

STDA Academy : Website Design and Development

Mr. Purushottam Chawke¹, Mrs. Anupama Mohbansi², Nishant M. Barde³, and Yogita Mirge⁴

^{1,2}Assistant Professor, Department of Electronics and Telecommunication Engineering, G. H. Rasoni College of Engineering and Management, Nagpur

²Proprietor of eLan Technology, Nagpur

³Student, Department of Electronics and Telecommunication Engineering, G. H. Rasoni College of Engineering and Management, Nagpur

Abstract -In the modern digital era, educational institutions require responsive and interactive web applications to provide students with easy access to academic information and online services. This research paper presents the development of a responsive educational web application using React.js technology. The proposed system was developed for STDA Academy (Shreekant Tankhiwale Design Academy) to improve digital accessibility and user interaction through a modern responsive web platform. The proposed system is designed to improve user interaction, accessibility, and navigation by providing a structured platform for course exploration and student registration. The application follows a component-based architecture that enhances scalability, maintainability, and performance. Features such as course modules, registration forms, blog sections, and dynamic routing are integrated to create a seamless user experience. React Router is implemented for smooth page navigation, while JSON-based data management ensures efficient handling of information. The system is optimized for multiple devices, making it suitable for desktop and mobile users. The developed application demonstrates how modern frontend technologies can enhance educational platforms and improve communication between institutions and students.

Key Words: Educational Web Application, React.js, Responsive Design, User Interface, Web Development.

1.INTRODUCTION

The rapid growth of internet technologies has transformed the education sector by introducing digital learning platforms and online academic services. Educational websites are now essential for delivering course information, student interaction, and institutional communication. However, many traditional educational websites are static in nature, lack responsiveness, and provide poor user experience across different devices.

To overcome these limitations, a responsive educational web application has been developed using React.js. React.js is a modern JavaScript library widely used for creating dynamic and reusable user interface components. The proposed system aims to provide students with an easy-to-use platform where they can explore courses, access educational content, and complete registration procedures efficiently.

The application is designed with modern UI/UX principles to improve accessibility, responsiveness, and performance. By using component-based development and dynamic routing, the system ensures smooth navigation and faster rendering of web pages. This project highlights the importance of modern web development technologies in building scalable and user-friendly educational applications.

2. SYSTEM ANALYSIS

Earlier educational websites were mainly developed using static web technologies, which offered limited functionality and poor interactivity. These systems generally displayed information in a fixed format without providing dynamic features for user engagement. As a result, students often faced difficulties while navigating through the website or accessing updated academic content.

Traditional systems also lacked responsive design capabilities, making them less compatible with mobile devices and tablets. Updating content in such systems required manual modifications in multiple pages, which increased maintenance complexity and development time. Additionally, older systems provided limited scalability and poor user experience due to inefficient page rendering techniques.

These challenges created the need for a modern web application framework capable of providing responsiveness, dynamic content handling, and better performance. The proposed React.js-based system addresses these limitations by introducing reusable components, smooth navigation, and improved accessibility.

The flowchart illustrates the operational sequence of the proposed educational web application. The process begins when a user accesses the homepage of the system. The homepage provides different navigation options such as course information, registration, and blog sections.

When the user selects the course section, the application displays available educational programs along with related details. If the registration option is selected, the system redirects the user to a registration form where personal and academic details can be entered. After submitting the form, the application processes the data and confirms successful registration.

The flowchart demonstrates the interaction between the user and the web application, ensuring a smooth and organized workflow throughout the system.

3. FLOWCHART

The flowchart illustrates the operational sequence of the proposed educational web application. The process begins when a user accesses the homepage of the system. The homepage provides different navigation options such as course information, registration, and blog sections.

When the user selects the course section, the application displays available educational programs along with related details. If the registration option is selected, the system redirects the user to a registration form where personal and academic details can be entered. After submitting the form, the application processes the data and confirms successful registration.

The flowchart demonstrates the interaction between the user and the web application, ensuring a smooth and organized workflow throughout the system.

