CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

It is possible to define learning as the process of gaining new ideas, insights, knowledge and skills via different experiences, observations, encounters, information (White, 1983). It is a very important activity that needs concentration mixed with interactivity, clear understanding of facts that's been indicated or debated using increased communication skills. Not all learning processes are efficient because of unsuccessful learning circumstances like noise, bad ventilation, Extreme temperatures and insufficient teaching equipment and resources. It depends on multiple variables for efficient teaching to take place. In most cases, these factors arise from the teachers, the students, media or teaching and learning facilities and the building learning environment. If a lecturer lacks efficient communication abilities and methods, learners will find it hard to comprehend the materials or information media required for teaching and instruction, or if the materials provided are inadequate, it may impair the knowledge and comprehension of the topic or problem mentioned (March & Smith, 1995). The mode of learning and teaching also has a major effect on how students would assimilate. Development of certain techniques have been developed to remedy the condition in others.

1.2 Statement of the Problem

Certain disadvantages are being displayed by traditional teaching method like poor teaching and communication skills between the lecturer and the students in traditional learning. The major problem in this sort of learning is that most information been given to learners in a lecture room might not be recent. Also, the traditional mode of teaching is at times boring and tiring due to the environmental conditions which can make learners to be impatient, therefore causing them to loose attention during lecture hours. Therefore, this project would provide a tool that can help the student to study and make them accessible to information online in any geographical area. The information that would be provided would be recent and updated.

1.3 Aim and Objectives

This research aims at designing and implementing an interactive electronic system for learning. The specific objectives are to:

i. create different views for two users so as to access the system differently.
ii. develop a database that would store the users information and grant assess using username and password.

1.4 Scope of the Study

The suggested e-learning system is designed to achieve effective and effective learning. Further, the system shall be used by computer science students of Mountain Top University. In the development of the suggested system, access to certain resources would only be accessible to computer science students who has an account on the software. Security measures like passwords would be implemented. The basis of this task is to associate with online revision which is one of the keys for daily study and exam preparations.

1.5 Significance of the Study

This project aims at designing an e-learning web portal by developing an e-learning software that is supposed to be distributed over the internet, providing a remedy platform for the shortcomings found in traditional education and learning processes. The application would be one of the channels of learning that opens the door for computer science students in the institution to have access to learning for fewer costs. It would be used to access knowledge, high-quality education and training. Lecturers and teachers can also learn from this research that web-enhanced learning "is no longer an add-on feature in education, but it is needed in the education system."

The methods of the traditional classroom have high tendencies of responding to the many factors that affects effective learning, however, these variables may arise with the implementation of Electronic Learning and may have little or no effect on the learner. Therefore, this project focuses on creating an Electronic Learning application that will bring captivation through the provision of separate learning systems and the skillful use of multimedia that will contribute to

the improvement of efficient learning and the decrease of work load tutoring lecturers.

1.6 Definition of Terms

Animation: Animation Computer is a technique of generating animated images. The more general term computer-generated imagery (CGI) involves both dynamic images and static scenes, whereas computer animation only refers to picture movement.

Application: A software that operates on the monitor of a computer system is an application or application program. Games, e-mail programs, utilities, web browsers, and word processors are examples of applications. The term "application" is often used because the customer has a particular application in a program or each application.

CAI: Computer-assisted instruction (CAI): This is a method using a computer system to show the educational material and to monitor the teaching. In improving the teaching process, CAI utilizes a mixture of graphics, text, video and sound.

CAL: By playing and using tools stored on DVDs, mobile phones, and other web-based resources, learning becomes more appealing and vibrant and provides enjoyable opportunities for learners to showcase their listening and learning abilities.

CBT: Computer-based learning (CBT) is defined as any instruction that has a computer as its main delivery means.

Contents: information and experiences that may provide value for end-user.

Data: Is the information that a computer has processed or stored. This may be in the form of text, software, audio clips, images or other data types. Computer information can be analyzed by the computer's CPU and stored in files and folders on the computer's hard disk.

Database: Database, is any data collection or information specifically arranged for quick computer search and retrieval. Databases are organized to allow information to be stored, retrieved, modified and deleted in combination with multiple information processing activities.

Information: Refers to as data when information is entered into a computer system and stored. After processing (such as formatting and printing), it is possible to perceive output data as

information again.

Media: These are the items, equipment or instruments used for information or data storage and delivery. Media may also include channels, connections or equipment that transmit information or data.

Menu: It's a collection of different alternatives submitted to the computer application user in another to assist the user to find data or perform an operation of the program.

Project: A project consist of different programs, configuration definitions and associated information in computer software.

Resource: A resource is any virtual or physical element within a computer that has limited accessibility. Any device connected to a computer can be called a resource, and every component of the internal system is a resource as well.

Server: A server is defined as a computer program that offers other programs or systems functionality, known as "clients." The mode of architecture is generally called client-server model.

Software: In contrast to the hardware's physical parts, software is described as a program that allows a computer to perform a particular job for users.

Technology: Technology includes the use of storage, computers, connectivity, and other physical systems, equipment, and processes to create, store, process, protect, and exchange all kinds of digital data.

User: A user is an individual who uses a network or computer service. Computer systems and software products users usually lack the necessary or necessary technical knowledge to fully comprehend how they function.

Web: The Web is an Internet server system that allows specially formatted files to be supported. The files are formatted in a markup language called HTML (Hypertext Markup Language), which promotes connections to other documents, graphics, video files and audio.

1.7 Organization of Subsequent Chapters

In this project, Chapter one discusses on the introduction of the project topic, Chapter two talks about the literature review, conceptual review and theoritical review, Chapter three discusses the techniques used to achieve the written goals set out in chapter one, the Software Development Life Cycle has been used to implement the suggested design. Chapter four speaks about the suggested scheme being implemented.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

The learning concept is a cognitive process that aids knowledge discovery. E-Learning is simply the method of learning online which provides a boundary-free way to broaden the horizons that enables communication between the lecturer and student across the web. According to Hart (2009), when the work of others is reviewed it enables one to identify strategies for research and methodological assumptions. Hence, the idea of e-learning was identified and examined from different angles which are the platforms they operate on to deliver information, the classes of pedagogical content development, and the user's way of interaction. In addition an e-learning scheme theoretical framework was presented.

This chapter is structured in six sections: the first presents the discussion of the concept of e-learning; the second presents a literature review on the related concepts of e-learning; the third presents the trends of the concepts based on a bibliometric study; the fourth summarizes different e-learning research. The fifth chapter comprises several aspects of e-learning systems, such as stakeholders, teaching strategies, pedagogical models and learning techniques.
A general comment on the literatures reviewed was made in the last section leading to the e-learning theoretical framework.

2.1 Overview of E-Learning

E-learning brings together two primary fields of education and technology. Learning can be described as a cognitive process used to achieve understanding, and technology is an enabler of the learning process, meaning that technology is used in educational practices like a notebook or pencil, like any other instrument. While this may seem quite simple and logical, a pencil is more of a technologically transparent instrument, so many may find it more natural to use it. In addition, other difficult situations are underpinned by technology because it consists of different sizes. E-learning systems combine distinct tools, including communication techniques, writing technologies, storage and visualization. For these purposes, researchers and scientists have attempted to indulge in transforming e-learning systems into technically transparent tools such as pencils or notebooks. The literature on e-learning is broad and vast and is steadily growing

(Aparicio, Bacao & Oliveira, 2014b). Investigating e-learning systems' acceptance and usage have revealed that there would continue to be growth and development everywhere in the world (Organization for Economic Co-operation and Development [OECD], 2012). The rate of growth of online courses reaches up to 65% (Means, Toyama, Murphy, Bakia & Jones, 2009), and some scientists suggest that strategies should be advocated at government level to enable e-learning to be used (Kong et al., 2014).

2.2 E-Learning Systems Related Concepts

E-learning systems are developing notion based on the Computer Assisted Instruction (CAI) concept (Zinn, 2000). The notion of CAI first emerged as a learning tool to solve problems in 1955 (Zinn, 2000). Table 2.1 presents 22 e-learning ideas. In ascending order from 1960 to 2014, depending on the amount of concept appearances in academic journals.

Table 2.1: E-learning related concepts (Aparicio & Bacao, 2013)

S/N	Acronym	Description	Concept Focus	Authors
1.	CAI	Computer-Assisted Instruction	Use of computers focused on programming learning used in different areas: mathematics, engineering, psychology, physics, administration of company, statistics.	(Bernhardt, 1960) (Anderson, 2008) (Kemeny & Kurtz, 1967)
2.	CBE	Computer-Based Education	This concept focuses on the multitude of computers that are used in education.	(Barson, Levine, Smith, Scholl, & Scholl, 1963) (Zinn, 2000)

3.	CAL	Computer-Assisted Learning	Focused not on duties, but on people. Using pcs to help solve problems.	(Lanier, 1966) (Hart, 1981) (Levy, 1997) (Zinn, 2000)
4.	LMS	Learning Management Systems Supports the registration, tracking and delivery of learners ' content. It also reports the progress of the learner and evaluates the outcomes.	Focuses on content and interaction between teacher and student.	(Becker, 1968) (Lee & Lee, 2008) (Ismail, 2001)
5.	CMI	Computer-Managed Instruction	CMI emphasizes the duties of the teacher.	(Zinn, 2000) (Molnar & Sherman, 1969)
6.	CAE Computer-Assisted Education	Computer-Assisted Education	The CAE idea relates to the use of computers in the manufacturing of products and focuses on the use of the computer in teaching by the learners.	(Zinn, 2000) (Bitzer & Others, 1970)
7.	e-Learning	Electronic Learning	The notion of e-learning relates to learning through electronic sources and provides interactive distance learning. Use of a Web System as a manner to	(White, 1983) (Morri, 1997) (Dorai, Kermani, & Stewart, 2001) (Piccoli, Ahmad, & Ives, 2001)

			access accessible data, regardless of room and time.	(M. Rosenberg, 2000)
8.	ALE	Artificial Learning Environments	Use of artifacts as a mediator in teaching in a particular setting.	(Fiol & Lyles, 1985)
9.	m-Learning	Mobile Learning	The first way to combat analphabetism. Pessanelli (1993) provides a futuristic approach to how 21st century learning could be, concentrating on the idea as a modular plug-in classroom. To conceptualize a cyber-mobile library, Drumm & Groom used the idea. M-Learning is the focus of the learning class setting and the use of different learning sources in the learning class setting.	(Rushby, 1998) (Darazsdi & May, 1989) (Pesanelli, 1993) (Drumm & Groom, 1997)
10.	SRE	Self-Regulatory Efficacy	Concept concentrated on the autonomous evaluation of self-regulatory learning capacity by the learner.	(Bandura, 1994) (Joo, Bong, & Choi, 2000)
11.	CSCL	Computer Support for Collaborative Learning	Concept that focuses on pcs as a manner of facilitating, enhancing, and redefining group support learning.	(Koschmann, 1994) (Sthal, Koschmann, & Suthers, 2006) (Morch, 2013)

				(Ludvigsen & Morch, 2010)
12.	REAL	Rich Environments for Active Learning	Computer use concentrated on the accountability and initiative of the student. Generative learning activities within the context of genuine learning. Providing strategies for evaluation and cooperative support.	(Grabinger & Dunlap, 1995)
13.	Mega-University	Mega-University	Concept combining distance learning, greater education, size and technology utilization	(Daniel, 1996)
14.	LCMS Content	Learning Content Management Systems	Management launch pads for third party content to be purchased or outsourced by the organization	(Ismail, 2001)
15.	B-Learning	Blended Learning	Blended learning for learning purposes incorporates multimedia. This teaching type combines various teaching environments (face-to-face and distance). The goal is to add face-to-face courses to distance learning.	(Singh, 2003)

16.	c-MOOC	Connective MOOC	Massive internet opening courses based on connectivism and networking philosophy, autonomy, diversity, and openness. Content created by independent and driven learners.	(Siemens, 2005) (Downes, 2008) (Rodriguez, 2013) (Rodriguez, 2012) (Downes, 2006)
17.	SDL	Self-Directed Learning	Focus on the technique of teaching-learning. SDL relates to using individual teaching methods, using learning self-strategies. Although SDL can happen without a laptop, these approaches can happen using a laptop.	(Rovai, 2004) (Lee & Lee, 2008)
18.	ILM learning.	Internet-based Learning Medium	ILM aims to support and improve students	(Lee et al., 2005)
19.	MOOC	Massive Open Online Course	Web-based free dissemination of content lessons to a worldwide audience. Integrates social networking connectivity, facilitating a recognized specialist in the field of research, and collecting internet resources that are freely available.	(Fini, 2009) (McAuley, Stewart, Siemens, & Cormie, 2010) (Godwin-Jones, 2012) (Peter & Deimann, 2013)

20.	xx-MOOC	MITx & EDX MOOC	Based on behavioral pedagogy, it depends on diffusion of material, tasks, and peer evaluation. Learning management systems with content of high quality.	(Rodriguez, 2012) (Rodriguez, 2013) (Bates, 2012)
21.	LOOC	Little Open Online Course.	Focus on the teacher's guidelines to the learners.	(Kolowich, 2012)
22.	SPOC	Small Private Online Course	MOOC uses classroom learning as a complement, not as a replacement for traditional teaching methods.	(Fox, 2013)

From the Table 2.1 it was noted that the concept of e-learning was not the first word used to conceptualize the use of automated systems for enabling or promoting the educational process. This idea concentrated on fulfilling the job during the 1960s and then concentrated more on the learners. In 1983, Mary Alice invented the word "e-learning" in a newspaper article entitled "Synthesis of Research on Electronic Learning." E-learning was described as "learning through electronic sources such as television, video, computer, video and teletext" (White, 1983). In 1997, e-learning signified an abbreviation of electronic learning, which in turn meant "interactive distance learning" (Morri, 1997). Despite using the word e-learning, another author referred it to be the capacity to combine technologies with distance learning and universities, which was called "mega-university" (Daniel, 1996). Learning Online is a distinct e-learning idea. Learning Online is the learning that takes place partly or completely over the internet, making understanding and data accessible to consumers irrespective of geographical location and time limitations (Sun, Finger, Tsai, Chen & Yeh, 2008). E-learning systems' ideas include a functional and technological focus, regarding the possibilities of the Internet in defeating space and time issues. Figure 2.1 presents a timeline for the primary concepts of e-learning. Concepts are displayed on the first date of publishing.

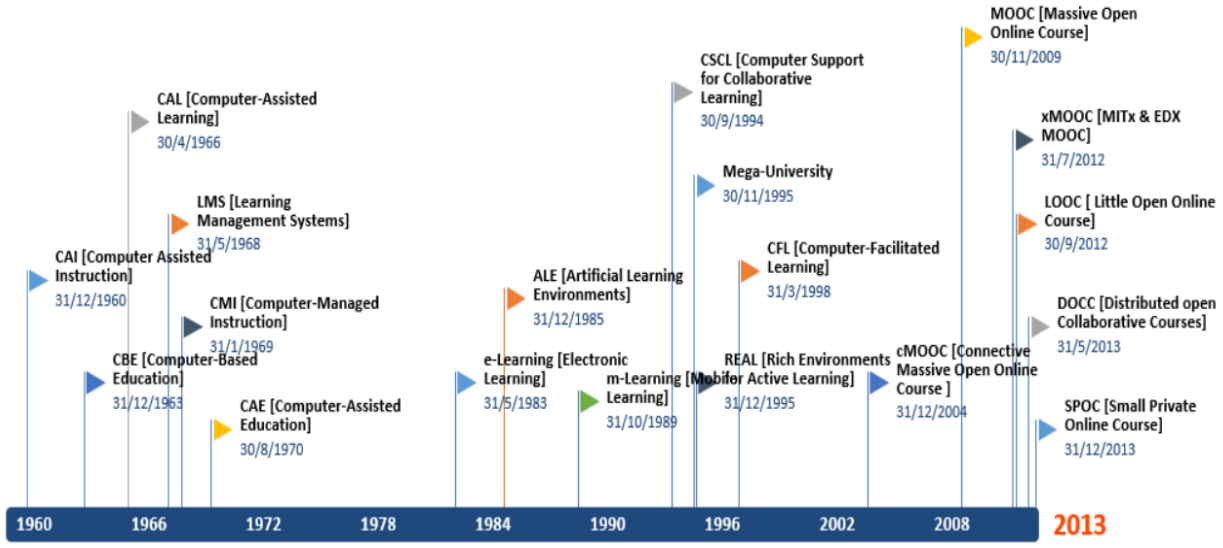

Figure 2.1. E-learning related concepts timeline (Aparicio, Bacao & Oliveira, 2014b)

2.3 E-Learning Concept Trends

Today, besides technology, the e-learning idea involves strategies for learning, learning techniques, and the vast opportunities of content relation and diffusion are very much addressed recently. The concept model no longer simply implies using a computer in the learning process as an artifact. Figure 2.1 shows the development and frequency of each notion based on searches conducted with the engine used in searching for Google Scholar. Each search was conducted between 1960 and 2014 at five-year intervals using a double quotation operator for each accurate word (Figure 2.1). The graph offers a clear visualization of the development and trends in academic conference papers and journal articles among the ideas most frequently used since 1960. We build a circle using an information design software to visualize these variables. (Krzywinski and others, 2009). The illustration can be read as written: if we split the circle into half circles, we have the left hand portion for each idea with the concepts and associated publications and the correct hand part with the time periods (from 1960 to 2014). We have two parts of the circle are connected by ribbons that are colored, which relate to the corresponding time interval for each concept publishing quantity circle, which is associated to the corresponding time interval for each concept publishing quantity. We take this figure to acquire over time the general image of the past of publishing on ideas linked to e-learning. The colored ribbons have distinct widths - wider suggesting more publications per time span in each idea Figure 2.2 is based on the journals ' bibliometric studies, indexed in Google Scholar, for the most

prevalent e-learning concepts (on the semicircle left side): CAI, CAL, SDL, e-learning, LMS, CSCL, etc. (Aparicio et al., 2014b). CAI is the most frequently used concept because it first appeared and is still widely used today. We can also see from Figure 2.2 that CAI is the most quoted notion; we can see the yellow connection between the idea and all the intervals of time. With the exception of the 1960s and 1970s, when the idea was introduced, CAI ribbons (yellow colored) are balanced over time. The other four ideas, SDL (red ribbon), CAL (purple ribbon), e-learning (purple ribbon), and LMS (orange ribbon), are equally important, although some of them later emerged. From 2005 to 2014, SDL is mainly linked in red (Y05-09 and Y10-14). From 2000 to 2014, although the idea was used previously, the most significant CAL links were created. The idea concept of eLearning, in blue, mostly interconnected between 2000 and 2014. Other ideas indicate a connection with the periods of moment, but not as powerful as the rest. With regard to the right-hand half-circle, it clearly demonstrates that the earliest years between 1960 and 1999, accounted for only one-third of the journals, with approximately two-thirds of all subsequent papers generated. This adds to the concept that the presence of systems in the process learning of in the last 14 years has been explored and researched over the past 40 years.

