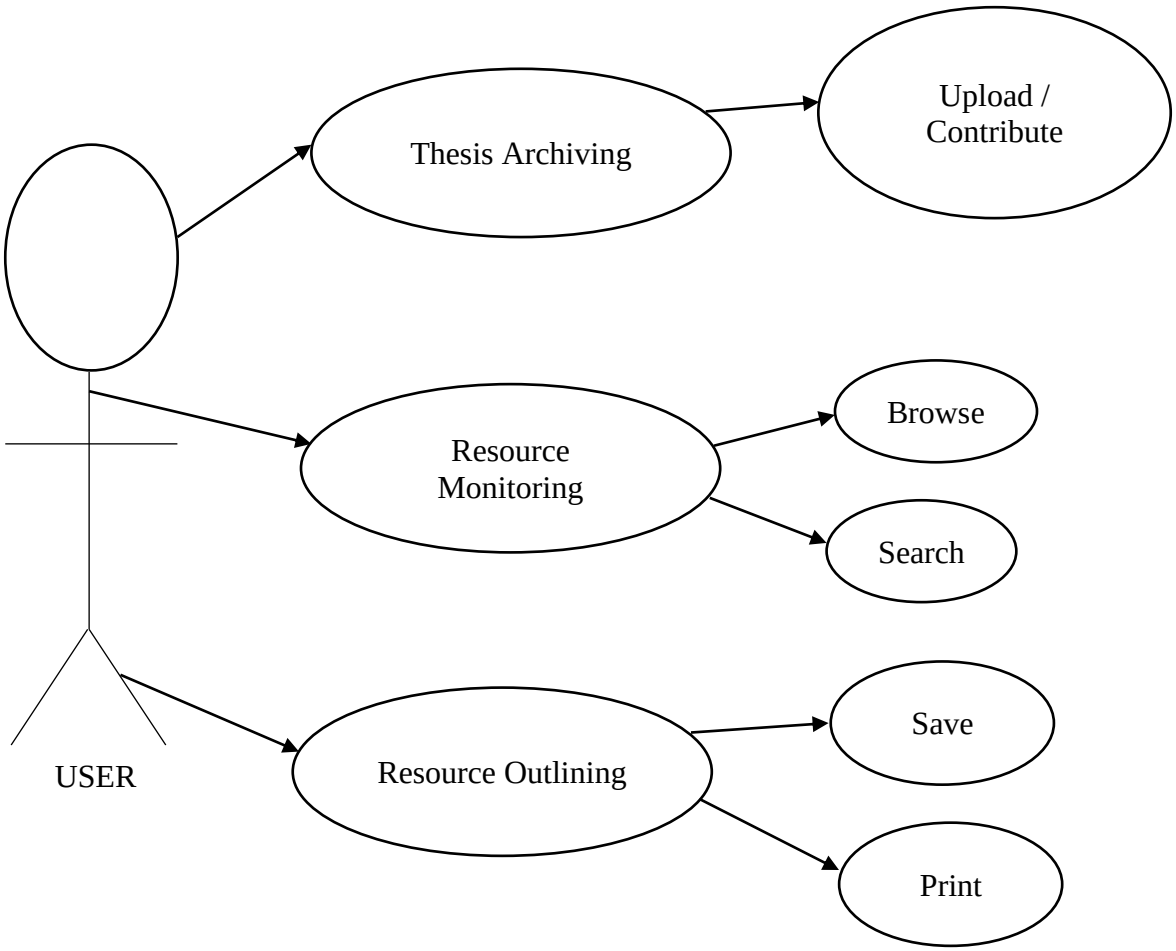


Figure 5.0. Use Case Diagram

Figure 6.0. is The Entity Relationship Diagram of the “Learning Resource Platform” that shows the relationship of the entity sets stored in the database of the system. In other words, the diagram illustrates the logical structure of the database.

