

# Virtual Labs: Need, Perspective, and Scope



*Date and Time*

**2 December, 2024**

from 10:00 AM to 11:00 AM, Monday

**Resource Persons**



**Prof. Indu Kumar**  
Head DICT & National Coordinator,  
DIKSHA, CIET-NCERT



**Prof. Amarendra P. Behera**  
Joint Director,  
CIET-NCERT



**Dr. Praveen B. Binjha**  
Associate Professor  
DICT & TD, CIET-NCERT



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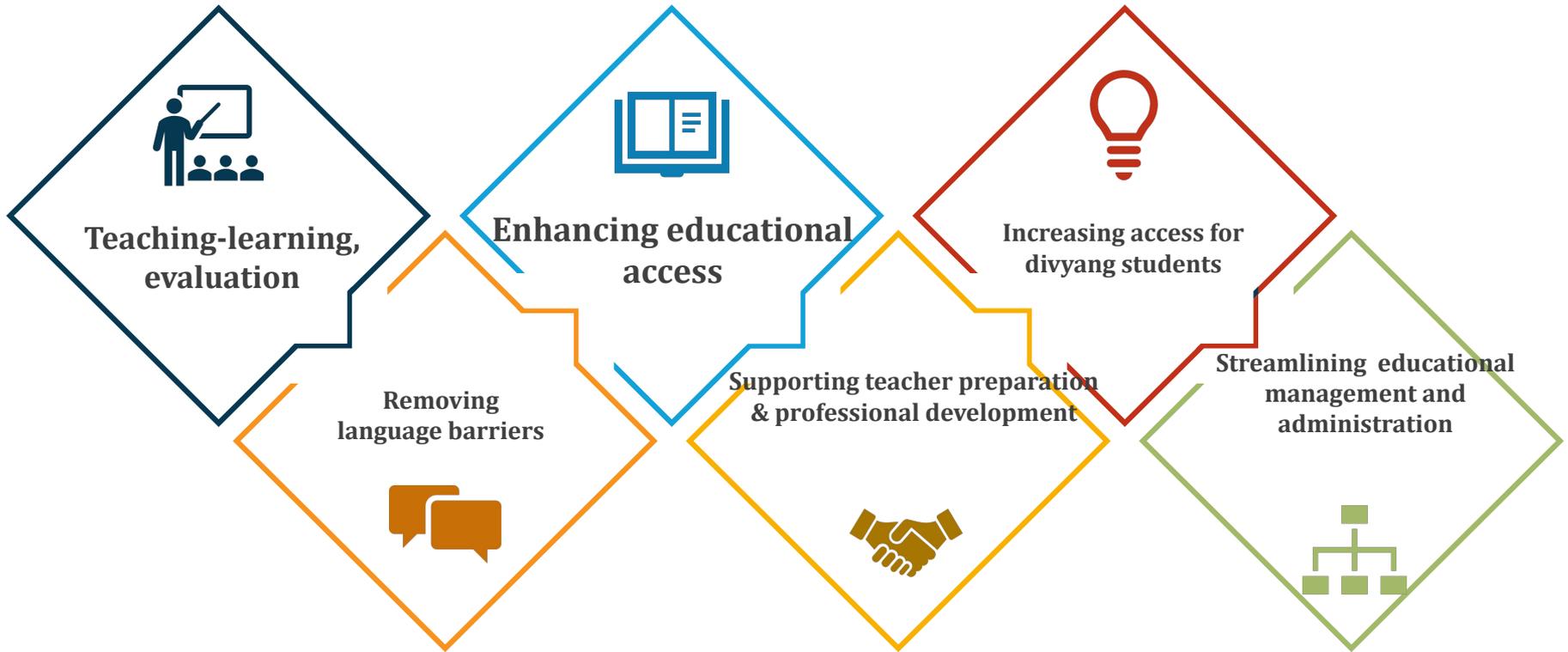


