



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

WEB-DEVELOPEMENT LEARNING PLATFORM (with project based approach)

Rizwana S , Arsh Pawar, Arnav Pawar , Ayush Patil , Viranch R

Associate Professor, Student , Student , Student , Student

Department of Artificial Intelligence and Data Science,

SIES Graduate School of Technology, Navi Mumbai, India

Abstract: The proposed system is a web development platform that aims to teach learners the basics of web development through practical projects. The platform consists of several modules, including a roadmap, code editor, curated resources, and a set of projects designed to reinforce key concepts and skills. The platform is grounded in research on effective web development practices and incorporates best practices into each of its modules. The user interface is designed to be attractive and intuitive, making it accessible to learners of all levels. The platform will be regularly updated to reflect the latest trends and technologies in web development and will be supported by a team of experienced developers and educators. Overall, the proposed system offers a comprehensive and engaging approach to learning web development that can help learners build the skills they need to succeed in this field.

Index Terms - web development, learning platform, project based learning, tutoring system.

I. INTRODUCTION

In today's digital era, web development has become a highly demanded skillset. With the rise of online businesses and e-commerce platforms, there is a growing need for web developers who can create visually appealing and user-friendly websites. However, learning web development can be challenging, especially for beginners who do not have any prior experience. To bridge this gap, a project-based learning approach can be highly effective, where learners can gain hands-on experience by building real-world projects. This project aims to create a web development learning platform with a project-based approach to enable learners to acquire web development skills effectively. The system deals with basic design tutoring along with various knowledge support. For beginners, to start with this will be very useful system without any knowledge. A guided learning system from simple to advanced technologies are incorporated here.

LITERATURE REVIEW

There are various systems available that are used for learning web application development. Some of the systems are studied as follows.

In current times as in [1], getting effective design in a web application is becoming rare. This means that problem of effective design is getting more important than problem of effective development. A better web design can improve flexibility to learners of using e-learning with self-paced learning effectively.

Web-based E-learning platform is developed by authors in [2]. During the pandemic, e-learning has become a popular topic due to its ability to offer students a virtually limitless selection of educational materials and methods. In addition, e-learning provides more focused guidance to learners, allowing them to choose the learning approach that best suits their needs.

Web Application Development proposed by authors in [3] is studied for the reference. To achieve a good design, several steps

need to be taken at the initial stage, including identifying problems and formulating objectives. In order to fulfil these steps, researchers conducted a preliminary study using a questionnaire. The data obtained from this study will be utilized in the next stage, which involves developing the actual design.

A Progressive web application learning system is proposed in [4]. Progressive Web Applications (PWA) offer a number of advantages when it comes to User Experience (UX). Users can not only browse, search, and download resources with PWAs, but also save time and avoid frustration. These benefits are particularly appealing in Ukraine, where 3G/4G coverage may not be optimal. However, it is important to note that while PWAs are useful, they cannot completely replace mobile applications, as native mobile apps still offer more features.

Following are some of the observations from various systems [5- 14].

Lack of Personalization: Some platforms provide a one-size-fits- all approach, which may not meet the unique needs of individual learners.

Overwhelming Content: With an abundance of online resources available, it can be challenging for learners to know where to begin and how to proceed, leading to feelings of frustration and overwhelm.

Outdated Information: The technology and tools used in web development are constantly evolving, and some platforms may not be regularly updated to reflect the latest trends and best practices.

High Cost: Some platforms may require a significant financial investment, which may not be feasible for all learners, particularly those from low-income backgrounds.

Limited Interaction: Some platforms may not provide enough opportunities for learners to engage with instructors or peers, leading to a lack of feedback and support.

Lack of Real-World Application: Some platforms may focus solely on theory and not provide enough opportunities for learners to apply their skills in real-world scenarios.

It's worth noting that not all platforms suffer from these disadvantages, and some are specifically designed to overcome them.

Project-based learning (PBL) is an instructional approach that engages learners in authentic, real-world problems, and challenges. In PBL, students work collaboratively and independently to develop solutions to complex, challenging problems. Through this approach, students acquire deep content knowledge and develop a range of critical thinking, communication, collaboration, and self- management skills that are essential for success in college, career, and life.

Research has shown that PBL has many benefits for learners. PBL has been found to improve student motivation, engagement, and achievement, particularly in STEM (science, technology, engineering, and mathematics) subjects. Studies have also found that PBL can improve students' problem-solving skills, critical thinking abilities, and creativity.

In addition to benefiting students, PBL can also be beneficial for teachers. PBL can promote teacher collaboration and support the development of more student-centered and inquiry-based approaches to teaching and learning.

Overall, project-based learning is a powerful instructional approach that has the potential to transform teaching and learning. By engaging learners in authentic, real-world problems and challenges, PBL can help students develop the skills and knowledge they need to succeed in the 21st century

II. PROPOSED SYSTEM

The proposed system is a comprehensive web development platform that offers a range of tools and resources for learners to master the basics of web development and build their skills. The platform will consist of several modules as shown in fig1, each of which will focus on a specific aspect of web development.