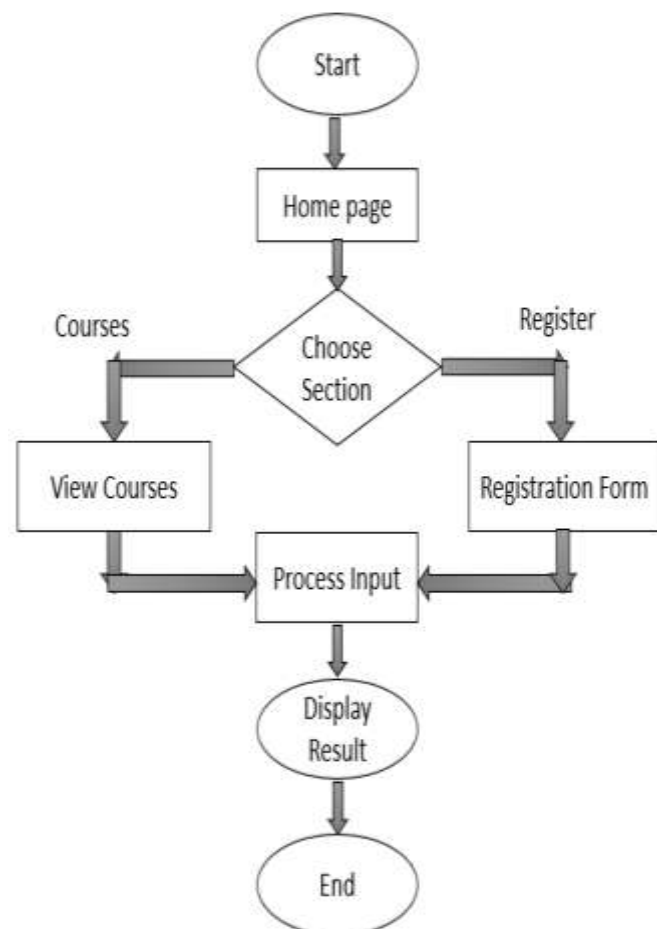


Fig. a : Flowchart

4. BLOCK DIAGRAM

The block diagram represents the overall architecture and functional modules of the proposed system. The user interacts with the application through a web browser interface. User requests are processed by the React.js frontend application, which manages routing, components, and data rendering.

The frontend layer consists of reusable interface components and routing modules responsible for navigation between different sections of the website. The application uses Context API for handling global states such as themes and shared user data. JSON files are utilized for efficient data storage and retrieval.

After processing user interactions, the system displays the required output through an interactive graphical user interface. The architecture ensures smooth communication between components while maintaining high performance and responsiveness.