# Virtual Labs: Policy Perspective, Need and Scope

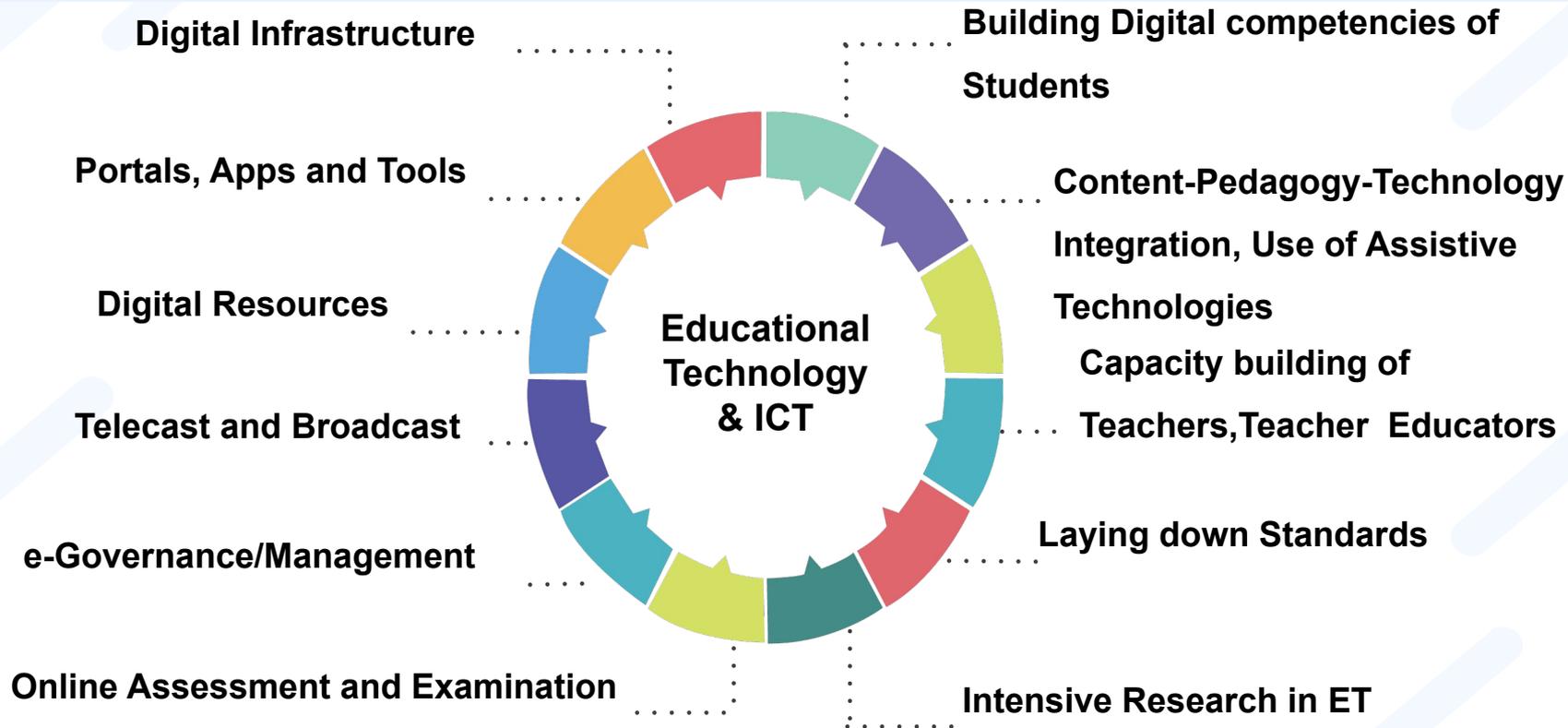


Central Institute of Educational Technology  
NCERT, New Delhi

