DESIGN AND IMPLEMENTATION OF A WEB-BASED MULTIMEDIA LEARNING SYSTEM FOR ELECTRONIC WASTE MANAGEMENT

AHMED-SUMAILA UMMI SALMA

DEPARTMENT OF COMPUTER SCIENCE
COLLEGE OF INFORMATION AND COMMUNICATION TECHNOLOGY, CRESCENT UNIVERSITY, ABEOKUTA, OGUN STATE, NIGERIA

AUGUST, 2022

CERTIFICATION

This is to certify that the project work entitled "Design and Implementation of a Web Based Multimedia Learning System for E-waste Management" was undertaken by **AHMED-SUMAILA Ummi Salma** with Matric Number [redacted], and has been supervised in accordance with the requirement for the award of Bachelor of science **(B. Sc.) degree (Hons.) in Computer Science**, CICOT, Crescent University Abeokuta, Ogun state.

_____ _____

DR ADESHINA A.M. DATE

(Supervisor)

_____ _____

MR LASISI I.O. DATE

(H.O.D)

DEDICATION

This project work is dedicated to Almighty Allah for his infinite mercy, and to my parents, Mr and Mrs Ahmed-Sumaila, who supported and encouraged me throughout my course of study.

ACKNOWLEDGEMENT

My appreciation first goes to God Almighty for giving me an opportunity to excel in my efforts to complete this project on time. I am extremely grateful to my project supervisor, Dr Adeshina for his valuable suggestions and guidance in the completion of this project. I would also like to acknowledge with much appreciation the crucial role of my friends; Junaid Motolani, Bakare Hamaamah, and Lamina Rodiyah, whose suggestions and encouragement helped me in the compilation of this project. I will be failing in duty if i do not acknowledge with grateful thanks, the authors of the literatures referred to in this report.

ABSTRACT

The world generates between 20 - 50 million tons of e-waste annually, and an astounding 57.4 million tons of e-waste was generated in 2021, with only about 17.4% of that figure undergoing recycling. One of the reasons for such a low global recycling rate is the general lack of awareness among electronic device users. There needs to be more awareness regarding the problem, causes, and health and environmental effects of e-waste and these issues need to be taught to users at a young age. Schools are the best places for these issues to be taught and the use of a multimedia learning system is a great way to do that. Multimedia learning is a form of communication that combines different content forms such as text, audio, images, animations, or video into a single interactive presentation, in contrast to traditional mass media which featured little to no interaction from users, such as printed material or audio recordings.

Several literatures were reviewed on the effectiveness and bottlenecks of multimedia learning in schools, and were used to propose a methodology, involving a proposed framework, a feasibility study, and a system analysis and design process. These various elements were subsequently used as a blue-print to follow through in the implementation process. Various developer languages and tools were then used to bring the system to life, and a verification and validation test were used to evaluate the system. This report was subsequently concluded with the suggestion of various recommendations that could be made to the system in the future, in order to increase its features and enhance its effectiveness.

TABLE OF CONTENTS

CHAPTER FOUR

List of Figures

CHAPTER ONE

INTRODUCTION

1.1 Introduction

E-waste can be classified as any electronic product that is unwanted, not working, and nearing or at the end of their "useful life". Used electronics which are fated for restoration, reprocessing, resale, salvage recycling through material recovery, or discarding are also considered E-waste. The rapid expansion of technology and the consumption driven society results in the creation of vast amounts of E-waste. For example, in 2019, an estimated 53.6 Metric tons (Mt) of e-waste was created (with a 7.3 kg per capital average) globally, and in 2021, that number rose to 57.4 Mt, and is projected to increase to 74 Mt by the year 2030. Of the 57.4 Mt of e-waste generated globally in 2021, only about 17.4% of that figure is estimated to have undergone recycling. One of the reasons for such a low global recycling rate is the general lack of awareness among electronic device users. There needs to be more awareness regarding the problem, causes, and health and environmental effects of e-waste and these issues need to be taught to users at a young age. Schools are the best places for these issues to be taught and the use of a multimedia learning system is a great way to do that.

A Multimedia Learning System (MMLS) is a web-based courseware that utilizes multimedia to enhance the teaching and learning process (Mgbeafulike & Okeke, 2019). Multimedia learning is a form of communication that combines different content forms such as text, audio, images, animations, or video into a single interactive presentation, in contrast to traditional mass media which featured little to no interactions from users. Multimedia content helps to vary and enhance the learning process, and leads to better knowledge retention, and hence, would be very useful in disseminating knowledge and information on E-waste management to students. There are many web-based learning and e-learning systems obtainable on the Internet, but they offer only the same plain hypertext pages to all students irrespective of

individual ability. In many current web-based courses, the course material is still tacitly directed at a traditional audience consisting of homogeneous, well prepared and well-motivated students. However, a much wider variety of students make use of web-based courses. These learners may have very different objectives, backgrounds, knowledge level, and competencies. According to Mgbeafulike and Okeke (2019), a web-based course designed for a specific group of students, like a traditional course, may not fit other students, thus the course material needs to be flexible so that different students may get different materials and an order of presentation that depends upon their own characteristics.

1.2 Background of the Study

The usage of Multimedia Learning System (MMLS) methods and tools, is gaining more importance among schools and educational establishment to teach about varying concepts, one of which is the concept of e-waste management. The role of schools in disseminating information on e-waste management to students is one of great importance, and with the help of a web-based multimedia learning system, this task can become easier, for both students and teachers.

1.3 Statement of the Problem

The amount of e-waste generated globally increases every year, despite e-waste management legislations, systems and recycling practices encouraged by the government. E-waste contains toxic and hazardous materials such as lead, mercury, beryllium, cadmium, and brominated flame-retardants that post both human and environmental health threat. Despite the human health and environmental threats posed by e-waste, the global recycling rates are stubbornly low. Such low recycling rates is a consequence of several factors, one of which is the general lack of awareness among electronic device users.

1.4 Purpose of the Study

The purpose of this study is to propose a web-based system aimed at informing students about the problem, causes, effects, and management of e-waste, as well as to implement the proposed system.

1.5 Aims and Objectives

The aim of this project work is to design an effective web-based multimedia learning system to provide a solution to the lack of awareness regarding e-waste among students.

The objectives of this study are:

i. To propose a framework for a web-based system aimed at informing students about the problem, causes, effects, and management of e-waste,

ii. To design and implement the framework proposed in (i),

iii. To evaluate the designed and implemented framework using the two principal software evaluation methods, verification and validation.

1.6 Scope of the Study

The proposed system intends to apply the concept of multimedia learning to disseminate information and knowledge about e-waste management, its causes, effects, and ways to reduce the amount of e-waste we generate globally. The application of this project is aimed solely at senior secondary school students. Other higher and lower levels of formal education are ignored.

1.7 Significance of the Study

a. Multimedia is very effective in helping learners with low preceding understanding or aptitude in the domain being learned, and hence will make it easier for learners to quickly grasp the concept of e-waste despite the fact that they have no prior knowledge of it.

b. By incorporating audio, images, animations, and video, multimedia significantly amplifies student's ability to recall basic facts, as well as improving their understanding of e-waste management.
c. Multimedia presentations are captivating because they are multi-modal, which means multimedia can incite more than one sense at a time, and in doing so may be more attention holding.

1.8 Definition of Terms

Multimedia: using more than one medium of expression or communication

Audio: sound, especially when recorded, transmitted, or reproduced

Animation: is a method in which figures are manipulated to appear as moving images. It is the technique of photographing successive drawings or positions of puppets or models to create an illusion of movement when the film is shown as a sequence

System: a set of things working together as parts of a mechanism or an interconnecting network

Computer: an electronic device for storing and processing data, typically in binary form, according to instructions given to it in a variable program

Video: the recording, reproducing, or broadcasting of moving visual images

E-Waste: any electronic product that is unwanted, not working, and nearing or at the end of their "useful life."

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The goal of this chapter is to review existing literatures on the importance of schooling students about the causes and effects of e-waste as well as the ways to properly reduce and recycle our e-waste. This chapter also aims to review literatures on the effectiveness and limitations of multimedia learning in schools, as well as discuss the bottlenecks of these literatures. This will give an insight into the project area and help to get information that will enhance the development of the multimedia learning system for e-waste management. The use and effectiveness of multimedia learning in schools, as well as the importance and benefits of teaching e-waste management to students have been researched extensively over time. Only recently has literature began to focus on the use of multimedia learning to teach specific concepts such as e-waste management.

2.2 Multimedia Learning System

As the rate of technological advancement increases with time, society looks to create and develop easier ways to live (Ahmadi, 2018). With the introduction of the Internet, and several new innovations and technologies specifically in the communication and computer systems' sphere, there is a need to improve teaching and educational methods through the implementation of those technologies which may enhance the abilities of educators to provide information in an interactive and media enhanced format, with reference to traditional methods. Multimedia Learning Systems (MMLS) provide flexibility as well as a collaborative approach to learning, decreased cost of education for learners and proper time usage for instructors (Mgbeafulike & Okeke, 2019). Akbar et al. (2018) defines Multimedia learning as a learning media, involving information technology in the form of computer or Android, by bringing together two or more elements consisting of voice, video, text and images incorporated in a

multimedia software for students interactively. According to Mgbeafulike and Okeke (2019), a Multimedia Learning System (MMLS) is a web-based courseware that utilizes multimedia to enhance the teaching and learning process.

The basic objective of interactive multimedia material is not to replace the teacher, but to change the teacher's role entirely. Multimedia as a tool cannot replace hands-on learning but can strengthen the impact of activities in the field and in the classroom. New information tools such as blogs, pod-casts, and streaming video and audio, can be used to engage students and to effectively demonstrate concepts. Digital media tools such as photo-sharing, video-publishing and map-making programs, can also be used to engage students and to give them opportunities to demonstrate their mastery of a concept and to simultaneously reinforce their literacy skills by having them create their own content.

In an experiment conducted by Made Rajendra and Made Sudana (2018) to test and show the comparison between the performance of an experimental group and a control group before and after the use of multimedia to teach a concept, it was determined that the experimental group had a higher mean performance than the control group in the post-test in practical test. In the image below, Made R. and Made S. (2018) illustrates the finding that indicates how multimedia instruction has a positive effect on student's academic achievement.

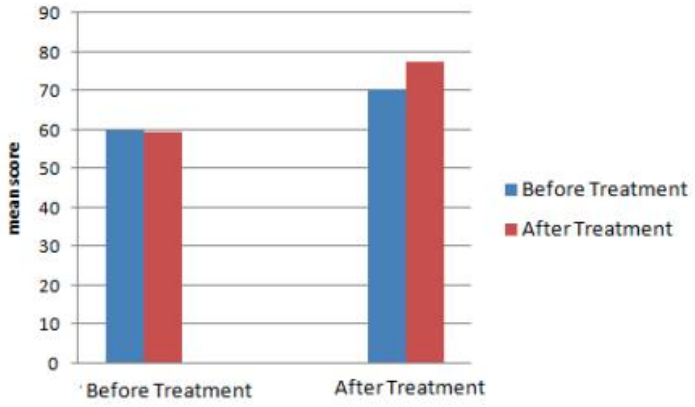

Fig. 2.1: Academic Achievement of the Experimental and Control Groups (Made R. & Made S. 2018)

Made R. and Made S. (2018) concluded from their study that students taught with job sheet interactive multimedia instructions performed higher in the post-test than those taught with text job sheet instruction, as the result of the effectiveness of the method used. There was significant difference in the retention abilities in cognitive and psycho-motor skills of students taught with interactive multimedia technology.

In another experiment of 49 students conducted by Oghomwen et al. (2021), it was determined that the experimental group taught using multimedia technology had a mean achievement score of 26.1008 while the control group had a lower mean achievement score of 17.900. Oghomwen et al. (2021) illustrates how the experimental group performed better than the control group in the image below.

Types of Test	N	Experimental Group Mean	SD	N	Control Group Mean	SD
Pre-test	29	9.103	2.704	20	7.800	2.505
Post-test	29	26.1008	7.170	20	17.900	3.144
Total	**58**			**40**		

Fig. 2.2: The Pre & post test mean scores of the experimental and control group (Oghomwen et al., 2021)

2.3 E-Waste Management in Schools

The production of electrical and electronic equipment (EEE) is one of the fastest growing global industries. This rapid expansion is resulting in an increase of electronic waste (e-waste), also referred to as waste electric and electronic equipment (WEEE). E-Waste is a popular, informal name for electronic products nearing the end of their “useful life”. E-wastes are considered dangerous, as they contain many hazardous constituents such as lead, cadmium, mercury, Poly-Chlorinated-Bi-Phenyl (PCB), brominated flame retardants, etc, that have the potential to cause environmental pollution as well as pose health hazards when disposed of. As reported by (Forti et al., 2020), governments around the world are developing national e-waste policies and legislations to deal with the growth of end-of-life electrical and electronic

products. Such policies lay out plans or courses of action and indicate, in a non-binding manner, what can be achieved by a society, institution, or company. Legislations are enacted at the national or municipal level and enforced by regulators, and a regulation indicates the way in which a legislation is enforced by regulators (Forti et al., 2020). However, one of the most significant practices to effectively tackle the e-waste stream is to educate people. This is an opportunity for education to help future generations of technology consumers become aware of the impact of their decisions concerning the handling, recycling and disposal of electronic technologies.

In one dimension of a study of 300 senior secondary school students (150 girls and 150 boys) conducted by Anjum and Rukhsar (2017), most of the students were aware that refrigerator, cooler and video games came under the category of e-waste but 78.66% of respondents did not know that laptops, mobile and printer also come under the category of e-waste. Around 33.3% of the students were aware that metal, wood, glass and rubbers are also categorized as e-waste. The startling result showed that around 62.66% respondents did not know that e-waste also contains precious and rare materials like gold, and platinum. In the dimension "Category of e-waste products", 56% responded 'Yes' and 44% responded 'No'.