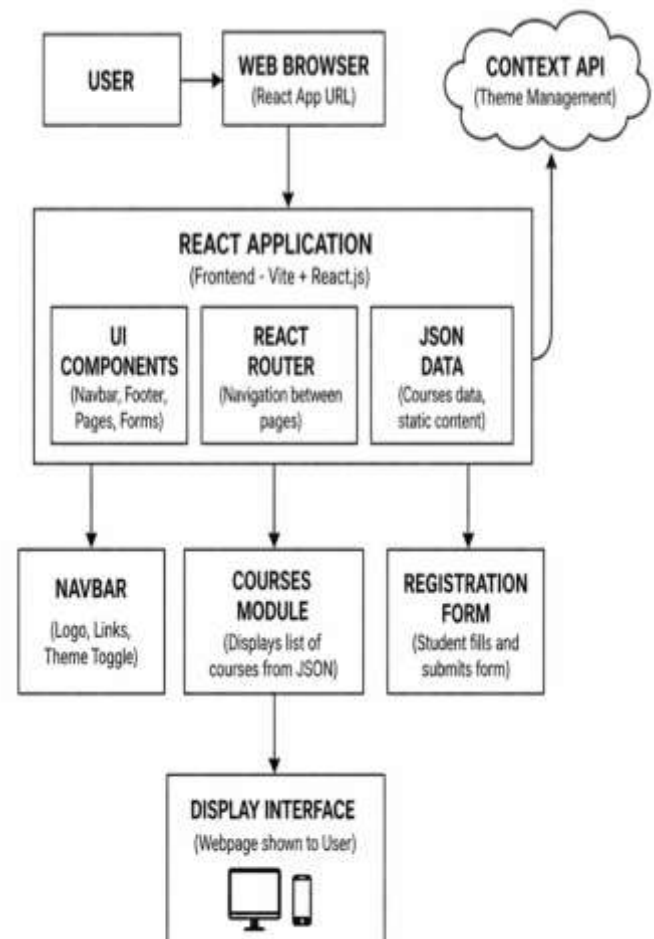


Fig. b : Block Diagram



Fig. 1 : Home Page



Fig. 2 : Course Section

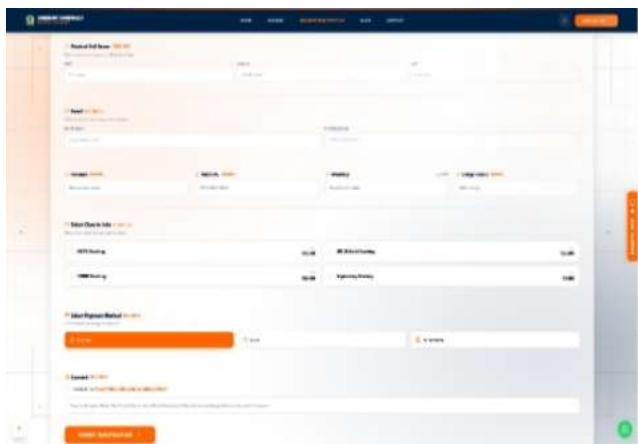


Fig. 3 : Registration



Fig. 4 : Blog Section

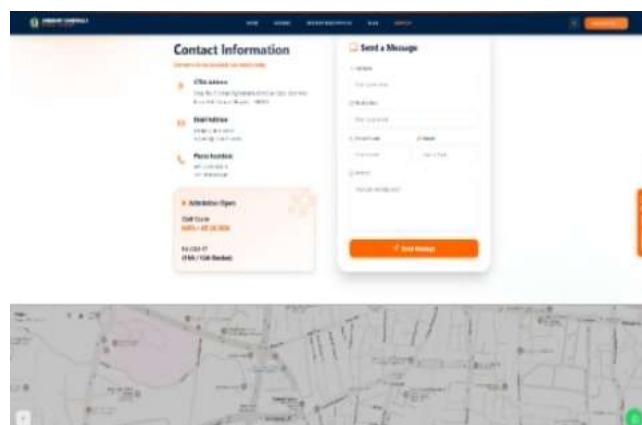


Fig. 5 : Course Page

CONCLUSION :

The research work successfully demonstrates the design and implementation of a responsive educational web application using React.js technology. The proposed system provides an efficient and user-friendly platform for displaying educational information and managing student interaction. The use of component-based architecture, dynamic routing, and responsive design principles significantly improves application performance and usability.

The developed application offers better accessibility, scalability, and maintainability compared to traditional educational websites. By integrating modern frontend technologies, the system enhances the overall user experience and supports smooth interaction across different devices.

In future development, additional features such as authentication systems, online payment integration, database connectivity, and real-time communication modules can be incorporated to further improve the functionality of the platform.

REFERENCE :

- I. Pattabi Rama Rao, Dr. Ajay Kumar Chaurasia, Dr. S. P. Singh, "Modern Web Design: Utilizing HTML5, CSS3, and Responsive Techniques," *Journal of Novel Research and Innovative Development (JNRID)*, ISSN: 2984-8687, August 2023.
- II. Pratik Sharad Maratkar and Pratibha Adkar, "React JS – An Emerging Frontend JavaScript Library," *Iconic Research and Engineering Journals (IRE Journals)*, ISSN: 2456-8880, June 2021.
- III. Prateek Rawat and Archana N. Mahajan, "ReactJS: A Modern Web Development Framework," *International Journal of Innovative Science and Research Technology (IJISRT)*, ISSN: 2456-2165, November 2020.
- IV. Devita Mira Lestari, Dadan Hardianto, Achmad Nizar Hidayanto, "Analysis of User Experience Quality on Responsive Web Design from its Informative Perspective," *International Journal of Software Engineering and Its Applications (IJSEIA)*, ISSN: 1738-9984, May 2014.