TEAM-UP VIRTUAL CLASSROOM APPLICATION

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Abstract: A virtual classroom is an online learning method conducted through the internet, providing communication for distance learners similar to face-to-face classrooms. This educational approach is gaining popularity and is expected to replace traditional education methods as internet-dependent learning becomes more widespread in schools and colleges. There are two main types of virtual classrooms: synchronous and asynchronous.[14] In the synchronous format, online teaching is scheduled, led by a teacher. Students can interact in real-time, asking questions and getting immediate responses, even from remote locations. On the other hand, asynchronous learning allows students to progress at their own pace, choosing when and where to engage with the educational content. This method provides flexibility and is not bound by specific time constraints. Virtual classrooms are advantageous as they enable students to clarify doubts at any time and from any location. A key goal of this approach is to enhance collaboration among teachers and students, fostering a dynamic and interactive learning environment. As internet-based learning continues to grow, virtual classrooms are anticipated to play a significant role in the future of education.

Keywords: Virtual classroom, Synchronous, Asynchronous, Education, Challenges.

1.INTRODUCTION

Education is crucial for a country's economic growth and societal progress. Nowadays, technology is making education more accessible, with virtual classrooms gaining popularity. A virtual classroom is an online learning platform where students can participate from anywhere, using devices like laptops and phones. This trend is expected to replace traditional education methods as more schools and colleges embrace internet-based learning. Universities are converting their courses into online formats, making education accessible globally. This shift is driven by factors like geography and allows students to choose subjects and learning environments that suit them. In the 21st century, virtual classrooms benefit both teachers and students, overcoming distance and time barriers. They streamline the education system and save time. Virtual environments are also used for studying human behavior and skill training. In particular, virtual classrooms are employed in neuropsychological assessments, simulating real classrooms to evaluate the attention performance of students. This approach proves effective in enhancing attention in actual classrooms for these students.[22]

OBJECTIVES

1.1 Facilitate seamless collaboration for both professional and educational users by providing a unified platform virtual-classrooms.[11]

1.2 Provide educators with tools to create engaging and interactive virtual classrooms, fostering active learning and student participation.[13]

1.3 provide a platform for co-authoring documents, presentations, and spreadsheets.

2. LITERATURE SURVEY

2.1 (**Ms. Varsha Ramnath Pandit,2022**) The article discusses the impact of online learning on students, particularly during the COVID-19 pandemic. While acknowledging the shift towards digitalization in education, it highlights the challenges faced by students. The reliance on online platforms like MS-Teams, Google Classroom, and Zoom necessitates a strong network connection and electronic devices, posing difficulties for students, especially those in rural areas with poor connectivity. The main problems identified are the students' struggle to adapt to the sudden shift to virtual learning and the lack of equipment and network access, particularly among those from economically disadvantaged backgrounds.[1]

2.2 (**SHARADA C, ROOPA H R, BHARATHI N,2021**) The research relies on primary data collected through extensive field visits, employing a methodology that includes the collection of secondary data from selected rural areas and the use of questionnaires for data interrogation. The study emphasizes the importance of creating awareness about online education for school children, suggesting strategies such as leveraging community resources, utilizing media for communication, promoting mobile connectivity, and organizing workshops and training programs. The authors highlight the crucial role of e-learning in India's international market growth, particularly in the IT sector, with the government actively investing in internet kiosks in rural areas to facilitate e-learning access. The article also addresses concerns about the pervasive influence of technology on children's education, underscoring the need for a thorough evaluation when selecting e-learning software. The benefits of e-learning are outlined, including flexibility in learning schedules, the ability to revisit lectures, and access to updated content. Overall, the research provides a comprehensive overview of the evolving landscape of online education in India, recognizing its potential benefits while acknowledging and addressing associated challenges.[2]