S. NO	STATEMENTS	YES	NO
1	Cooler, TV, refrigerator.	61%	39%
2	Mobile, laptop, printer.	21.66%	78.66%
3	Video games & electronic toys.	63%	37%
4	Metal, glass, wood & rubber.	33.33%	66.66%
5	It contains valuable rare material such as gold.	37.3%	62.66%

Fig. 2.3: Category of e-waste products (Anjum & Rukhsar, 2017)

In another dimension of the same study, there were five statements which were related to awareness of recycling electronics. The result revealed that 57.8% students were

aware about the importance of recycling facilities. 35.66% of students did not find recycling economical but 84.66% agreed that reselling will help those individuals who cannot otherwise afford to buy new electronics. 70% of the students agreed that the use of unscientific means to recycle e-waste has affected human health, agricultural produce, underground water and air. Majority of the students, about 56.33% did not hear about e-waste or its recycling procedures from their parents.

S. NO.	STATEMENTS	YES	NO
27	Better to buy new to replace old one.	55	45
28	Recycling of equipment is not economical.	35.66	64.33
29	Reselling old gadget help to people who can't afford.	84.66	15.33
30	Indians use unscientific method in recycling.	70	30
31	E-waste word heard from my parents.	43.66	56.33

Fig 2.4: Recycling of electronic equipments (Anjum & Rukhsar, 2017)

Azodo et al. (2017) conducted a cross-sectional study among undergraduate students of Federal University Wukari (Taraba, Nigeria). The tool used for data collection was a questionnaire which was designed and divided into four sections, with the categories of information accessed in each section including participants demography, electrical/electronic equipment ownership and usage, awareness and knowledge of e-waste and e-waste treatment and management. The response rate for the four hundred questionnaires distributed to the students in the three faculties in the school was (392/400) 98%. The response variables for the questions enumerated under e-waste awareness and knowledge were "Yes", "No", and "Not sure", with 1 for No, 2 for Not sure and 3 for Yes.

Characteristics	Yes	No	Not sure
Meaning of e-waste	222(57.1%)	116(29.8%)	51(13.1%)
Awareness of volume of e-waste that you generate	70(25.5%)	117(42.5%)	88(32.0%)
Hazardous materials in e-waste	163(59.9%)	16(5.9%)	93(34.2%)
Health risks associated with e-waste	179(65.6%)	19(7.0%)	75(27.5%)
Special treatment of waste at disposal	163(60.4%)	15(5.6%)	92(34.1%)
E-waste a serious threat to the environ	183(67.3%)	36(13.2%)	53(19.5%)
Knowledge on local and international laws on e-waste	62(22.8%)	157(57.7%)	53(19.5%)
Knowledge on local problem on e-waste	85(31.2%)	143(52.6%)	44(16.2%)
E-waste contain toxic material	171(63.1%)	30(11.1%)	70(25.8%)
E-waste recycling	172(63.2%)	29(10.7%)	71(26.1%)
Re-usage of e-waste	166(61.0%)	39(14.3%)	67(24.6%)
E-waste recovery	151(55.7%)	45(16.6%)	75(27.7%)

Fig 2.5: Knowledge and awareness of e-waste management (Azodo et al., 2017)

From the table above, it can be seen that most students were aware of what e-waste was but were not aware of the volume of e-waste they generated, local and international laws on e-waste or local problems of e-waste. The sources of information on e-waste cut across media (97 (32.4%)), teachers/mentor (79 (26.3%)), friends/peer group (39 (13.0%)), taught in school (36 (12.0%)), personal search (42 (14.0%)) and other unspecified sources (7 (2.3%)).

In another survey of 1,332 Millennials (ages 23 - 28) and Gen-Zers (ages 18 - 22) commissioned by a tech reseller “Decluttr” in July 2020, it was found that 60% were unfamiliar with the term “e-waste” even though 63% contributed to it. What was more concerning was that 57% were not aware that electronic waste was a significant contributor to toxic waste, thereby illustrating the dire need for early education of e-waste management in schools.

2.4 Bottlenecks and Proposed Solutions

The usability of multimedia in classroom to disseminate information quickly and accurately has been established, with lots of literature defending in favor of the viability of these methods. But, the application and implementation of this method in classrooms require the integration of several things, things that may pose a barrier to establishing a multimedia classroom. Multimedia class is researched to have made

lessons easy to present and eased workloads of the teachers, but Xu (2017) addressed that:

i. Every lecture cannot be transformed to digitized form.

ii. A teacher cannot add emotion and fodder for thought, emotive shifiting of the learners during multimedia presentation.

iii. Inserting cartoon, adding animations and graphics design in PowerPoint slides require advanced levels of computer skills that teachers often lack.

iv. The multimedia presentation could collapse due to electricity outage or software misbehavior.

Multimedia teachings has some restrictions as it cannot be replaced by human beings, and can sometimes distract the attention of the students if the transmission is not done in a proper way. In order to not overload one or both information-processing channels within their limited capacity, different multimedia principles, which should be considered when designing instructions, were formulated based on many years of empirical research (Mayer, 2020a). The principles for decreasing extraneous cognitive processing and thus increasing resources available for essential and generative processing are:

i. The ***spatial contiguity principle*** describes that corresponding pictures and words in multimedia presentations should be presented in a visuo-spatially integrated way instead of a separated presentation (Mayer, 2020, pp. 207 - 226). It is assumed that when material is presented in a separated way, more visual searching is necessary and cognitive resources need to be used to keep the individual elements in working memory before being able to integrate them mentally (Jule M. & Daniel 2022).
ii. The ***coherence principle*** describes that extraneous elements that might disturb learning, such as interesting but irrelevant or unnecessarily detailed visual or auditory elements, should be excluded from multimedia presentations (Mayer, 2020, pp. 143 - 165). The addition of irrelevant but interesting elements, also

called seductive details, can divert learners' attention away from, lead to difficulties in organization within and mislead the integration of the relevant learning content (Jule M. & Daniel 2022).

iii. The ***personalization principle*** describes that students understand and learn the topic more profoundly and easily from animated narrations, especially when the voice based recitation is in general casual conversational form rather than based on official technical wording with formal style (Bhatti, 2017).

iv. The ***signaling (or cueing) principle*** refers to the finding that people learn more deeply from a multimedia message when cues are added that guide attention to the relevant elements of the material or highlight the organization of the essential material (Tamara, 2021).

2.5 Summary

From the literatures reviewed, it could be asserted that multimedia use eases and objectifies learning as it presents more than one technological factor to the learner and it addresses more than one emotion of the receiver. It is however important to be aware of the restrictions that come with the use of multimedia. If the transmission is not properly done, the use of multimedia could distract the attention of the students. The information gathered whilst reviewing existing literatures has been very useful in the development of the proposed framework.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

A methodology is a coherent set of methods used in carrying out some complex activity. It is a specific way of performing an operation that implies precise deliverables at the end of each stage. A methodology is not the same as a method as it does not set out to provide solutions, instead, it provides a theoretical perspective for understanding which methods or set of methods can be applied to the problem at hand. A methodology provides the guidelines to make a project manageable, smooth and effective. This Chapter gives a brief description of the methodology employed in the development of the proposed system. The main methodology involves the proposed framework, feasibility study, system analysis and design.

3.2 The Proposed Framework

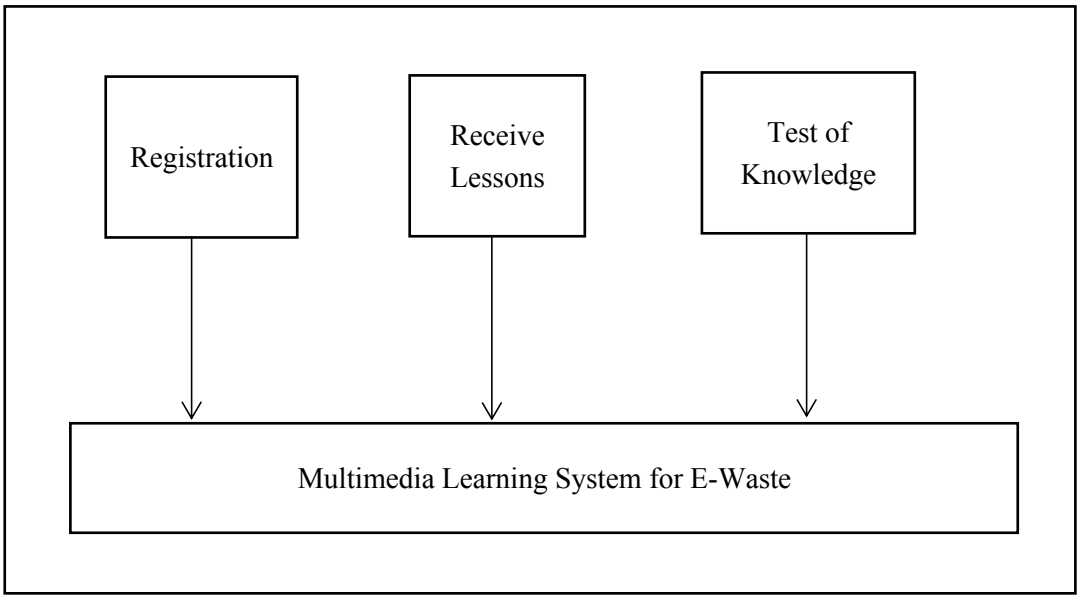

Fig. 3.1: The proposed framework

A framework is a structure whose purpose is to hold or support a theory of a research study. It introduces and describes the theory that explains why the research problem under study exists. The framework consists of concepts and, together with their definitions and reference to relevant scholarly literature, existing theory that is used for this particular study. Numerous pieces of previous academic research exist regarding the use of multimedia learning system. As such, the proposed research took the form of a new research but on an existing research subject.

3.2.1 Registration

The system consist of a registration/log in page through which a user as well as the administrator/teacher can gain access. First, the user signs up in order to create a username and a password, which is saved to the database. This username and password can then be used to log in to the system at any time. The administrator/teacher is able to add and remove lessons (in whichever form the lesson may be, such as audio, video, or text), and also attach quizzes to lessons.

3.2.2 Receive Lessons

The lessons added by the administrator/teacher can take the form of audio, video, animation, or text. Each lesson covers a specific topic regarding e-waste, and can be accessed by any user at any time.

3.2.3 Test of Knowledge

A quiz is attached to each lesson with the aim of testing the knowledge acquired by the user from such lesson. More than one quiz could be attached to a lesson with the quiz either being a single choice quiz or a multiple choice quiz.

3.3 System Design

The system design phase decides how the system will operate, in terms of the hardware,

software, and network infrastructure; the user interface, forms, and reports; and the specific programs, databases, and files that will be needed (Nwakanma, 2018). The purpose of the System Design process is to provide adequate and thorough information about the system and its components. The overall objective of the system design process is to provide an efficient, modular design that will reduce the system's complexity and result in an easy implementation. The design of the system will be carried out as illustrated by the diagram below.

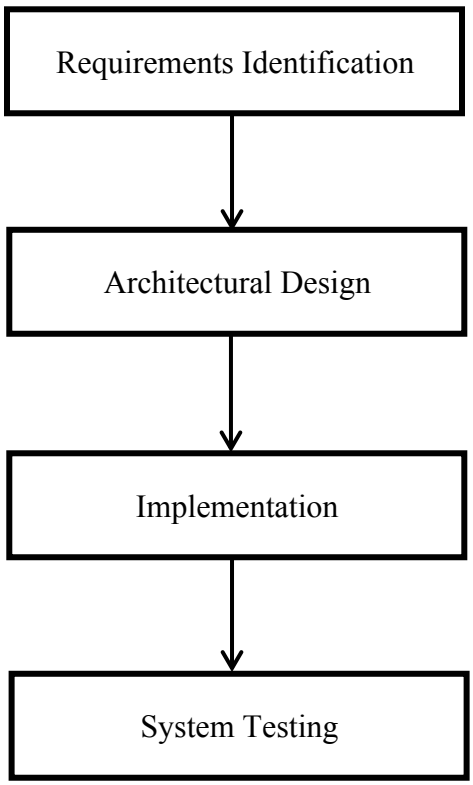

Fig. 3.2: System Design

3.4 Architectural Design

IEEE defines architectural design as "the process of defining a collection of hardware and software components and their interfaces to establish the framework for the development of a computer system." The architecture of a system outlines

its major elements, their relationships (structures), and how they interrelate with each other. It serves as a blueprint for the system and it defines a structured solution to meet all the technical and operational requirements of a system.

