

# "Learning-enabled assessment" through O-Labs facilitates

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# Objectives of the Virtual Lab

- To provide remote-access to labs in various disciplines of science and engineering.
- To cater to students at the undergraduate level, postgraduate level as well as to research scholars.
- To enable the students to learn at their own pace, and to arouse their curiosity.
- To provide a complete Learning Management system that included web-resources, video-lecturer, animated demonstrations and self-evaluation.



# Salient features



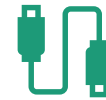
Anytime anywhere lab.



Virtual Labs are free to use.



Accessible through internet on any PC/Laptop



Surprisingly even on your smartphone/Tablet.



Developed in self-learning mode.



Innovative experimentations



Over 100 Virtual Labs already been developed

# Physical Labs Vs Virtual Labs



Factors	Physical Labs	Virtual Labs
Cost	Typically in few Lakh Rupees	Almost Nil ( only your existing PC with internet connection is needed)
Availability	Limited in time and space	Designed for 24x7 usage
Experimentations	Limited options for innovation	Provides wider & safer options for innovative experimentations e.g. High Voltage lab, Mechanical Design lab, Biomedical , Civil Engg Structures labs.
User Experience	Best	Second Best



- Usage of online labs during pandemic situation.
- With the non-affordability of lab equipment
- Ban on using live specimens for experimentation

Need for online  
Labs



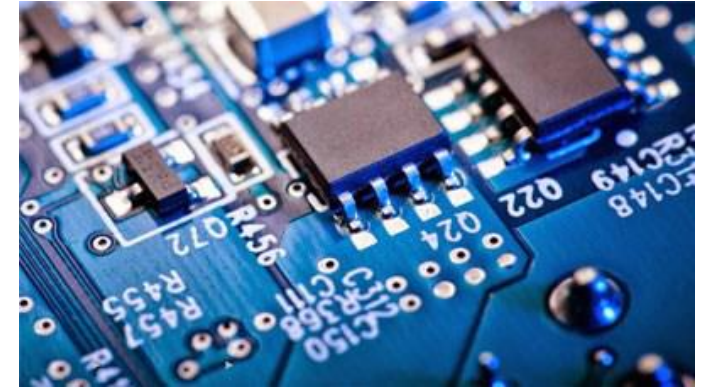
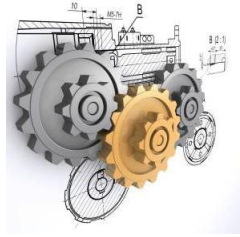


## Intended Users

- **College Students** who do not have access to good lab-facilities.
- **High school students** whose inquisitiveness will be triggered, possibly motivating them to take up higher-studies.
- **Different engineering colleges** who can benefit from the content and related teaching resources.
- **Researchers in different institutes** who can share collaborate equipment and resources.

# Broad Areas for Virtual Labs

- Electronics and Communication Engineering
- Computer Science and Engineering
- Electrical Engineering
- Mechanical Engineering
- Civil Engineering
- Chemical Engineering
- Biomedical and Biotechnology Engineering
- Chemical Sciences
- Physical Sciences





## Virtual Labs -A Complete Learning Management System

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Integrated Learning  
[contents at one  
place]



Animation/Video  
Tut [better insight]



Freedom to make  
mistakes [can  
experiment with  
experiments]