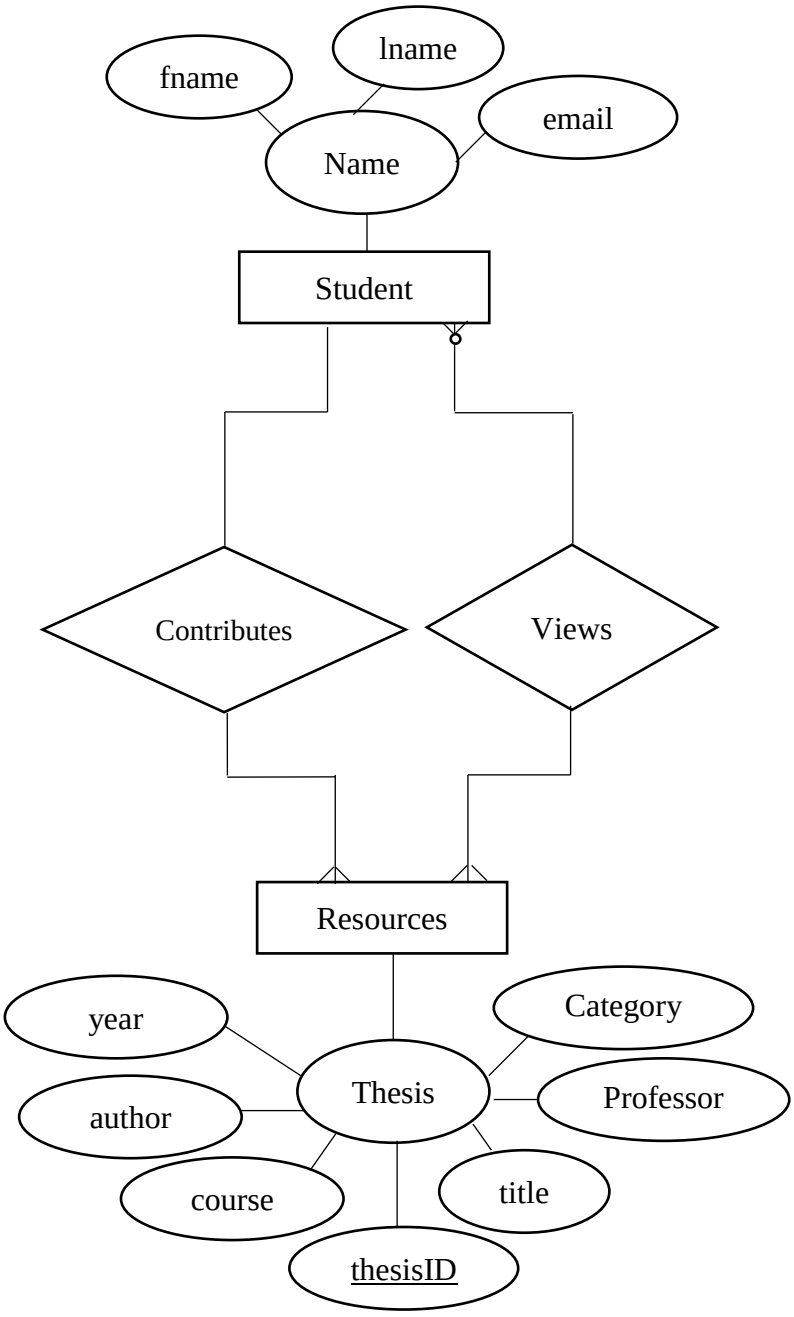


Figure 6.0. Entity Relationship Diagram

Project Development

This part discusses the procedures undertaken on how this structure was created based on the design specifications.

The following steps are coded in the login and dashboard of the developed system:

1. Text areas, labels, buttons and color design were embedded to serve as controls and design in the system.
2. Renamed the buttons and labels into the modules title such as “Login, Register, Browse and Upload.
3. Resized and designed textboxes, buttons and labels to attain a better user interface that is efficient for user inputs.

The Database was created using MySQL and XAMMP/WAMP for the server.

1. Created schema with tables, format primary keys as auto increment.
2. Normalized tables in the database.
3. Repopulate the database using sample data in order to test the functionality.

The following steps shows the language used and the system was created using PHP, JavaScript, Ajax and SQL Queries.

1. Created coded functions to every modules, buttons and labels inside the system.
2. Connected the database into the CodeIgniter PHP Framework
3. Inserted SQL Queries to the buttons for database manipulation and store or retrieve respectively.
4. Retrieve data from the database and displayed to panes and tables in the system.

Operation and Testing Procedure

In this stage, the implementation of the system is extensively analyzed to ensure its function suitability, usability, performance efficiency to determine if the system can be considered a quality-based website.

Table 1.

Operation and Testing Procedure

Test On	Step Undertaken
Register module	1. Visited the site. 2. Inputted username, valid e-mail address and password. 3. Taped the "register" button and it will redirect you to login page.
Login module	1. Inputted username and password. 2. Tapped the "login" button and it will redirect you to dashboard page. 3. Tapped the "upload project" button
Upload Projects module	1. Inputted the title of the project or study. 2. Import or choose the file of the project or study (must be .pdf file). 3. Inputted the abstract of the project or study. 4. Chose the course and year. 5. Chose the category of the project or study. 6. Chose the adviser of the project or study. 7. Tapped the "upload" button and wait while the file is being converted. 8. After the file is converted, tapped the button "browse projects".
Browse Project module	1. Inputted keywords of the project or study you want to view. 2. Tapped the "search" button and it will display the results. 3. Based on the results clicked the project or study you want to view.
View Project module	1. Read the project or study. 2. Selected words, sentences or paragraph you want to cite. 3. Tapped the "add to resource manager" button to add your selected text into the resource manager. 4. Tapped the "manage" button to print or export your cited text or notes from your resource manager or tap the "delete"

button to remove your cited text or notes from your resource manager.

User Acceptance Testing

The system was tested by the S and K to expose the system to actual business operations management. In this stage, this allows the researchers to see if the system is operational, meaning that all functions of the system are executing properly. This determines if the system is acceptable and ready for deployment.

Evaluation Procedure

The following steps have been conducted to determine the level of acceptability of the system developed. The Web-based Learning Resource Platform was evaluated by 20 respondents who were randomly selected composed of Professors and CS/IT Students from the Technological University of the Philippines – Manila. The following steps were followed during the evaluation process.

1. The purpose of the system and demonstration on how to use it was explained by the researchers.
2. Respondents were requested to try navigating the developed system.
3. Each respondent was given a copy of the evaluation survey.
4. The respondents evaluated the system according to the criteria of the ISO 25010 instrument using the Likert's Scale of 1 (Not Acceptable) up to 4 (Highly Acceptable).

5. The Data collected was tabulated and frequencies of ratings were computed for each criterion.
6. Results were interpreted based on the range of ratings for the corresponding qualitative interpretation.

Table 2 presents the rating scale and the corresponding descriptive rating.

Table 2.

Likert's scale used for the evaluation.

Numerical Rating	Interpretation
4	Highly Acceptable
3	Very Acceptable
2	Moderately Acceptable
1	Not Acceptable

Table 3 shows the scale range and its qualitative interpretation.

Table 3.

Scale Range and its Qualitative Interpretation

Range	Qualitative Interpretation
76 – 100	Highly Acceptable
51 – 75	Very Acceptable
26 – 50	Moderately Acceptable
1 – 25	Not Acceptable

The range where the frequency average falls concluded the evaluation of the system. 1 to 25 means “Not Applicable”, 26 to 50 means “Moderately Acceptable”, 51 to 75 means “Very Acceptable” and 76 to 100 means “Highly Acceptable”.