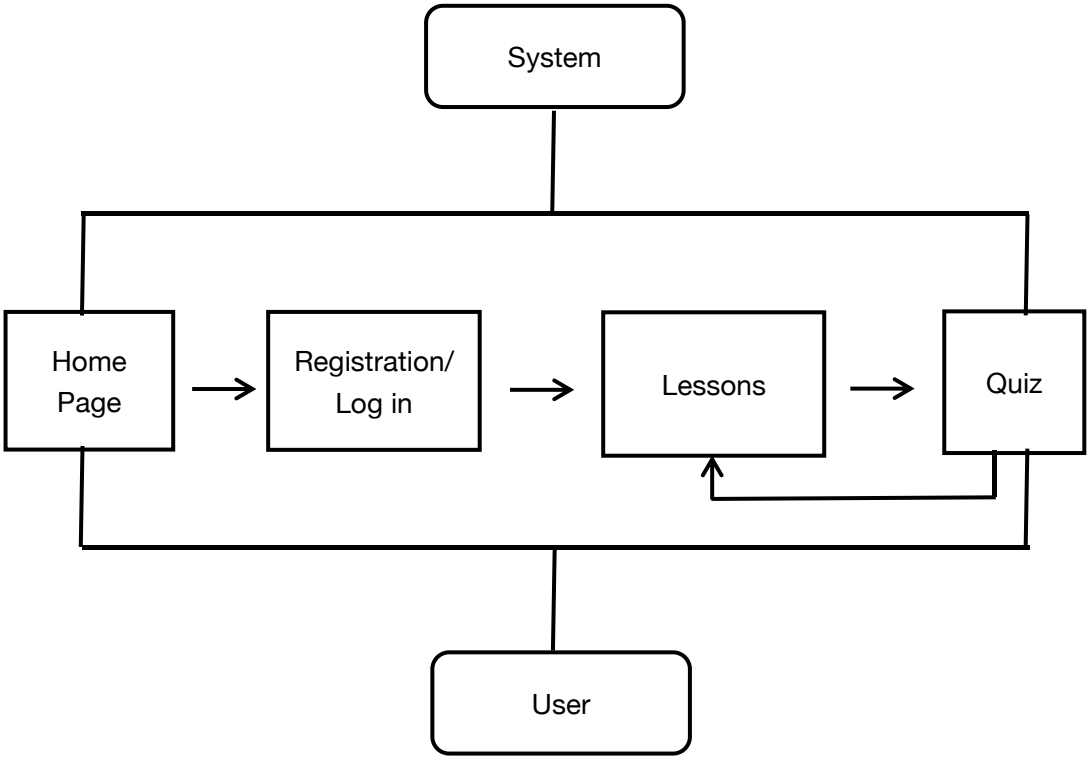

Fig. 3.3: System Architectural Diagram

The multimedia learning system consist of components such as the registration/log in page to be used by a student/user. The student is able to take a quiz after every lesson, and the teacher/admin is able to add or remove lessons/quizzes.

3.5 Entity Relationship Diagram

Also referred to as ERD or ER models, an entity relationship diagram is a type of flowchart that demonstrates how “entities” such as people, objects, or concepts interrelate with each other within a system. An ERD is essential for modeling the data stored in a database and it is the basic design upon which a database is built.

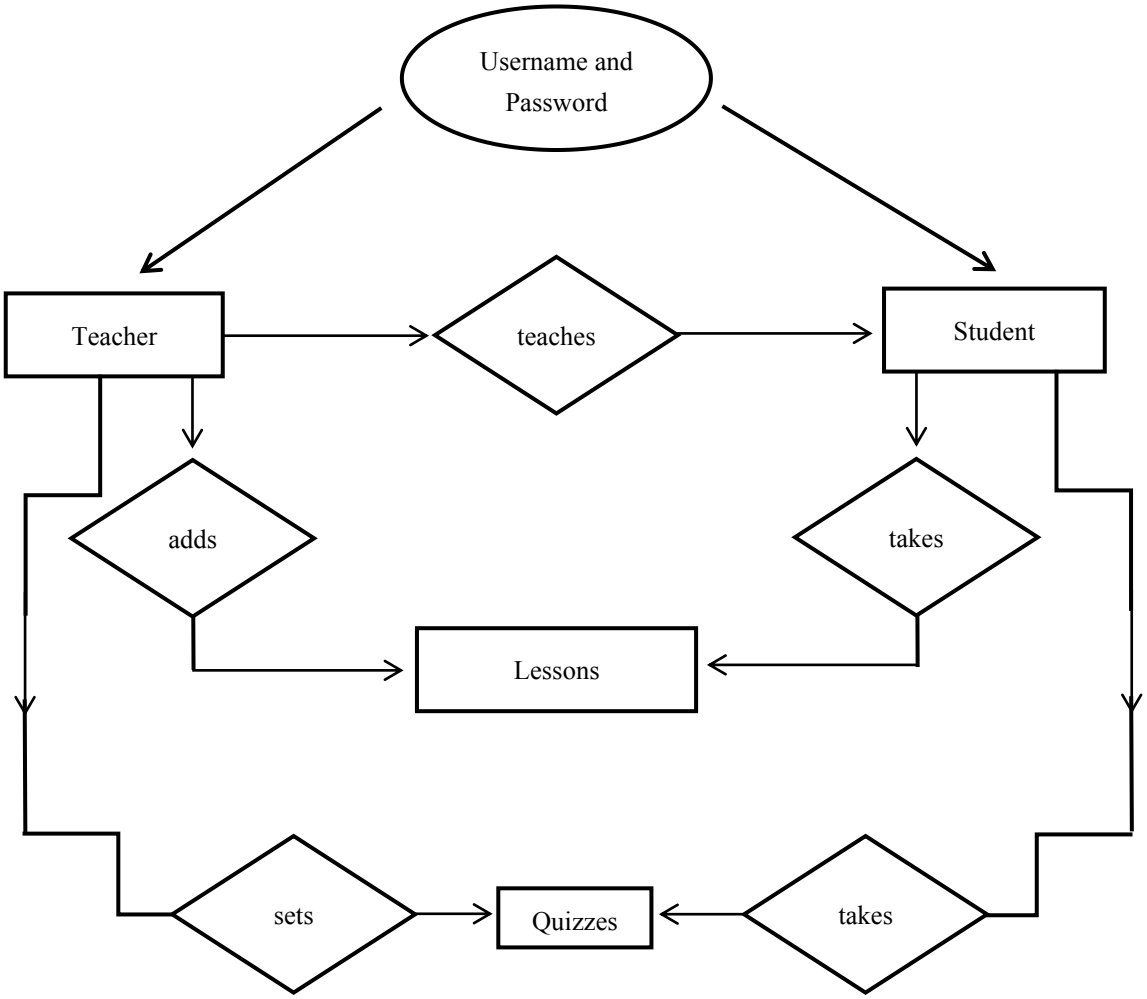

Fig. 3.4: ERD of the database of the multimedia system

3.6 Workflow Diagram

A workflow diagram is a step-by-step linear representation of a process from start to finish. It is a visual representation of a process, usually done through a flowchart. A workflow diagram uses standardized symbols to describe the exact steps needed to complete a process, and it serves the purpose of making processes transparent and easier to understand.

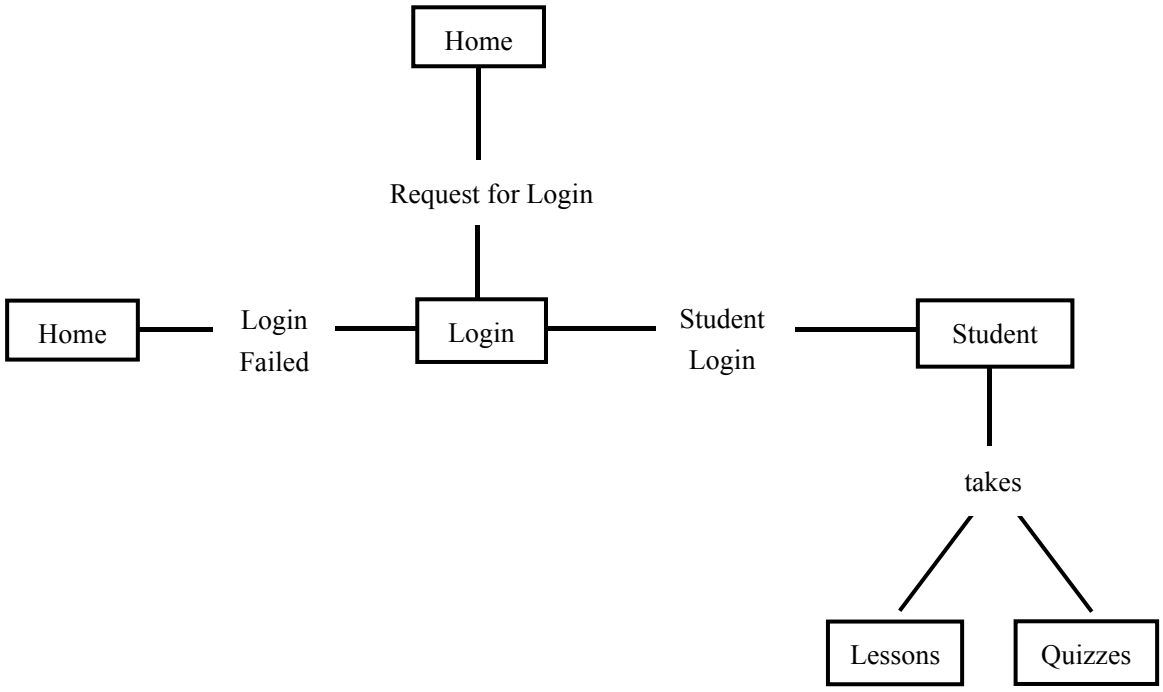

Fig. 3.5: Workflow diagram (student)

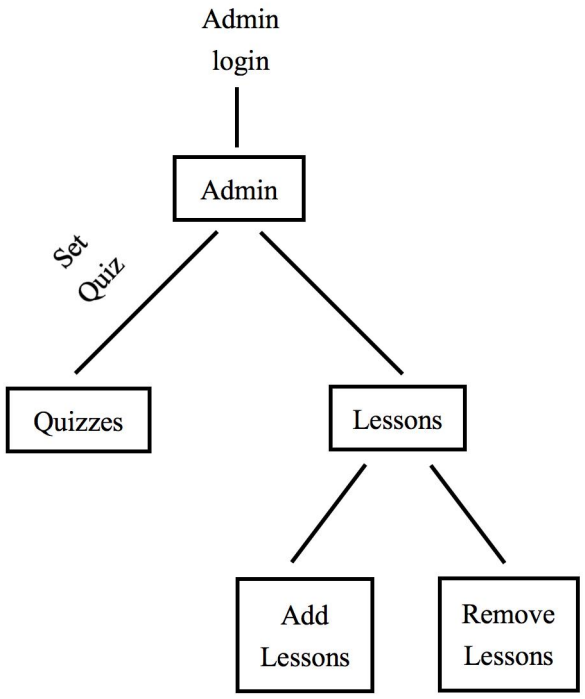

Fig. 3.6: Workflow diagram (admin/teacher)

3.7 Feasibility Study

A feasibility study is an evaluation of the viability of a proposed project. It aims to objectively and rationally uncover the strengths and weaknesses of an existing or proposed project, threats present, the resources required to carry out the project, and ultimately the prospects for success. A feasibility study is a systematic plan and analysis of the sustainability of a project taking into consideration factors such as operational, or technical issues, scheduling considerations financial implications. (Masanja, 2020). The objective of a feasibility study is to ascertain whether the project should move forward, be remodeled, or else abandoned completely.

The feasibility study identifies various aspects of the project, which includes mapping out potential roadblocks, offering alternative solutions, identifying project objectives, budgets, time frame, etc. A feasibility study usually assesses areas such as:

a. Budget – Is there adequate financial resources to start and complete the project? What is the risk analysis of the project? Is it adequate to warrant launching the project?
b. Time – What is the likelihood that the project will be completed in the stipulated time frame?
c. Risk – Are there risks associated with undergoing this project? What is the risk-to-reward quotient of the project?
d. Technical capability – Are the technical resources required to accomplish the project available?

Determining an optimal solution requires evaluating the level of risk, cost and benefits of alternatives/options based on feasibility areas, the five generic areas are known as TELOS (technical, economic, legal, operational and schedule) (Ssegawa & Muzinda, 2017).

i. **Operational Feasibility (Why should you do it?)**

Operational feasibility is a measure of how perfectly a proposed system intends to solve the stated problem. The proposed Multimedia learning system intends to employ various forms of media such as video, audio, image, text, animation, etc, to impart knowledge of e-waste, its problems and how it can be managed, onto learners or users. This system is operationally feasible as various literatures, studies, and research works have praised the effectiveness of the use of multimedia in teaching specific concepts.

ii. **Technical Feasibility (How should you do it?)**

Technical feasibility evaluates the technical complexity of a system and often involves determining whether the system can be implemented or not (Mukherjee et al. 2017). I can strongly say that this project is technically feasible, since there won't be much difficulty in sourcing the required resources for the development of the system. All the resources required are available on the internet, some paid for and some free. The hardware resource required (laptop) is also readily available.

iii. **Economic Feasibility (How much would it cost?)**

Economic feasibility study is determining the costs and benefits of the project, before it commences (Mukherjee et al. 2017). This project is economically feasible as the hardware and software required are readily available, and thus no new purchase is required.

iv. **Scheduling Feasibility/Time Visibility (How much time would it take?)**

Scheduling feasibility or time visibility is the probability of a project to be completed within its scheduled time limits, by a planned due date. In a scheduling feasibility study, one estimates how much time the project will take to complete. Proper evaluation at this step can help one avoid unpredictable or extra costs. This project is

feasible in this aspect as the probability of it being completed within the stipulated time frame (3 months) is high.

v. **Legal Feasibility (Is it legal?)**

Legal feasibility investigates whether any aspect of the proposed plan or project is in conflicts with the national and international legal requirements (Adbollahbeigi et al. 2017). This project is legally feasible.

3.8 Functions of Proposed System

The proposed system would make provisions for students to log in using their email and a set password. The teacher/admin would be able to add or remove files from the system. The proposed system has the following functions:

i. User friendly interface
ii. Storage capacity
iii. Fast database access

3.9 Summary

A proposed framework was given, accompanied by an explanation of each portion of the framework. System and architectural design diagrams were also specified, with explanations of each. An entity relationship diagram was established to give further detail as to how the system is to be achieved and a workflow diagram was also designed in order to describe the exact steps of the processes needed to successfully design and complete the proposed system. A feasibility study was undertaken to determine the viability of the project.

CHAPTER FOUR

IMPLEMENTATION, EVALUATION AND RESULTS

4.1 Introduction

This chapter aims to describe how the various developer languages and tools were used to bring the blue-print of the system provided by chapter three, to life. This chapter offers a thorough description of the system's functionality, and details the implementation process, from start to finish.

4.2 Implementation

The first step of the implementation phase is the system requirement phase.

4.2.1 Requirement Phase

The requirement phase involves gathering the various hardware and software tools, necessary for the successful implementation of the system.