2.3 (**Hemant Koyande, Abhi ram Kulkarni, Atharva Kulpe, Ankur Ganorkar,,2022**) Published in the International Research Journal of Engineering and Technology in January 2022, the article explores the impact of the COVID-19 pandemic on education, emphasizing the increasing significance of online literacy and the likelihood that changes prompted by the pandemic will endure. The authors highlight the global closure of schools, affecting over 1.2 billion children in 186 countries, prompting discussions on next-generation education. They propose a virtual classroom system as a solution to support all students in a class, providing live lectures, notes, and recordings for future use. The system aims to automate tasks for teachers and students, reducing manual paperwork. Key features include video conferencing, instant messaging, participation control, video recording of lectures, end-to-end encryption, and the ability to conduct exams and receive results. The methodology involves student and teacher registration by the admin, email delivery of login credentials, and a link to change passwords. The system offers flexibility for students who cannot attend physical classes. Overall, the virtual classroom system is positioned as a comprehensive solution to adapt to the evolving landscape of education in the digital age.[3]

3. PROPOSED METHODOLOGY

Virtual classroom applications have become essential, especially during times when in-person education is not feasible or as a supplement to traditional classrooms. They offer a flexible and accessible way to learn, connect, and collaborate, transcending geographical boundaries and time constraints.

3.1 Chat and Messaging: virtual classroom apps offer chat and messaging features. This enables text-based communication, asking questions, and sharing information during the class or in between sessions.[12]

3.2 File Sharing: Teachers can share various types of files, such as documents, presentations, and multimedia, with students. This makes it easy to distribute learning materials and assignments[13]

3.3 Assessment Tools: Virtual classroom applications may include features for conducting quizzes, tests, and assignments within the platform, with automatic grading capabilities.[17]

3.4 Security and Privacy: Ensuring the security and privacy of students and their data is a top priority. These applications often have security measures in place, including password protection and encryption.

3.5 Mobile Accessibility: Many virtual classroom apps are accessible on mobile devices, making it convenient for students and teachers to participate from smartphones or tablets
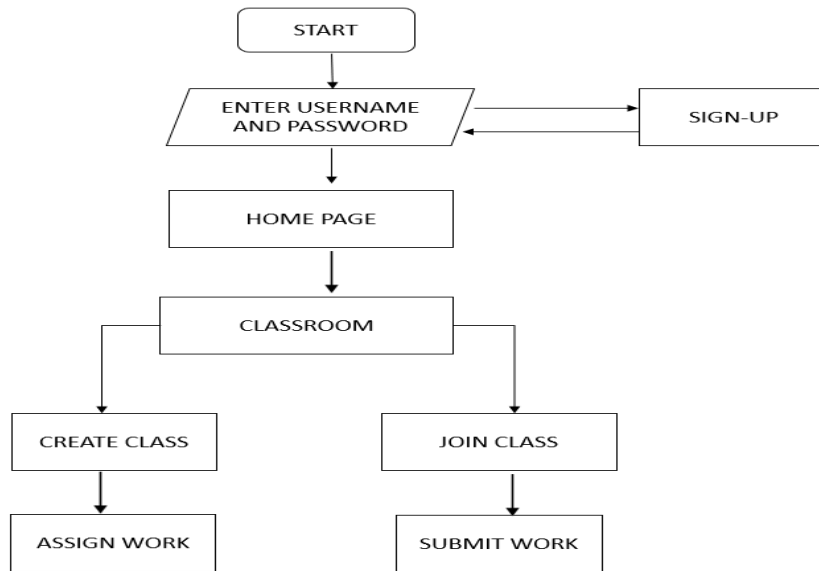
4. SYSTEM FLOW DIAGRAM

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                    ┌──────────┐
                    │  START   │
                    └────┬─────┘
                         │
        ┌────────────────────────┐        ┌──────────┐
        │ ENTER USERNAME         │───────▶│ SIGN-UP  │
        │ AND PASSWORD           │◀───────│          │
        └────────────┬───────────┘        └──────────┘
                     │
              ┌──────────────┐
              │  HOME PAGE   │
              └──────┬───────┘
                     │
              ┌──────────────┐
              │  CLASSROOM   │
              └──────┬───────┘
           ┌─────────┴──────────┐
    ┌─────────────┐       ┌─────────────┐
    │ CREATE CLASS│       │  JOIN CLASS │
    └──────┬──────┘       └──────┬──────┘
           │                     │
    ┌─────────────┐       ┌─────────────┐
    │ ASSIGN WORK │       │ SUBMIT WORK │
    └─────────────┘       └─────────────┘
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Fig. 5.1 System Flow Diagram