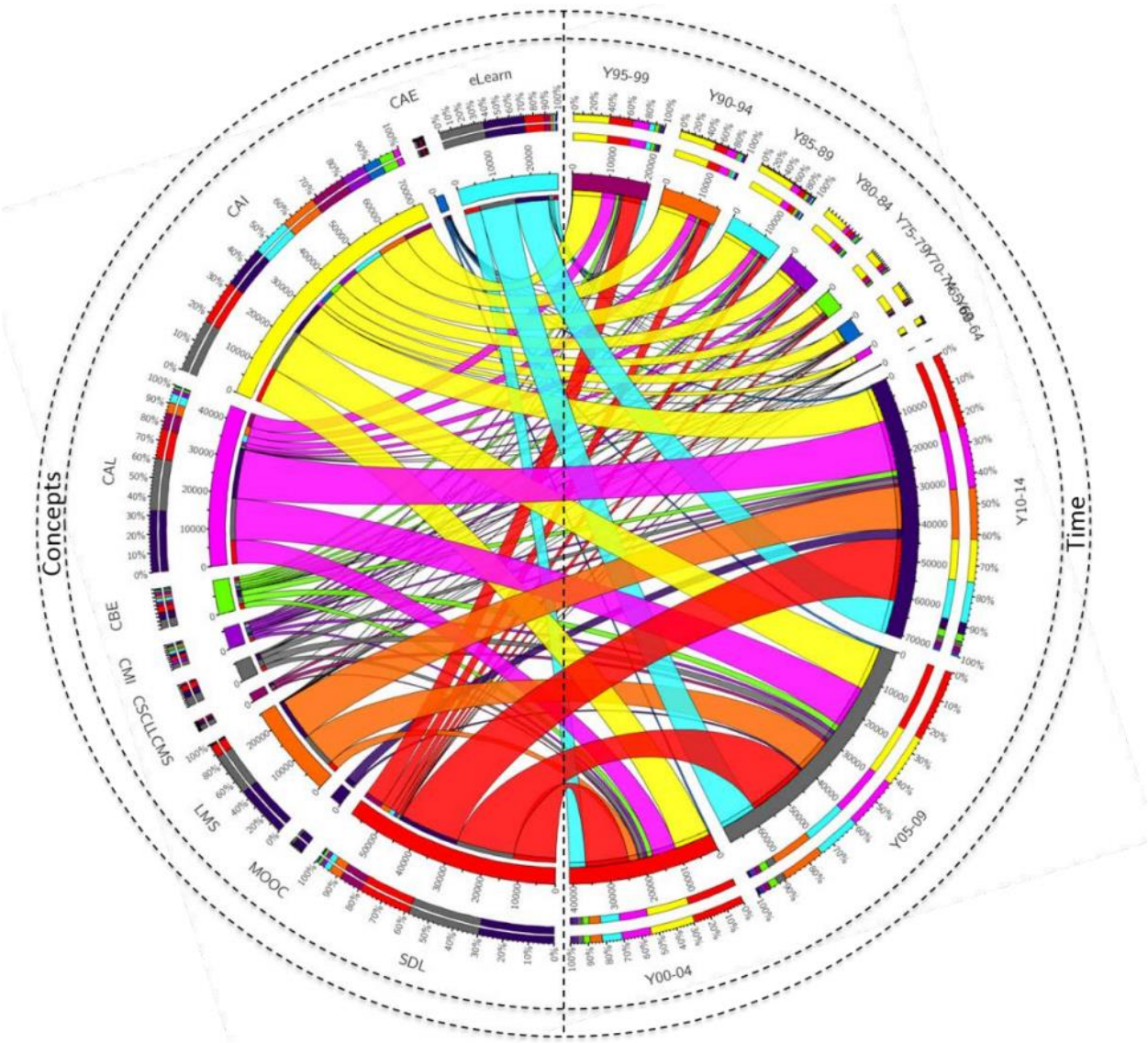

Figure 2.2. E-learning concepts related to the time reference (Krzywinski et al., 2009)

The terms most frequently returned were: CAI, CAL, computer-based education (CBE), e-learning, learning management (LMS), self-directed learning (SDL), and massive open online (MOOC) classes. All these ideas have two prevalent aspects: learning and systems; except the psychologically derived SDL notion (Bandura, 1994) and not necessarily applicable to computer use. Three ideas were discovered: tiny private online course (SPOC); tiny open online course (LOOC); and open cooperative classes (DOCC) distributed. These ideas in scientific study are to stand in comparison to MOOCs. SPOC focuses on a personal audience and, apart from frequent face-to-face lessons, is described as an additional manner of teaching. As it is based on

a distinct pedagogical model, LOOC distincts itself from MOOC; it offers learners with direct directions. It fixate on the pedagogical participation of all performers, DOCC is also distinct from MOOC, emphasizing on the one part of the unseen job of educators and on the other hand, collective academic intelligence. The graph that illustrates the idea of evolution shows a tendency from learning individually to learning globally. E-learning today may imply huge distribution for all Internet users of content and worldwide courses.

2.4 E-Learning studies

Several fields are focused on e-learning research. Table 2.3 summarizes multiple e-learning instances based on three primary organizations, individuals, technology and services. As Leidner & Jarvenpaa (1995) say, IT impact on learning solves little or no problem, we have to take into consideration, people and models of learning. Some studies attempt to comprehend the application of e-learning technologies; others assess the content of the accomplishment of the course; others assess the perceived fulfillment of certain e-learning lessons among students.

Table 2.2: E-Learning studies

e-Learning studies	People	Technology	Services	Authors
Studies on the content and operations of the course		√	√	(Brox, Painho, Bação, & Kuhn, 2004; Piccoli et al., 2001; Rosenberg, 2005; Zinn, 2000)
Augmented reality studies in eLearning		√		(Bacca, Baldiris, Fabregat, Graf, & Kinshuk, 2014; Lee, Choi, & Park, 2009)
Studies on the interaction of learners in collaborative learning settings	√		√	(Bain et al., 1998; Ludvigsen & Morch, 2010)
Study of cultural learning differences	√		√	(McLoughlin & Oliver, 1999; Yang, Kinshuk, Yu, Chen, & Huang, 2014)

Studies on the achievement of lessons and modules on e-learning systems.	√	√		(Aggelidis & Chatzoglou, 2012; Jailani, Kassim, Hairuddin, & Zamzuri, 2012; M. K. O. Lee et al., 2005; S. H. Lee et al., 2009; Wang, Wang, & Shee, 2007)
Motivational study of the Internet-based learning medium	√			(D. Lee, Kim & Chung, 2013; J. Lee, Bharosa, Yang, Janssen, & Rao, 2011)
Adoption of e-learning studies	√	√		(Liu & Chen, 2013; J. Lee et al., 2011)
Studies on the use of eLearning technologies for satisfaction level.	√	√		(Aggelidis & Chatzoglou, 2012; Sun, Tsai, Finger, Chen, & Yeh, 2008)
E-learning and digital division studies	√	√		(Chen & Liu, 2013; Cruz-Jesus, Oliveira, & Bacao, 2012)
Studies on the level of confidence, satisfaction and e-learning adoption	√	√		(Kassim et al., 2012; Thoms, Garrett, Herrera, & Ryan, 2008)
Studies on procedures of e-learning assessment	√		√	(Oliver & Herrington, 2003; Vavpotič, Žvanut, & Trobec, 2013)
Studies of the business models of MOOCs	√		√	(Aparicio, Bacao, & Oliveira, 2014a; Belleflamme & Jacqmin, 2014; Dellarocas & Van Alstyne, 2013)

From Table 2.2 we see that whenever the study discusses the adoption or fulfillment of learners, the content, or even ways that courses are implemented and distributed, we can group these studies together and find overlaps between them. This extends to the concept that scientists must include factors other than technology when exploring e-learning.

The way content is produced and the underlying teaching policies also play significant roles in e-learning research, according to the research examined. In relation to these aspects, latest disruptive circumstances have resulted in a huge spread of online learning across different formats, from closed to open learning, and the massification of open online courses (MOOCs) has been checked. McAuley and others (2010) Defines huge internet open classes as "Over the previous few years, the internet phenomenon has gathered momentum ; MOOC integrates social networking connectivity, facilitating a recognized specialist in the domain of research and collecting freely available internet resources. "Allison et al. (2012) indicated that MOOCs are disrupting the teaching atmosphere as a result of the free worldwide acceptance and use of such open classes. Although, according to a research conducted by Jordan (2013), the thousands of learners or simply government customers enroll in various classes, for instance, one of the biggest (measured by the amount of learners registered) has 180,000 and one of the smallest has 20,000. These numbers show a large number of learners enrolled, comparing to a face-to-face university course that never reaches such numbers of students; nor does a teacher reach such a high number of students in her/his entire career.

According to the above-mentioned research, acceptance is no longer a issue in e-learning, but a research by Jordan (2013) of the disruptive potential of MOOCs contrasts the enrolment rates with the completion rates for each course and finds that completion rates are very small for all of them. Motivation surveys can also shed light on the disruptive potential of MOOCs, such as "those without access to greater schooling in developing nations are clearly underrepresented among early adopters" (Christensen et al., 2013).For financial, geographic or political purposes, MOOCs enable for a huge distribution of expressed understanding, particularly for those who are unable to attend university classes. Indeed, according to an empirical research (Christensen et al., 2013), MOOC primarily draws young, well-educated and employed individuals from developed countries. This overview of e-learning research maps the different regions when studying e-learning and exposes the concept of using a mixture of different aspects to study e-learning.

Dimensions of e-learning systems Data systems are made up of different aspects. The scheme is

an artifact from a conceptual point of perspective (Beckman, 2002), and this author sees the use of computers in education as an "artificialization." Artifacts are not only technology, but "a complicated and evolving mix of individuals and technology" (Dahlbom, 1996). Technology adopts artifacts and IT serves human aims, supporting multiple duties (March & Smith, 1995). In this context, we present the aspects of e-learning schemes to develop our structure for e-learning theory. E-learning systems stakeholder analysis of e-learning schemes includes identifying internal and external organizations or people that can directly and indirectly affect an organization (Freeman, 2010; Stoner, Gilbert, & Freeman, 1995). Other areas beyond management can also be applied to stakeholder theory (Phillips, Freeman, & Wicks, 2003). In info studies, stakeholder analysis was used to define consumers of the schemes and their indirect or direct interaction (Papazafeiropoulou, Pouloudi, & Currie, 2001; Wagner, Hassanein, & Head, 2008). The e-learning system stakeholders are summarized in Table 2.3

2.4.1 E-Learning Systems Dimensions

Information systems are made up of different dimensions. When viewing from a conceptual point of the system, it is seen to be an artifact (Beckman, 2002), and this author considers the use of systems in education an “artificialization.” Artifacts are not just only technology, it is also “a complicated and dynamic combination of people and technology” (Dahlbom, 1996). Technology applies artifacts and information technology serves human purposes, giving help to various tasks (March & Smith, 1995). Within this idea, we provide in this section the dimensions of e-learning systems, in order to prepare our e-learning theory framework.

2.4.2 E-learning systems stakeholders

Analysis of stakeholders involves identifying inner and external organizations or people that can influence an organization directly and indirectly (Freeman, 2010; Stoner, Freeman & Gilbert, 1995). Other areas beyond leadership may be applied to stakeholder theory (Freeman, Phillips & Wicks, 2003). In information studies, stakeholder analysis was used to define the consumers of the schemes and their interaction directly or indirectly (Papazafeiropoulou, Currie & Pouloudi 2001; Wagner, Hassanein & Head, 2008). In Table 2.3, we summarize the stakeholders in e-learning systems.

Table 2.3: E-Learning systems stakeholders

Stakeholders	Group	Direct Action	Internal	External
Students	Customers	√		√
Employers	Customers	√		√
Educational Institutions	Suppliers	√	√	√
Accreditation Bodies	Suppliers	√		√
Teachers	Suppliers	√	√	√
Content Providers	Suppliers	√	√	√
Education Ministry	Board and Shareholders	√		√
Teachers' Association	Professional Associations	√		√
Students' Commissions	Special Interest Groups	√		√
Technology Providers	Suppliers	√		√

As e-learning systems are precious communication channels between learners and teachers, customers are the main consumers of the scheme used for learning. Learners can be an individual, students or even company employees who are using these systems according to the development policies of their employees. They are internal consumers in their situation, but they communicate with the scheme directly. Suppliers can generally be colleges, universities, or academic organizations; this group of stakeholders is an inner user group that interacts directly with the scheme. Accreditation bodies are external; for auditing purposes they communicate directly with the scheme. Teachers are among the supplier group; they are internal users and directly interact with the platforms of e-learning. Providers of content may be inner or external consumers, but they communicate with the scheme directly. Other external stakeholders directly interacting with e-learning systems are: ministry of education, associations of educators, and commissions of learners and suppliers of technology. The Ministry of Education is regarded as a

board and shareholder because this ministry finances government organizations. In order to help the educational organizations in their teaching role, they have a direct contact with the systems. If they support teaching or study activities, lecturers and student organizations can also communicate directly with the scheme. Although technology providers are external to the system, they can provide maintenance services to the technological aspect of the system by giving technical support. Each group of stakeholders communicate with the scheme differently, although all stakeholders play a significant part in the operations of the e-learning scheme.

2.5 Elements of an E-Learning System

The theory of e-learning consists of three components. E-learning may be described through a theory-based structure that connects learning systems, educational policies, and pedagogical models or constructs, according to Dabbagh (2005). The structure of Dabbagh (2005) involves various dimensions, such as teaching (open / flexible way), learning strategy (cooperation, exploration, challenge-solving) and technology as well. It is a pedagogical model, and "cognitive models or theoretical constructs [are] gotten from models of acquisition of knowledge or perception and information views that form the foundation for teaching theory. They are the process through which we connect theory to practice "(Mehlenbacher, 2010). Learning strategies promote learning, including cooperation, articulation, reflection, and role-playing. Despite being pedagogical models, our primary goal in this research is to review the e-learning system literature. Following Table 2.4, which introduces the concepts of e-learning systems context, we built Table 2.4 in which these concepts are categorized according to two aspects of definitional e-learning aspects. First, Dabbagh's (2005) framework classifies the concepts based on whether the notions indicate a pedagogical model, teaching strategy, or learning technology. Secondly, we also define the ideas based on the characterization of e-learning views by Mason & Rennie (2006), whether ideas are guided by content, technologically oriented, or communication focused

Table 2.4: E-Learning concept perspectives overlapping

Year	Acronym	Pedagogical models	Instructional strategies	Learning technologies	Content	Communication	Technology

1960	CAI		√	√			
1963	CBE		√	√			√
1966	CAL	√	√	√			√
1968	LMS			√	√	√	√
1969	CMI			√		√	√
1970	CAE			√	√		√
1983	e-Learning	√	√	√	√	√	√
1985	ALE			√			√
1989	m-Learning			√	√	√	√
1994	SRE	√	√	√		√	√
1994	CSCL	√	√	√	√	√	√
1995	REAL		√	√	√	√	√
1996	Mega-University		√	√		√	√
1998	CFL	√		√	√		√
2001	LCMS		√	√	√		√
2003	B-Learning	√	√	√	√	√	√
2004	SDL	√	√	√		√	√
2004	c-MOOC	√		√	√	√	√
2005	ILM		√	√	√		√
2009	MOOC	√	√	√	√	√	√
2012	x-MOOC	√	√	√	√	√	√
2012	LOOC	√	√	√		√	√
2013	SPOC		√	√	√	√	√

These three elements allow the connection between who indulges in the learning process (including distributed learning, open learning, or communities of practice), with the method in

which these characteristics communicate (collaboration, articulation, reflection, exploration) and the communication technology (synchronous, asynchronous, communication tools, course management tools, among others).