4.2.2 Hardware Requirements

The following are hardware requirements of the system

I. Processor: 2.4 GHz Intel Core 2 Duo
II. RAM: 4 Giga Bytes
III. Hard Disk: A Minimum of 100 Giga Bytes

4.2.3 Software Requirements

The following are software requirements of the system

I. Operating system: Mac OS High Sierra
II. Software: Apache HTTP Server

4.2.4 Technologies Used

To create the web-based multimedia learning system, a combination of programming languages were used, as well as a code editor to run and debug the code. The following technologies were used in making this system.

4.2.4.1 Hypertext Markup Language (HTML)

HTML is the standard markup language for documents designed to be displayed in a web browser. It is often assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as <img /> and <input /> directly introduce content into the page. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements.

4.2.4.2 Cascading Style Sheet (CSS)

CSS is a style sheet language used for describing the presentation of a document written in a markup language such as HTML or Extensible Markup Language (XML). CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility; provide more flexibility and control in the specification of presentation characteristics; enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, which reduces complexity and repetition in the structural content; and enable the .css file to be cached to improve the page load speed between the pages that share the file and its formatting.

4.2.4.3 JavaScript

JavaScript, often abbreviated JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. JavaScript is

a high-level, often just-in-time compiled language that conforms to the ECMAScript standard. It has dynamic typing, prototype-based object-orientation, and first-class functions. It is multi-paradigm, supporting event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model (DOM).

4.2.4.4 Hypertext Preprocessor (PHP)

PHP initially stood for Personal Homepage, but is now a recursive acronym for Hypertext Prepocessor. PHP is an open-source, free server-side scripting language that is embedded in HTML. It is also a general-purpose language that can be used to make lots of projects, including Graphical User Interfaces (GUIs).

4.2.4.5 MySQL

MySQL is an open-source relational database management system (RDBMS). A relational database organizes data into one or more data tables in which data may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

4.2.4.6 Visual Studio Code

Visual Studio Code, also commonly referred to as VS Code, is a source-code editor made by Microsoft for Windows, Linux and MacOs. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git. Users can change the theme, keyboard shortcuts, preferences, and install extensions that add additional functionality.

4.2.4.7 PhpMyAdmin

PhpMyAdmin is a free and open source administration tool for MySQL and MariaDB. As a portable web application written primarily in PHP, it has become one of the most popular MySQL administration tools, especially for web hosting services.

4.2.5 Database Development

The next step in the implementation phase is the creation of the database. Database development involves the development and maintenance of a database system. A database is critical for storing relevant information in an ordered manner. During the development of the database, PhpMyAdmin will be used, with the purpose of managing and administering the database.

4.2.5.1 Database Creation

The first step is to create a database using PhpMyAdmin. We open our web browser and enter the username, and password, and click Go.

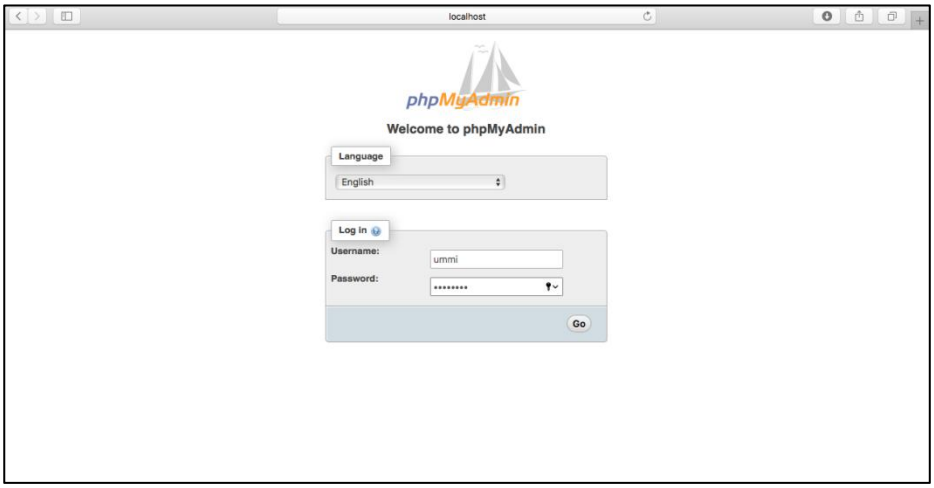

Fig. 4.1: Starting up PhpMyAdmin

When we click “Go”, the PhpMyAdmin is opened

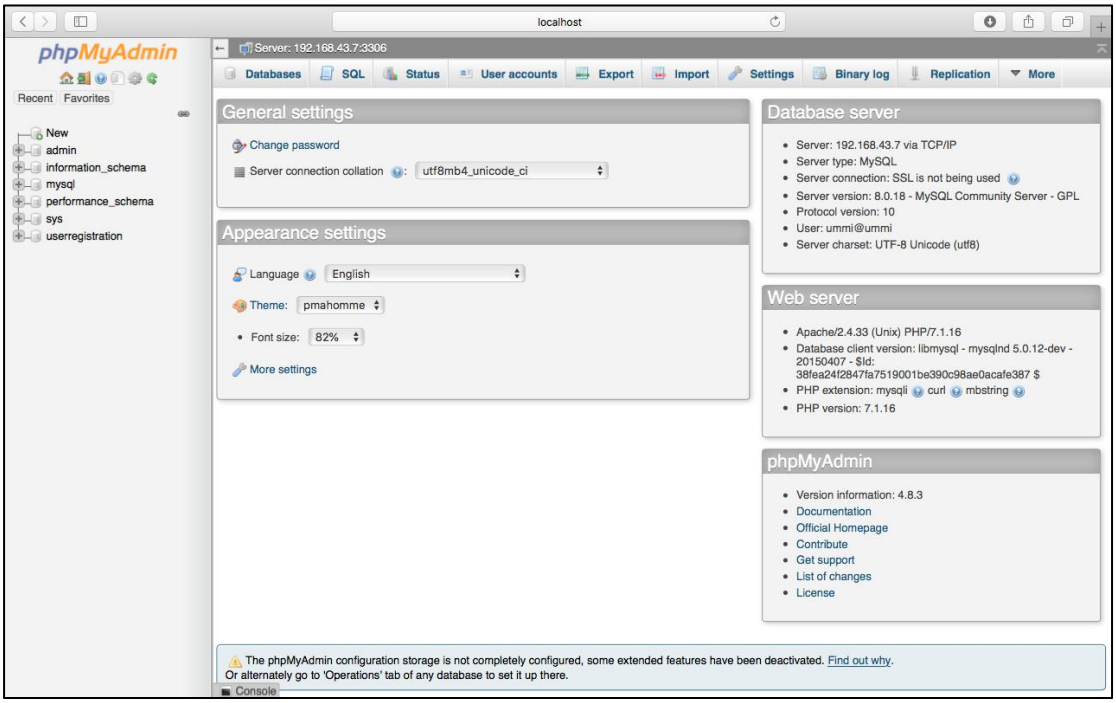

Fig. 4.2: Phpmyadmin

To create a new database, we click on “New” on the left panel. We then enter our preferred database name and click “Create”.

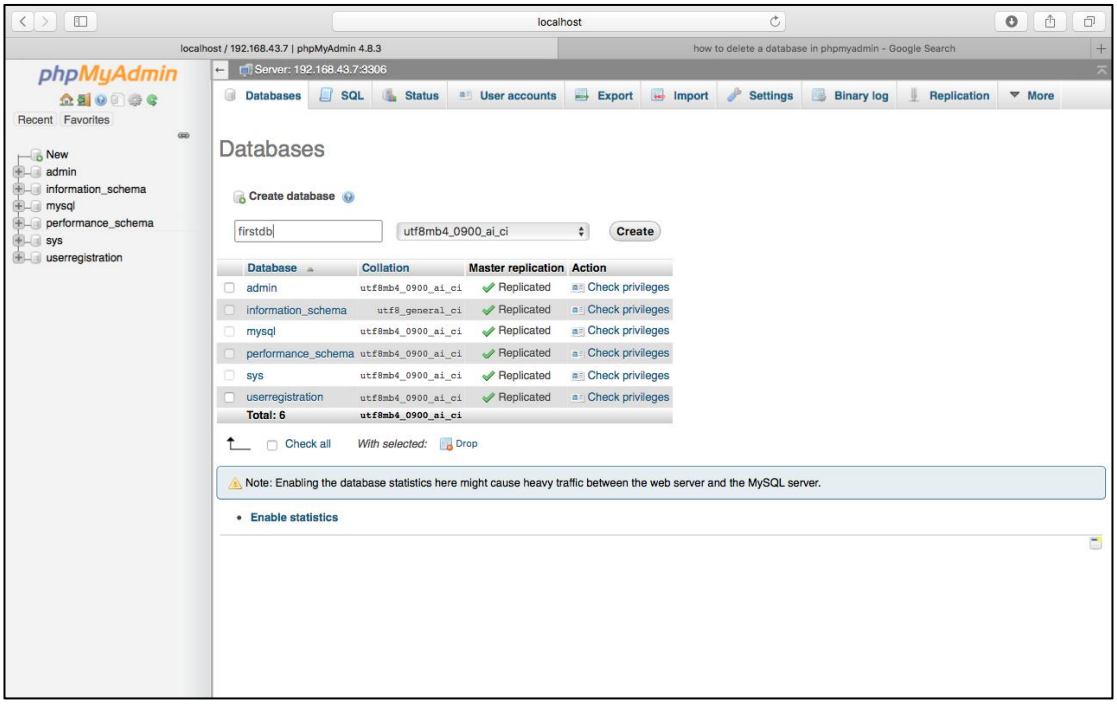

Fig. 4.3: Creating a new database

We will automatically be asked to create a database table. We do that by entering our preferred database name, specifying the number of columns and clicking “Go”.

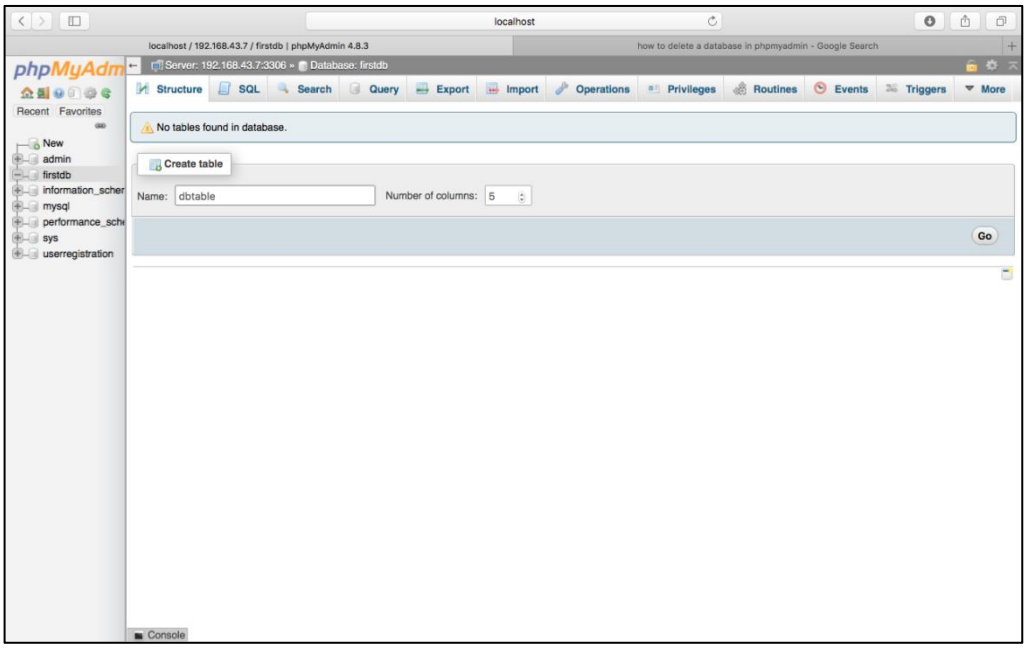

Fig. 4.4: Creating a database table

We can then proceed to create attributes for the database table (Username, and Password). We also specify the type, length/values and also the index (if necessary). We have successfully created a database table. I named my database “userregistration” and named my database table “ftable”. We can insert details for a user by clicking “edit”, writing the SQL query below and clicking “Go”.

```
INSERT INTO ftable (username, password) VALUES (‘salma’, ‘salma’);
```

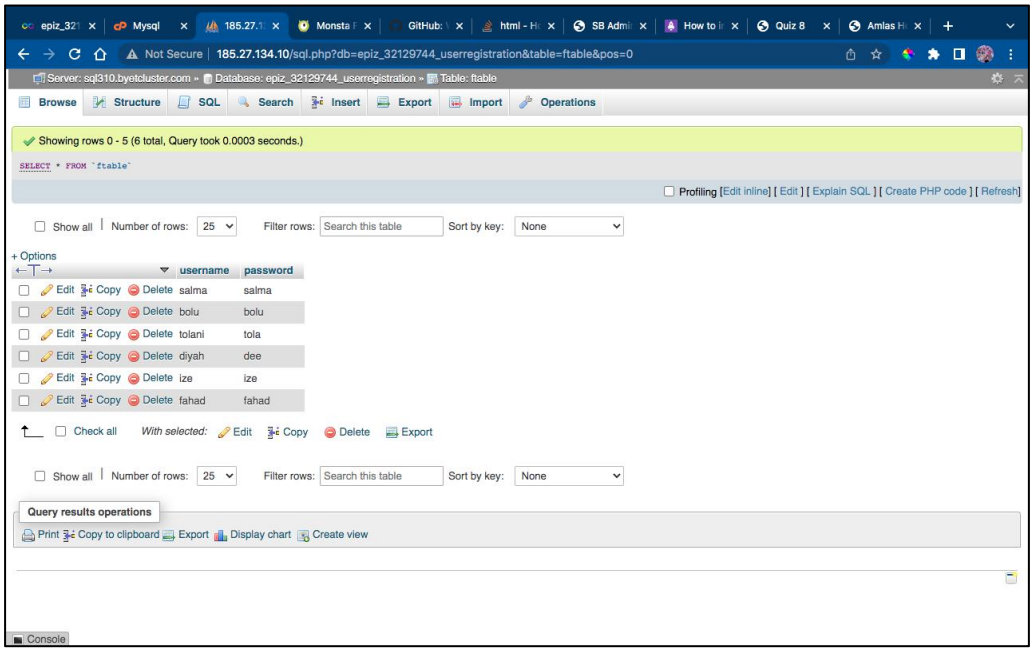

Fig. 4.5: Users of the database

I have created six users for the purpose of illustration. To view the users of the table, we click on the database table, and Fig 4.5 above shows up.