4.1 Firstly, log in to the application using username and password

4.2 If account is not created in application then sign up.

4.3 In the third step the user has two options one is for meeting and other is for classroom if you have to join the meeting you can click on meet or either you can click on classroom for viewing the documents.

4.4 After choosing the meet option you will see a interface in which you have to enter the room id for accessing the conference and then click on join room. There is a 'create room' option to create your own meet.

4.5 In classroom section, user can create a class and join a class.

4.6 In this section teacher can assign the work to the students and students can submit work virtually.

5. SOFTWARE DESCRIPTION

5.1 Equipment required for TEAM-UP:
   a. **Displays:** laptop, desktop monitor, television screen
   b. **Internet Connection:** Wi-Fi, Ethernet.

5.2 Programming Languages used for creating application:
   a. HTML
   b. JavaScript
   c. CSS
   d. Node JS
   e. PHP

5.3 Technologies:
   a. WebRTC (Web Real-Time Communication) using HTML &JavaScript (API specification on Mozilla)
   b. WebSocket using JavaScript& Java server for signaling.

6. RESULTS AND DISCUSSION

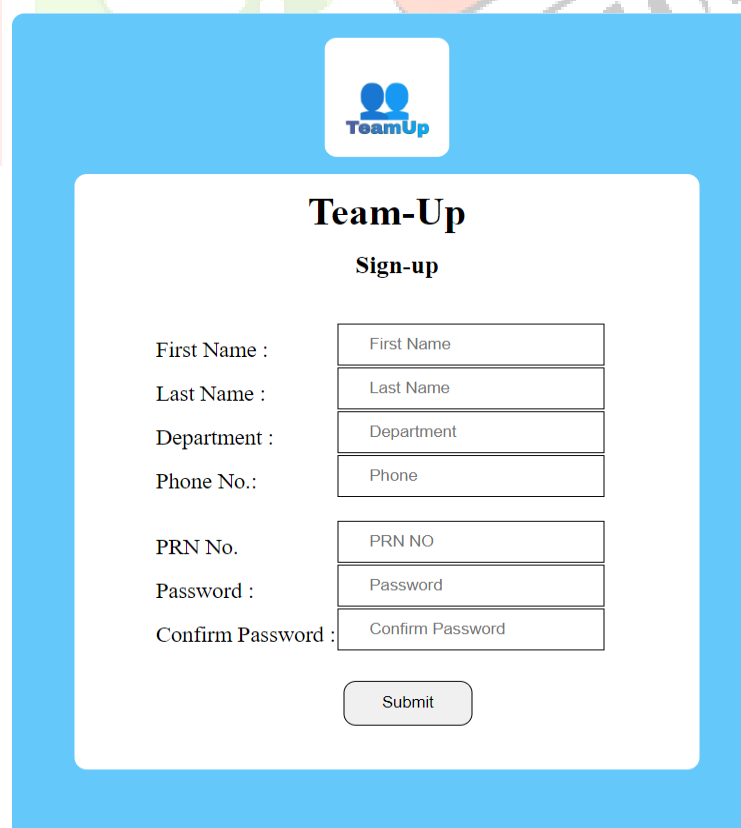**6.1** In this step user have to log in to the application by entering the user id and password.

Fig 7.1-Login Page

6.2 In this step ,if account is not created then sign by filling some details like first name, last name, department, phone number, PRN number, password etc.