2.6 Pedagogical Models in E-Learning

Pedagogical designs are the foundation of learning theory as they derive from data growth. These models are strategies from a pedagogical view that link e-learning theory with e-learning practice (Dabbagh, 2005). The pedagogical models in e-learning are distributed learning, open learning, practicing communities, learning communities, and data development groups. Open learning can take many forms, such as a workshop, a seminar, a night-time course or a distance course. Some web examples are: "information networks, portals of information, asynchronous education networks, virtual schools, and tele-learning" (Dabbagh, 2005). Distributed learning fixate on the delivery of learning resulting in a scenario of mixed channels that Enables people to reach education with or without technology in a manner which can be acquired synchronously or asynchronously anywhere (Dabbagh 2005). In many circumstances, teaching communities are comprised of university learners who "tends to feel more self-confident and feel backed by colleagues, teachers, and university" (Patterson, 2011). Wenger (1999) defines community practice (CoP) as casual communities of individuals sharing the same interests on a topic. Practice communities share interests and best practices and cooperate in sector as well as in academia. These groups have generally planned meetings on a regular basis, and CoP meet face to face or in virtual settings (Liu, Chen, Sun, Wible, & Kuo, 2010 ; Wenger, 1999).A knowledge building community is perceived as a group having “commitment among its members to invest their resources in the collective, upgrading of knowledge” (Hewitt & Scardamalia, 1998). These communities pursue the creation of knowledge by sharing individual knowledge to achieve learning. The pedagogical models applied to e-learning are backed by the following characteristics: learning is a social method, group learning is essential to understanding attainment; distance is insignificant (space questions are often blurred); It is possible to separate learning and teaching in moment and space.

2.7 Instructional strategies

Instructional strategies operationalize the pedagogical models, since strategies consist of general approaches to a learning model, which is to say, the instructional. Jonassen et al. (1997) present five teaching approaches which are, in reality, plans and methods used by the teacher to engage the learner - in other words; instructional strategies are enablers to learning. The authors state that instructional strategies differ from learning strategies, as learning strategies are mental tools that students use to comprehend and learn more (Jonassen et al., 1997). The authors state that each instructional condition should meet a different instructional strategy.

2.8 Learning Technologies

Many writers have described the learning technology features to promote a collaborative learning atmosphere and support learning, and left space for different views (Dabbagh, 2005; Hsieh & Cho, 2011; McLoughlin & Oliver, 1999; Oliver & Herrington, 2003; Rourke & Anderson, 2002). A constructivist epistemological perspective (Hannafin, Hannafin, Land, & Oliver, 1997) needs integrated strategies that align multiple foundations and settings Psychological, cultural, pedagogical, technological and pragmatic because "knowledge relies on the frame of reference of the knower" (Dabbagh, 2005) according to the features of this vision. Oliver and Herrigton (2003) are building an e-learning structure that comprises of technological components divided into three primary learning fields: resources, supports, and operations. These educational policies and the functionalities of the corresponding techniques are summarized in Table 2.5

Table 2.5: Instructional Strategies and Learning Technologies

Strategies / Technologies	Authentic activities	Problem solving	Role playing	Articulation & reflection	Collaboration & negotiation	Multi-perspectives	Modeling & explaining	Scaffolding	Authors
Graphics	√								Dabbagh, 2005; Hannafin

									et al., 1997)
Digital audio & video components	√								(Dabbagh, 2005; Hannafin et al., 1997)
Animation	√								(Dabbagh, 2005; Hannafin et al., 1997)
Hypermedia	√								(Dabbagh, 2005; Hannafin et al., 1997)
Authoring tools	√								(Dabbagh, 2005; Hannafin et al., 1997)
Synchronous discussion area	√								(Dabbagh, 2005; McLoughlin & Oliver, 1999)
Online databases/ knowledge repositories	√								(Dabbagh, 2005; McLoug

									hlin & Oliver, 1999)
Search engines		√				√			(Dabbagh, 2005; McLoughlin & Oliver, 1999)
Multi-user dialog			√						(Dabbagh, 2005; McLoughlin& Oliver, 1999)
Virtual reality			√						(Dabbagh, 2005; McLoughlin & Oliver, 1999)
Forums				√	√	√			(Dabbagh, 2005; McLoughlin & Oliver, 1999)
Learner web-post area				√					(Dabbagh, 2005; McLoughlin &

									Oliver, 1999)
Sharing tool					√			√	(Dabbagh, 2005; McLoughlin & Oliver, 1999)
Video conferencing					√		√	√	(Dabbagh, 2005; McLoughlin & Oliver, 1999)
Web links manager						√		√	(Dabbagh, 2005; McLoughlin & Oliver, 1999)
"Ask the expert" area/link						√			(Dabbagh, 2005; McLoughlin & Oliver, 1999)
Solution/problems area							√		(Dabbagh, 2005; Jonassen et al., 1997)

Digital area audio/video capturing							√		(Dabbagh, 2005; Jonassen et al., 1997)
One-on-one mentoring								√	(Dabbagh, 2005; McLoughlin & Oliver, 1999; Vygotsky, 1978)
Glossary								√	(Dabbagh, 2005; McLoughlin & Oliver, 1999; Vygotsky, 1978)
Assessment		√		√				√	(Dabbagh, 2005; McLoughlin & Oliver, 1999; Vygotsky, 1978)

2.9 E-Learning Theory Framework

A framework "classifies key variables in information development schemes may indicate that these factors are causally linked to the effective growth of systems" (Gregor, Martin, Fernandez, Stern, & Vitale, 2006). The primary aspects of data systems tailored to e-learning systems are described in this framework (Figure 2.3). This framework is indeed a theoretical generalization arising from the literature review of e-learning aspects (Carroll & Swatman, 2000; Lee & Baskerville, 2003). The e-learning systems ' the theoretical framework covers the three primary parts of the IS. People, techniques and services are included in the parts. People are communicating with e-learning systems. E-learning techniques allow the various user groups to interact directly or indirectly. Technologies provide assistance for content integration, communication enabling, and collaborative tools. E-learning facilities incorporate all operations that match pedagogical models and teaching strategies. The direct or indirect intervention is to combine complex interaction with e-learning systems. Simultaneously, systems provide services depending on the activity policies indicated. In other words, service requirements seem to be e-learning activities that are linked to the pedagogical e-learning models and educational approaches.

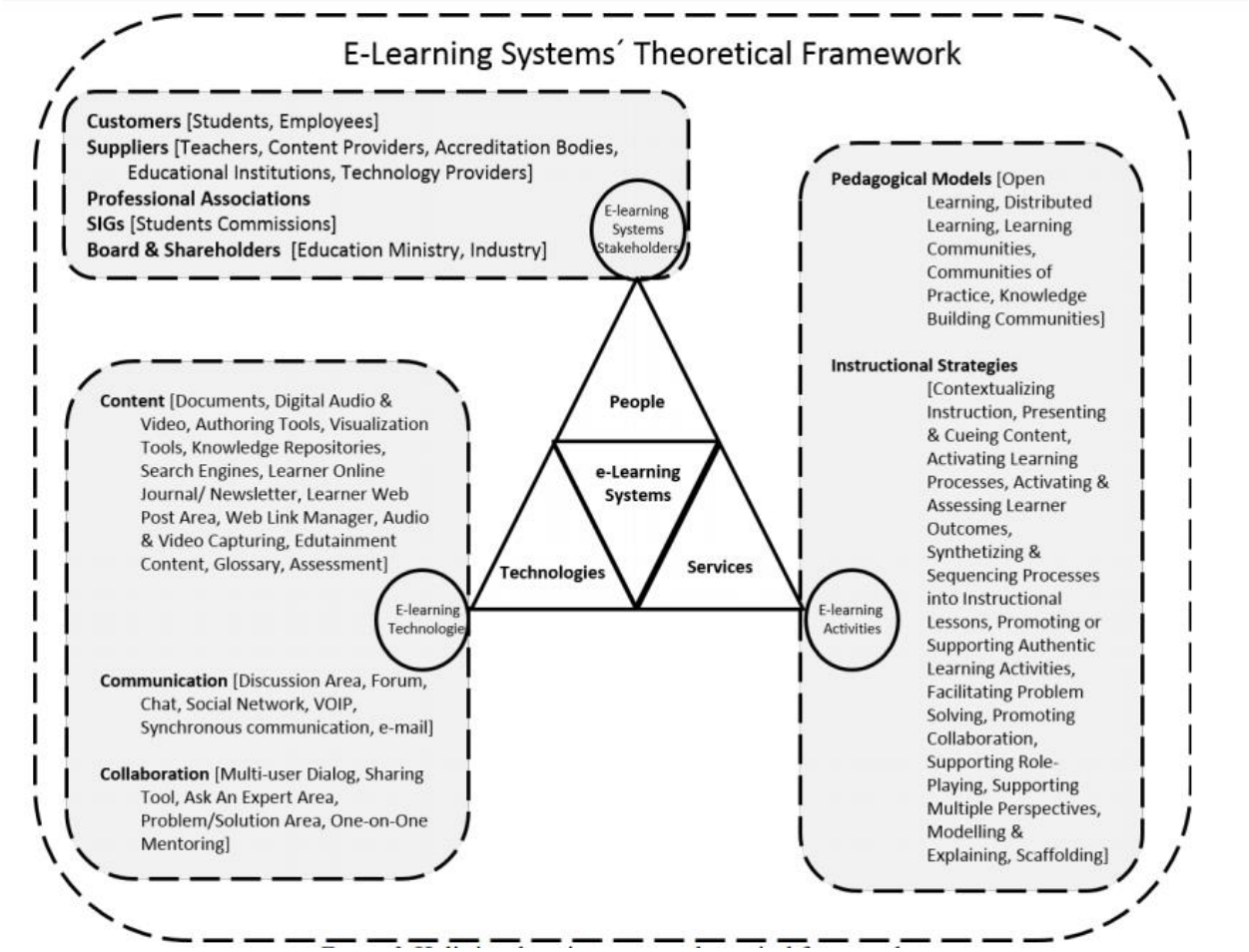

Figure 2.3. Holistic e-learning systems theoretical framework (Carroll & Swatman, 2000; Lee & Baskerville, 2003)

2.10 Conclusion

We are building an e-learning system theory structure in this research. The objective is to define e-learning attendees, technology and services. We present an e-learning literature review, looking for the different concepts of using computer systems in learning contexts. This study indicates the most generally used idea in studies is not e-learning. Researchers actually makes reference to other ideas such as LMS, CBE, CAE, CFL, CAL or MOOCs. After identification of these ideas, we then publish the outcomes of an academic search engine-indexed bibliometric studies of e-learning associated concepts. We also analyze the aspects of e-learning, which are: stakeholders in e-learning schemes, pedagogical models, learning techniques and teaching strategies. Using these aspects, we are building a conceptual framework for theoretical e-learning. There are three (3) dimensions to the resulting e-learning structure: individuals, technology, and services. These

dimensions offer a more holistic perspective of our theoretical framework. This critical literature review's main contribution is for the provision of the theoretical background for research strategies on e-learning. The e-learning system theory framework was built on the three main components of an information scheme: individuals, technology, and the technology itself provides services. We review and identify stakeholder groups, driven by these primary pillars, and their communication with systems of e-learning. Then we are presenting the classification of the technological considerations to these kinds of system, focusing more on the contents type and ways of communication, than on providing a list of the platforms existing in the market. This is an important feature of the framework, because apart from the commercial platforms we identify technological specifications that may be apply to any technological artifact. The third main component concerns the system of e-learning services. Services are here regarded as the primary production, as they formalize instructional techniques and multiple pedagogical designs. The framework offers the theoretical construct in systems of e-learning for various research. We intend to use this structure as a cornerstone for future work to guide our studies into e-learning technologies. We plan to propose a model to carryout e-learning systems ' success.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

This chapter describes the methods used to design and implement an e-learning web portal. It describes the methods of research, requirement determination and other concepts. This approach below describes the steps involved sequentially.

3.1 User View Creation for Accessibility

In creating the access for the two (2) user views (Lecturers and Students), Hyper Text Markup Language (HTML) was used to build the framework for the user view. In this system, the lecturer served as the director while the user is the students. Cascade Style Sheet (CSS) was used to develop the styles in the pages of the web view. JavaScript was used to add dynamics to user views, like dropping down menus and altering stuff after loading the page. The design interfaces for both the lecturers and students have different features in the system.

3.2 Database Design and Development for the System

The database server My Structured Query Language (MySQL) was used to store the two users ' username and password (lecturer and student). Hypertext Preprocessor (PHP) was used to manipulate the SQL codes in the system. The database created for ProgCafe is called Economics database. Economics database has eight (8) tables as shown in their schemas.

```
CREATE TABLE `images` (
  `iid` int(11) NOT NULL,
  `name` varchar(255) NOT NULL,
  `link` varchar(255) NOT NULL
)
CREATE TABLE `contact` (
  `cid` int(11) NOT NULL,
  `name` varchar(255) NOT NULL,
  `email` varchar(255) NOT NULL,
```

```
  `subject` varchar(255) NOT NULL,
  `msg` varchar(500) NOT NULL
)
CREATE TABLE `images` (
  `iid` int(11) NOT NULL,
  `name` varchar(255) NOT NULL,
  `link` varchar(255) NOT NULL
)
CREATE TABLE `subscription` (
  `sid` int(11) NOT NULL,
  `email` varchar(255) NOT NULL,
  `stat` int(11) NOT NULL
)
CREATE TABLE `user` (
  `uid` int(11) NOT NULL,
  `name` varchar(255) NOT NULL,
  `phone` bigint(20) NOT NULL,
  `email` varchar(255) NOT NULL,
  `password` varchar(255) NOT NULL,
  `status` int(11) NOT NULL
)
CREATE TABLE `videos` (
  `vid` int(11) NOT NULL,
  `cid` int(11) NOT NULL,
  `name` varchar(255) NOT NULL,
  `link` varchar(255) NOT NULL,
  `book` int(11) NOT NULL,
  `temp` varchar(255) NOT NULL
)
CREATE TABLE `teacher` (
  `Tid` int(11) NOT NULL,
  `Name` varchar(20) NOT NULL,
```

```
  `Phone` bigint(20) NOT NULL,
  `email` varchar(225) NOT NULL,
  `password` varchar(225) NOT NULL,
  `status` int(11) NOT NULL
)
CREATE TABLE `upload_data` (
  `File_name` varchar(200) NOT NULL,
  `File_size` varchar(200) NOT NULL,
  `File_type` varchar(200) NOT NULL
)
```

3.3 Design of an E-learning System

During the design of this system called ProgCafe, flowchart, use case, sequence and activity diagrams were used to show the activities that happens and their interaction.

3.3.1 The Flow Chart Diagram

The flowchart represented the showed an algorithm diagrammatic representation and the step-by-step approach to solve the problem of e-learning as shown in Figure 3.1.

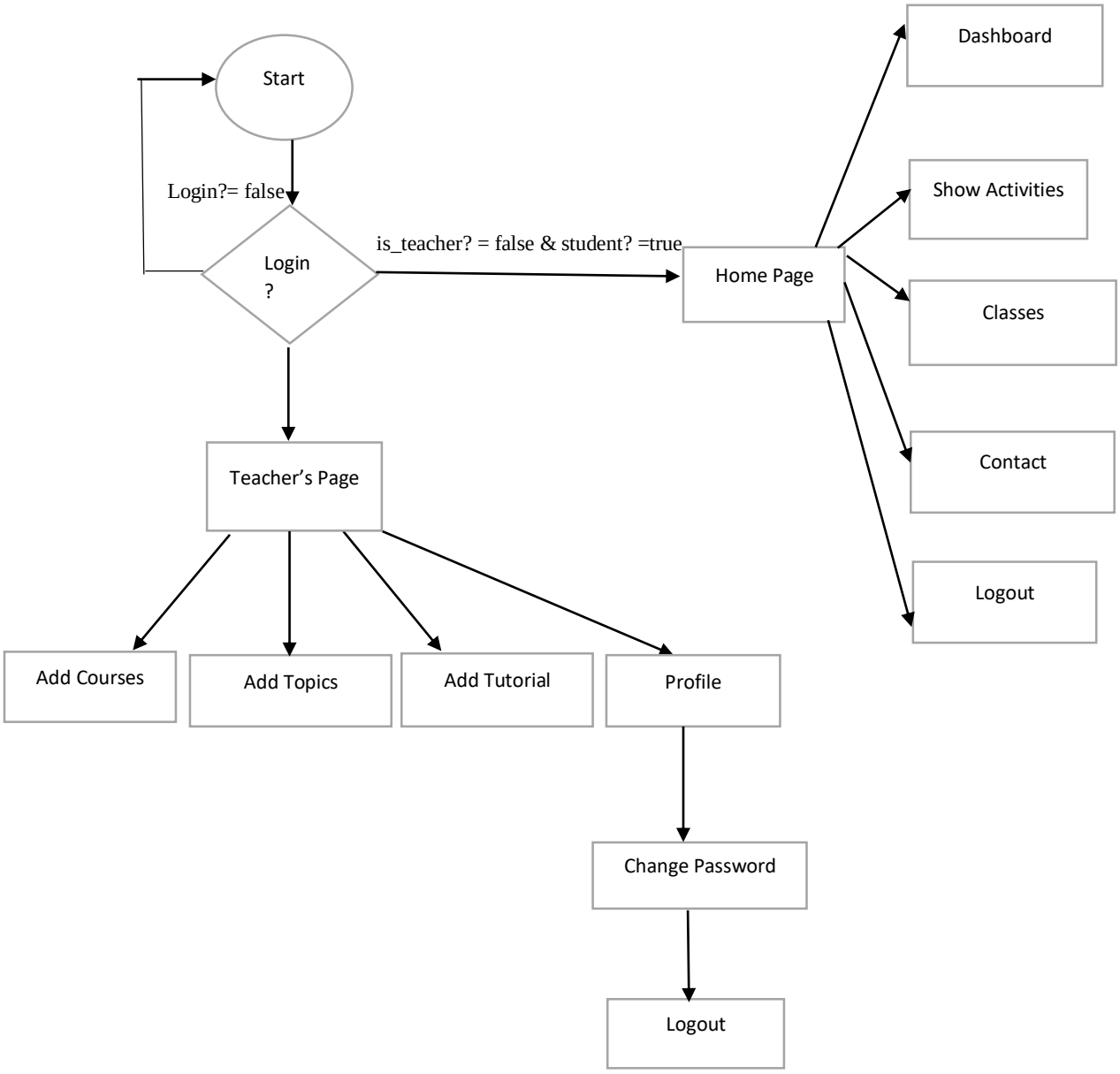

Figure 3.1: Flowchart for the system

3.3.2 The Use Case Diagram

This depicted the interaction of the user with the system and the connection between the users involved as shown in Figure 3.2 (a, b and c).