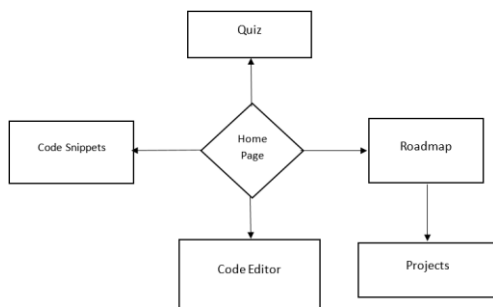


Fig1. System Architecture

Roadmap: A comprehensive guide that outlines the essential topics and concepts that learners need to master in order to become proficient in web development. The roadmap will be structured in a logical and easy-to-follow manner, with clear explanations and examples provided for each topic.

Code Editor: A web-based code editor that enables learners to practice coding skills in a safe and supportive environment. The editor will include features such as syntax highlighting, auto-completion, and error checking, to help learners write code more efficiently and effectively.

Resources: A curated list of websites, tools, and resources that learners can use to deepen their understanding of web development and build their skills. The resources will include links to online courses, tutorials, forums, and other relevant content.

Projects: A set of engaging and practical projects that learners can work on to reinforce key concepts and skills. The projects will be designed to challenge learners and help them apply their knowledge in a real-world context.

The platform will be designed with an attractive and intuitive user interface that is easy to navigate and use. It will be accessible to learners of all levels, from complete beginners to more advanced learners looking to build their skills.

To ensure the quality and effectiveness of the platform, it will be grounded in research on effective web development practices, and will incorporate best practices into each of its modules. The platform will be regularly updated to reflect the latest trends and technologies in the field of web development, and will be supported by a team of experienced developers and educators.

In summary, the proposed system is a comprehensive web development platform that offers a range of tools and resources for learners to master the basics of web development and build their skills. It is designed to be accessible, engaging, and effective, and will be supported by a team of experienced developers and educators.

The proposed system is a web development platform that aims to teach learners the basics of web development through practical projects. The platform consists of several modules, including a roadmap, code editor, curated resources, and a set of projects designed to reinforce key concepts and skills. The platform is grounded in research on effective web development practices and incorporates best practices into each of its modules. The user interface is designed to be attractive and intuitive, making it accessible to learners of all levels. The platform will be regularly updated to reflect the latest trends and technologies in web development and will be supported by a team of experienced developers and educators. Overall, the proposed system offers a comprehensive and engaging approach to learning web development that can help learners build the skills they need to succeed in this field.

III. SYSTEM IMPLEMENTATION

The implementation process includes various steps as shown in fig.2 starting with the user interface and then developing every module in details as an individual learning components.

Design the user interface: Create a visually appealing and easy-to- navigate website interface that will engage the user.

Develop the website: Develop the website using HTML, CSS, and JavaScript, and ensure that it is responsive to various screen sizes.

Create the code editor: Integrate a code editor that allows users to write and test their code within the website itself.

Develop the roadmap: Develop a roadmap that guides users through the web development learning process, with a focus on project-based learning.

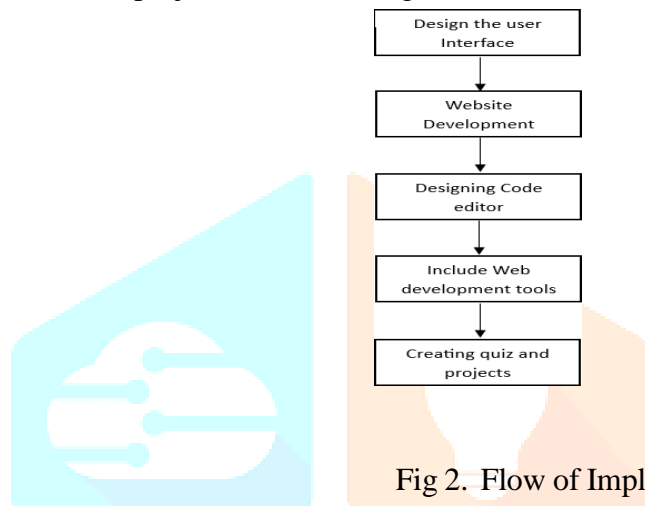


Fig 2. Flow of Implementation

Include web development tools: Add various web development tools to the website, such as a CSS button generator, gradient generator, and other useful resources.

Create web development projects: Develop several web development projects that users can work on to apply their newly acquire skills and knowledge.

Implement quizzes: Create quizzes to test users' understanding of the concepts and skills taught on the website.

Test the website: Conduct thorough testing of the website to ensure that it is fully functional and free of bugs.

Deploy the website: Deploy the website to a web server or hosting service so that it is accessible to users worldwide.