Chapter 4

RESULTS AND DISCUSSION

This chapter contains the project description, project structure, project capabilities and limitations, and project evaluation of the study.

Project Description

As technology progresses, one must adjust to the changes whether it is in the system or the process. Everyone must cope up to the evolving technology surrounding our society and not to just let the time pass us by. We are developing a project that will help the students create a topical outline of their research as well as the easiness to browse different resources coming from different users and contributors.

Learning Resource Platform includes modules like uploading projects, creating topical outline, browsing and viewing the collection of theses. Users can easily create their account and access the system with ease. Print saved outlines and display all previous created outlines. The system had been developed using web development tools like PHP, JavaScript, jQuery, Ajax. Markup Languages like HTML and CSS, BOOTSTRAP as a front-end library for designing, ATOM as a cross-platform source code editor, WAMP for database manager and MySQL as the relational database management system.

Project Structure

The log in page where the End User would input his/her username and password to gain access to the system is shown in Figure 7.

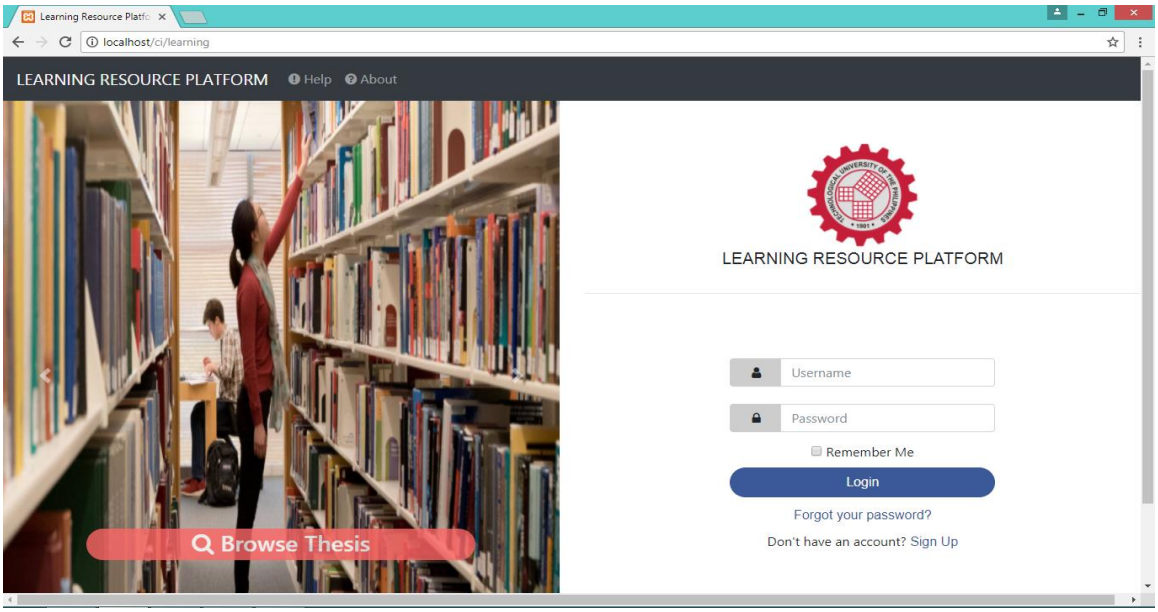


Figure 7. Log-In Form

Register page where the End User would input his/her username, valid e-mail address and password to have an account is shown in Figure 8.

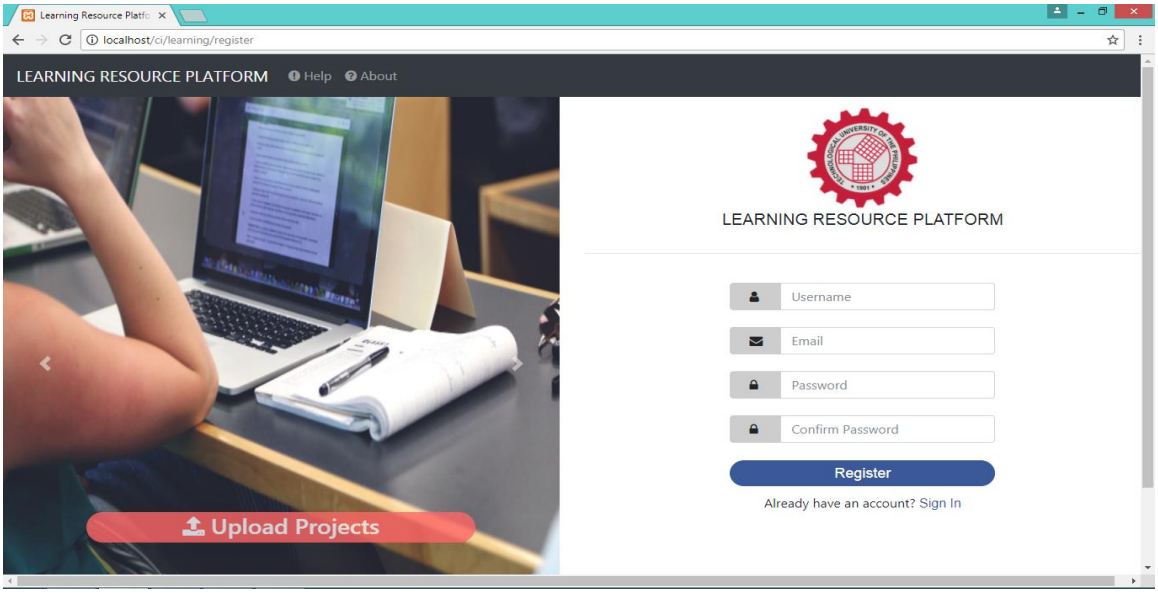


Figure 8. Register Form

Dashboard page where the End User can browse projects and upload projects is shown in Figure 9.