# NEP 2020 - Technological thrust areas



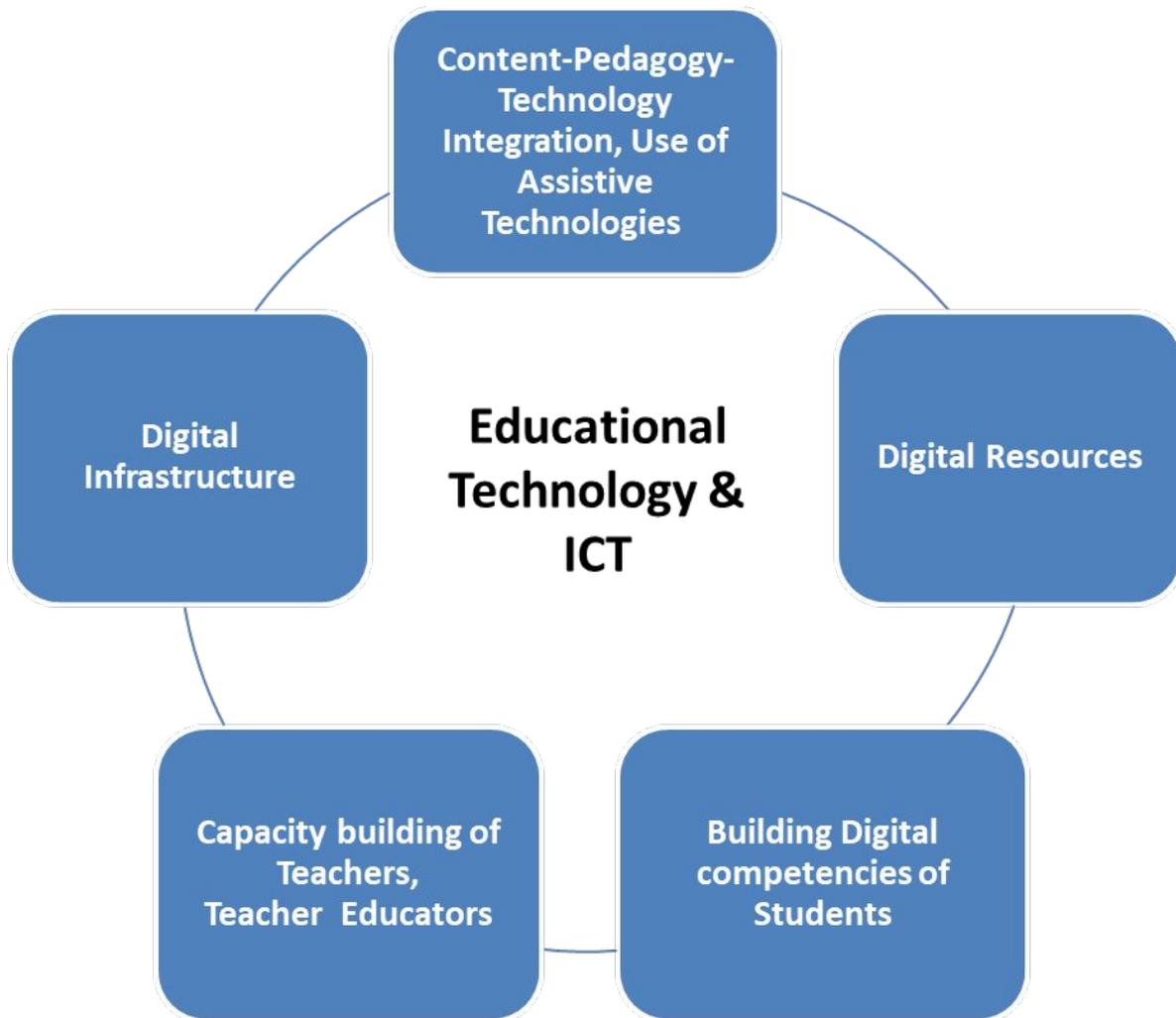
# NEP-2020: Recommendations for Online and Digital Education