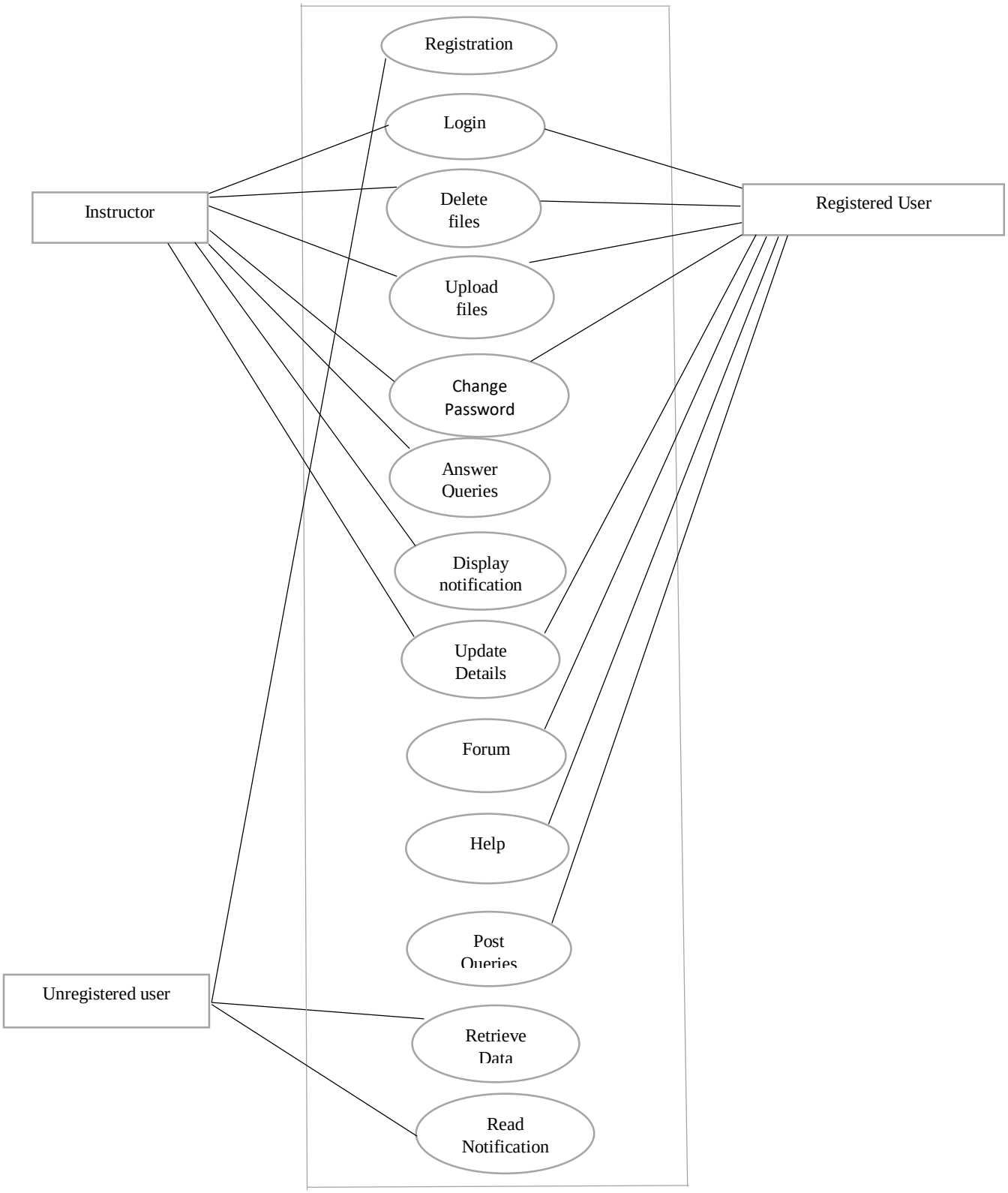

Figure 3.2a: Use case diagram for the entire system

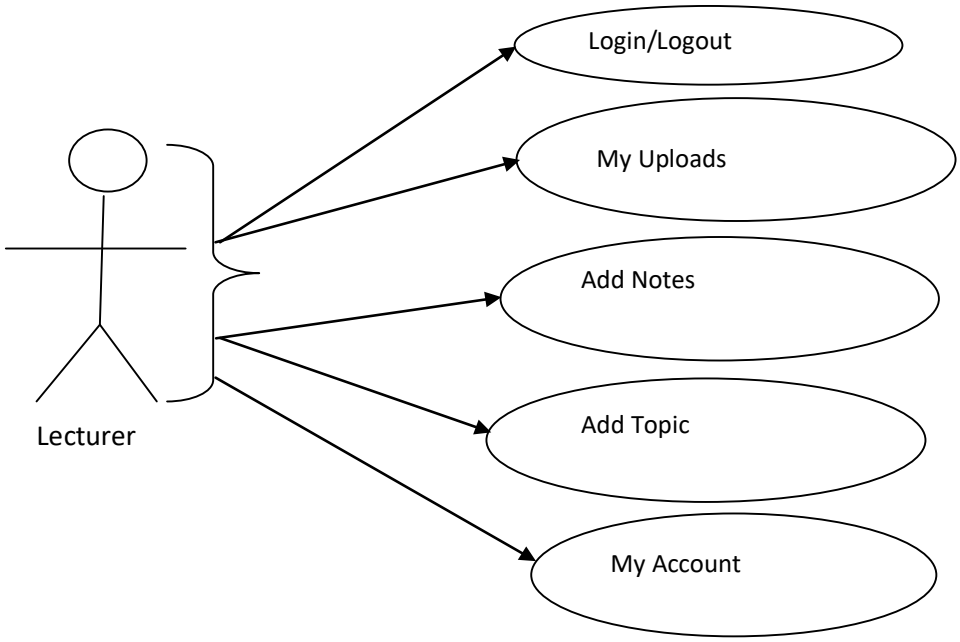

Figure 3.2b: Use case diagram for the Lecturer

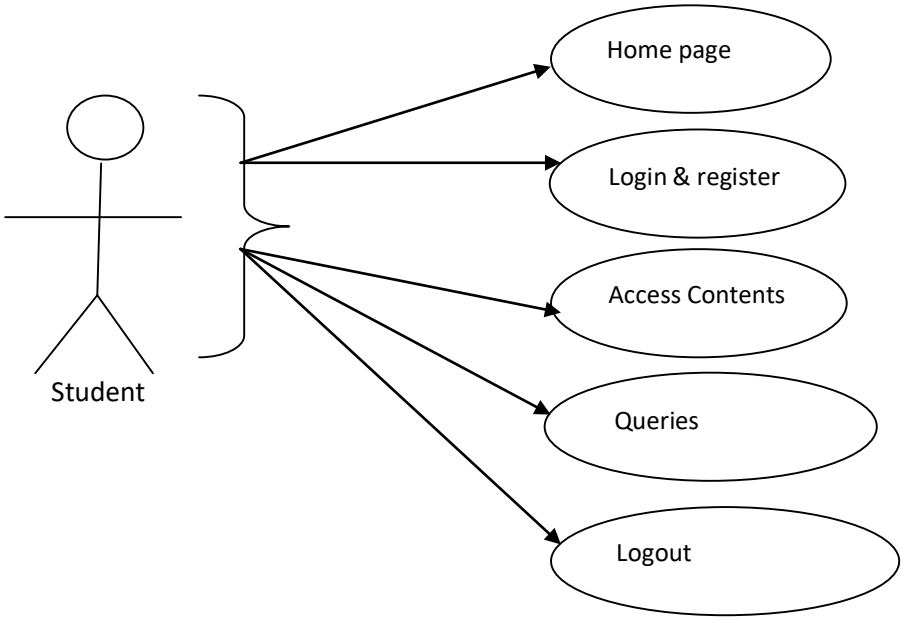

Figure 3.2c: Use case diagram for the Student

3.3.3 The Sequence Diagram

This shows object interactions organized in time sequence and demonstrates the classes and objects involved in the setting and the sequence of information exchanged between the objects required to perform the system's functionality as shown in Figure 3.3.

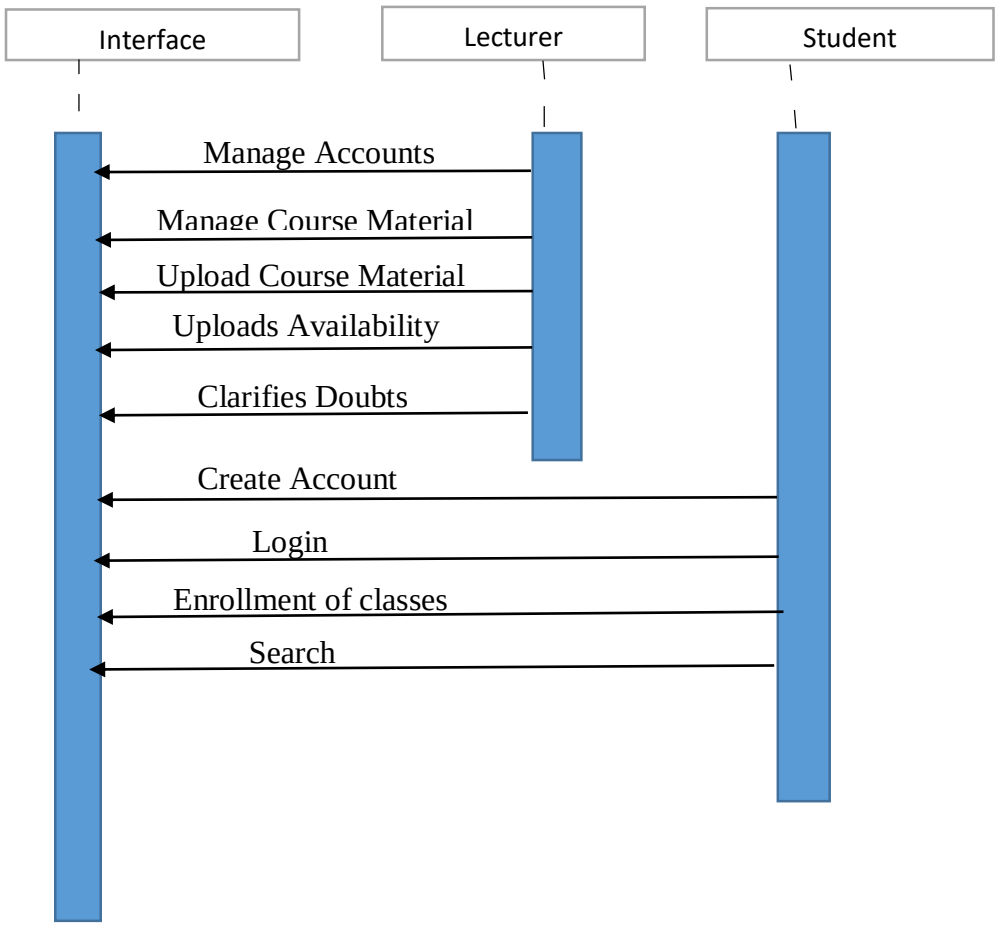

Figure 3.3: Sequence diagram for the system

3.3.4 Activity Diagram

This shows the workflow of step-by-step operations and actions including information flow components between operations through one or more information stored as shown in Figure 3.4.

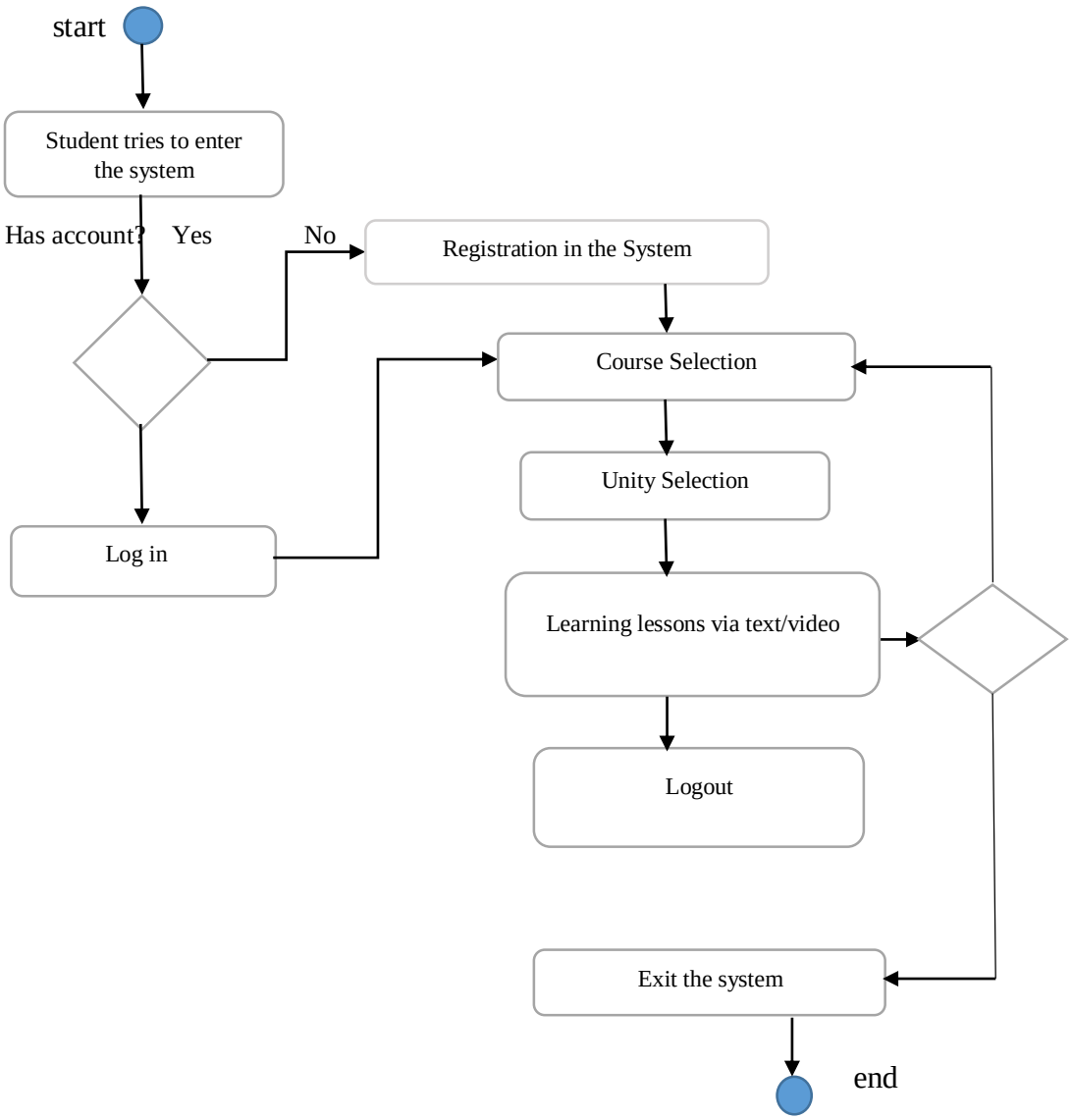

Figure 3.4: Activity Diagram for the System

3.4 Software Development Life Cycle

The waterfall model also referred to as a linear-sequential life cycle model was used in the growth and development of the e-learning web portal. In this model, each phase must be completed before the next phase can start. The waterfall model has been embraced as it enables departmentalization and control. The model has five (5) stages such as: requirement determination, requirement analysis, system design, implementation, testing and validation. Each of these stages had their own way of operation.

3.4.1 Requirement determination

During the requirement determination the information concerning the system on how it should operate was collected, this was one of the most challenging part of system analysis. For the e-learning web portal being developed, the true and real requirements were collected and documented. The main goal of this stage was the system's functionality, this information was used for the identification of the user's requirement and system specification.