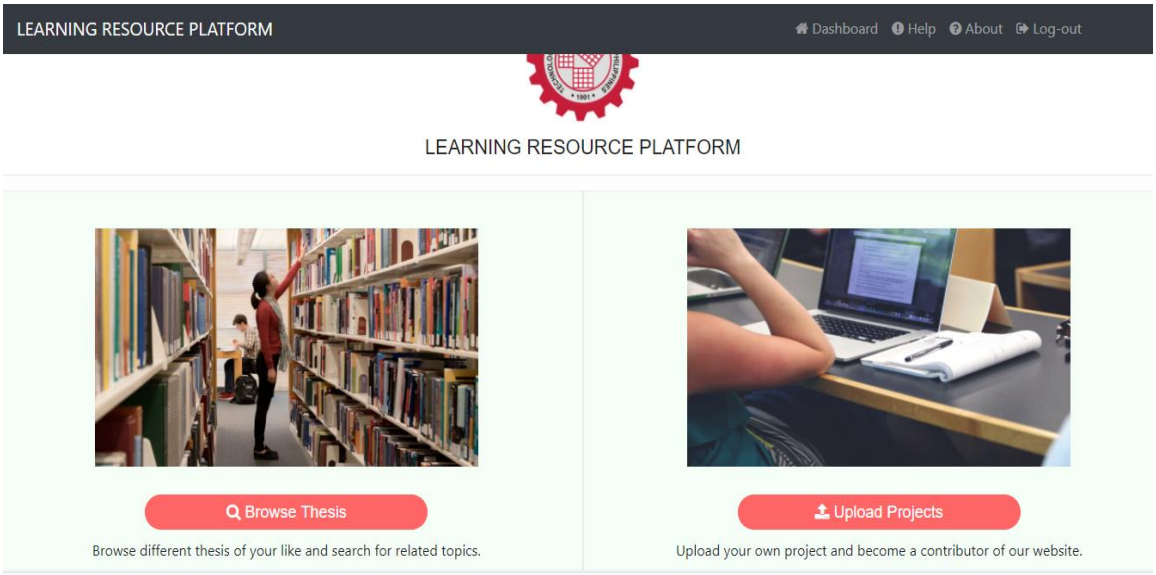


Figure 9. Dashboard Form

The search module of the system. The user will input keywords according to his wants and displays results is shown in Figure 10.

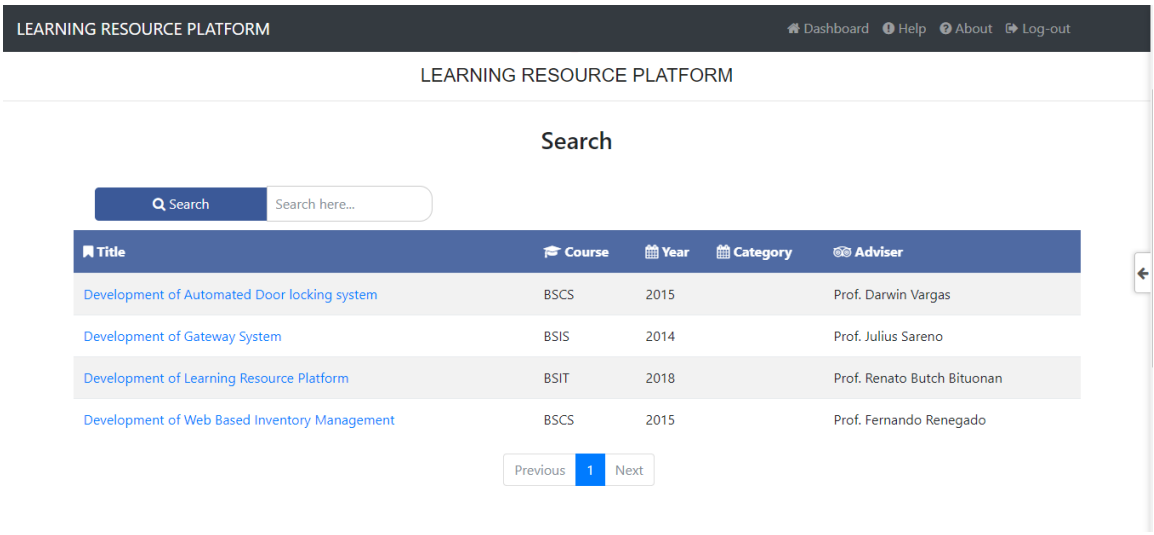


Figure 10. Search Form

The project that's been chosen by the user and being cited in the resource manager is shown in Figure 11.

