A Virtual Lab to Enhance the Technical Education Using Web Technologies

1Prof. M. S. Lohar(Guide), Pooja Hasurkar, 2Manasi Shivare, 3Sejal Kumbhar, 4Sayali Powar, 5Rupali Kamble

Sant Gajanan Maharaj College of Engineering Mahagaon
Computer Science and Engineering

Abstract: Virtual lab is a platform at which certain practical’s can be performed. It is an excellent tool for education purpose for learners. By using virtual lab students can perform practical’s assigned by teachers. In virtual lab we provide simulation, open source for students. To provide a complete learning management system around the virtual labs for the students and teachers there are various tools available for learning. For the student’s virtual lab provides additional notes, assignments, web-resources, self-evaluation. In our project students can clear concepts of all experiments via experiment related information.

Date of Submission: Date of acceptance:

INTRODUCTION

Virtual Labs will increase the education quality of engineering education each student will be able to understand the course studies. One example for the usage of virtual labs teachers can assign the tasks for the students like physical labs which will allow the students to get many opportunities to practice an experiment and understand concepts. Additionally virtual lab development and improve the quality of online learning program by providing active learning opportunities to students that succeed by employing more different learning styles. Specifically virtual labs would provide a means of interaction and when ever loss in the course material that is often difficult in connecting with students.

Thus by using Virtual lab you can save lot of time and effort. Also, they have solved many problems that were faced by student and teacher both to conduct and perform experiments and practical’s. As they are providing facility of conducting of experiments and practical’s outside the real labs. It will helps solve the problem like limitation of resources.

I. PROPOSED WORK

In this proposed system students can easily access experiments as per their practical’s. Students can view notes, assignments as well as experiment programs. This system maintains all experiments efficient and systematic way.

III. MODULES

Admin:
1. First Admin login to the page using username and password.
2. Admin can add Department, Class, Subject, Experiments, Assignments and Notes.
3. In the Department page Admin can add Departments as per requirements for example Computer Science and Engineering, Electronics and Telecommunication etc.
4. In the Class page Admin can add class as per class present in that particular Department for example Second year, Third year, final year.
5. In the Subject page Admin can add subjects as per subject presents in the specific class.
6. In the Experiment steps page user can add experiment so the student can perform the experiments as per their class and subject.
7. Admin can add Assignments in Assignment page for students for each subject.
8. Admin can add Notes in Notes page for students for each subject as well as each topic in that subject.

Student:
1. Student first select department then choose their class then select the subject and then perform experiments as per their requirements.
2. Also, student can view the Assignments displayed by teachers.
3. Students can read the notes of every subject.
4. Students can perform program using online compiler.
5. Student can write the suggestion.
Fig. System Architecture

Data Flow Diagram

Fig. Level 0 DFD

Fig. Level 1 DFD
IV. RESULT
Admin Login:

Home Page:
Objectives
1. To provide remote-access to simulation-based Labs in various disciplines of Science and Engineering.
2. To enthrall students to conduct experiments by arousing their curiosity. This would help them in learning basic and advanced concepts through remote experimentation.
3. To provide a complete Learning Management System around the Virtual Labs where the students/teachers can avail the various tools for learning, including additional web resources, video-lessons, animated demonstrations and self-evaluation.

The Philosophy
Good lab facilities and updated lab experiments are critical for any engineering college. Faculty of lab facilities often make it difficult to conduct experiments. Also, good teachers are always a scarce resource. The Virtual Labs project addresses this issue of lack of good lab facilities, as well as trained teachers, by providing remote-access to simulation based Labs in various disciplines of science and engineering.

- Access to online labs to those engineering colleges that lack these lab facilities
- Access to online labs as a complementary facility to those colleges that already have labs Training and skill set augmentation through workshops and on-site/online training

Virtual Labs are any place, any pace, any-time, any-type labs. It is a paradigm shift in student-centric, online education.
V. CONCLUSION

The results showed that the virtual lab is able to enhance students’ problem solving, critical thinking, creativity, conceptual lab skills, motivation, interest, perception and learning outcomes therefore educators need to use virtual lab to improve teaching quality and students learning outcomes.

VI. REFERENCES
1. http://vlabs.iitkgp.ac.in/vlt/
3. www.vlab.co.in VirtualLabs-vlab.co.in