3.4.2 Requirement Analysis

In this phase, the detailed functional specification was created to specify the complete set of system capabilities to be implemented, along with process models that illustrate the information to be managed and the functions to be supported by the system. Under here requirements were classified as functional and nonfunctional requirements.

3.4.3 Design

The design stage objective was to convert the defined specifications into a framework in some programming language appropriate for execution. Technically, the software architecture is obtained from where the requirement was indicated during the design stage.

3.4.4 System Implementation

In this stage, MySQL was used in the database and Xampp Server hosting web pages. In this stage the actual system was recognized. The interface was designed using HTML and JavaScript languages because the languages provides a tremendous user friendly interface that is easy to understand and affordable. The database was designed in MySQL basing on Xampp Server software. The reason why I used MySQL was because it gives a high level of security to the database or on DML commands such as delete, add or even edit, it also reduces redundancy.

3.4.5 System Testing

The system was tested thoroughly to correct errors and to remove defects. The source code was also tested to ensure sure that it provides the expected and desired results when subjected various set of predefined conditions. I performed three major testing during development which are

- Unit testing
- System testing
- User Acceptance testing

Unit testing: Specific parts of the source code was tested. Emphasis was put on the website database connection to ensure that information sent by users from the web page reaches the systems database.

System testing: The whole software was tested to ensure whether or not the functional requirements have been effectively and efficiently integrated and satisfied.

User Acceptance testing: This was a main factor for the achievement of the system's performance. The system being considered was screened for user recognition by maintaining in constant contact with the users of the system who are the students and lecturers.

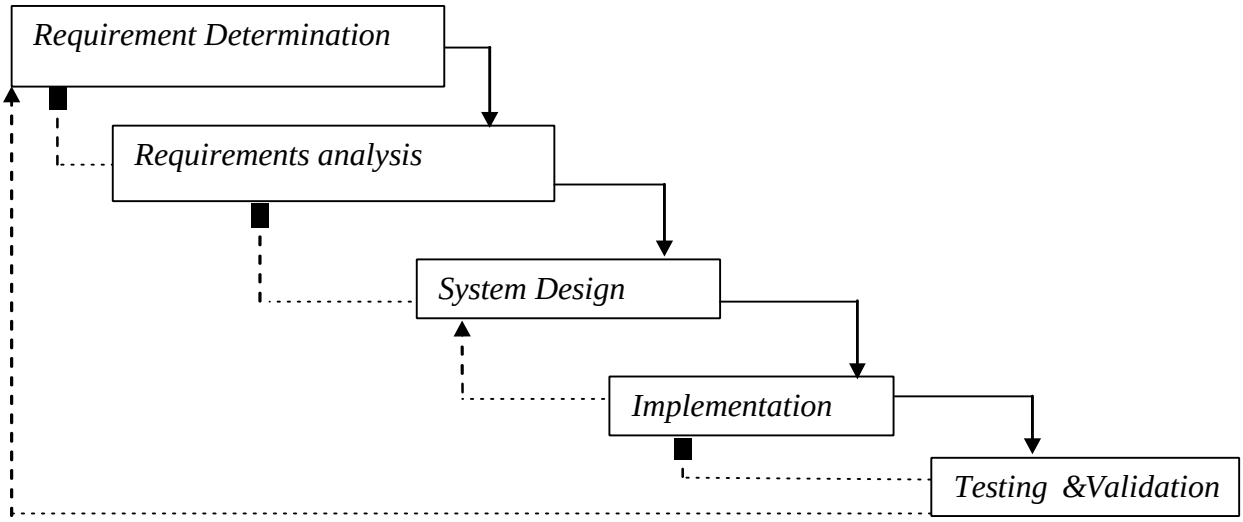

Figure 3.5: Waterfall Development Life Cycle

CHAPTER FOUR

SYSTEM DESIGN AND ANALYSIS

4.0 Introduction

The implementation and design of the e-learning portal was shown in this section. It also showed the primary concept and also the functions of the portal in other to carry out its specified task.

4.1 System Design Objectives

The software application which is the E-Learning Web Portal is to assist students with an effective and easy learning which is needed in other to improve academic performance from the viewpoint of the Web Portal the system provides the following

From the viewpoint of the E-learning the system provides the following

1. The system would avoid face to face appearance in a classroom thereby reducing the time it takes from the user's residence to the class room.
2. The system would maintain the user's information whenever emergency cases emerges e.g. inability to remember password, deadline for submission.
3. The system would secure its information, thereby ensuring that a particular user has adequate authorization in other to access the system.
4. The system would allow users to check the system status and to make necessary changes.

4.2 System Design

This was segmented into logical, conceptual and physical design

4.2.1 Logical design

This model indicates all the essential measures that the development of the system has taken. Tools such as flow charts, use case diagrams have been used in this phase. These models were essential and crucial to the system's development. This phase included the design of the user interface, the input design in which the user enters the information; the output design showing the outcomes of what a user has entered; And the portrayal of the database design where information is stored easily. These designs provided the technical blueprint from which the system was built. Layout

tools such as hand sketches and CASE tools were used to come up with both input, output designs. MySQL was the database management system used.

4.2.2 Conceptual design

This was just a description of the suggested scheme in terms of a collection of embedded ideas and concepts as to what the system is intended to do, act and appear like, which consumers would readily understand as designed. This process was initiated by identifying several entities that is needed by the users and also identifying all the significant interactions that exist between the entities. The outcome was the user interface model created.

4.2.3 Physical design

This was the physical realization of the logical design. Forms, reports and tables have been developed and relationships identified among these tables and safety limitations have been established. The anticipated schemes were converted into the real structure of the database during the physical. The system was created according to the following criteria:

4.2.3.1 Functional Requirements

The following requirements were captured for the intended usage of the E-Learning Portal.

User account: The user who has registered could access the E-learning resources.

Creating a new user account: A new user fills the registration form containing field like Name, Email, Matric number, and Cell phone number.

Importing Files: Files in .pdf, .ppt, .docx format would be imported directly from the file explorer into the E-learning system.

Checking Availability: To check available topic the user should check the list of available courses.

4.2.3.2 Non-functional requirements

Security Requirements: Only one individual can control the user's private data. The user's information can be viewed only by the administrator.

Quality Attributes: The e-learning system is user friendly, interoperable and flexible.

Performance Requirements: Both the system efficiency and the hardware itself are highly dependent on the internet bandwidth.

4.3 Database Design

Data types, attributes and the relationship among them were defined according the user's requirements. The database design also involves a suitable data model construction for the system as shown in Figure 4.1.

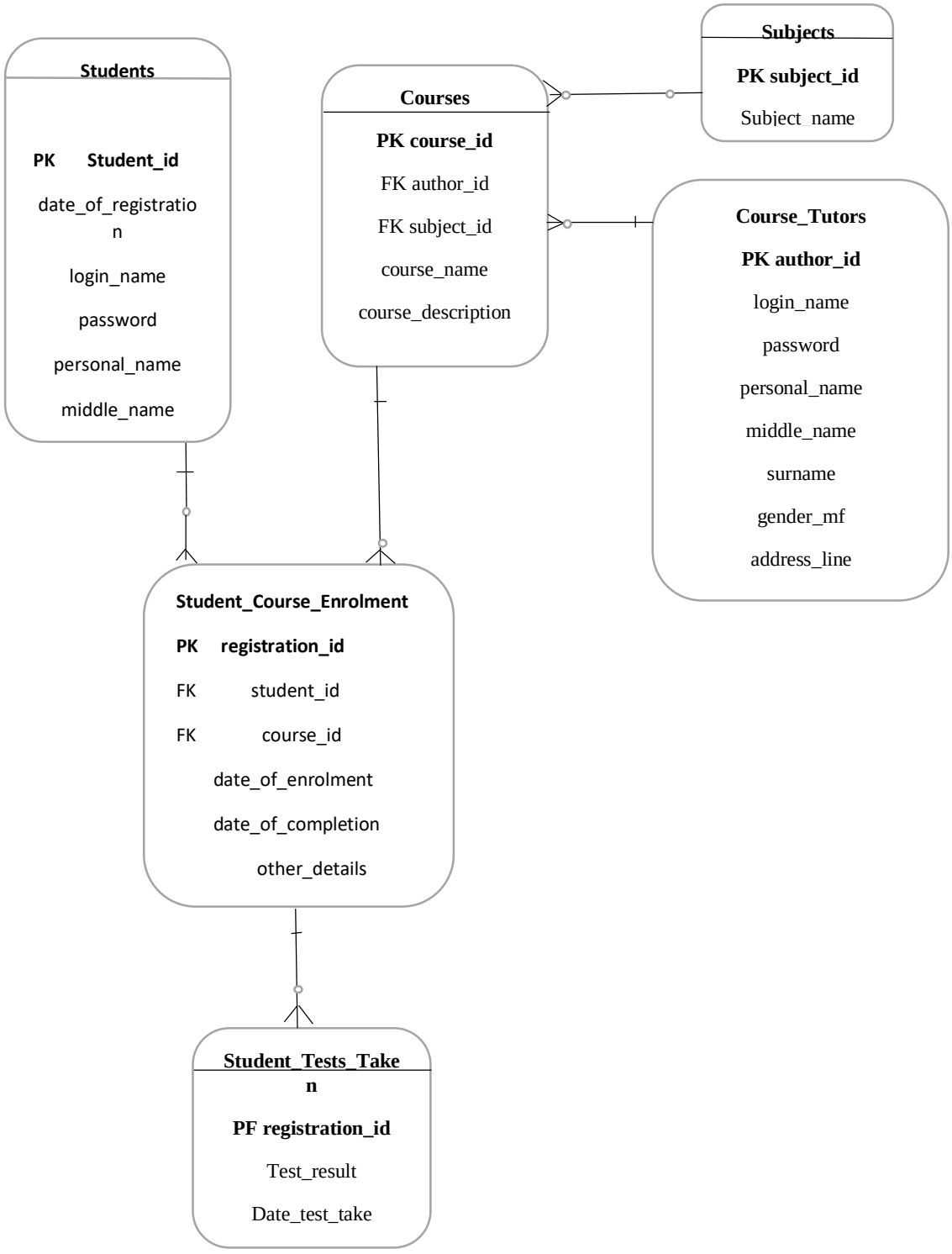

Figure 4.1: The Database Logical Design for the E-Learning Web Portal

The following tables shows the attribute description (physical design) of the system as shown in Tables 4.1 to 4.6.

Table 4.1: Student's table showing student's details

Column Name	***Data Type***	***Nullable***	***Size***
Tid	*Int*	*No*	*11*
Name	*Varchar*	*No*	*20*
Maticno	*Bigint*	*No*	*20*
Email	*Varchar*	*No*	*255*
Password	*Varchar*	*No*	*255*
Status	*Int*	*No*	*11*

Table 4.2: Lecturer's table showing Lecturer's details

Column Name	***Data Type***	***Nullable***	***Size***
Tid	*Int*	*No*	*11*
Name	*Varchar*	*No*	*20*
Phone	*Bigint*	*No*	*20*
Email	*Varchar*	*No*	*255*
Password	*Varchar*	*No*	*255*
Status	*Int*	*No*	*11*

Table 4.3: Upload data table showing upload data details

Column Name	*Data Type*	*Nullable*	*Size*
File_name	*Varchar*	*No*	*200*
File_size	*Varchar*	*No*	*200*
File_type	*Varchar*	*No*	*200*

Table 4.4: Video's table showing video details

Column Name	*Data Type*	*Nullable*	*Size*
Vid	*Int*	*No*	*11*
Name	*Varchar*	*No*	*255*
Cid	*Int*	*No*	*11*
Temp	*Varchar*	*No*	*255*
Link	*Varchar*	*No*	*255*
Book	*Int*	*No*	*11*

Table 4.5: Images table 3 showing image details

Column Name	*Data Type*	*Nullable*	*Size*
Iid	*Int*	*No*	*11*
Name	*Varchar*	*No*	*255*
Linl	*Varchar*	*No*	*255*

Table 4.6: Contact's table showing contact details

Column Name	*Data Type*	*Nullable*	*Size*
Cid	*Int*	*No*	*11*
Name	*Varchar*	*No*	*255*
Email	*Varchar*	*No*	*255*
Subject	*Varchar*	*No*	*255*
Msg	*Varchar*	*No*	*500*

4.4 System Implementation

The web portal for e-learning is easy to use, very interactive and has an intuitive graphical user interface. It has the following characteristics:

1. An intuitive and user-friendly user interface as part of the user's operating setting.
2. An interactive user interface on the Web for the general users.

4.4.1 User Guide

1. The user should register himself/herself in other to access the online resources.
2. It is mandatory to input all the required details when registering.
3. The customer will be formally registered with the web service and the user after a successful login.
4. A user can login using his/username and password.

4.4.1.1 Lecturer (Registered user)

This is the individual who placed most of the students ' content online to access.

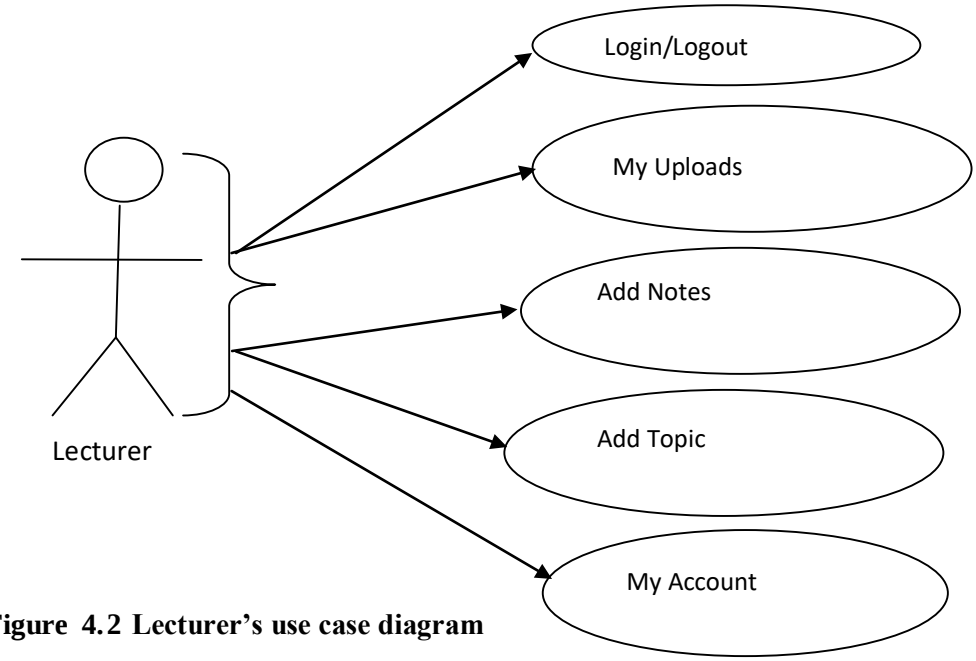

Figure 4.2 Lecturer's use case diagram

4.4.1.2 Student (Registered User)

The student has access to the contents been put by the Lecturer

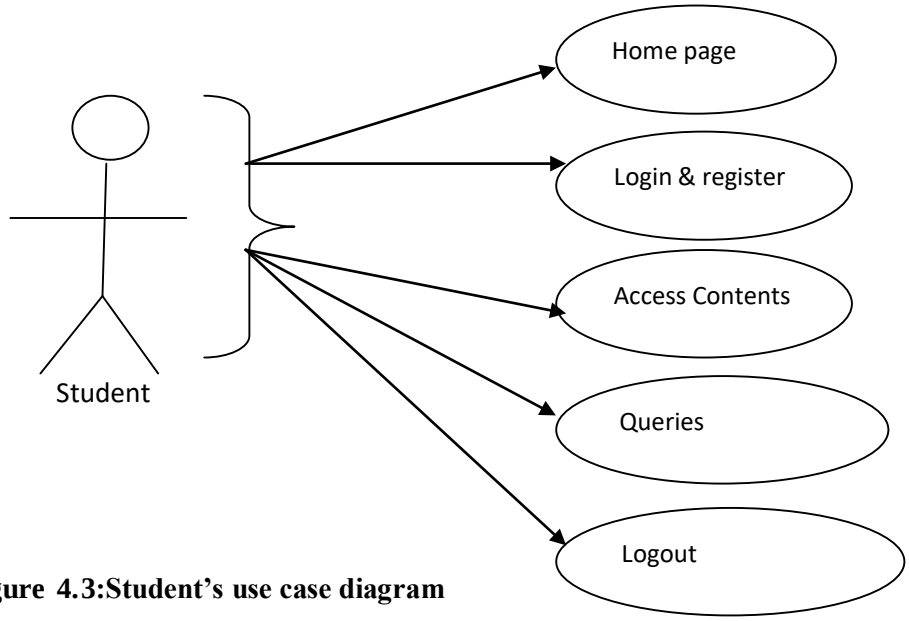

Figure 4.3:Student's use case diagram

4.4.2 Hardware Platform

The implementation requirements depends on the system's specification. The system supports Pentium III computers and above with 512 MB of RAM, at least 10 GB of hard disk storage and 550 MHz of processor speed and operating systems such as Linux, Windows NT, and Mac.