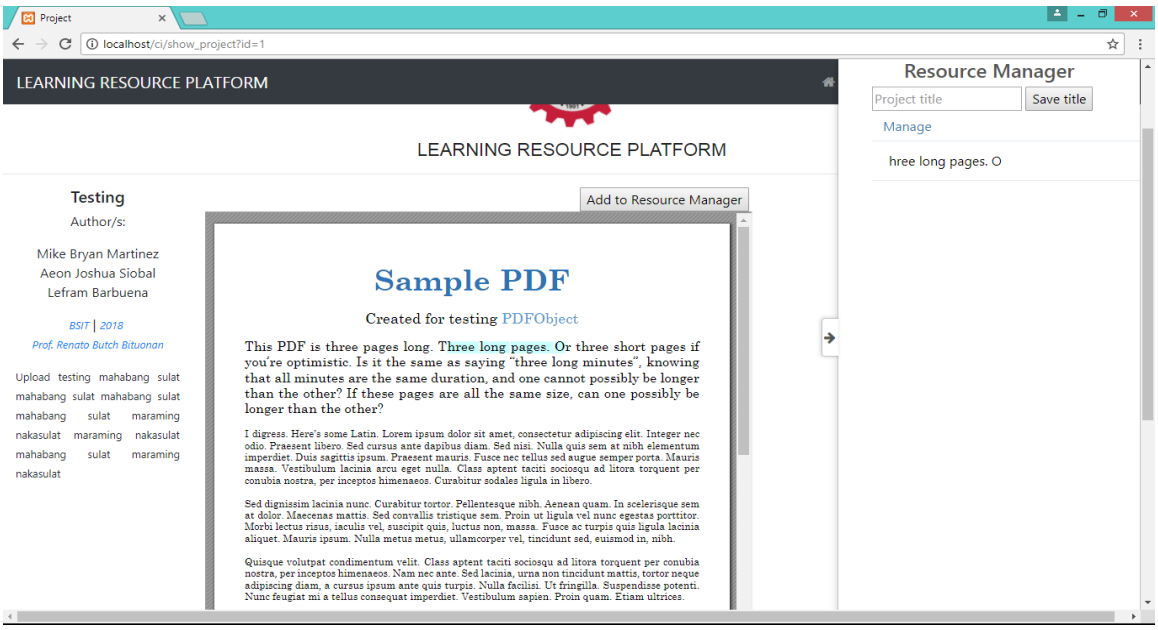


Figure 11. View Project Form

The upload module where the user can contribute their thesis with specific information for the system is shown in Figure 12.

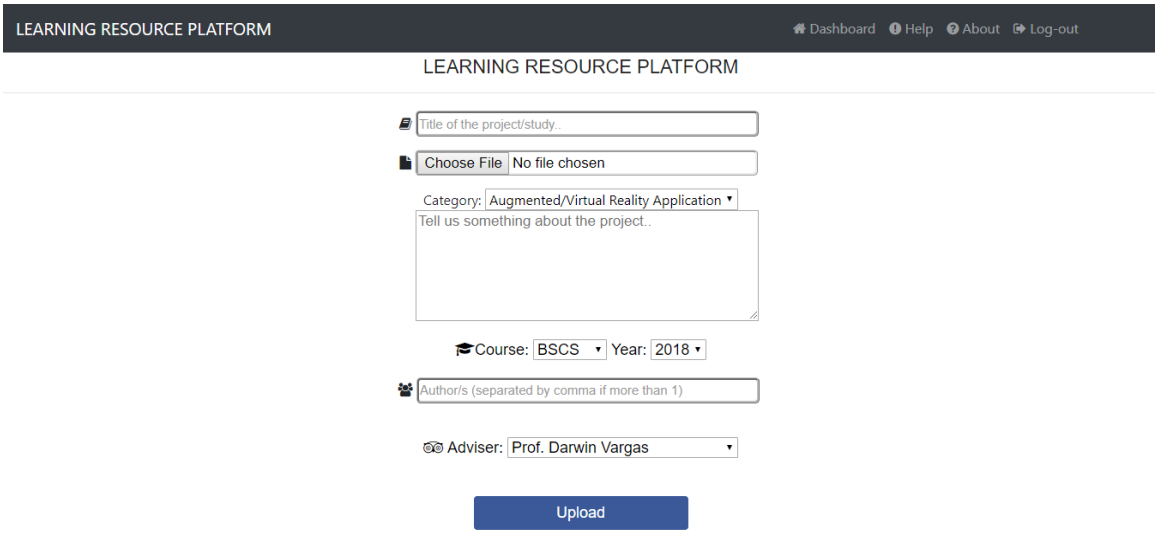


Figure 12. Upload Project Form

Project Capabilities and Limitations

The following are the system's capabilities

1. The system is capable of uploading pdf projects and converting into html files.
2. The system is capable of creating, saving and printing of topical outline.
3. The system is capable of displaying projects for users to browse.
4. The system is capable of editing the resources added to the manager

The following are the system's limitation

1. The system cannot delete the projects once uploaded.
2. The system cannot download the whole project file.
3. The system cannot accept any other file extension except pdf.
4. The system cannot add to roles, picture, equation and tables.

Project Evaluation

Based on the results of the evaluation conducted, the developed system entitled: Web-based Learning Resource Platform was generally or 70.72% of the respondents rating the system as "Highly Acceptable" (see Table 4).

The system obtained the highest rating in terms of "Performance Efficiency" with 85% of the respondents rating it as "Highly Acceptable", which means that the platform is easily loaded and results are displayed within acceptable duration for the respondents. In terms of function suitability, most or 78.33% of the respondents evaluated the platform as "Highly Acceptable". This proves that the features of the platform are working as attested by the respondents.

In terms of “usability”, most or 75.83% of the respondents rating the system as “Highly Acceptable”, which shows that the user interface and other accessibility features of the platform is very useful and usable as perceived by the respondents.

Table 4.

ISO 25010 Instrument Evaluation Result

Criteria	**Frequency**			
	1 **Not Acceptable**	**2** **Moderately Acceptable**	**3** **Very Acceptable**	**4** **Highly Acceptable**
Function Suitability	0	0	21.67%	78.33%
Usability	0	0	24.72%	75.83%
Performance Efficiency	0	0	15.00%	85.00%
Overall Frequency	**0**	**0**	**20.28%**	**79.72%**

Chapter 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

With the test conducted and evaluations presented regarding the specifications and technical performance of the Learning Resource Platform the following are the findings of the study. The Learning Resource Platform is created according to the desired specification of the developers for the institution. The website is created using different graphical and web developmental tools including WAMP to accommodate and store the database for the desired website. The specific functions given to the users is to upload their thesis in a pdf format as a contribution to the system whereas these resources can be used to create a topical outline that will help the students with the related literatures and studies. In order to do these processes, the users are required to register and give their basic information and login through the system. With the help of thirty (20) respondents and their ratings, the website attained its intended purpose as a Web-based Learning Resource Platform.