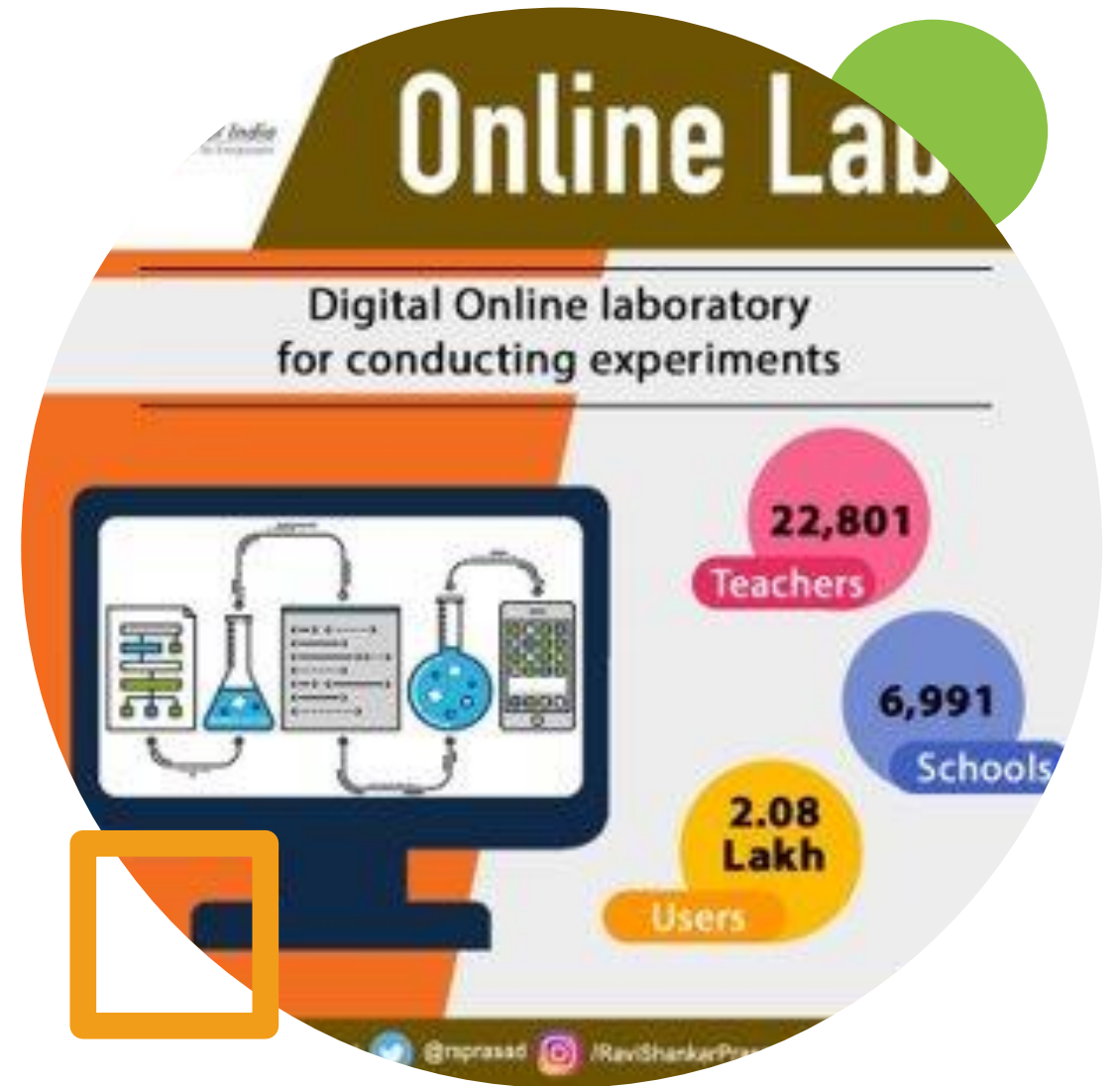
Self –Evaluation [pre  
/post lab quiz]



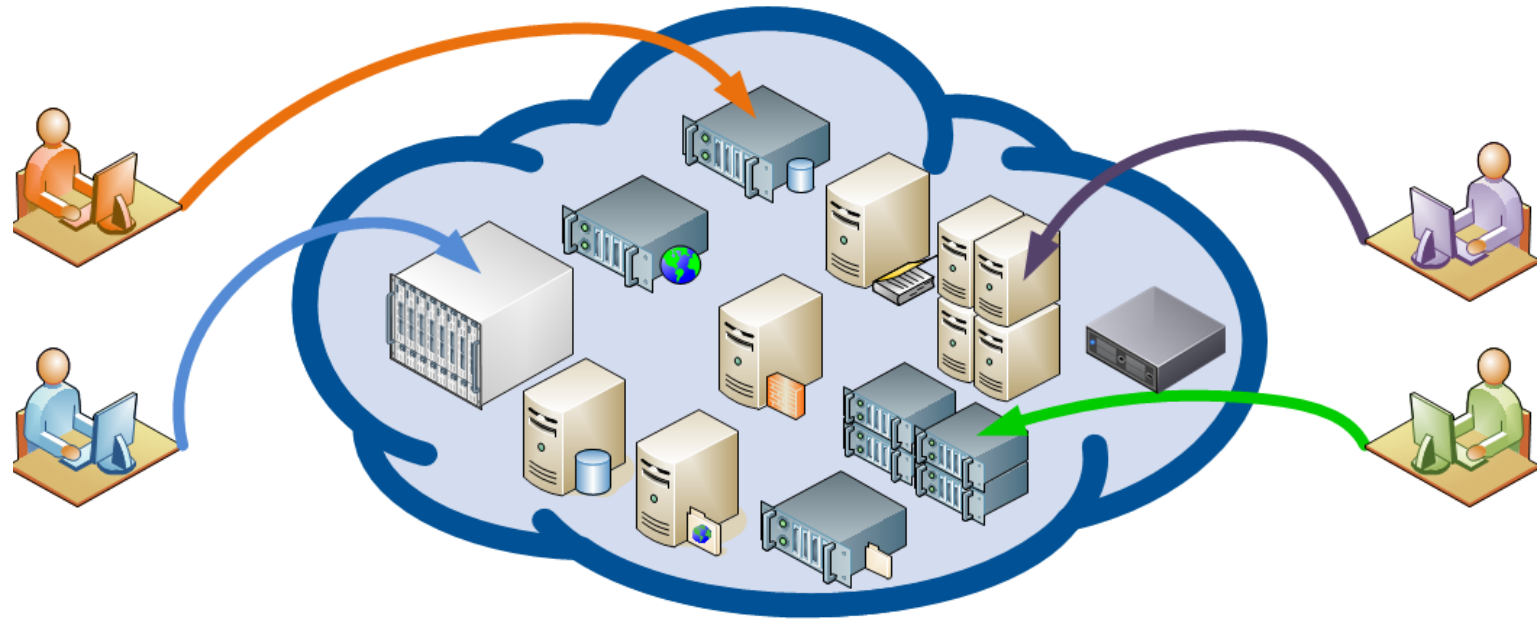
On-demand Labs  
[learn at own pace]