4.3 Evaluation

Evaluation plays a significant role in accomplishing the quality of a software product (Oluigbo et al., 2017). The evaluation of this software involves exercising the codes using examples, and making some development step, in order to reflect on the result of said step to check whether the results were really what was intended. There are two methods of evaluating any web based system:

I. ***Verification*** is concerned with whether the system is error free. It determines whether the software is of high quality, but doesn't ensure that the system is useful. (Is the product right?).

II. ***Validation*** is the process of evaluating the final product to check whether the software meets the customer expectations and requirements. (Is it the right product?).

4.3.1 Verification Steps

I. The program codes were checked thoroughly for any errors or bugs.

II. The site was opened on my system's local server and i checked the links to ensure they worked as needed

III. The details of an example user were registered in the sign up page. I then checked the database to ensure the user's details reflected there

IV. I then attempted to log in with the example user created

V. Each quiz was checked to ensure that it worked as needed and that the timer worked correctly

4.3.2 Validation Steps

I. The interface of the site is checked to ensure its ease of navigation and understanding, as is necessary for its target users (students).

II. The media (videos) is checked to ensure that they focused solely on the topic of e-waste.

4.3.3 Verification Results

While it's not feasible to solve all the failures one might find, it is possible to reduce the number of errors within the software program. All the links were working as they should. The details of the example user i registered in the sign up page was reflected in the database. The login attempt with the details of the example user was successful. The timer in each quiz worked correctly.

4.3.4 Validation Results

The interface of the site is very easy to understand and navigate, as is made sure of by the site's minimalist interface. The media (videos) in each lesson focused solely on

the topic of e-waste.

4.3.5 Software Interfaces

After writing codes, implementing various techniques in building the multimedia learning system, and evaluating the system, the results are as follows

4.3.5.1 Home/Landing Page

The home/landing page is the first page the user is directed to, and therefore must be minimalist, easy to use and must be pleasant/attractive to look at. The home page leads one to the about page and the help page. A user can also click on the login button to take him/her to the login section of the page, or click on the sign up button to take him/her to the sign up section of the page.

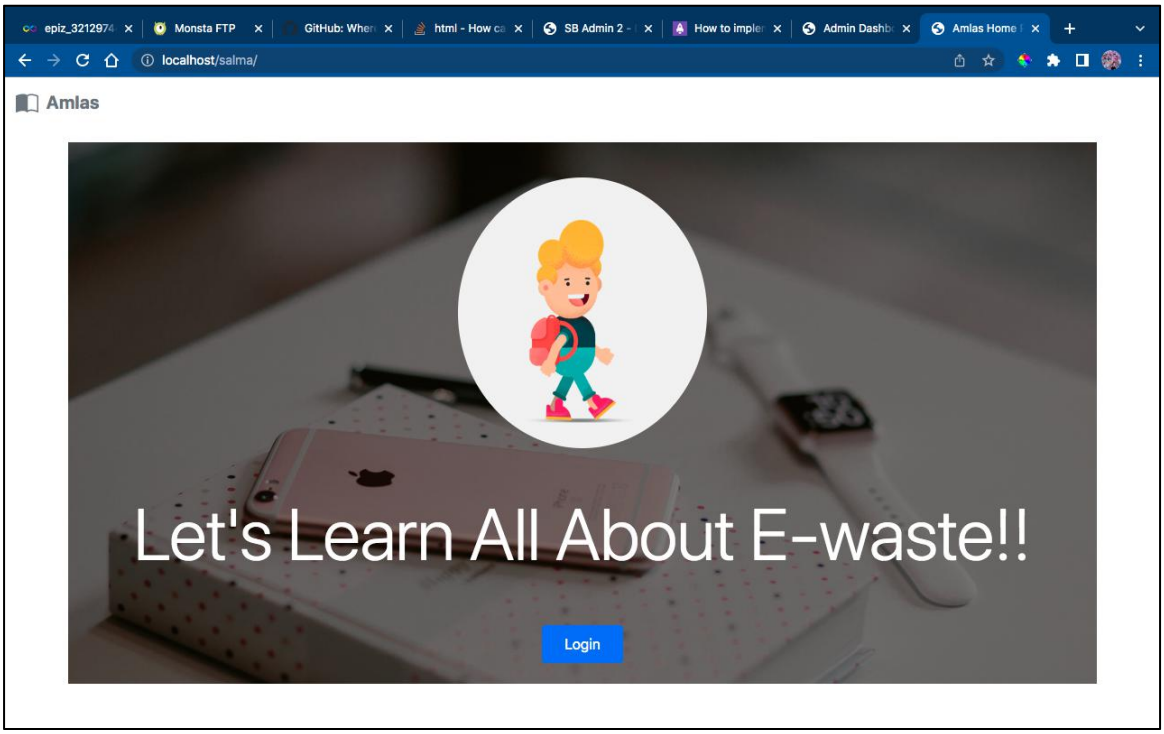

Fig. 4.6: Home/Landing Page

4.3.5.2 About Section

The About section is where site users go to learn more about the site they're on.

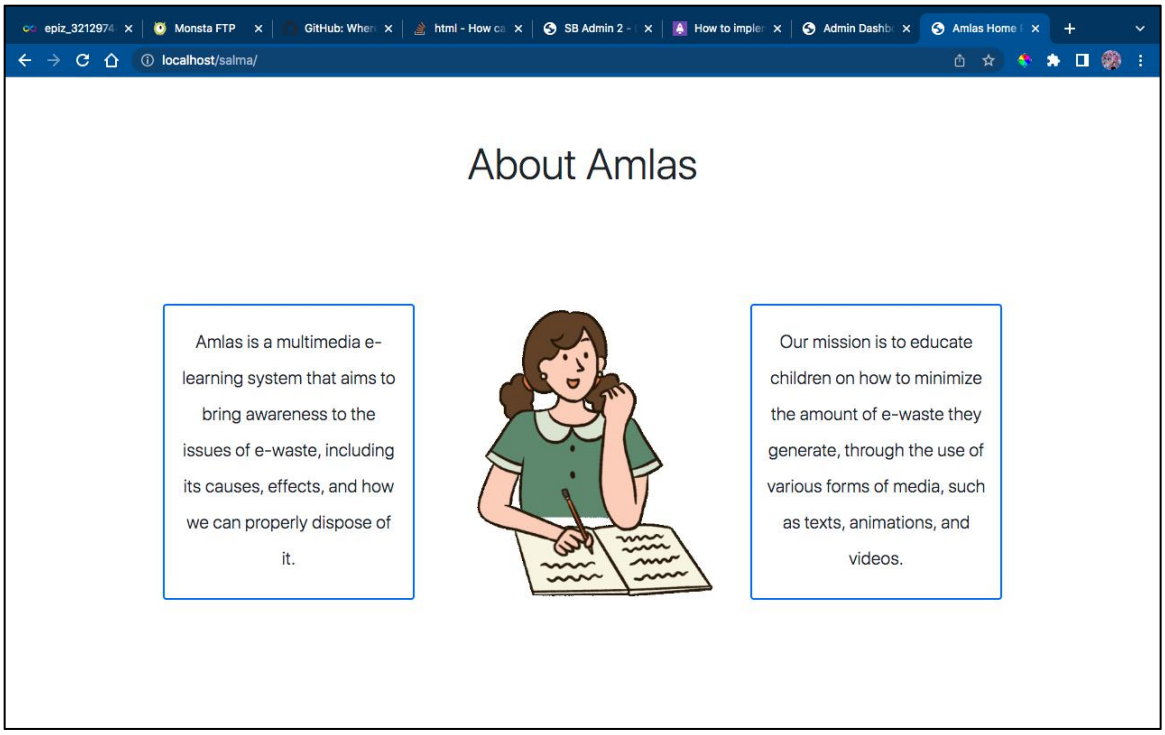

Fig. 4.7: About Section

4.3.5.3 Help Center

A help center is one where a customer can get answers to their questions

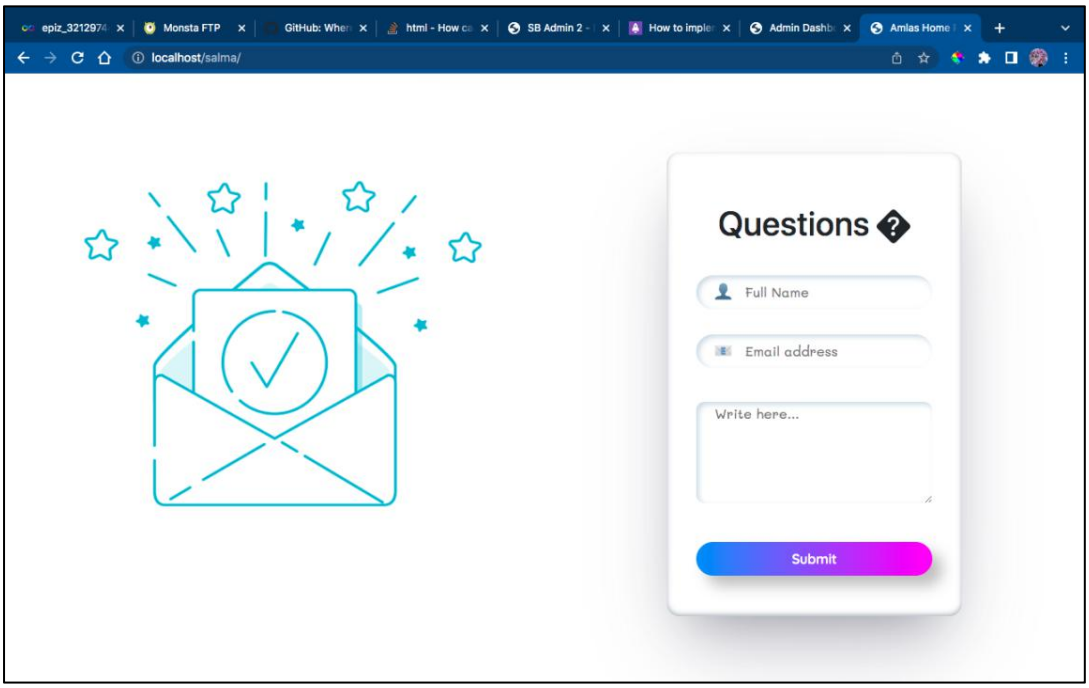

Fig. 4.8: Help Section

4.3.5.4 Sign Up Page

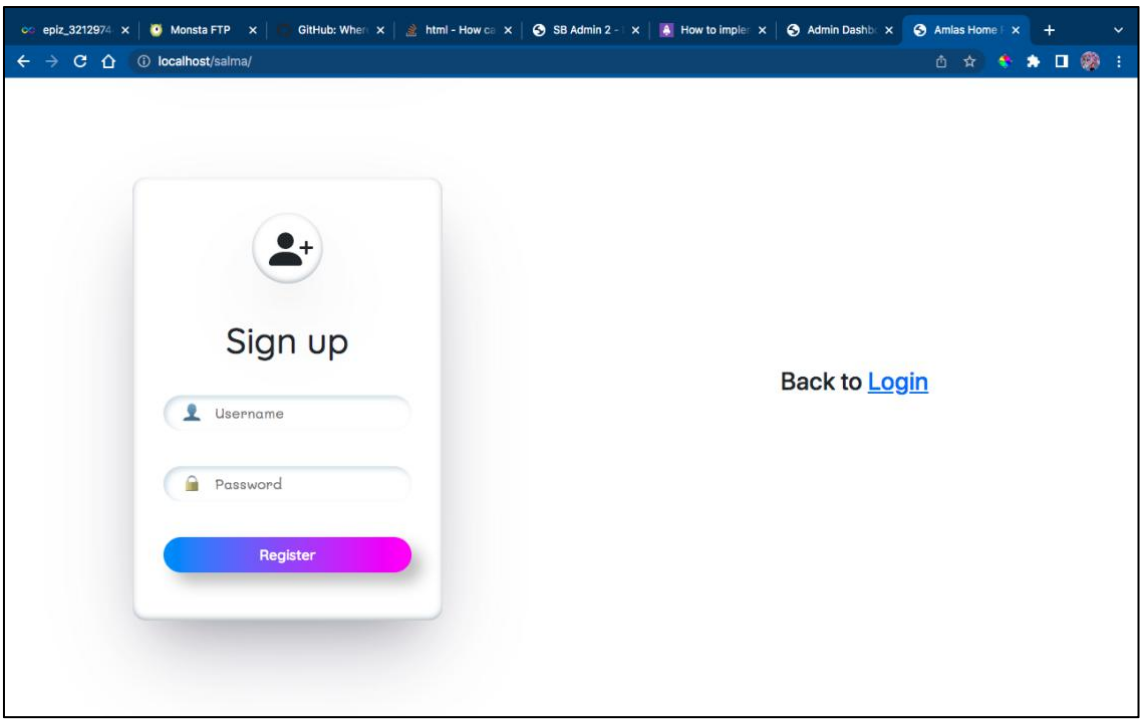

Fig. 4.9: Sign up Section

A new user registers his/her username, and password. First, the system checks to see if such user detail already exists in the database. If it does, the message “Username already taken” is shown on the screen, else the system registers the user and the message “Registration successful, please login with your details” is shown on the screen. The user can then proceed to the login section.