Conclusion

In conclusion to the objectives of the study and the results of the evaluation conducted, the following are acquired:

1. The system was designed with the following functional features:
    a. The system can collect data provided by the users
    b. The system can convert data depending on the user's needs
    c. The system can manage to support the specific needs of the users

d. The system can deliver output the user requires.

2. The Learning Resource Platform was successfully developed as a web-based application using the identified tools for development.

3. The developed system is successfully tested and improved its features and standards.

4. The system was highly acceptable especially in terms of “performance efficiency”.

Recommendation

The following are the recommendations for the study:

a. Enhance the functionality of the system by adding the following:

b. OpenID for the login process

c. Improve the integrity of the documents

d. Provide interaction between users

e. Tracking and commendation of documents by the users.

f. Use the study as research input for further development.

Appendix A

EVALUATION INSTRUMENT
"Web-based Learning Resource Platform"

Instruction: Evaluate the developed system using the given scale and placing a checkmark (/) under the corresponding numerical rating with respect to its sub-criteria. Each rating is quantified by the following:

4 -*Highly Acceptable*,
3-*Very Acceptable*,
2-*Moderately Acceptable*,
1-*Not Acceptable*

Characteristics	Sub-Characteristics	Descriptions	4	3	2	1
Functional Suitability	Functional Completeness	The system has the set of functions covers all the specified tasks and objectives.				
	Functional Correctness	The system provides the correct results with the needed degree of precision.				
	Functional Appropriateness	The system functions facilitate the accomplishment of specified tasks and objectives.				
Usability	Appropriateness Recognisability	It has the ability in which the user can recognize whether the application is appropriate for their needs.				
	Learnability	It has the ability in which the application can be used by specified users to achieve specified goals of learning.				
	Operability	The application has the attributes that make it easy to control and to operate.				
	User Error Protection	It has the ability to protect users against making errors.				
	User Interface Aesthetics	It has the ability in which the user interface enables pleasing and satisfying interaction for the users.				
	Accessibility	The system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.				
Performance Efficiency	Time Behaviour	It has the ability to respond, process time and throughput rates of a product or system, when performing its functions				
	Resource Utilization	It has the ability to meet the amounts and types of resources used by a product or system, when performing its functions.				

Comments and Suggestions:

Appendix B

SAMPLE OF RESPONDENTS EVALUATION

Technological University of the Philippines
College of Science
Mathematics Department

DEVELOPMENT OF A WEB-BASED LEARNING RESOURCE PLATFORM

Name(optional): _____ **CYS(optional):** BSIT-3A

Instruction: Please evaluate the developed system by using the given scale and placing a checkmark (√) under the corresponding numerical rating with respect to its sub-criteria. Each rating is quantified by the following:

4 – Highly Acceptable
3 – Very Acceptable
2 – Moderately Acceptable
1 – Not Acceptable

Characteristics	Sub-Characteristics	Descriptions	4	3	2	1
Functional Suitability	Functional Completeness	The application has the set of functions covers all the specified tasks and objectives.	✓			
	Functional Correctness	It provides the correct results with the needed degree of precision.		✓		
	Functional Appropriateness	Its functions facilitate the accomplishment of specified tasks and objectives.	✓			
Usability	Appropriateness Recognizability	It has the ability in which the user can recognize whether the application is appropriate for their needs.	✓			
	Learnability	It has the ability in which the application can be used by specified users to achieve specified goals of learning.		✓		
	Operability	The application has the attributes that make it easy to control and to operate.	✓			
	User Error Protection	It has the ability to protect users against making errors.	✓			
	User Interface Aesthetics	It has the ability in which the user interface enables pleasing and satisfying interaction for the users.	✓			
	Accessibility	The application can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.		✓		

Performance Efficiency	Time Behavior	It has the ability to respond, process time and throughout rates of a product or system, when performing its functions	/			
	Resource Utilization	It has the ability to meet the amounts and types of resources used by a product or system, when performing its functions.	/			

Comments and Suggestions:

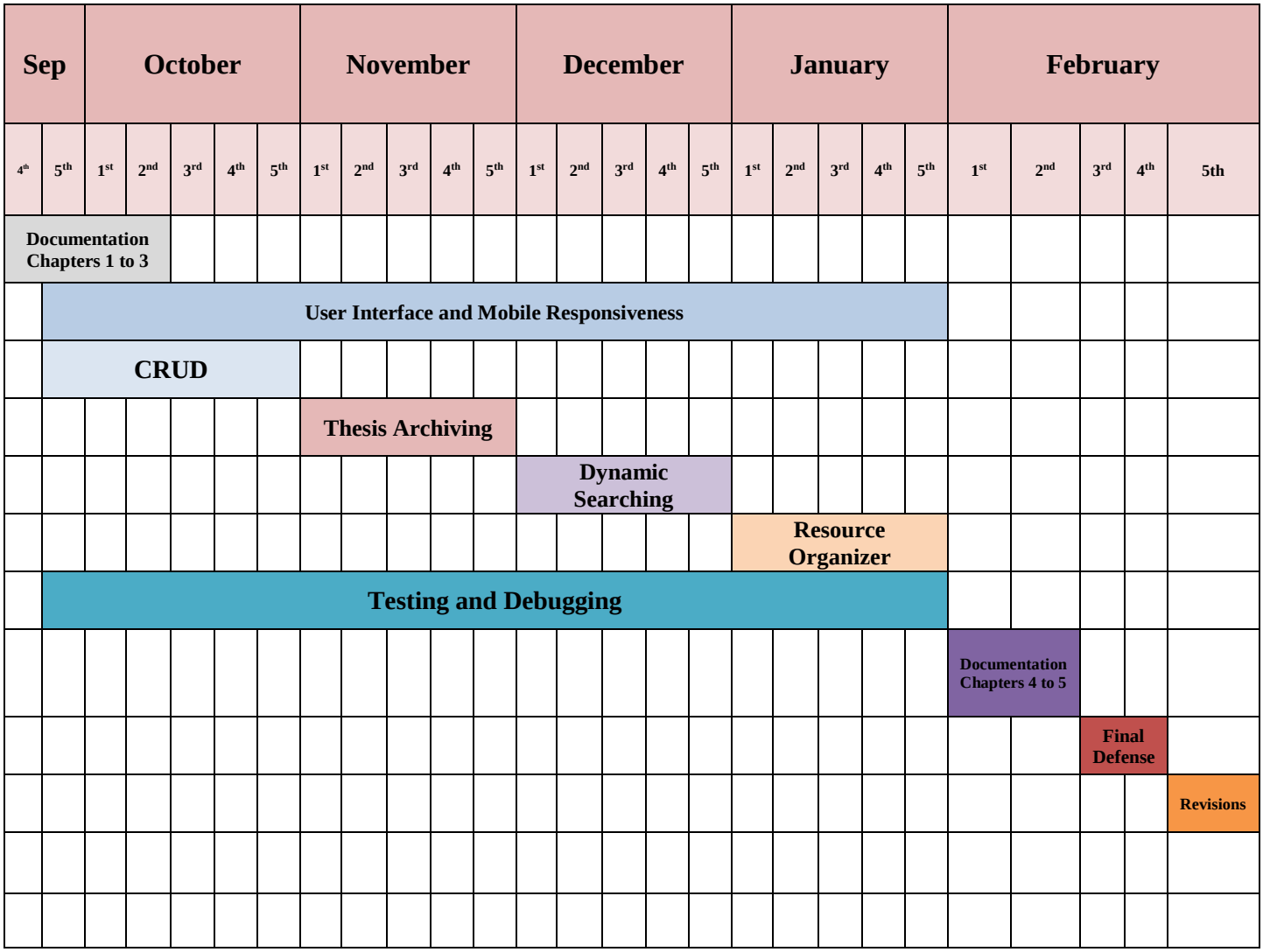
Appendix C

SUMMMARY OF RESPONDENTS EVALUATION

		Functional Sustainability			Usability						Performance Proficiency	
Respondents												
1		4	4	4	4	4	3	3	4	4	4	4
2		4	4	4	4	4	4	4	4	4	4	4
3		4	4	4	4	4	4	4	4	4	4	4
4		4	4	4	4	4	4	4	4	4	4	4
5		4	4	4	3	4	4	4	4	4	3	4
6		4	4	4	4	3	4	4	3	4	4	4
7		4	4	4	4	3	4	3	4	3	4	4
8		4	4	4	4	4	4	4	3	4	4	3
9		4	3	4	4	4	4	3	4	4	3	4
10		4	4	4	3	4	4	4	4	4	3	4
11		4	3	3	4	3	4	4	4	4	3	4
12		4	4	3	4	4	4	4	4	4	4	4
13		4	3	4	3	3	4	4	4	4	4	4
14		4	3	4	4	3	4	4	4	4	4	4
15		4	4	4	3	4	4	3	3	4	3	4
16		4	4	4	3	4	4	3	4	3	4	4
17		3	3	3	4	4	4	3	4	3	4	4
18		4	3	3	4	4	3	4	4	3	4	4
19		4	3	4	4	3	4	4	4	4	4	4
20		4	4	3	4	3	3	4	4	3	4	4
Mean		3.95	3.65	3.75	3.75	3.65	3.85	3.7	3.85	3.75	3.75	3.95
Frequency	**4**	19	13	15	15	13	17	14	17	15	15	19
	3	1	7	5	5	7	3	6	3	5	5	1
%	**4**	95	65	75	75	65	85	70	85	75	75	95
	3	5	35	25	25	35	15	30	15	25	25	5
% per Criterion	**4**	78.33			75.83						85	
	3	21.67			24.17						15	
Over all %	**4**	79.72										
	3	20.28										
Mean per Criterion		3.78			3.76						3.85``	
Overall Mean		3.80										
Over all Descriptive Meaning		***Highly Acceptable***										

Appendix D

GANTT CHART



Appendix E

USER'S MANUAL

1. Register

1. Visit the site.
2. Input username, valid e-mail address and password.
3. Tap the "register" button and it will redirect you to login page.

2. Login

1. Input username and password.
2. Tap the "login" button and it will redirect you to dashboard page.
3. Tap the "upload project" button.

3. Upload Projects

1. Input the title of the project or study.
2. Import or choose the file of the project or study (must be .pdf file).
3. Input the abstract of the project or study.
4. Choose the course and year.
5. Choose the category of the project or study.
6. Choose the adviser of the project or study.
7. Tap the "upload" button and wait while the file is being converted.
8. After converting the file, tap the button "browse projects".

4. Browse Project

1. Input keywords of the project or study you want to view.
2. Tap the "search" button and it will display the results.
3. Based on the results click the project or study you want to view.

5. View Project

1. Read the project or study.
2. Select words, sentences or paragraph you want to cite.
3. Tap the “add to resource manager” button to add your selected text into the resource manager.
4. Tap the “manage” button to print or export your cited text or notes from your resource manager or tap the “delete” button to remove your cited text or notes from your resource manager.

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Curriculum Vitae

Aeon Joshua S. Siobal

OBJECTIVE

Dedicated and motivated person seeking for an opportunity that offers a broader horizon for advancement.