# Online Labs Users



# Virtual Computing labs



# Online Lab: Example 1

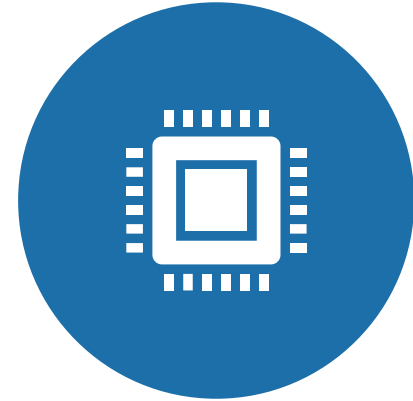
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**COURSE:** ADVANCED CHEMISTRY LAB



**TRADITIONAL:** STUDENTS FOLLOW A SPECIFIC PROCEDURE FOR MIXING CATIONS, TO SEE HOW THEY REACT. THE EXPERIMENTS CAN TAKE WEEKS SAFETY IS AN ISSUE BECAUSE SOME CATIONS ARE TOXIC.



**VIRTUAL:** STUDENTS USE A COMPUTER SIMULATION THAT ALLOWS THEM TO EXPERIMENT WITH VIRTUAL CATIONS. THEY CAN SAFELY USE VIRTUAL REPRESENTATIONS OF TOXIC CATIONS, SUCH AS MERCURY, AND EXPERIMENTS THAT NORMALLY TAKE WEEKS ARE FINISHED IN MINUTES.

# Online Lab: Example 2

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**Course:** Advanced microbiology lab



**Traditional:** Students combine bacterial cultures with various chemicals to observe reactions. The experiments can take weeks, and the students usually must avoid certain procedures that could ruin expensive cultures.



**Virtual:** Students run experiments with virtual bacterial cultures by telling a computer what chemicals to add. Reaction times are cut to minutes, letting students spend more time experimenting.



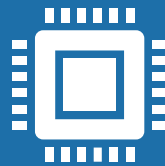
# Online Lab: Example 3



Course: Advanced physics lab



Traditional: Students work in the lab to measure the speeds of remote-controlled cars and plot the Results on graphs.



Virtual: Students use computer simulations of remotecontrolled cars While students conduct the experiments, the software acts as a virtual lab partner and offers good and bad advice to the students to test their problem Solving skills.

# Website of Virtual labs

- <http://www.vlab.co.in/>
- [https://www.iitk.ac.in/mimt\\_lab/vlab/index.php](https://www.iitk.ac.in/mimt_lab/vlab/index.php)
- <https://www.iitg.ac.in/cseweb/vlab/vlsi/>
- <http://vlabs.iitb.ac.in/vlab/>
- <https://www.olabs.edu.in/>



# O-Labs



The O-Labs is based on the idea that lab experiments can be taught using the Internet, more efficiently and less expensively.



The labs can also be made available to students with no access to physical labs or where equipment is not available owing to being scarce or costly.



The experiments can be accessed anytime and anywhere.



# Registration

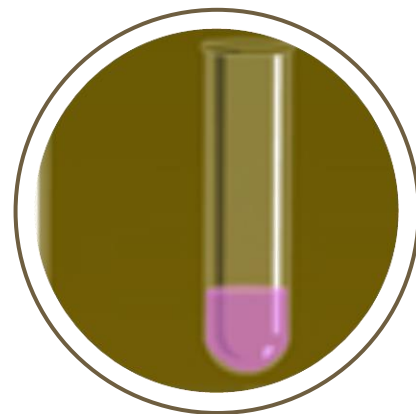
O-Labs Training Registration Form

<https://www.olabs.edu.in/>



# O-lab includes the following features





# Virtual Lab Working Demonstration

Test for organic functional group



Trainees  
Assessment videos

# Want Something to share!

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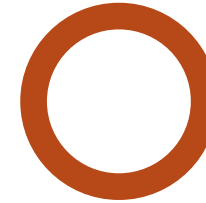
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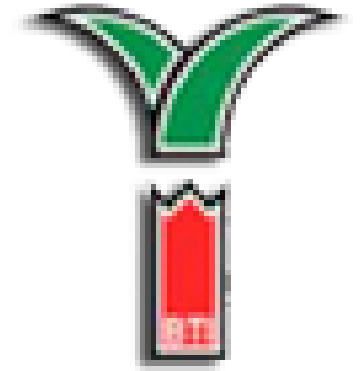
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Thank you

A Journey From Concept  
To Reality !