Fig 7.2-SignUp page

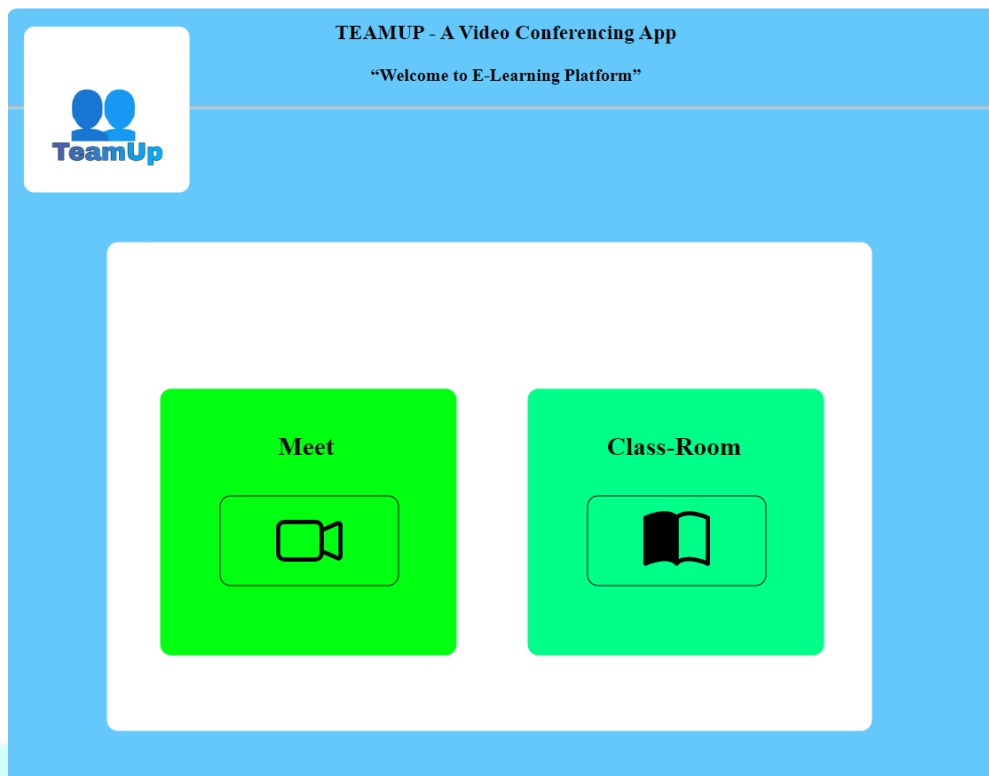**6.3** In the third step the user has two options one is for meeting and other is for classroom.

Fig. 7.3-Home Page

6.4 After clicking on class-Room option , user can see following screen , in this teachers can add various subjects and students can join the class.
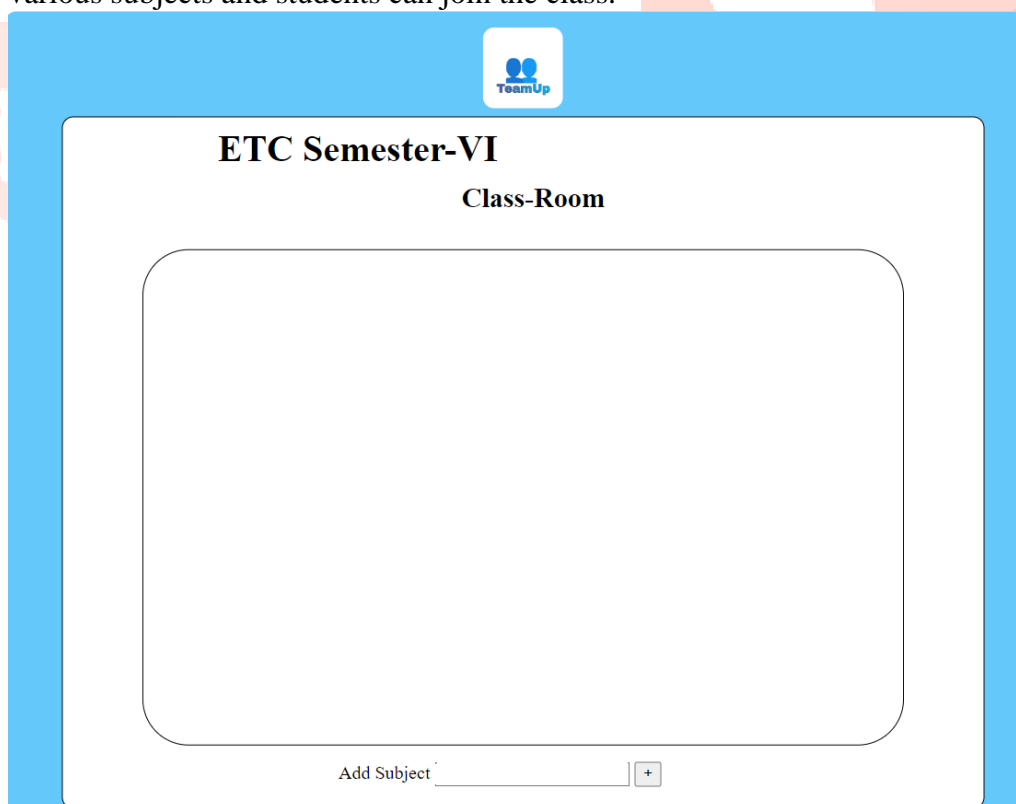

