

Design and Development of a Responsive EdTech Website for Enhanced Digital Learning Experience

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ABSTRACT

Edtech has changed education. We can use it anytime from anywhere to access resources. Educational websites that are easy to use and work on all browsers are becoming more necessary as people learn. This research aims to create an EdTech website that makes it easy for students to access, use, and buy content.

The proposed system focuses on design principles, easy navigation and structured presentation of course information. The website was made with HTML and CSS and JavaScript and Bootstrap. These things help the platform work, on computers and phones and everything.

We developed the platform in stages: interface design, development, testing, analysis, and deployment.

The results show that our platform offers design, easy navigation, and simple access to educational resources. As a result, student engagement increases. The study says that flexible web design is crucial for creating a learning environment. Flexible web design helps people learn easily.

Keywords: Edtech, Responsive Web Design, Digital Learning, UI/UX, Educational Website Development.



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1. Introduction

EdTech has change to learns online platforms into education. The internet and smart devices learners can now access resources from anywhere. How are many existing educational platforms have navigation, unorganized course information and lack responsiveness. These problems negatively affect user engagement.

Designing and developing an EdTech website is the focus of this study. Our goals are to improve access, increase user engagement, and offer a platform for educational services.

1.1 Motivation

This study is motivated by the importance of digital education. Many educational websites have downsides, including information, poor responsiveness, and design. Users find it challenging to access knowledge resources and course information due to these issues.

There is a demand for websites with engaging design, easy navigation, and good educational content.

1.2 Contribution

This study advances the creation of websites. The main contribution is the creation and execution of an EdTech website. The website emphasizes clarity and user-centered design principles.

The study offers a system for creating platforms with modern front-end technology. It shows how responsive design strategies ensure compatibility across different devices.

2. Related work

Researchers have extensively studied EdTech and web-based knowledge systems. Many studies emphasize the importance of user-centered interfaces, online design, and organized content distribution.

Traditional educational websites often fail due to navigation, unresponsiveness, and disorganized content. Modern web development methodologies advise using design strategies, user-friendly layouts, and interactive user interfaces.

3. Research Methodology

We developed the EdTech website using an approach. The approach focuses on using web development techniques to produce an educational platform that is accessible and easy to use.

3.1 Requirement Analysis

The first stage is to determine the system's requirements. This involves understanding the limitations of websites.

3.2 System Design

During system design, we plan the website's structure and layout. We organize the website's parts into sections. Choose colors, we also create wireframes to visualize the website's layout.

3.3 Development Process

We use front-end web technologies to apply the system during the development process.

3.4 Testing and Validation

We test the website to ensure it works and meets user needs. Testing includes performance testing, content checking, navigation testing, and device testing.

3.5 Deployment

The website is made available for operation after testing. Deployment ensures that users can access the platform and offers a user environment.

3.6 Evaluation Criteria

We assess the system's effectiveness using criteria, including user interface, responsive performance, quick access to educational content, and enhanced navigation and engagement.

4. Detailed Research Methodology

Our research methodology is based on an approach. The approach consists of requirement analysis, system design, development, testing, deployment, and assessment phases.

4.1 Problem Identification and Analysis

The first step is to identify the issues with current websites.

We noted shortcoming including:

- Disorganized course material.
- A lack of responsive design.

- Poor navigation.

4.2 Requirement Gathering and Specification

After identifying the problem detailed requirements. They are categorized into two ways: functional and non-functional requirements.

4.2.1 Functional Requirements

The Functional requirements include displaying programs providing an informative home page and allowing users to contact the organization.

4.2.2 Non-Functional Requirements

These requirements are about the systems details:

- It working all the web browsers.
- The system have simple interface.
- It should load quickly.
- The design and loading times are also important.

4.3 System Design Methodology

The system design phase is about creating a clear plan for building the website.

4.3.1 UI/UX Design Planning

We used accessible design principles:

- To ensure clear and uncomplicated layouts.
- Typography.
- Color schemes.

4.3.2 Responsive Design Strategy

We used design strategies including:

- Grid layouts.
- Media queries.
- Automatic resizing of images and content.

4.4 Development Methodology

To ensure that the system was simple to assemble, we developed it in compact factors.