4.3.5.5 Login Page

The user can now login with his/her username and password. First, the system checks to see if the username exists in the database. If it doesn’t exist, the message “please login with a valid ID” is shown on the screen. If it does exist, the user is redirected to the lessons page.

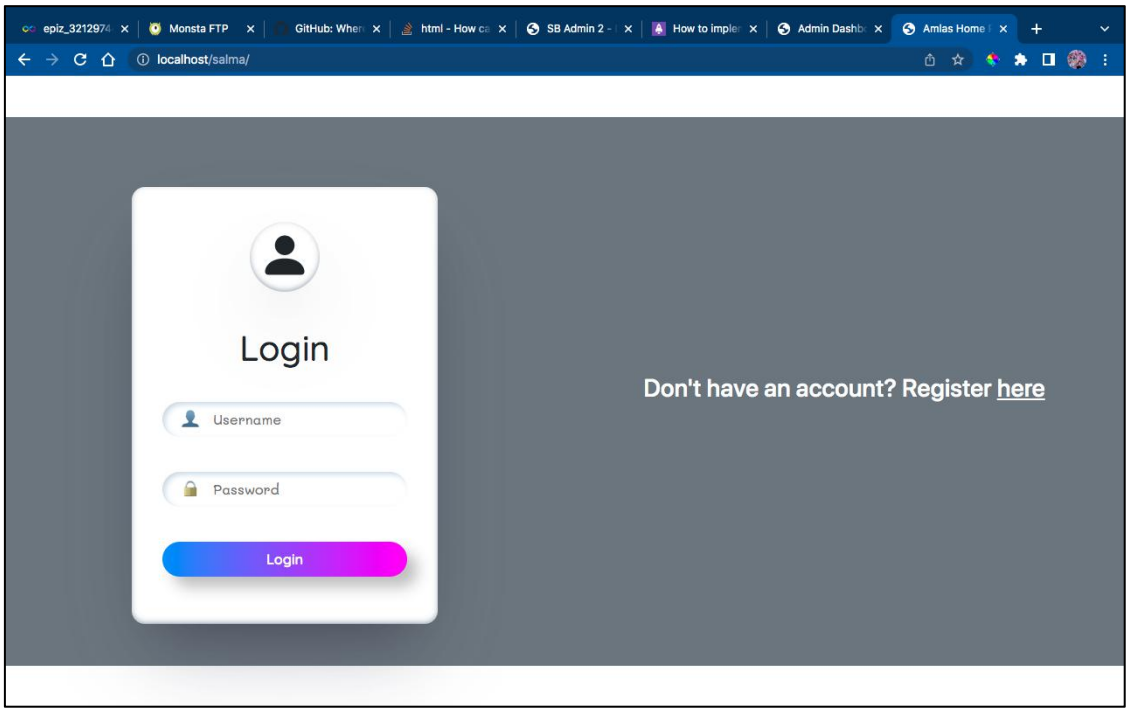

Fig. 4.10: Login Section

4.3.5.6 Lessons Page

The lessons page consists of eight carefully divided lessons, and each lessons consists of two to three videos on certain subtopics in e-waste. Each lesson also consist of a quiz at the end, to test the user's (student's) knowledge on the lesson.

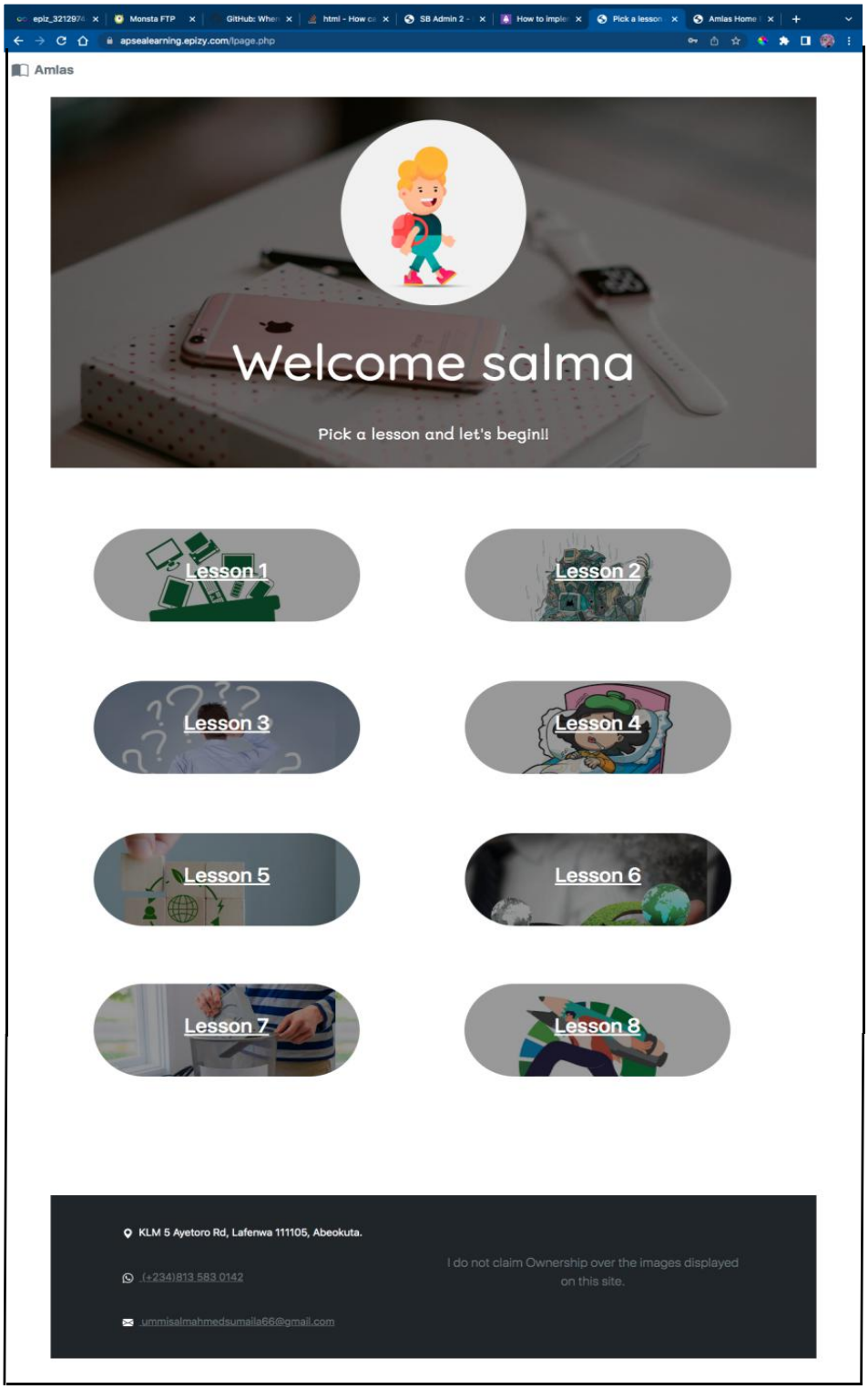

Fig. 4.11: Lessons page

4.3.5.7 Lesson 1 Page

We will pick one lesson to talk about, seeing that all the lessons have the same structure, with the only difference being the different videos in the lessons.

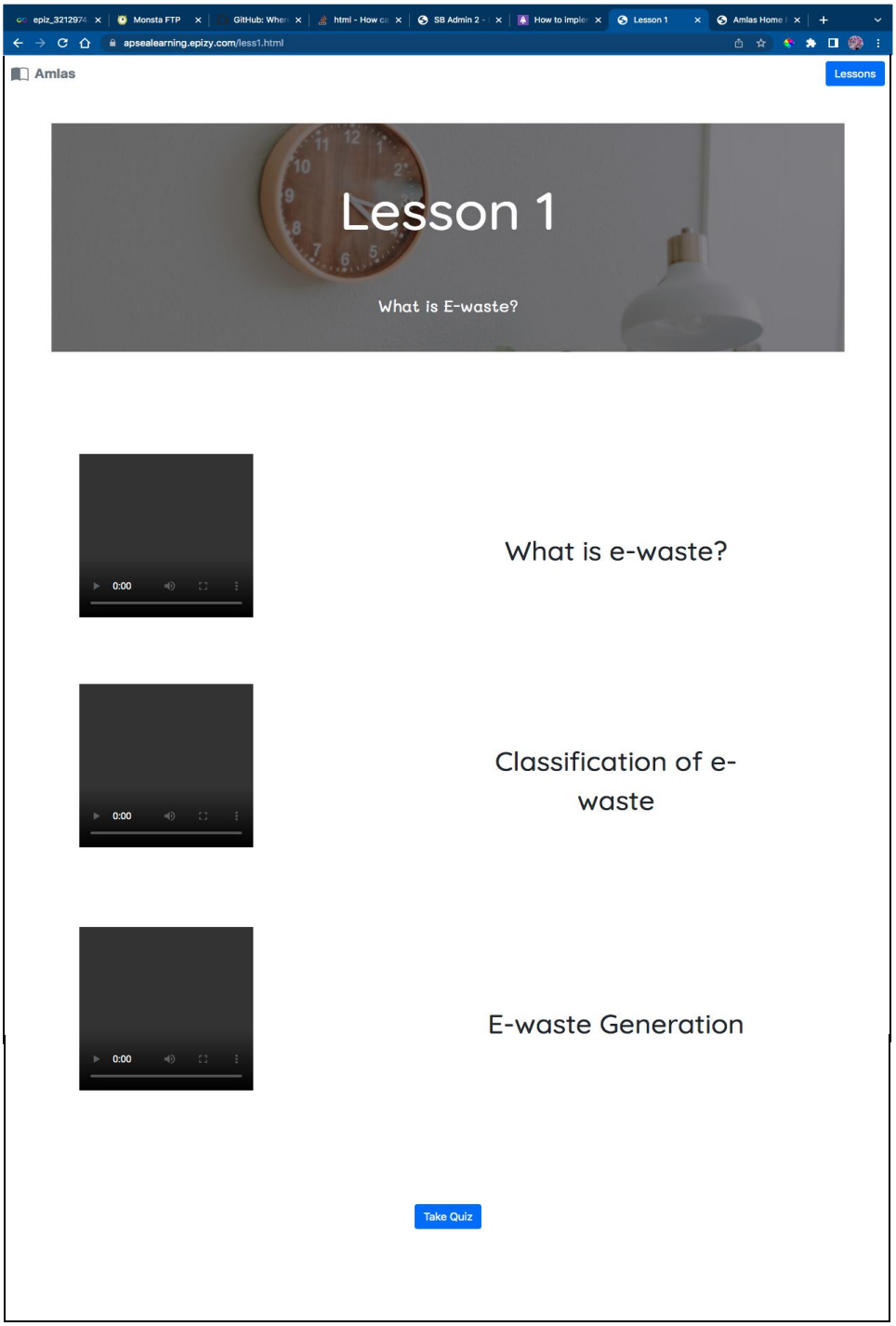

Fig. 4.12: Lesson 1 page

4.3.5.8 Quiz 1

Quiz 1 is to be taken after lesson 1. It consists of 4 carefully structured questions, designed to gauge and test the user's (student's) knowledge of lesson 1. All the quizzes have the same structure.

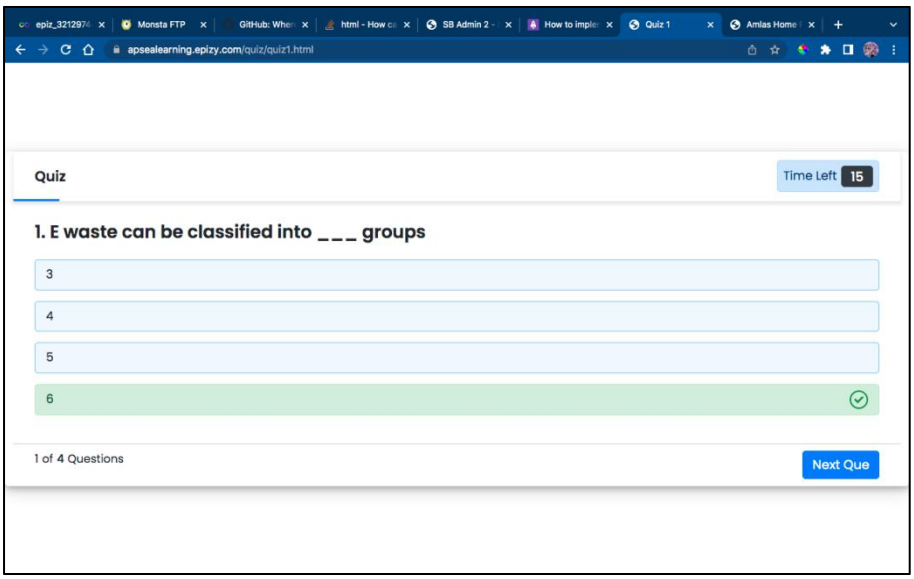

Fig. 4.13: Quiz 1

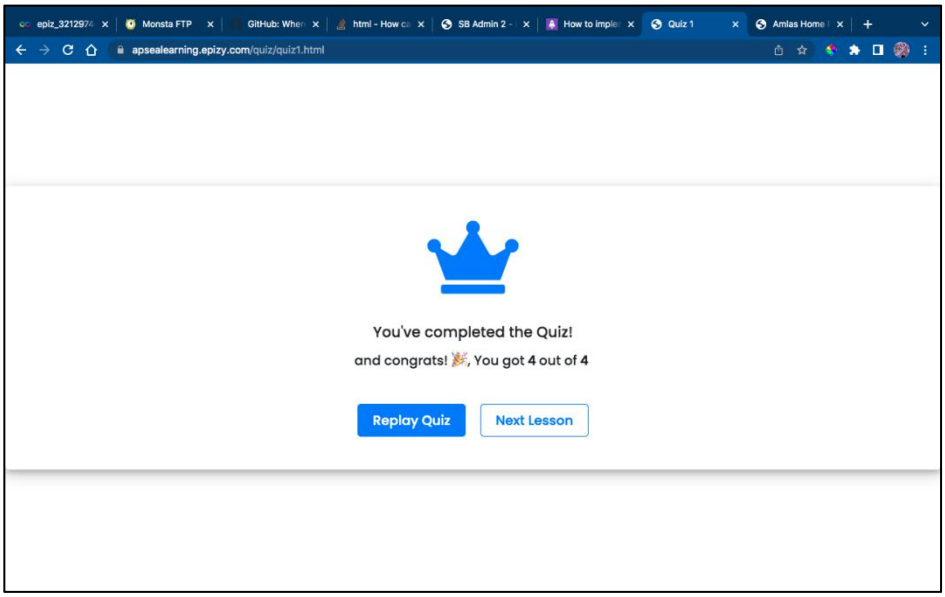

Fig. 4.14: Reload or go to next lesson

At the end of the quiz, the user is given the option of either reloading the quiz, or to move to the next lesson, as shown in Fig. 4.16 above.