Fig 7.4-Create class

6.5 In classroom ,teachers can assign the assignments and students can submit the assignments.
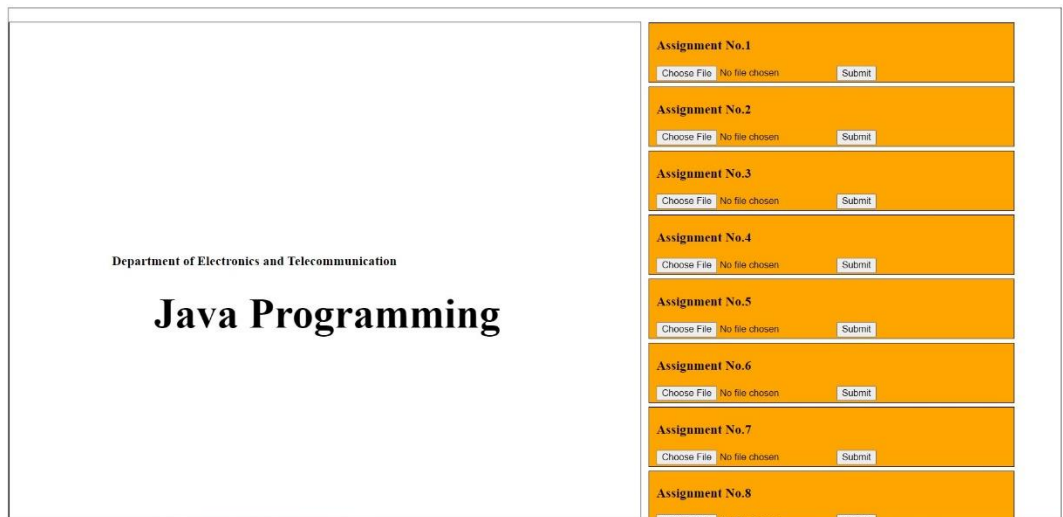

Fig 7.5 Assignment Submission

7. CONCLUSION

The major reason for this mode of education is student's comfortability. This is the best way to reach globally distributed learners. As it saves time and money, the learner will have more time to learn or if he wants to do something else. It is a great field as the students can clarify their doubts at any time from any place. It brings a type of competitive spirit which in turn leads to progress in one's academic performance. The students who learn through virtual classroom is seem to have more knowledge and good performance as they study with their own interest and not by force which normally occurs in traditional classrooms. Even if learner forgets any concepts, they can review the recorded videos and get them revised. In this application, both the tutor and the learner are benefited in training and learning. One of the important goals of this application is to improve collaboration among teachers and students. The physical barriers between classroom and student have been minimized due to virtual classroom. Future scope of this field is to make application that will help the user in many platforms and would be more useful and more user-friendly on the basis of the user's experience.[20]

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