4.4.1 Technology Stack

The following technologies were employed in the system's construction:

- HTML: To construct a webpage's structure
- CSS: To make the website visually appealing and user-friendly
- JavaScript: To incorporate interactive rudiments
- Bootstrap: To ensure that the website functions properly on mobile devices

4.4.2 Module Development

The website was divided into the following sections:

- Home: Provides a summary of the courses

- Course: Provides details on courses
- About: Describes our company.
- Contact: Enables users to communicate with us
- Responsive: Ensures that the website functions properly across all platforms.

Before being assembled, each element was constructed independently.

4.5 Testing Methodology

We tested the system to ensure it functions well. Is dependable.

4.5.1 Functional Testing

We conducted functionality testing to ensure all components work properly.

4.5.2 Responsiveness Testing

The system are tested on devices like desktops, tablets, and smartphones.

4.5.3 Usability Testing

We made sure users can easily navigate and interact with the website.

4.5.4 Browser Compatibility Testing

We tested the system in a setup to ensure it functions properly.

4.6 Deployment Methodology

We deployed the website after testing.

4.7 Evaluation and Performance Analysis

We evaluated the system using criteria including:

- Ease of navigation.
- Device compatibility.
- Appeal.
- Simplicity of information transfer.

4.8 Research Workflow Summary

Our research workflow consisted of following resources:

- Recognizing issues
- Analyzing circumstances
- Designing the system
- Creating the system
- Testing the system
- Applying the system
- Assessing the system

5. System Architecture

The architecture of our EdTech website facilitates communication between users and the system.

The architecture has three parts: Presentation, Application and Data Layer.

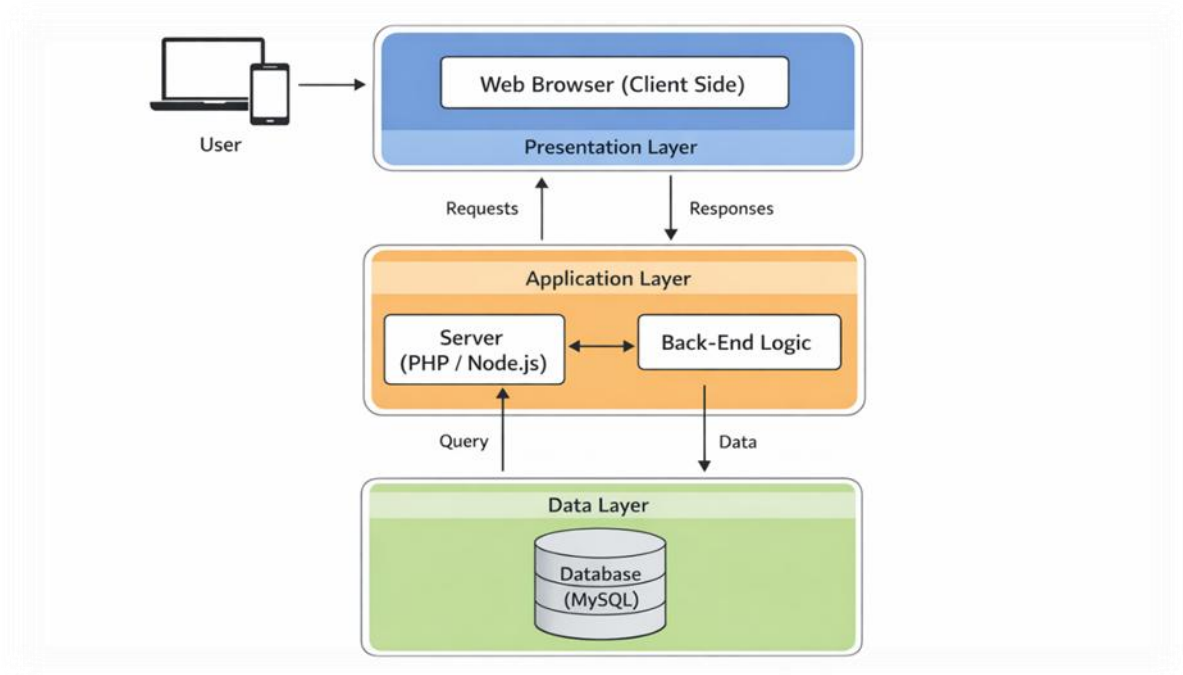


Fig.5 System Architecture of the Responsive EdTech Website

5.1 Overview of Architecture

Our system is built with layers, and users access the website using a browser.