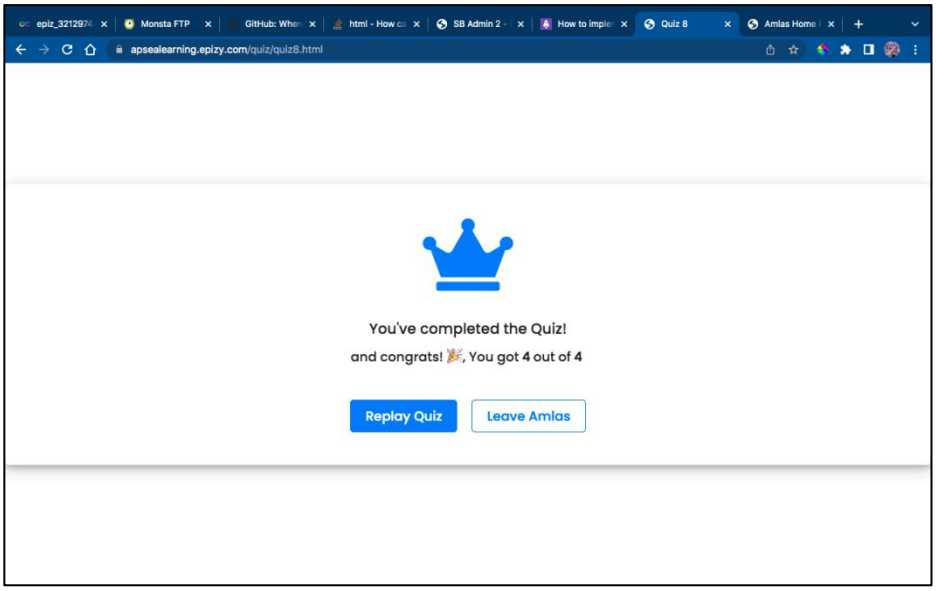

Fig. 4.15: Quiz 8

At the end of the last quiz (quiz 8), the user is given a choice to either reload the quiz, or to leave the site, as shown in Fig 4.15 above.

4.4 Deployment Phase

The site was hosted with infinityFree web hosting service and is now available at the domain https://www.apsealearning.epizy.com. InfinityFree is a free hosting initiative powered by iFast Net. It offers users:

I. An autoinstaller with more than 400 different apps
II. Free subdomains
III. Unlimited storage
IV. Unlimited bandwidth
V. 400 MySQL databases
VI. Knowledge base support

InfinityFree hosting service provider doesn't offer domain registration, but one can use a domain acquired from another registrar. InfinityFree also provides an admin dashboard to manage the site.

4.5 Maintenance Phase

The goal of the maintenance phase is to provide support for a distributed software product. Changes made at this level are general corrections or adaptations to technological changes or uses (Ahmad & Ahmad 2019). This phase may include identifying system operations, maintaining data, and identifying problems (Lemke Gillian 2018).

4.6 Summary

The methodology from chapter three provided a blue-print on how the system was to be designed and this chapter brought the design to life through various developer languages and tools. The system was evaluated by subjecting it to a verification and validation testing, which it passed. The software has its basic requirements to be able to run efficiently on different computer systems and also be accessed across different geographical locations using a web browser.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

One of the reasons for the low global recycling rate of electronic waste, is the general lack of awareness among electronic device users. More awareness needs to be made regarding the problem, causes, and health and environmental effects of e-waste and these issues need to be taught to users at a young age. A multimedia learning system is a great way to teach this concept to kids. Multimedia content helps to vary and enhance the learning process, and leads to better knowledge retention, hence, would be very useful in teaching e-waste management to students. Through persistent hard work, careful conduction, and proper supervision, this project work was completed.

5.2 Conclusion

In this project, i designed and implemented a web-based multimedia learning system for e-waste management, through the use of a system analysis and design phase, and an implementation phase. The system was evaluated by subjecting it to a verification and validation testing, which it passed.

5.3 Recommendation

I. More videos could be added if necessary.
II. One may upgrade the web application to include and teach more subjects like physics, chemistry, biology, english, or programming languages like C#, Java, or Python.
III. One may upgrade the web application to keep track of a student's learning.
IV. The web application may be deployed into a desktop application, to be used in school's computer laboratories.

REFERENCES

Abdollahbeigi, B., Salehi, F., & Jayashree, S. (2017). The Effect of Recruitment, Selection and Development on Talent Management in IKCO Company in Iran. 2(3), 69-77.

Ahmad AbdulQadir Al Rababah, Ahmad A. Alzahrani (2019). Software Maintenance Model through the Development Distinct Stages. IJCSNS International Journal of Computer Science and Network Security, VOL.19.

Ahmadi Begum (2018). Technological Advancement and the Meaning of Progress. SSRG International Journal of Humanities and Social Science (SSRG -- IJHSS). Volume 5 Issue 4 July to August. ISSN: 2394 -- 2703.

Akbar Iskandar, Muhammad Rizal , Nuning Kurniasih, Dian Utami Sutiksno and Agung Purnomo (2018): The Effects of Multimedia Learning on Students Achievement in Terms of Cognitive Test Results. J. Phys.: Conf. Ser. 1114 012019.

Azodo, Adinife Patrick, Ogban, Peter Unor, Okpor, James (2017). Knowledge and Awareness Implication on E-Waste Management among Nigerian Collegiate. J. Appl. Sci. Environ. Manage. October 2017 Vol. 21 (6) 1035-1040. JASEM ISSN 1119-8362. DOI: https://dx.doi.org/10.4314/jasem.v21i6.6

Anjum Ahmed, Rukhsar (2017). A study of e-waste awareness and its management among undergraduate students. Vol 2, Issue 4 ISSN: 2455-9202, 2017.

Bhatti, Zeeshan & Waqas, Ahmad & Chandio, Fida & Mahesar, Abdul & Bhutto, Ghulam Asghar. (2017). Use of Multimedia, Temporal Contiguity &

Personalization principles in Cognitive Multimedia learning through 3D Animation.

Jule M. Krüger, Daniel Bodemer (2022). Application and Investigation of Multimedia Design Principles in Augmented Reality Learning Environments. Information 13, 74. DOI: https://doi.org/10.3390/ info13020074.

Lemke Gillian (2018). The Software Development Life Cycle and its Application. Senior Honors Theses and Projects. 589. https://commons.emich.edu/honors/589.

Made Rajendra and Made Sudana (2018). The Influence of Interactive Multimedia Technology to Enhance Achievement Students on Practice Skills in Mechanical Technology. J. Phys.: Conf. Ser. 953 012104.

Masanja Ndalahwa. (2020). A Practical Guide to writing a Feasibility Study.

Mayer, R. (2020a). 2 Science of Learning: Determining How Multimedia Learning Works In Multimedia Learning; Cambridge University Press: Cambridge, UK, ; pp. 29–62, ISBN 978-1-316-94135-5.

Mayer, R. (2020b). 6 Coherence Principle. In Multimedia Learning; Cambridge University Press: Cambridge, UK, ; pp. 143–165, ISBN 978-1-316-94135-5.

Mayer, R. (2020c). 9 Spatial Contiguity Principle. In Multimedia Learning; Cambridge University Press: Cambridge, UK, ; pp. 207–226. ISBN 978-1-316-94135-5.

Mgbeafulike Ike J. and Okeke Ogochukwu (2019). Design and development of a multimedia learning system for teaching C++ in computer science. Journal of Physical Sciences 1 (2).

Mukherjee, Momin & Roy, Sahadev. (2017). Feasibility Studies and Important Aspect of Project Management. International Journal of Advanced Engineering and Management. 2. 98. 10.24999/IJOAEM/02040025.

Nwakanma, Cosmas & Folashade, Adu & Jeremiah, Obinna & Ikechukwu, Akuta & Cletus, Akuta (2018). Transistions in System Analysis and Design Methology. American Journal of Information Science and Technology. 2.10.11648/j.ajist.20180202.14.

Oghomwen John Smith, Abdullahi Abdulkadir Ndawancin, Kolo Joshua & Karickson Peter Kambai (2021). Effects of Multimedia Technology on Instructional Delivery in Commerce in Selected Secondary Schools in Bida Metropolis. International Journal of Management, Social Sciences, Peace and Conflict Studies (IJMSSPCS), Vol.4 No.1 March, 2021; p.g. 347 - 354; ISSN: 2682-6135 .

Oluigbo I.V., Asiegbu B.C., Ezeh G.N., Nwokonkwo O.C. (2017) Group Membership Prediction of an Outsourced Software Project: A Discriminant Function Analysis Approach. International Journal of Scientific Research in Multidisciplinary Studies, Vol. 3, Issue. 4, pp.12-18

Ssegawa J.K., M. Muzinda. (2021). Feasibility Assessment Framework (FAF): A Systematic and Objective Approach for Assessing the Viability of a Project, Procedia Computer Science, Volume 181, Pages 377-385, ISSN 1877-0509, https://doi.org/10.1016/j.procs.2021.01.180. (https://www.sciencedirect.com/science/article/pii/S1877050921002210)

Tamara Van Gog. (2021). The Signaling (or Cueing) Principle in Multimedia Learning. In R. Mayer & L. Fiorella (Eds.), The Cambridge Handbook of Multimedia Learning (Cambridge Handbooks in Psychology, pp. 221-230). Cambridge: Cambridge University Press. doi:10.1017/9781108894333.022

Thamarana S. (2017) Multimedia Technologies in English Language Teaching - A Study on English Teachers. IJELLH. ISSN-2321-7065

Xu, X. (2017). Study on Effective Using of Multimedia Teaching System and Enhancing Teaching Effect. International Journal of Emerging Technologies in Learning, 12, 187-195. https://doi.org/10.3991/ijet.v12i06.7093.

APPENDIX

Index.php (Home/Landing Page)

```
<?php
session_start();
include "flash.php";
?>

<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Amlas Home Page</title>
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuC
OmLASjC" crossorigin="anonymous">
<link href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.3.0/font/bootstrap-icons.css"
rel="stylesheet">
<link rel="stylesheet" href="index.css">
</head>

<body>
<!--navbar, we can add fixed-bottom to the nav class if we want the nav bar to be fixed at the
bottom of the page-->
<nav class="navbar navbar-expand-md navbar-light">
<div class="container-xxl">
<div class="navbar-brand">
```

<svg xmlns="http://www.w3.org/2000/svg" width="25" height="25" fill="currentColor" class="bi bi-book-half" viewBox="0 0 16 16">

<path d="M8.5 2.687c.654-.689 1.782-.886 3.112-.752 1.234.124 2.503.523 3.388.893v9.923c-.918-.35-2.107-.692-3.287-.81-1.094-.111-2.278-.039-3.213.492V2.687zM8 1.783C7.015.936 5.587.81 4.287.94c-1.514.153-3.042.672-3.994 1.105A.5.5 0 0 0 0 2.5v11a.5.5 0 0 0 .707.455c.882-.4 2.303-.881 3.68-1.02 1.409-.142 2.59.087 3.223.877a.5.5 0 0 0 .78 0c.633-.79 1.814-1.019 3.222-.877 1.378.139 2.8.62 3.681 1.02A.5.5 0 0 0 16 13.5v-11a.5.5 0 0 0-.293-.455c-.952-.433-2.48-.952-3.994-1.105C10.413.809 8.985.936 8 1.783z"/>