PERSONAL INFORMATION

Birthdate	: September 13, 1998	**Civil Status**	: Single
Nationality	: Filipino	**Address**	: 022-B Matiisin St. Herbosa Ext. Tondo,Manila, NCR
Gender	: Male		

CONTACT INFORMATION

Mobile	: 09161615890	**Home**	:
Work	:	**Email**	: aeonjoshua.siobal@gmail.com

SKILLS

- **Microsoft Office**
- **Java**
- **PHP**
- **Networking**
- **Editing using Adobe Photoshop**
- **Database**
- **Troubleshooting**
- **Encoding Management**

WORK EXPERIENCE

2017 August to 2017 October

TUP-Manila
Position: IT Assistant (Trainee)
Specialization: IT/Computer - Network/System/Database Admin
Industry: Computer / Information Technology (Hardware)

EDUCATION

2018 March

Technological University of the Philippines-Manila (TUP Manila)
Major: BSIT
Field of Study: Computer Science/Information Technology

ACHIEVEMENTS

- PGC Inventory System
- Learning Resource Platform
- 360 TUP Virtual Tour
- TUP Voting System
- Hotel Reservation System

CERTIFICATIONS

2018 **Certificate of Participation in Google Analytics Seminar**

2017 **Certificate of Participation in Laws and Ethics In I.T. Profession Seminar**

2017 **Certificate of Attendance in Threat Experts Summit 2017**

2017 **Certificate of Completion in Microsoft Virtual Academy with Best of Build and Windows 10**

SEMINARS

2018 **Google Analytics**

2017 **Laws and Ethics in IT Profession**

2017 **Threat Experts Summit 2017: IAmCyberSecure**

2017 **Advance Web Programming: Ajax and jQeury**

2017 **The World in 360**

LANGUAGES

- **Filipino**
- **English**

REFERENCES

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Biology Master Teacher
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Rev. Rodolfo Guintu

Principal
Shiloh Christian Academy of Tondo
353-20-49

"I hereby certify that the information contained in this application is true and correct to the best of my knowledge."

_____

AEON JOSHUA S. SIOBAL

Mike Bryan Molinas Martinez

OBJECTIVE

Secure a position in a progressive organization where I can capitalize and further enrich my skills in the field of Information Technology.

PERSONAL INFORMATION

Birthdate	: July 15, 1997	**Civil Status**	: Single
Nationality	: Filipino	**Address**	: 845 Tomas Claudio St. Pandacan,Manila, NCR 1011
Gender	: Male		

CONTACT INFORMATION

Mobile	: 09056049118	**Home**	:
Work	:	**Email**	: m.bryanmartinez@gmail.com

SKILLS

- **Java Programming**
- **Computer Hardware**
- **C# Programming**
- **PHP Programming**
- **Photo Editing using Photoshop**

WORK EXPERIENCE

2017 August to 2017 October — **TUP-Manila**
Position: On-the-job Trainee (Trainee)
Specialization: IT/Computer - Network/System/Database Admin
Industry: Education
I was a trainee in Information Technology Development Center (ITDC) under Network Management Unit.

2013 October to 2014 March — **RMR Electric Corporation**
Position: On-the-job Trainee (Trainee)
Specialization: Customer Service (Technical)
Industry: Electrical and Electronics

Our department is responsible for products' design and specifications based on customers' preference. I drew panel boards and circuit breakers back when I was a trainee in RMR Electric Corporation.

EDUCATION

2018 March **Technological University of the Philippines-Manila (TUP Manila)**
Major: BSIT
Field of Study: Computer Science/Information Technology

CERTIFICATIONS

2015 **Microsoft Virtual Academy Certificate of Completion (Best of Build and Windows 10)**

SEMINARS

2018 **18th Job Fair for Baccalaureate Courses**

2017 **Laws and Ethics in IT Profession**

2017 **Cyber-Attack Methodologies**

2013 **Leadership Seminar**

LANGUAGES

•English **• Filipino**

"I hereby certify that the information contained in this application is true and correct to the best of my knowledge."

_____
MIKE BRYAN M. MARTINEZ

Lefram Mil LoriegaBarbuena

OBJECTIVE

Seeking a position with a progressive company that provides an opportunity and capitalize my skills and acquire valuable knowledge and abilities in the field of information technology.

PERSONAL INFORMATION

Birthdate	: November 27, 1997	**Civil Status**	: Single
Nationality	: Filipino	**Address**	: 612 Purok 3, Sucat, Muntinlupa City,NCR 1770
Gender	: Male		

CONTACT INFORMATION

Mobile	: 09219600903	**Home**	: N/A
Work	: N/A	**Email**	: lefram.barbuena@gmail.com

SKILLS

• Communication • PC Troubleshooting • Microsoft Office • Web Programming

WORK EXPERIENCE

2017 August to 2017 October

Technological University of the Philippines
Position: OJT - Technical Staff (Trainee)
Specialization: IT/Computer - Network/System/Database Admin
Industry: Education

My nature of work as a technical staff in Technological University of the Philippines, University Information Technology Center (UITC), is being a LAN and WLAN Network engineer.

EDUCATION

2018 March

Technological University of the Philippines-Manila (TUP Manila)
Major: BSIT
Field of Study: Information Technology

SEMINARS

2018	**Break the code : Cryptography and Cybersecurity**	2017	**Law and Ethics in Information Technology Profession Seminar**
2017	**Cyber Attacks Methodologies Seminar**	2017	**Google Analytics Seminar**

LANGUAGES

- **English**
- **Filipino**

REFERENCES

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University Research Development and Services – Research Director
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"I hereby certify that the information contained in this application is true and correct to the best of my knowledge."

_____

LEFRAM MIL L. BARBUENA