# Policy Perspective (NEP 2020 vision)

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- Technology use and Integration
- Ensuring Equitable use of technology
- Extensive Use of technology in teaching and learning
- Content Creation, digital repository and Dissemination
- Blended mode of learning
- Addressing digital divide



# Policy Perspective (NEP 2020 Vision) and Virtual Labs

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# Recommendation of NEP 2020

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- Access to quality practical and hands-on experiment-based learning experiences to each student
- Virtual labs enhance actual laboratory experience
- Lab based e-resources help students in visualizing the concepts

# Advantages of Virtual labs

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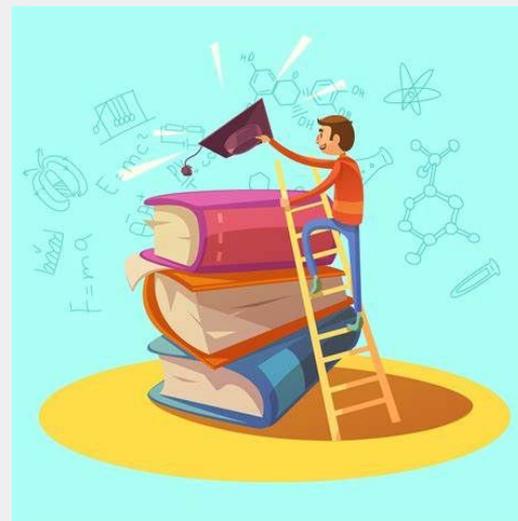


- Available on internet for free
- Accessed anytime and anywhere
- Can be accessed even in the absence of physical labs

# Virtual labs help learners in following ways

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- perform experiments multiple times without consuming chemicals
- revise theoretical concepts
- obtain result of time consuming experiments
- analysis of results thereby improving logical thinking skill



# Pedagogical integration of Virtual labs

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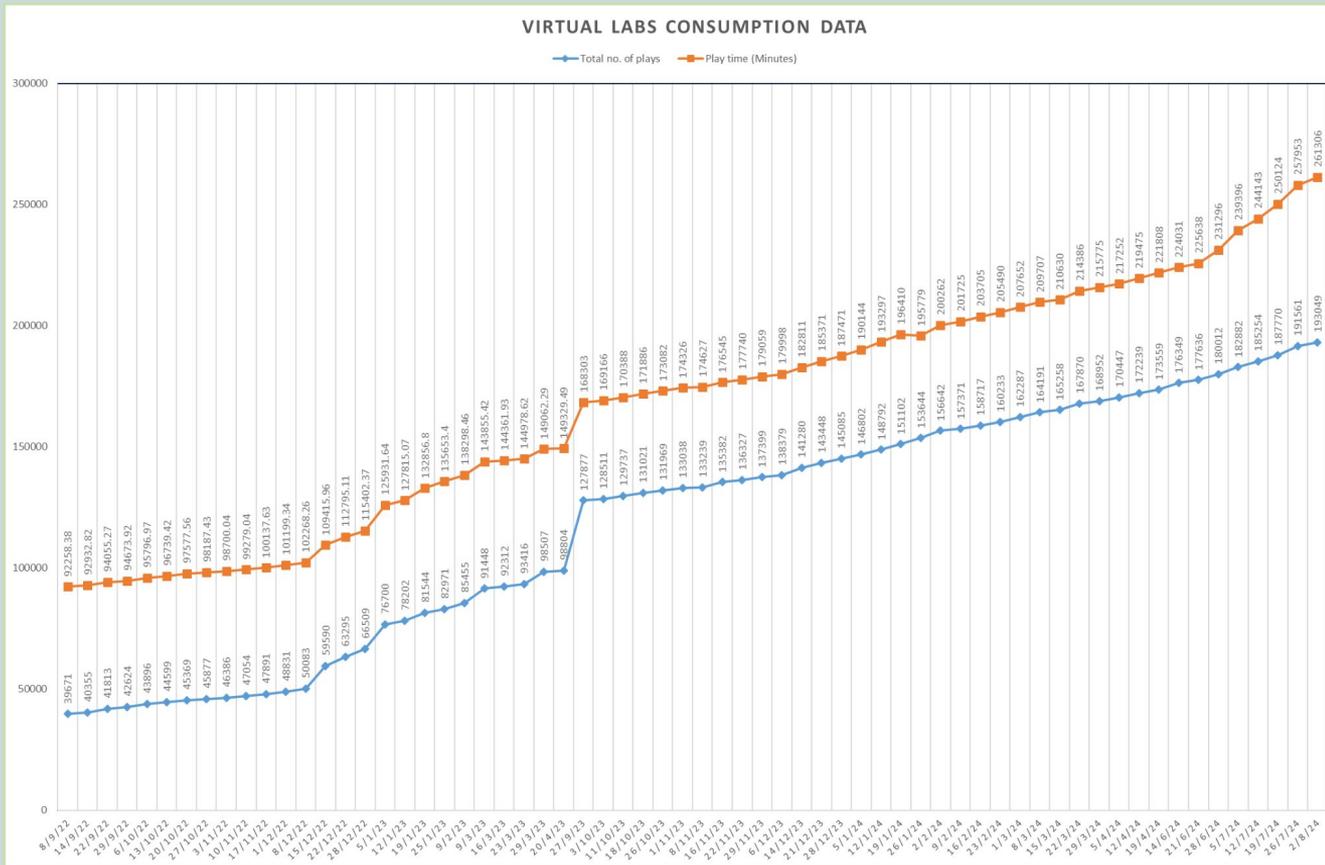
Virtual labs can help **teachers** in following ways:

- Design lesson plan integrating Virtual labs
- Use Virtual labs to demonstrate experimental skills and help learners in developing such skills

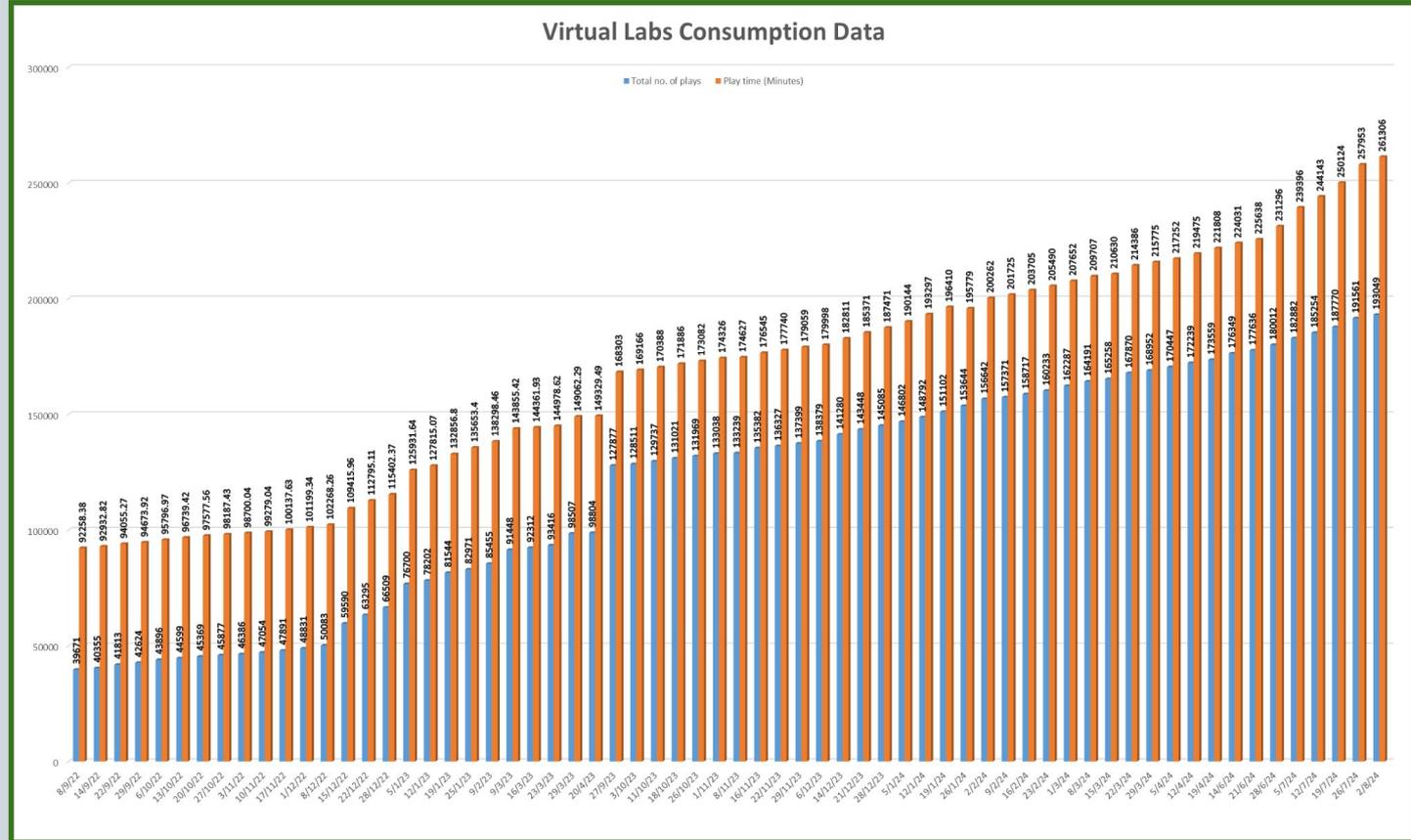


# Virtual Labs was launched on 29th July, 2022

Following data shows that large no. of users are taking benefit of available resources



The data shows that large no. of users are taking benefit of available resources

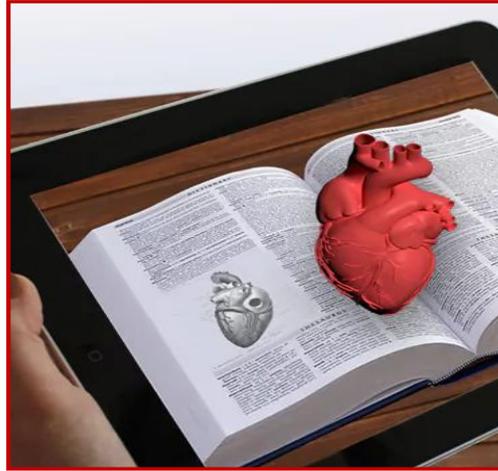




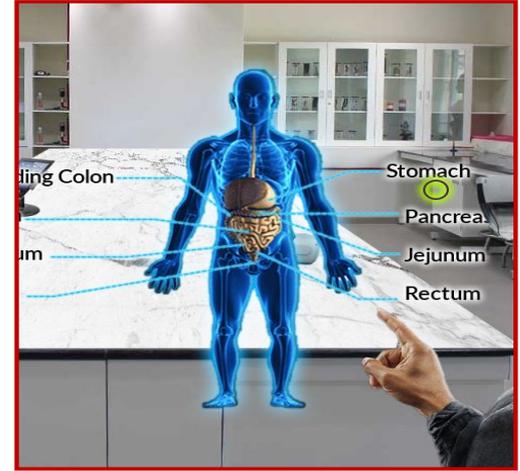
# The Spectrum of Reality-Virtuality Continuum



**Reality**



**Augmented Reality**



**Virtual Reality**



# Augmented Reality

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- Augmented reality (AR) refers to the real-time integration of digital information into a user's environment.
- AR technology overlays content onto the real world, enriching a user's perception of reality rather than replacing it.

# Virtual Reality

- Virtual Reality (VR) is a simulated experience created by computer technology that immerses users in an interactive, three-dimensional environment.
- It allows users to experience and interact with a virtual world as if they were physically present.