</svg>

Amlas

</nav>

<section id="intro" class="mt-3">

<h1 class="text-white display-1">Let's Learn All About E-waste!!</h1>

<button type="button" class="btn btn-primary ps-4 pe-4 pt-2 pb-2">Login</button>

</section>


```
<!--pricing plans-->
<section id="pricing" class="bg-white mt-5 pt-5 pb-5">
<div class="container-lg">
<div class="text-center">
<h2 class="pt-5 display-5">About Amlas</h2>
</div>
<div class="row my-5 align-items-center justify-content-center g-0">
<div class="col-8 col-lg-4 col-xl-3">
<div class="card border-primary border-2">
<div class="card-body text-center py-4">
<p class="lead card-subtitle lh-lg">Amlas is a multimedia e-learning system that aims to bring awareness to the issues
of e-waste, including its causes, effects, and how we can properly dispose of it. </p>
</div>
</div>
</div>
<div class="col-9 col-lg-4 mt-5">
<div class="card border-white">
<div class="card-body text-center py-4">
<img class="img-fluid pb-5" src="img/gif.gif">
</div>
</div>
</div>
<div class="col-8 col-lg-4 col-xl-3">
<div class="card border-primary border-2">
<div class="card-body text-center py-4">
<p class="lead card-subtitle lh-lg">Our
mission is to educate children on how to minimize the amount of e-waste they generate,
through the use of various forms of media, such as texts, animations, and videos.</p>
</div>
```

```
</div>
</div>
</div>
</div>
</section>
<div class="container-fluid bg-secondary pb-5" id="login">
<div class="row align-items-center">
<div class="col-sm-6 box">
<form action="valid.php" method="post">
<div class="logo pt-2">
<svg xmlns="http://www.w3.org/2000/svg" width="60" height="60" fill="currentColor" class="bi
bi-person-fill" viewBox="0 0 16 16">
<path d="M3 14s-1 0-1-1 1-4 6-4 6 3 6 4-1 1-1 1H3zm5-6a3 3 0 1 0 0-6 3 3 0 0 0 0 6z"/>
</svg>
</div>
<div class="sign">
<h1 style="font-family: 'Quicksand';">Login</h1>
</div>
<div>
<input type="text" name="username" class="uname"
placeholder="&#128100;   Username">
</div>
<div>
<input type="password" name="password" class="pass"
placeholder="&#128274;   Password">
</div>
<div>
<button type="submit" name="submit" class="sub">Login</button>
</div>
</form>
```

```
</div>
<div class="col-sm-6 text-center">
<h3 class="lh-lg mt-5 text-white">Don't have an account? Register <a class="text-white" href="#sign">here</a></h3>
</div>
</div>
<?php
#call flash for display message
echo flash('login');
?>
</div>
<br><br><br><br>
<div class="container-fluid pb-5" id="sign">
<div class="row align-items-center">
<div class="col-sm-6 box">
<form action="reg.php" method="post">
<div class="logo pt-3 ps-2">
<svg xmlns="http://www.w3.org/2000/svg" width="50" height="50" fill="currentColor" class="bi bi-person-plus-fill" viewBox="0 0 16 16">
<path d="M1 14s-1 0-1-1 1-4 6-4 6 3 6 4-1 1-1 1H1zm5-6a3 3 0 1 0 0-6 3 3 0 0 0 0 6z"/>
<path fill-rule="evenodd" d="M13.5 5a.5.5 0 0 1 .5.5V7h1.5a.5.5 0 0 1 0 1H14v1.5a.5.5 0 0 1-1 0V8h-1.5a.5.5 0 0 1 0-1H13V5.5a.5.5 0 0 1 .5-.5z"/>
</svg>
</div>
<div class="sign">
<h1 style="font-family: 'Quicksand';">Sign up</h1>
</div>
<div>
<input type="text" name="username" class="uname" placeholder="&#128100;   Username">
```

```
</div>
<div>
<input type="password" name="password" class="pass"
placeholder="&#128274;   Password">
</div>
<div>
<button type="submit" name="submit" class="sub">Register</button>
</div>
</form>
</div>
<div class="col-sm-6 text-center">
<h3 class="mt-5">Back to <a href="#login">Login</a></h3>
</div>
</div>
</div>
<?php
#call flash for display message
echo flash('log');
?>
<br><br><br><br>
<div class="container-fluid bg-secondary pb-5 d-none d-lg-block" id="adlogin">
<div class="row align-items-center">
<div class="col-sm-6 box">
<form action="admin.php" method="post">
<div class="logo pt-3">
<svg xmlns="http://www.w3.org/2000/svg" width="50" height="50" fill="currentColor" class="bi
bi-person-workspace" viewBox="0 0 16 16">
<path d="M4 16s-1 0-1-1 1-4 5-4 5 3 5 4-1 1-1 1H4Zm4-5.95a2.5 2.5 0 1 0 0-5 2.5 2.5 0 0 0 0
5Z"/>
<path d="M2 1a2 2 0 0 0-2 2v9.5A1.5 1.5 0 0 0 1.5 14h.653a5.373 5.373 0 0 1 1.066-2H1V3a1 1
```

0 0 1 1-1h12a1 1 0 0 1 1 1v9h-2.219c.554.654.89 1.373 1.066 2h.653a1.5 1.5 0 0 0 1.5-1.5V3a2 2 0 0 0-2-2H2Z"/>

</svg>

<h1 style="font-family: 'Quicksand';">Admin Login</h1>

<input type="text" name="username" class="uname" placeholder="👤   Username">

<input type="password" name="password" class="pass" placeholder="🔒   Password">

<button type="submit" name="submit" class="sub">Login</button>

</form>

<section id="footer" class="pb-5 mt-5">

<svg xmlns="http://www.w3.org/2000/svg" width="16" height="16" fill="currentColor" class="bi bi-geo-alt-fill" viewBox="0 0 16 16">

<path d="M8 16s6-5.686 6-10A6 6 0 0 0 2 6c0 4.314 6 10 6 10zm0-7a3 3 0 1 1 0-6 3 3 0 0 1 0 6z"/>

</svg> KLM 5 Ayetoro Rd, Lafenwa 111105, Abeokuta.

<svg xmlns="http://www.w3.org/2000/svg" width="16" height="16" fill="currentColor" class="bi bi-whatsapp" viewBox="0 0 16 16">

<path d="M13.601 2.326A7.854 7.854 0 0 0 7.994 0C3.627 0 .068 3.558.064 7.926c0 1.399.366 2.76 1.057 3.965L0 16l4.204-1.102a7.933 7.933 0 0 0 3.79.965h.004c4.368 0 7.926-3.558 7.93-7.93A7.898 7.898 0 0 0 13.6 2.326zM7.994 14.521a6.573 6.573 0 0 1-3.356-.92l-.24-.144-2.494.654.666-2.433-.156-.251a6.56 6.56 0 0 1-1.007-3.505c0-3.626 2.957-6.584 6.591-6.584a6.56 6.56 0 0 1 4.66 1.931 6.557 6.557 0 0 1 1.928 4.66c-.004 3.639-2.961 6.592-6.592 6.592zm3.615-4.934c-.197-.099-1.17-.578-1.353-.646-.182-.065-.315-.099-.445.099-.133.197-.513.646-.627.775-.114.133-.232.148-.43.05-.197-.1-.836-.308-1.592-.985-.59-.525-.985-1.175-1.103-1.372-.114-.198-.011-.304.088-.403.087-.088.197-.232.296-.346.1-.114.133-.198.198-.33.065-.134.034-.248-.015-.347-.05-.099-.445-1.076-.612-1.47-.16-.389-.323-.335-.445-.34-.114-.007-.247-.007-.38-.007a.729.729 0 0 0-.529.247c-.182.198-.691.677-.691 1.654 0 .977.71 1.916.81 2.049.098.133 1.394 2.132 3.383 2.992.47.205.84.326 1.129.418.475.152.904.129 1.246.08.38-.058 1.171-.48 1.338-.943.164-.464.164-.86.114-.943-.049-.084-.182-.133-.38-.232z"/>

</svg>

(+234)813 583 0142

<svg xmlns="http://www.w3.org/2000/svg" width="16" height="16" fill="currentColor" class="bi bi-envelope-fill" viewBox="0 0 16 16">

<path d="M.05 3.555A2 2 0 0 1 2 2h12a2 2 0 0 1 1.95 1.555L8 8.414.05 3.555ZM0 4.697v7.104l5.803-3.558L0 4.697ZM6.761 8.83l-6.57 4.027A2 2 0 0 0 2 14h12a2 2 0 0 0 1.808-1.144l-6.57-4.027L8 9.586l-1.239-.757Zm3.436-.586L16 11.801V4.697l-5.803 3.546Z"/>
</svg>
ummisalmahmedsumaila66@gmail.com

<!--for the image-->

I do not claim Ownership over the images displayed on this site.

</section>

<!--
I do not claim Ownership over the images displayed on this website.
-->
</body>
</html>

index.css (CSS file for index.php)

.box { background-color: white; width: 350px; height: 500px; text-align: center; padding-top: 40px; border-radius: 15px; margin: auto; margin-top: 80px; box-shadow: rgba(50, 50, 93, 0.25) 0px 50px 100px -20px, rgba(0, 0, 0, 0.3) 0px 30px 60px -30px, rgba(10, 37, 64, 0.35) 0px -2px 6px 0px inset; }

```
.logo { width: 80px; height: 80px; border-radius: 45px; margin-left: auto; margin-right: auto; box-shadow: rgba(50, 50, 93, 0.25) 0px 50px 100px -20px, rgba(0, 0, 0, 0.3) 0px 30px 60px -30px, rgba(10, 37, 64, 0.35) 0px -2px 6px 0px inset;    }
.sign h1 { margin-top: 40px; }
.uname { width: 280px; height: 40px; border: none; border-radius: 25px; margin-top: 30px; box-shadow: rgb(204, 219, 232) 3px 3px 6px 0px inset, rgba(255, 255, 255, 0.5) -3px -3px 6px 1px inset; }
.pass { width: 280px; height: 40px; border: none; border-radius: 25px; margin-top: 40px; box-shadow: rgb(204, 219, 232) 3px 3px 6px 0px inset, rgba(255, 255, 255, 0.5) -3px -3px 6px 1px inset;    }
.box2 { background-color: white; width: 350px; height: 550px; text-align: center; padding-top: 40px; border-radius: 15px; margin: auto; margin-top: 80px; box-shadow: rgba(50, 50, 93, 0.25) 0px 50px 100px -20px, rgba(0, 0, 0, 0.3) 0px 30px 60px -30px, rgba(10, 37, 64, 0.35) 0px -2px 6px 0px inset; }
.sign2 h1 { margin-top: 20px; }
.name { width: 280px; height: 40px; border: none; border-radius: 25px; margin-top: 30px; box-shadow: rgb(204, 219, 232) 3px 3px 6px 0px inset, rgba(255, 255, 255, 0.5) -3px -3px 6px 1px inset; }
.mail { width: 280px; height: 40px; border: none; border-radius: 25px; margin-top: 30px; box-shadow: rgb(204, 219, 232) 3px 3px 6px 0px inset, rgba(255, 255, 255, 0.5) -3px -3px 6px 1px inset;    }
.area { width: 280px; height: 120px; border: none; border-radius: 10px; margin-top: 40px; box-shadow: rgb(204, 219, 232) 3px 3px 6px 0px inset, rgba(255, 255, 255, 0.5) -3px -3px 6px 1px inset;    }
::placeholder {    padding-left: 20px; font-family: 'mali';    }
.sub {    width: 280px; height: 40px; border: none; border-radius: 25px; margin-top: 40px; color: white; font-size: 16px; font-weight: 600; font-family: 'Quicksand'; box-shadow: 12px 12px 16px 0 rgba(0, 0, 0, 0.25), -8px -8px 12px 0 rgba(255, 255, 255, 0.3);    }
.sub {    background-image: linear-gradient(to right, dodgerblue , magenta);    }
.sub:hover {    box-shadow: inset 6px 6px 10px 0 rgba(0, 0, 0, 0.2), inset -6px -6px 10px 0
```

```
rgba(255, 255, 255, 0.5);    }
.log {    text-align: center; margin-top: 40px;    }
.log h3 {    font-family: 'Quicksand'; color: white;    }
.log a {    color: rgb(231, 131, 196);    }
.con {    background-color: rgb(167, 167, 167);    }
```

Flash.php

```
<?php
    function flash($name='',$msg='',$cate='green'){
        if(!empty($name)){
            if(!empty($msg)&&empty($_SESSION[$name])){
            $_SESSION[$name]=$name;
            $_SESSION[$name."_msg"]=$msg;
            $_SESSION[$name."_cate"]=$cate;
            }
        else if(empty($msg)&&!empty($_SESSION[$name])){
            echo "<html><head><link rel='stylesheet' href='flash.css'></head></html>";
            echo "<h2 style='width: 1280px; font-size: 30px; height: 10px; margin-left:
            -8px; margin-top: -100px; padding-top:0px; text-align:center; color:black;
            animation:none;
            background-color:transparent;'>{$_SESSION[$name."_msg"]}</div>";
            unset($_SESSION[$name]);
            unset($_SESSION[$name."_msg"]);
            unset($_SESSION[$name."_cate"]);
            }
        }
    }
?>
```

flash.css (CSS file for flash.php)

```
h2 {    font-size: 20px; margin-top: -70px; color: black;    }
h3 {    font-size: 30px; color: black;    }
```

logout.php

```
<?php
    session_start();
    session_destroy();
    header('location:login.php');
?>
```

reg.php (registration for sign up)

```
<?php
    session_start();
    header('location:index.php');
    $con = mysqli_connect('sql310.epizy.com', 'epiz_32129744', '73pvzH6bR2Ktc');
    mysqli_select_db($con, 'epiz_32129744_userregistration');
    $name = $_POST['username'];
    $pass = $_POST['password'];
    $s = " select * from ftable where username = '$name'";
    $result = mysqli_query($con, $s);
    $num = mysqli_num_rows($result);
    if($num == 1) {
        session_start();
        include "flash2.php";
        #Call flash for assign message in login Page
        flash('log','Username Already Taken');
    }
    else {
```

```
        $reg = "insert into ftable(username, password) values ('$name', '$pass')";
        mysqli_query($con, $reg);
        include "flash2.php";
        #Call flash for assign message in login Page
        flash('log','Registration Successful, Please login with your details');
    }
?>
```

valid.php (validation for login)

```
<?php
    session_start();
    $con = mysqli_connect('sql310.epizy.com', 'epiz_32129744', '73pvzH6bR2Ktc');
    mysqli_select_db($con, 'epiz_32129744_userregistration');
    $name = $_POST['username'];
    $pass = $_POST['password'];
    $s = " select * from ftable where username = '$name' && password = '$pass' ";
    $result = mysqli_query($con, $s);
    $num = mysqli_num_rows($result);
    if($num == 1) {
        $_SESSION['name'] = $name;
        header("location:lpage.php");
        exit;
    }
    else {
        session_start();
        header("location:index.php");
        include "flash2.php";
        #Call flash for assign message in login Page
        flash('login','Please login with a valid ID');
    }?>
```