4.4.3 Software Platform

The client's system must be connected to the internet to access the web server through TCP/IP. The system is to be installed on any server computer running on either Linux or Windows architecture. The server should have at least a RAM if 4GB 4 GB of RAM and 500 Megabyte of storage space and running on processor speed of at least 1.8 GHz.

4.4.4 Screenshot of the System

The screenshot of the system is segmented into three (3) environments: Lecturer's environment, Student's environment and Administrator's environment.

A. Lecturer's Environment

a) **Home Page:** This appears when the URL of ProgCafe is typed in any browser. While on this web page the user has the choice to register and continue to access programming files, resources and access the contact us page. However for a user to use programming materials he/she must be registered first.

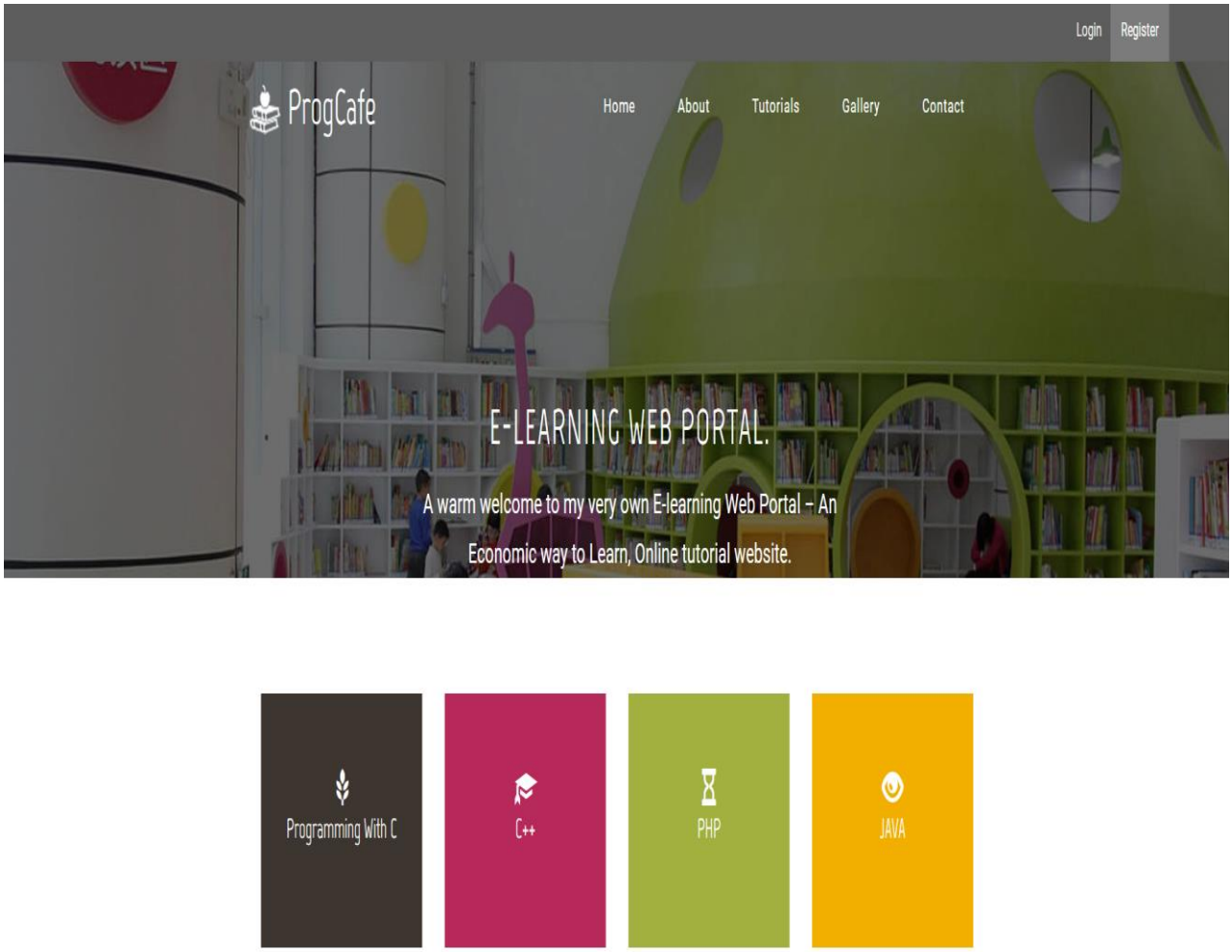

Figure 4.4: The Home page

b) **Registration Form:** This form is to be used by the lecturers to register. Before using any material or resource, the user must first register. To access this page, the user clicks on the register link that is on the home page. The email and password areas of the user are compulsory, which implies that before clicking on the register button, the user must complete them.

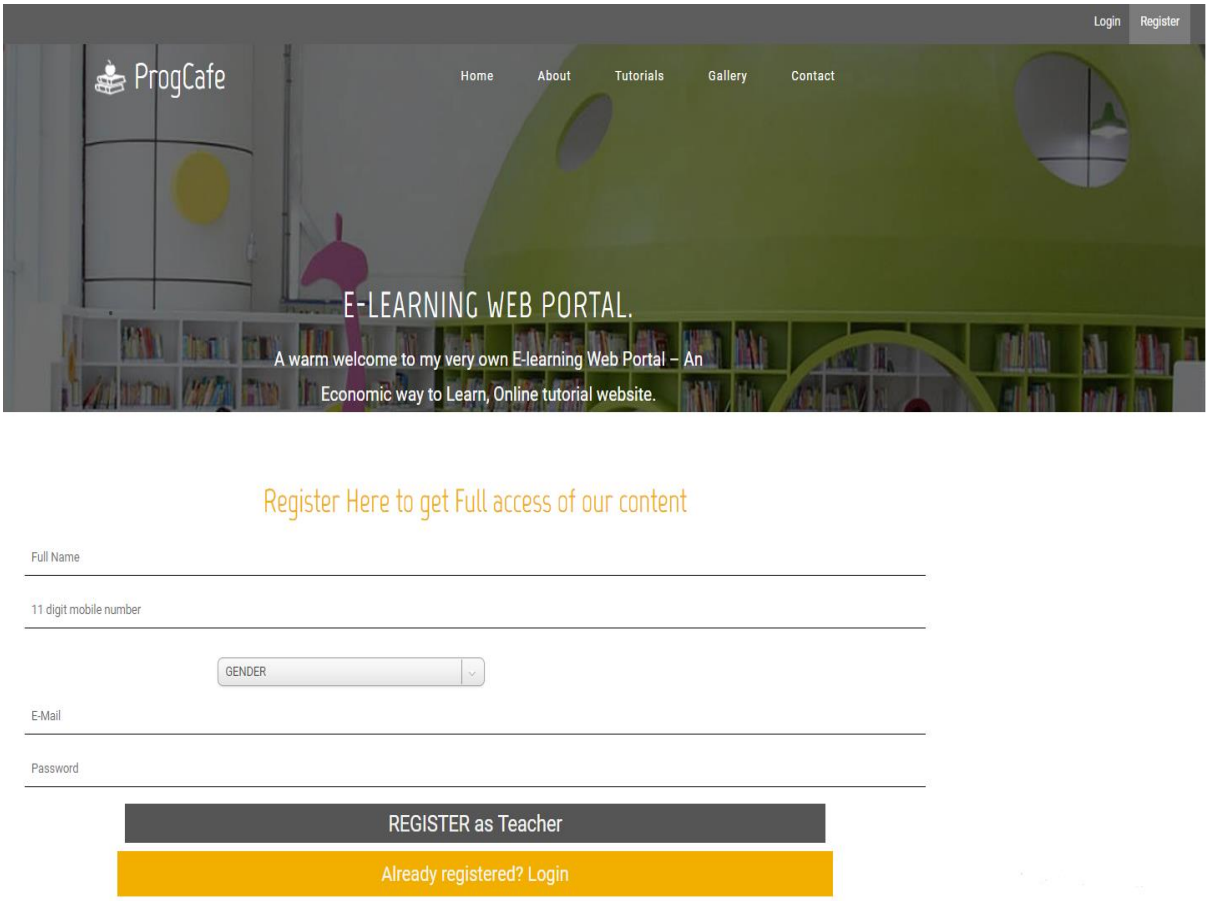

Figure 4.5: Lecturer's Registration Form

c) **Login Form:** To access this interface, click on the login link on the homepage which would require both your email and password.

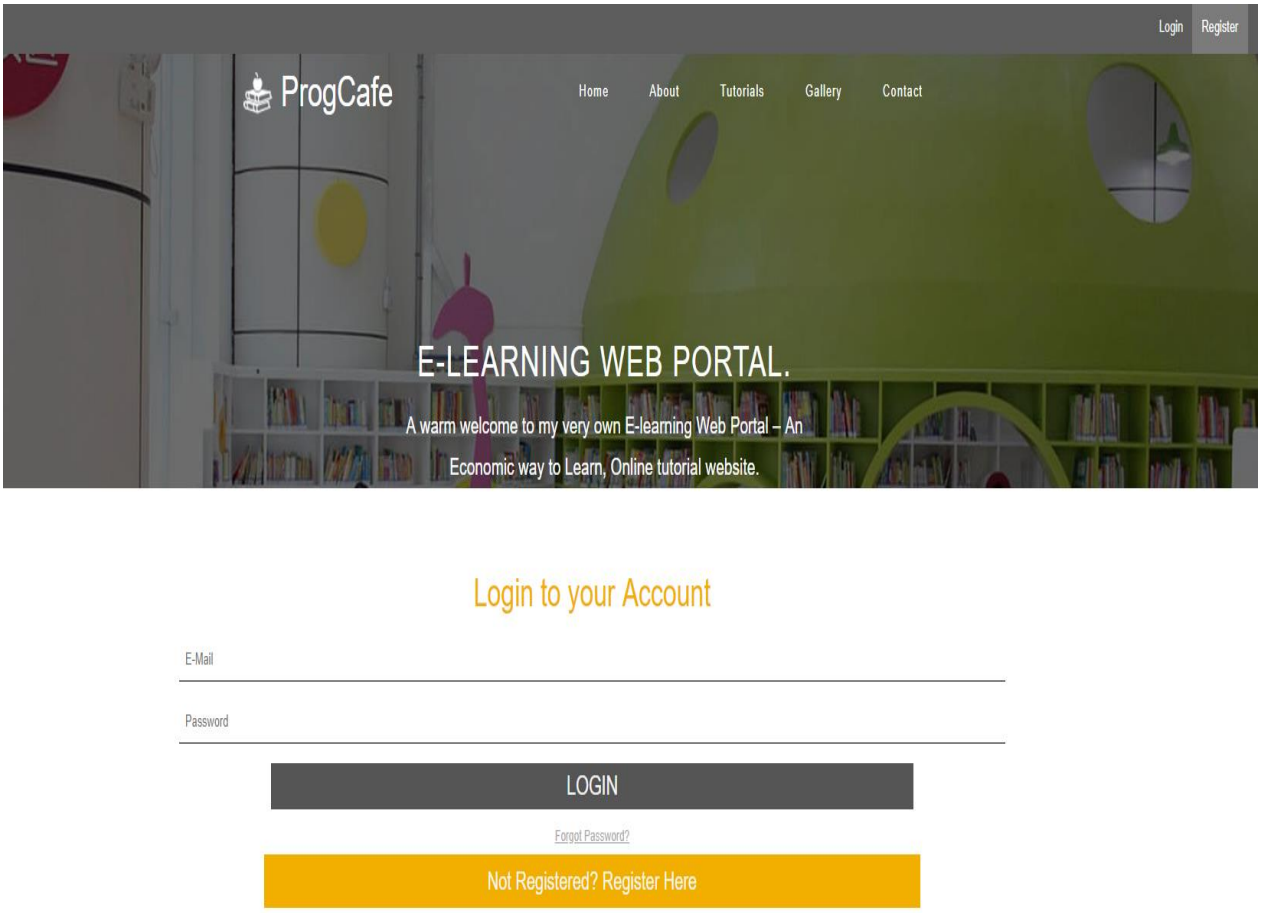

Figure 4.6: Showing the Login Interface

d) Lecturer's Dashboard

To access this page all the necessary details needed in the registration form is satisfied. After filling in your record and clicking on the **"Register as Teacher"** button, you then click on the login button on the homepage and fill in the required details which are the email and password.

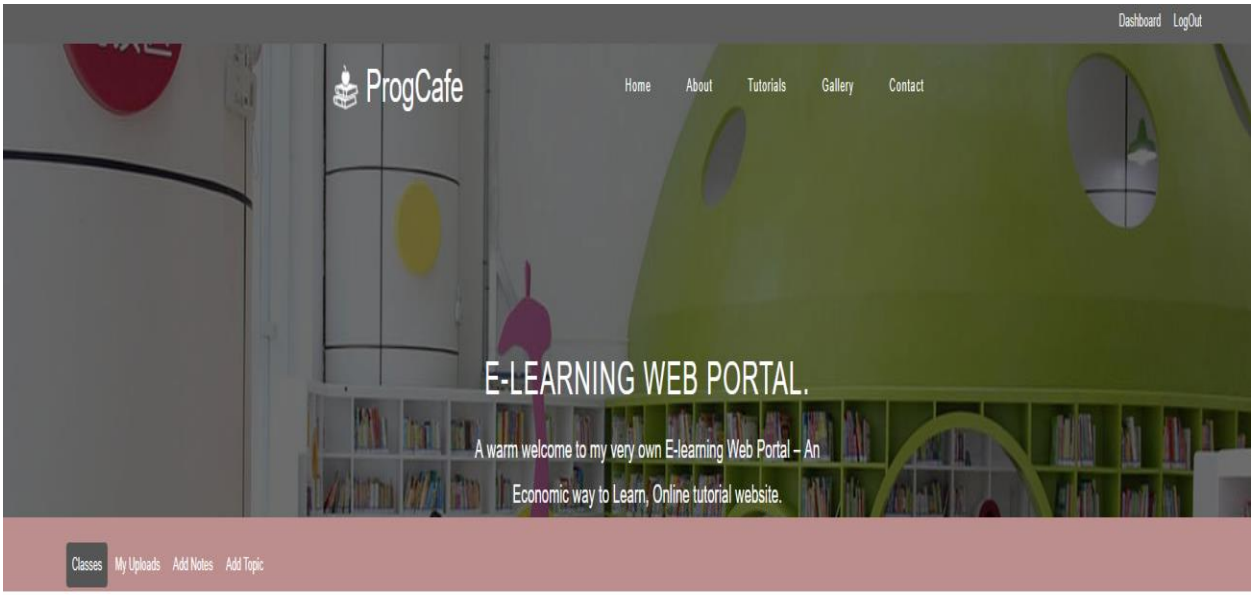

Figure 4.7: Showing the Lecturer's Dash board Interface

e) Add Topic

You can access this interface only in the lecturer's dashboard. This is used to insert topics to the various classes listed in the dropdown menu, more classes can be added also.

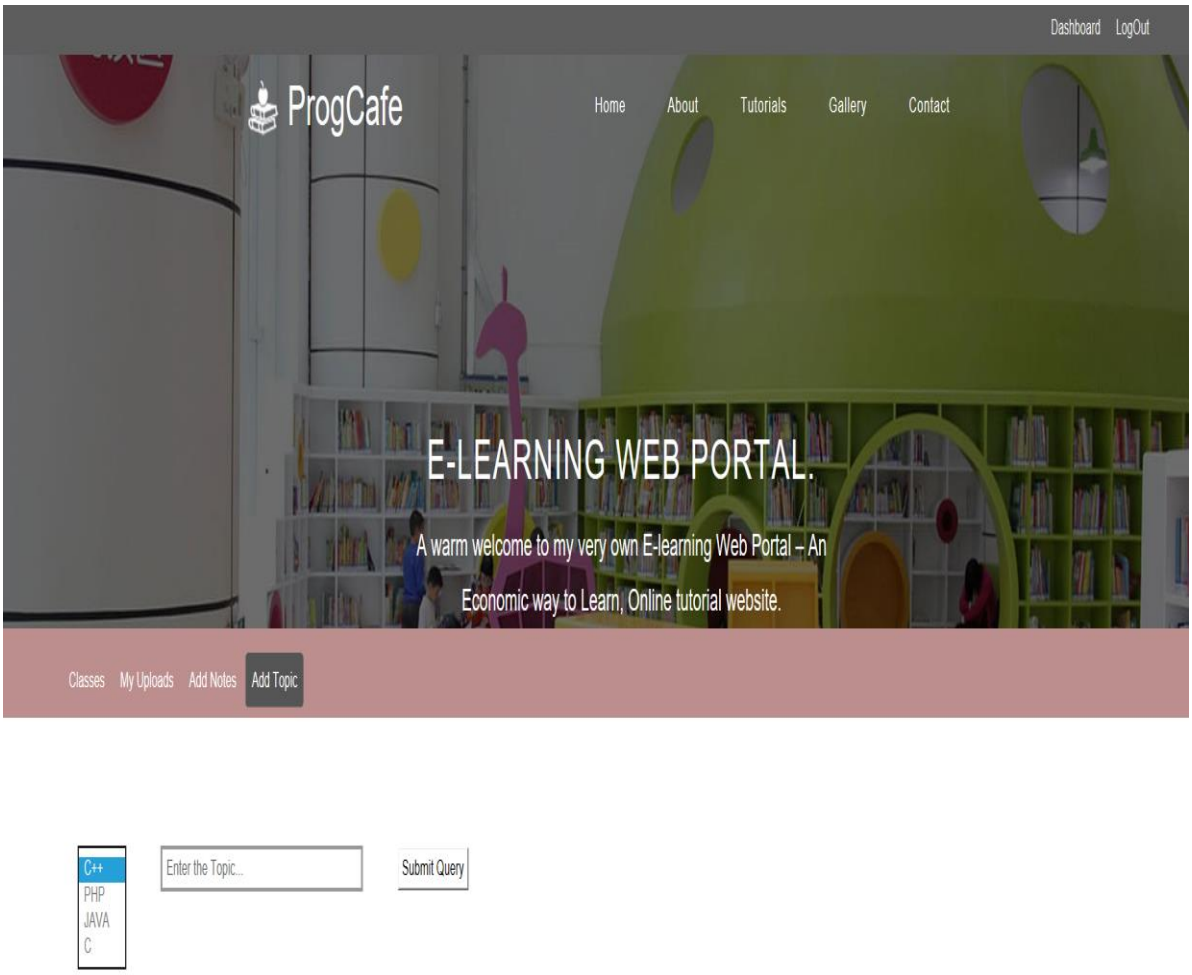

Figure 4.8: Showing the Interface for adding topic

f) Add Notes

Click on the bottom links in the dashboard stated by "Add Notes" to access this interface. It is used to add different kinds of resource to the class subjects in the scheme. The resources includes: text files, pdf, documents etc.