Provide support: Provide users with technical support and assistance in using the website and completing the web development projects.

This system implementation should help you develop a functional and effective web development learning platform that provides a project-based learning approach to users.

IV. ANALYSIS AND RESULTS

Proposed system is implemented with the various technologies, the screen shots exhibit the layouts of its components. The main page is given in figure 3. Figure4 indicates code editor screen withhtml, css and js editor. Figure 5 is the sample quiz screen layout of the system.



Fig 3: main System Screen



Fig 4: code editor

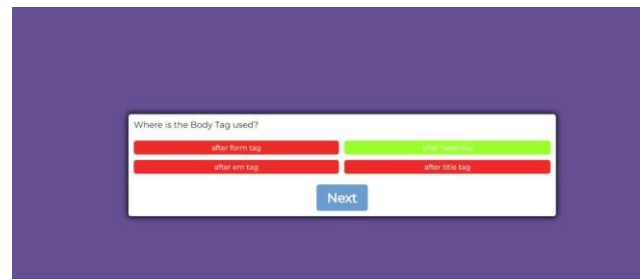


Fig 5: Sample of the quiz screen layout

The activity diagram illustrates the working the implementation in figure 6

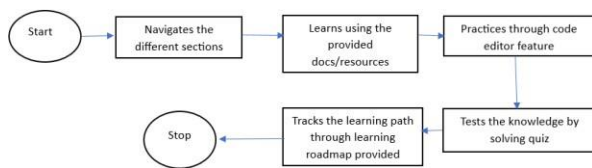


Fig 6: Activity Diagram

The proposed web development platform offers a powerful tool for teaching learners the fundamentals of web development through practical projects. The platform incorporates the latest research on effective web development practices, with a focus on key design elements such as navigation, graphical representation, organization, content utility, purpose, simplicity, and readability.

V. CONCLUSION AND FUTURE WORK

By providing learners with a roadmap, code editor, curated resources, and a set of projects, the platform aims to create a comprehensive and engaging learning experience that can help learners build the skills they need to succeed in this field. Moreover, the platform will be regularly updated to reflect the latest trends and technologies in web development, ensuring that learners are always learning the most relevant and useful skills. Overall, the proposed system offers a powerful and effective approach to learning web development, and has the potential to help learners achieve their goals and succeed in this exciting and dynamic field.

The proposed web development platform has a lot of potential for future growth and expansion. Some possible future directions for the platform include:

Integration with other web development tools and platforms, such as content management systems (CMS) or web hosting services, to provide a more seamless and comprehensive learning experience.

Addition of more advanced and specialized projects, such as e-commerce websites, web applications, and mobile-responsive designs, to help learners develop more advanced skills and stay up-to-date with the latest trends in web development.

Incorporation of social learning features, such as discussion forums or peer review, to facilitate collaboration and community-building among learners.

Development of a certification program or badge system to recognize and reward learners for their achievements and skills.

Expansion of the platform to include other programming languages and frameworks, such as JavaScript, React, or Angular, to cater to a broader audience of learners.

By pursuing these and other future directions, the proposed web development platform has the potential to become a leading resource for learners looking to build their web development skills and stay up-to-date with the latest trends and technologies in this field.

REFERENCES

- [1] Kostiantyn Morozov et al International Conference on Computational Linguistics and Intelligent Systems, 2020
- [2] Niwat Srisawasdi et al, Designing and Implementation of Web- Enhanced Inquiry Learning for Literacy in Science Platform for Post COVID-19 Education, IEEE 6th Eurasian Conference on Educational Innovation (ECEI), 2023.
- [3] Rudi S and et al, Web application development, IJI 2021.
- [4] Leshchuk et al, Design a progressive web application to support student learning, CS&SE@SW 2021.
- [5] Ikhateeb, S. S., & Ali, M. N. (2018). The effectiveness of project- based learning in teaching web design. International Journal of Emerging Technologies in Learning, 13(12), 105-120.
- [6] Kim, M. (2021). Effects of project-based learning on web development: Focusing on the project-based learning method of the programming education. Information, 24(2), 885-890.
- [7] Blaschke, L. M., & Hiltz, S. R. (2002). Online communities of practice: A catalyst for faculty development. In Annual Proceedings of Selected Research and Development Papers Presented at the National Convention of the Association for Educational Communications and Technology (24th, Atlanta, GA, November 8- 12, 2001) (pp. 40-45).
- [8] Khan, B. (2005). Managing e-learning: Design, delivery, implementation, and evaluation. IGI Global.
- [9] Coursera (2021). Web Development Courses.
- [10] Udemy (2021). Web Development Courses
- [11] Codecademy (2021). Web Development Courses
- [12] W3Schools (2021). Web Development Tutorials.
- [13] Khan Academy (2021). Computer Programming
- [14] FreeCodeCamp (2021). Web Development Courses

