



# virtual labs

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A virtual lab is an interactive, digital simulation of a physical laboratory that allows users to conduct experiments on a computer or other device without the need for physical equipment, chemicals, or a specific location.

They provide a flexible, safe, and accessible learning environment for various subjects

# Significance of virtual labs

## Supporting Conceptual Shift

Progress from concrete to abstract thinking

**Help in visualizing complex concepts**



## Equalizing Access to Quality Science Education

Bridge the resource gap between urban and rural or under-resourced schools..

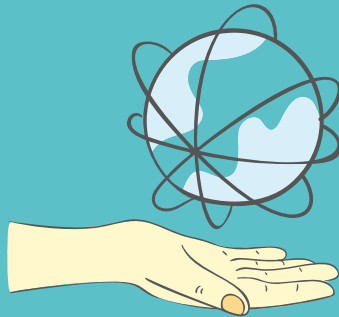
[Simulation-Liquid pressure](#)

# Significance of virtual labs

## Promoting Student-Centric and Self-Paced Learning

**Encourage curiosity** and allow students to learn at their own pace, revisiting experiments as needed.

Simulation link- Study that leaves prepare starch by the process of photosynthesis



## Teacher Support

Training programs help them effectively integrate virtual labs into teaching and assessment

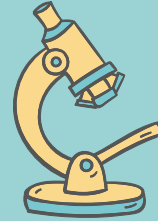
Simulation-Separate three components from iron, sand and common salt Mixture

# Cognitive benefits



## Enhanced Conceptual Understanding

**Simulations** make students grasp complex scientific concepts. Allow students to **repeat experiments**, promoting **understanding**.



## Development of Critical Thinking and Problem-Solving Skills

Students are encouraged to form hypotheses, **analyze data**, and **draw conclusions**, which fosters scientific reasoning and critical thinking abilities.

# Cognitive benefits



## Increased Motivation and Engagement

The opportunity for mastery through repetition and the flexibility to learn at one's own pace further support cognitive engagement and persistence.



## Enhanced Scientific Communication

Students document their findings, analyze results, and communicate conclusions clearly.

<https://diksha.gov.in/>

Thank you