- The server side handles data processing and storage.
- The client side is what users see and interact with.

5.2 Client - Side Architecture

The client side allows users to view content and perform actions.

It controls:

- Content display
- Managing input from users
- Guaranteeing performance

Client-Side factors:

- HTML
- CSS
- JavaScript
- The Bootstrap Framework

5.3 Server - Side Architecture

Our system's architecture allows back-end integration.

On the server side, it manages:

- Questions from User
- Submissions of forms
- Data handling

- Database trading

5.4 Data Layer

The data layer stores and updates data.

A relational database such as, MySQL can be used for storing data.

It manage:

- Data is kept
- Data can be retrieved
- Data is accurate and complete.

5.5 Working of System Architecture

Here's how it all works:

- Users visit the website using a browser.
- The browser loads the front-end interface.
- The front end handles what users do.
- If the server is set up to work with the end, it gets requests from users.
- The server keeps all the data in the database.
- The user gets the data back. It is visible to them.

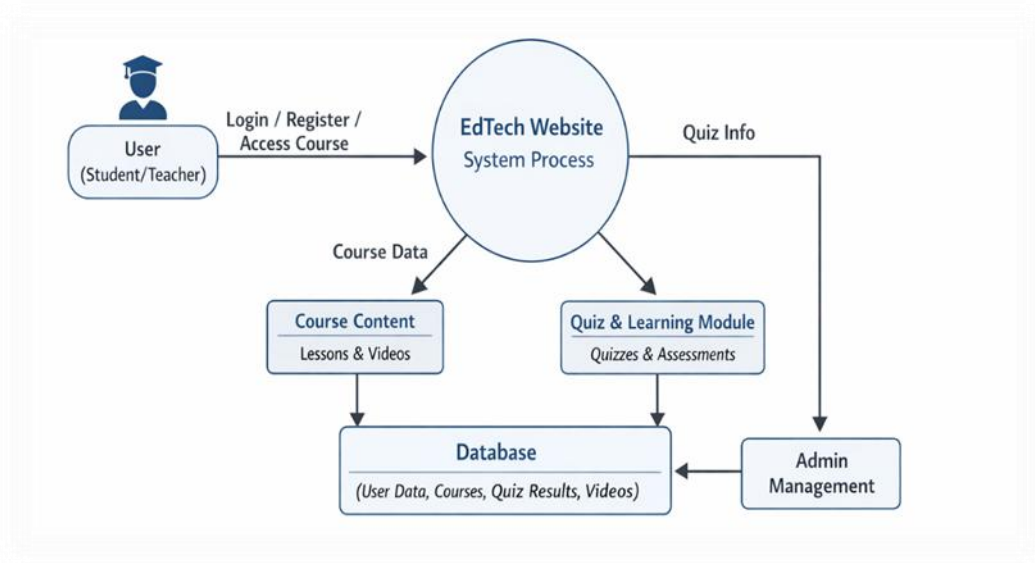


Fig.5.5 System Architecture

5.6 Advantages of the Proposed Architecture

- It helps make websites look good.
- It provides a modular structure.
- It makes sure content is distributed.
- It makes it easier for users to access and buy things.

5.7 Architectural Workflow

User → Web Browser → Front-End Interface → Server Processing (Optional) → Database → Response to User

Conclusion

The main goal of this project was to design and build an educational technology website.

The report says that current educational platforms have problems like being slow to respond and hard to navigate.

We built the website using front-end technologies to make a platform that focuses on users.

The platform we made has a design and a clear layout.

The technology works well. Improves traffic and commerce according to tests.

Future Work

Future updates could make the system work better and do more.

Some possible updates include:

- Adding features to the back-end system
- Creating an online course system
- The platform offers features, like quizzes and video lectures.
- Use techniques for course recommendations it has artificial intelligence and machine learning.

The platform keeps things secure. Make sure the system works well so that educational resources and course suggestions are delivered safely and efficiently.

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