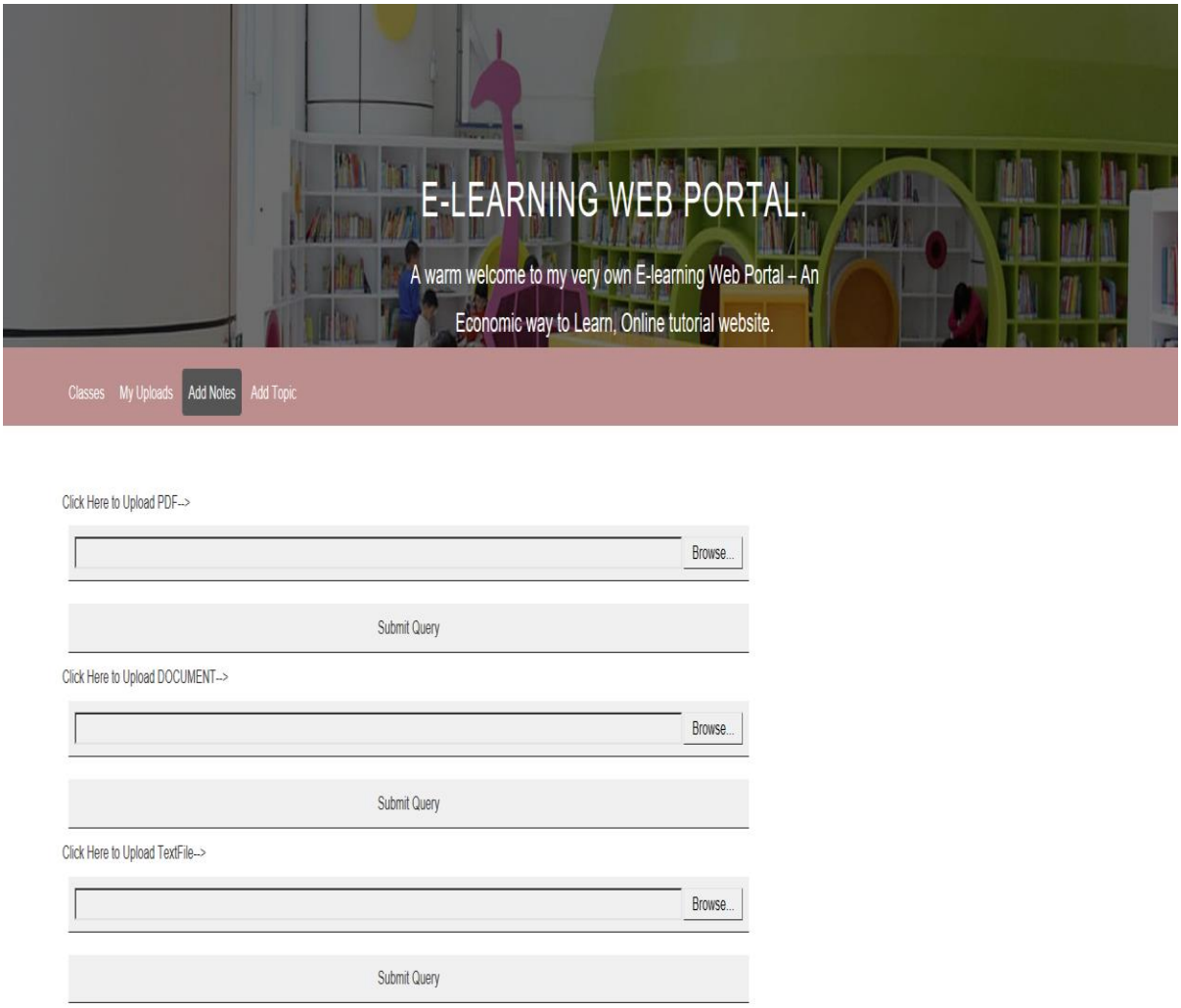

Figure 4.9: Showing the Interface for Adding Notes

g) My Uploads

Click on the "My Upload" link on the dashboard of the lecturer to access this interface. This shows all the videos either links to YouTube or the ones imported locally from the user's computer.

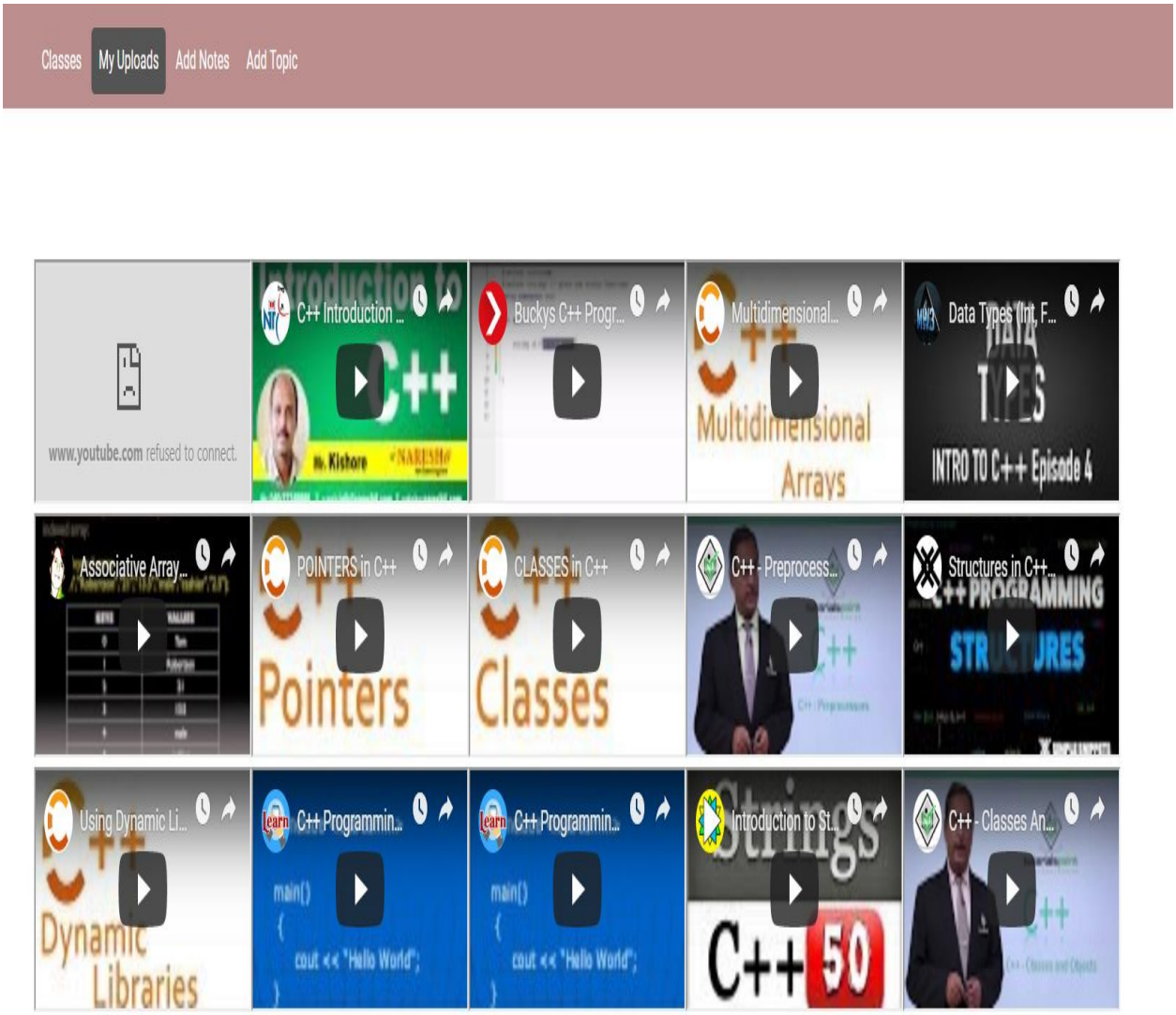

Figure 4.10: Showing the Interface for my Uploads

h) Contact us Page/Interface

Click on the contact link in the system menu to access this interface. As specified in the design of the project that ProgCafe system would have a page dedicated to user queries. On this page a user whether registered or not can post anything for which he/she is not satisfied with. Information sent here will go straight to the administrator.

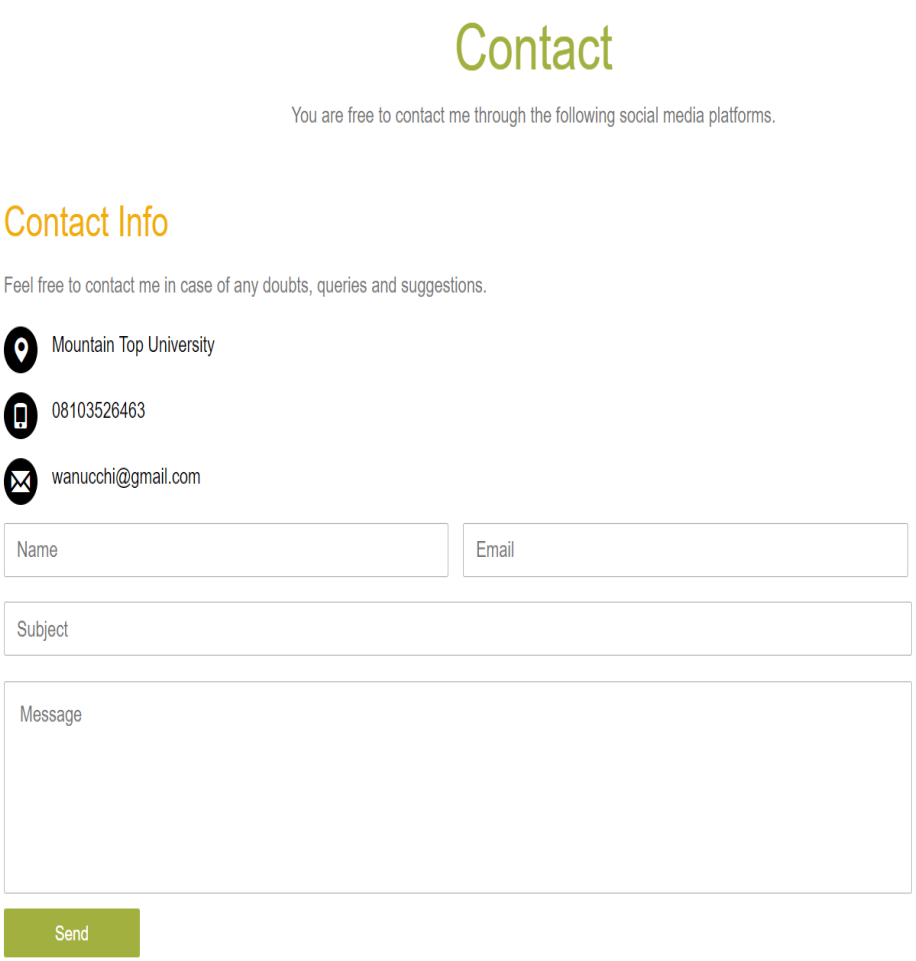

Figure 4.11: Showing Customer Contact us/Interface

i) Gallery Interface

You can access this interface by clicking on the link indicated as “gallery” showing at top area of the E-learning portal. It shows pictures of some views in Mountain Top University.

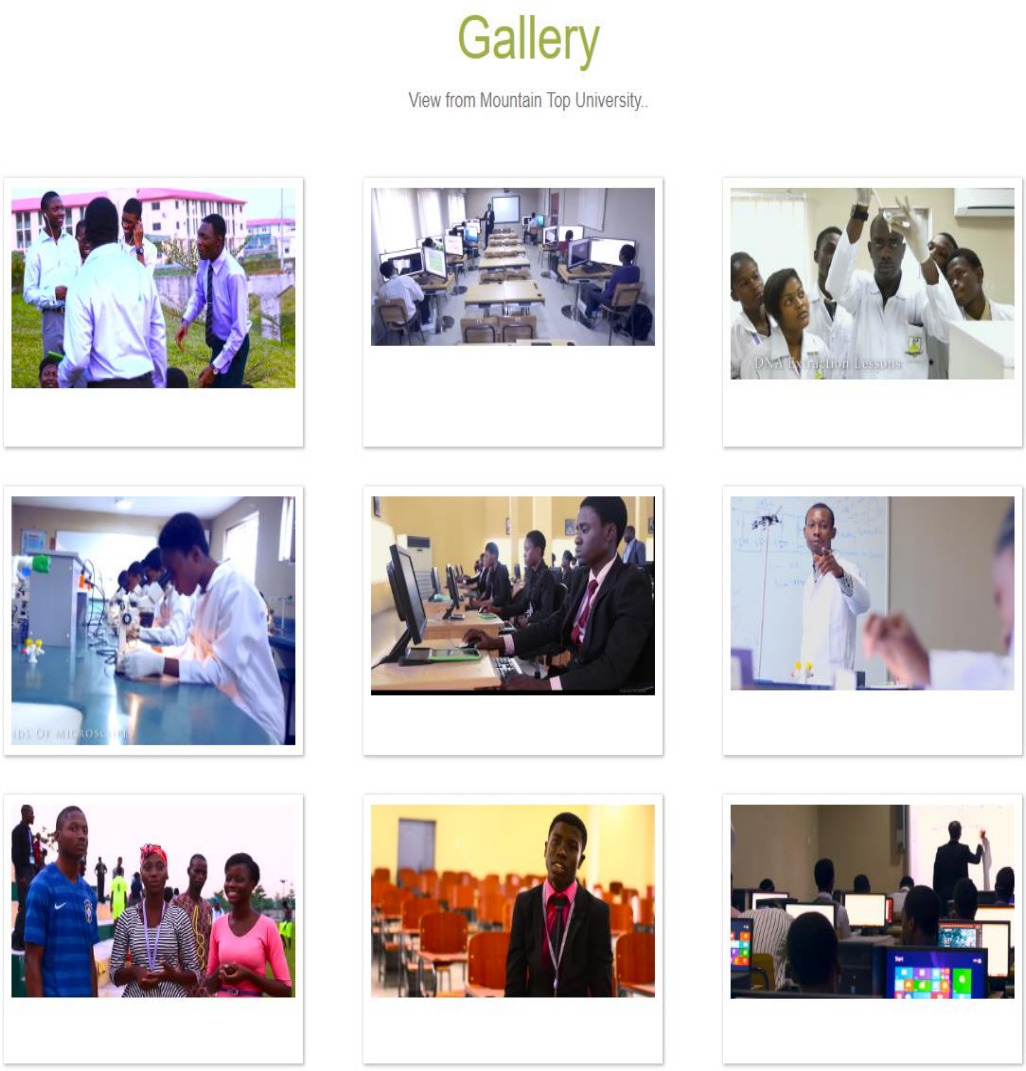

Figure 4.12: Showing Gallery Interface

B. Student's Environment

This environment is meant just for students and is restricted by a non-user and the lecturers. It shows the content been placed on the student's dashboard by the lecturers.

a) Student's Dashboard

This interface is obtained after authenticating and typing in both the email and password.

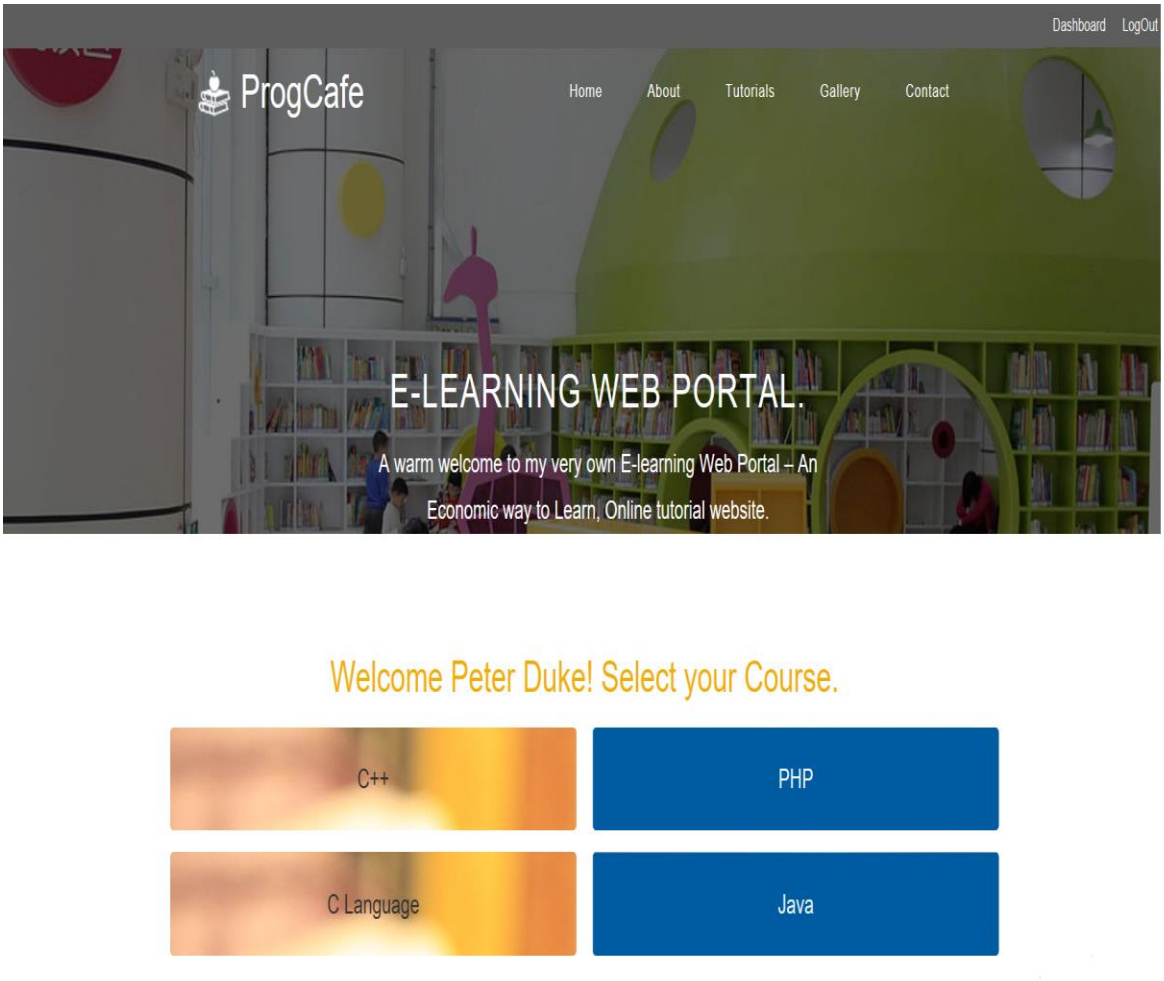

Figure 4.13: Student Dashboard Interface

C. Administrator Environment

This environment is restricted and used only by the administrator to change the system content. Access to this environment requires the admin to locate the application known as XAMPP Control panel. Once it is located the person would obtain access to modify/delete and control the system.

Database Interface: The administrator uses this interface to test configure and generates system databases. Use the admin button on the XAMPP Control Panel interface to access it.

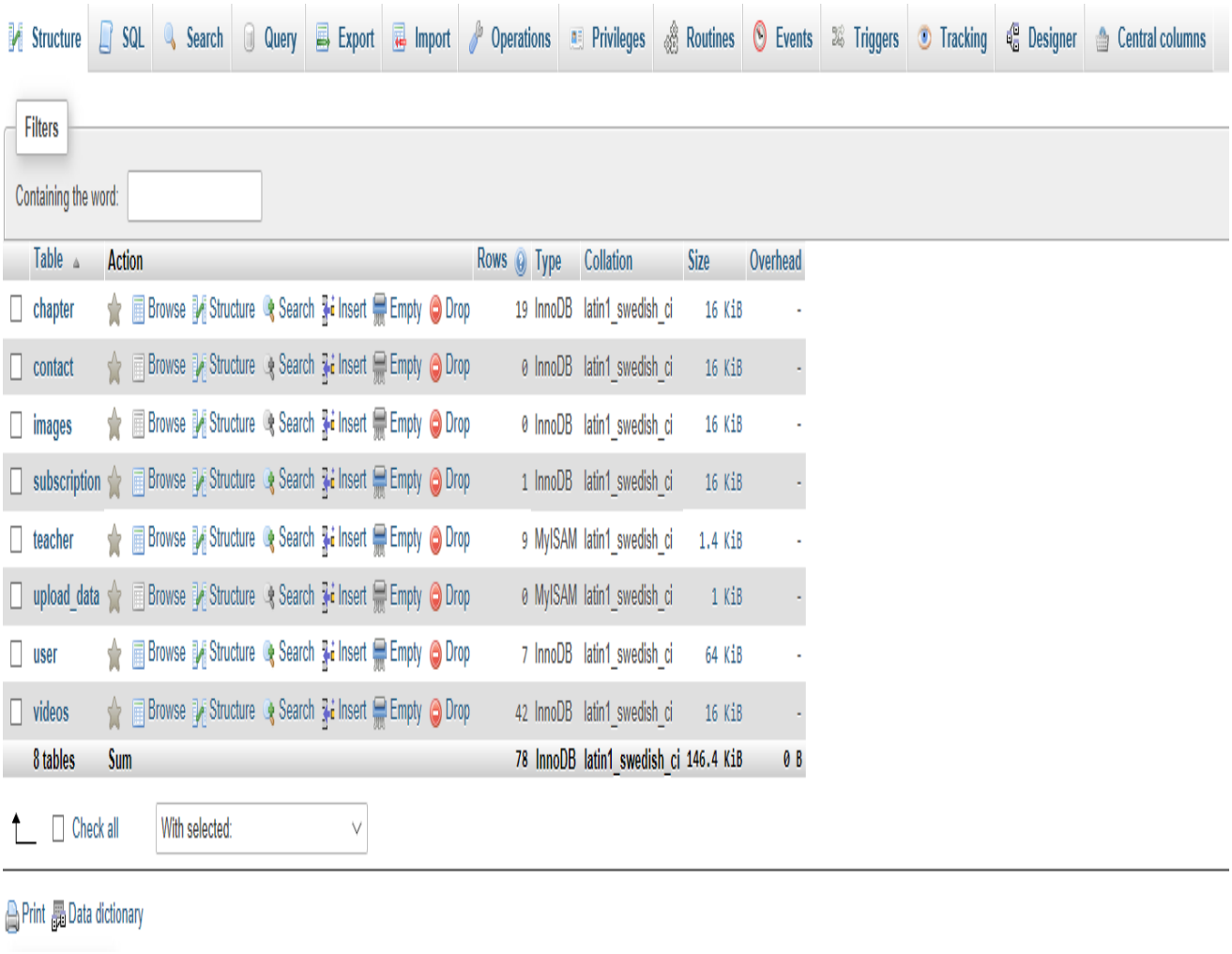

Figure 4.14: Database Interface

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter gives the summary, conclusion and recommendations of the entire project as discussed in sections 5.1 to 5.4

5.1 Summary

The E-learning web portal entailed the method used, the results alongside the security concerns with its counter measures. The E-Learning web portal takes of all the requirements of learning based on programming languages. It is capable of providing easy and effective storage of information related to users that has a profile on the E-Learning platform by storing their information on its database which was written using MySQL, in which the database is completely handled by the administrator. Also a well-designed user interface that provides easy and efficient operation to user on the platform was developed.

In addition, the single factor approach was used for authentication purpose, where the user does not have to disclose username, password and other information to a third-party platform. However, it has some limitations that gives users the power to allow sites limited access to their data. The waterfall model used in the creation of this software, it is also known as linear-sequential model which consist of five (5) stages and each has their own mode of operation.

This project consist of two users which are the lecturer and the student, both having different ways of operation, in which the students access the files and resources placed on the platforms and are used for educational purposes. The resources are available to anyone provided you have completely registered the information required by the platform and it would be properly secured on the database by the administrator. Though the resources cannot be hundred percent secured, however the security flaws can be reduced by closing loopholes and other factors that makes the web portal susceptible to attacks.

5.2 Conclusion

Before modern computing, the learning system was done using manual means. This meant that a person would have to come from wherever he/she is just to take lectures because a face to face method is compulsory and this process would consume a lot of time and money. The E-learning system is used for computerizing learning process anywhere accessible. The E-learning portal

automates the processes of learning, thus, reducing the time wasted as well as poor communication skills. From the researchers view, E-learning portal is one the best innovation that has taken place in the education industry and those people that have not yet embraced E-learning system ought to adopt this method or system for better learning.

5.3 Recommendations

The project recommends the following about the system:

i. Backups should be done frequently to avoid data loss in case of hardware or software malfunction.
ii. The users should carefully choose usernames and passwords so as to avoid security breach of the system hence they shouldn't have short passwords, using their friends or relative's names as passwords.
iii. However much system access is protected by a username and a password, the entire computer system should be protected from unauthorized people to avoid misuse and damage of the system components.
iv. Other researchers can use this project report as a basis during future study of E-learning system.
v. There is need for the system upgrade as user's requirements change. User requirements differ with time, therefore, it is of great help for the system to be flexible enough.
vi. The researcher recommends that Lecturers and students should be trained on how to use the system, thus enabling them to understand the functionality of the entire system.

5.4 Limitation of the Study

The research limitation is as follows:

i. Scarcity of previous work

ii. Lack of previous knowledge on MySQL

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APPENDIX I

SOURCE CODE FOR E-LEARNING WEB PORTAL

Home

```
<?php
   include 'header.php';
?>
<!-- FlexSlider -->
<!--
                        <script defer src="js/jquery.flexslider.js"></script>
                        <script type="text/javascript">
                                $(function(){
                                });
                                $(window).load(function(){
                                  $('.flexslider').flexslider({
                                        animation: "slide",
                                        start: function(slider){
                                          $('body').removeClass('loading');
                                        }
                                  });
                                });
                        </script>
-->
<!-- FlexSlider -->
<!--banner end here-->
<!--educate logos start here-->
<div class="educate">
      <div class="container">
          <div class="education-main">
                  <ul class="ch-grid">
```

```
<div class="col-md-3 w3agile">
<li>
<div class="ch-item">
<div class="ch-info">
<div class="ch-info-front ch-img-1">
<span class="glyphicon glyphicon-grain" aria-hidden="true"> </span>
<h5>Programming With C</h5>
</div>
<div class="ch-info-back">
<h3>Programming With C</h3>
<p>Complete C Language Tutorial</p>
</div>
</div>
</div>
</li>
</div>
<div class="col-md-3 w3agile">
<li>
<div class="ch-item">
<div class="ch-info">
<div class="ch-info-front ch-img-2">
<span class="glyphicon glyphicon-education" aria-hidden="true"> </span>
<h5>C++</h5>
</div>
<div class="ch-info-back">
<h3>C++</h3>
<p>Introductory to C++ programming Language</p>
</div>
```

```
                    </div>
                </div>
            </li>
            </div>
             <div class="col-md-3 w3agile">
            <li>
                <div class="ch-item">
                    <div class="ch-info">
                        <div class="ch-info-front ch-img-3">
                            <span class="glyphicon glyphicon-
hourglass" aria-hidden="true"> </span>
                        <h5>PHP</h5>
                        </div>
                        <div class="ch-info-back">
                            <h3>Scripting Language PHP</h3>
                            <p>Learn Scripting with PHP</p>
                        </div>
                    </div>
                </div>
            </li>
            </div>
             <div class="col-md-3 w3agile">
            <li>
                <div class="ch-item">
                    <div class="ch-info">
                        <div class="ch-info-front ch-img-4">
                            <span class="glyphicon glyphicon-
eye-open" aria-hidden="true"> </span>
                        <h5>JAVA</h5>
                        </div>
                        <div class="ch-info-back">
```

```
                                                    <h3>JAVA</h3>
                                                    <p>Start Programming with
    JAVA</p>
                                                </div>
                                            </div>
                                        </div>
                                    </li>
                                    </div>
                                    <div class="clearfix"> </div>
                                </ul>
                            </div>
                        </div>
                    </div>
                    <!--educate logos end here-->
                    <!--we do start here-->
                    <div class="we-do">
                        <div class="container">
                            <div class="we-do-main">
                                <h2>What We Do </h2>
                                <h4>Online Learning</h4>
                                <p> This E-learning portal provides students good, easily understandable
    experience while learning online.Students can self understand
                            and learn,website aims to provide a personalized learning experience.</p>
                                <a href="about.php">Read More</a>
                            <div class="clearfix"> </div>
                            </div>
                        </div>
                    </div>
                    <!--we do end here-->
                    <!--pop-up-box-->
                        <script type="text/javascript" src="js/modernizr.custom.53451.js"></script>
```

```
    <link href="css/popuo-box.css" rel="stylesheet" type="text/css" media="all"/>
    <script src="js/jquery.magnific-popup.js" type="text/javascript"></script>
<!--pop-up-box-->


<!--watch start here-->
<!--
<div class="watch-video">
    <div class="container">
       <div class="watch-video-main">
              <div class="video-bottom">
               <a href="pricing.php"> <span class="glyphicon glyphicon-triangle-right" aria-hidden="true"> </span> </a>
               video
                    <div id="small-dialog5" class="mfp-hide">
                         <iframe src="https://player.vimeo.com/video/2990650" width="640" height="361" frameborder="0" webkitallowfullscreen mozallowfullscreen allowfullscreen> </iframe>
                    </div>
                     <script>
                              $(document).ready(function() {
                              $('.popup-with-zoom-anim').magnificPopup({
                                   type: 'inline',
                                   fixedContentPos: false,
                                   fixedBgPos: true,
                                   overflowY: 'auto',
                                   closeBtnInside: true,
                                   preloader: false,
                                   midClick: true,
                                   removalDelay: 300,
                                   mainClass: 'my-mfp-zoom-in'
                              });
```

```
                                        });
                                </script>
            </div>


                        <h3>Watch Our Video</h3>
            </div>
        </div>
</div>
-->
<!--watch end here-->
<script src="js/responsiveslides.min.js"></script>
<script>
    // You can also use "$(window).load(function() {"
    $(function () {
      $("#slider2").responsiveSlides({
        auto: true,
        pager: true,
        speed: 300,
        namespace: "callbacks",
      });
    });
  </script>

<!--clients star here-->
<div class="we-do">
        <div class="container">
            <div class="we-do-main">
```

```
    <div class="clearfix"> </div>
        </div>
     </div>
</div>
<div class="clients">
    <div class="container">
        <div class="clients-main">
                <div class="clients-top">
                    <h3>Computer Science Students</h3>
                </div>
         <div class="slider-bann wow bounceInRight" data-wow-delay="0.3s">
        <ul class="rslides" id="slider2">
         <li>
                <div class="clients-text">
                    <p>Other than online tutorial sessions, you can personally contact me for
    clarification of doubts. For contact details, visit contact me tab.You can Mail me during
    20:00hrs to 21:00hrs where I would listen to your doubts and for further explanation.</p>

          </div>
        </li>

        </ul>
        </div>
   </div>

    </div>
</div>

<?php
   include 'footer.php';
?>
```

Login

```
<?php include 'header.php';

if (isset($_COOKIE['email'])) {
  # code...
  ?>
  <script>
    alert("already Logged in. Redirecting you to Dashboard.");
    window.location.assign("dashboard.php");
  </script>
  <?php
}

if ($_SERVER['REQUEST_METHOD'] == "POST") {
  # code...
  include 'connect.php';
  if (isset($_POST['email']) && isset($_POST['pass'])) {
    # code...
    $email = test_input($_POST['email']);
    $pass = test_input($_POST['pass']);
    $sql = "select * from user where email='$email' and password='$pass'";
    $sql1 = "select * from teacher where email= '$email' and password ='$pass'";
    $result = $conn->query($sql);
    $res = $conn->query($sql1);
    if ($result->num_rows > 0) {
      ?>
      <script>
        window.location.assign("log.php?in=<?php echo $email; ?>");
      </script>
```

```
    <?php
   }elseif ($res->num_rows > 0) {
    ?>
    <script>
      window.location.assign("log.php?te=<?php echo $email; ?>")
    </script>
   }
    <?php
   }else {
    ?>
    <script>
      alert("wrong Details. Please check type your Details carefully.");
    </script>
    <?php
   }
  }else {

   ?>
   <script>
    alert("Fields cannot be left blank please fill your Details");
   </script>
   <?php
  }
}



function test_input($data) {
  $data = trim($data);
  $data = stripslashes($data);
  $data = htmlspecialchars($data);
```

```
  return $data;
}

?>

<div class="login-form">
<center>
  <h2> Login to your Account </h2>
  <form method="post" action="<?php echo htmlspecialchars($_SERVER['PHP_SELF']); ?>">
    <input type="email" placeholder="E-Mail" name="email" autocomplete="off" required="yes" />
    <input type="password" placeholder="Password" name="pass" autocomplete="off" required="yes" />
    <button type="submit">LOGIN</button>
  </form>
  <h3>Forgot Password?</h3>
  <a href="register.php"><button>Not Registered? Register Here</button></a>
</center>
</div>

<?php include 'footer.php'; ?>
```