# Pedagogical Benefits of Extended Reality

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## **Increased Engagement-**

Immersive experiences make learning more exciting and interactive, boosting student motivation and interest.

## **Improved Retention-**

Hands-on experiences in virtual environments lead to deeper understanding and improved knowledge retention.

## **Personalized Learning-**

Students can learn at their own pace and adapt the simulation to their individual needs and learning styles.

## **Enhanced Collaboration-**

Virtual environments facilitate collaborative learning, allowing students to work together and learn from each other.

# Steps to reach at desirable resources of Virtual labs

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

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

DIKSHA

Home Dashboard About Get App Contribute User Guide

Explore DIKSHA Login

# DIKSHA

## ONE NATION ONE DIGITAL PLATFORM

An initiative of the National Council of Educational Research and Training (Ministry of Education, Govt of India)

### View DIKSHA world of open digital content

NCERT

CBSE

NIOS

STATE / UT BOARD  
Select State

- Scroll banners to find Virtual labs vertical and click on its “Explore” icon.

## Focus Areas of DIKSHA

### e-Jaadui Pitara



Foundational Stage Content with toys, games, puzzles, puppets, posters, flashcards etc.

[Explore →](#)

### Education For All



To impart foundational literacy and numeracy, critical life skills for Citizens

[Explore →](#)

### Virtual Lab

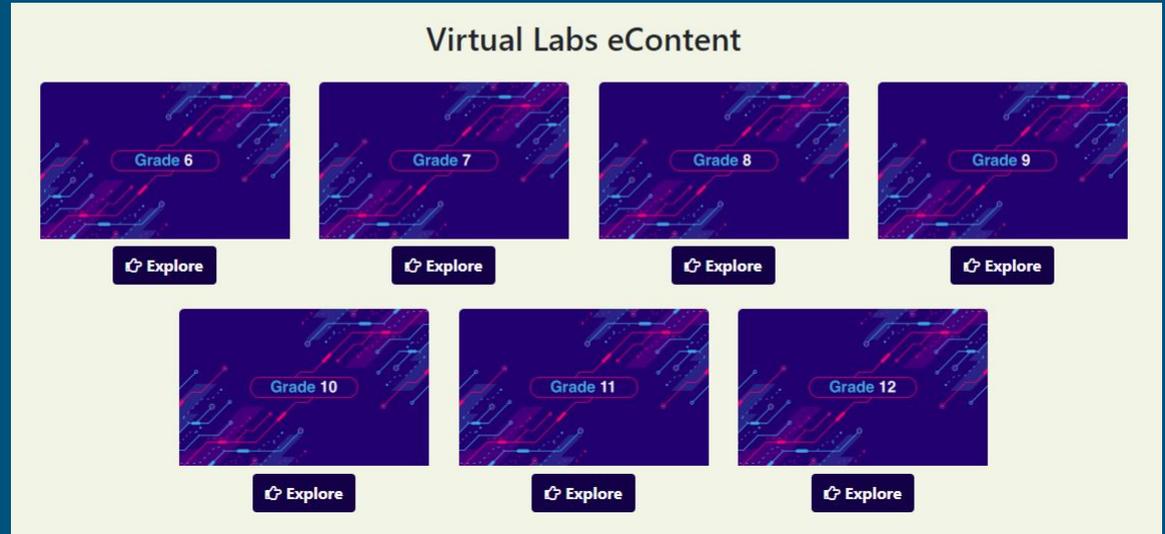


Virtual laboratories access for students to enhance actual laboratory experiences

[Explore →](#)



- Scroll down on the landing page of Virtual labs to reach eContent of classes 6-12.



- Click on the “Explore” icon of the desirable class, select the medium of interaction, then choose a subject you wish to study.

### Virtual Labs eContent

The interface displays seven cards for different grades, each with an 'Explore' button and subject options:

- Grade 6:** Explore button. Mediums: हिन्दी Medium, English Medium. Subjects: Mathematics, Science.
- Grade 7:** Explore button. Mediums: हिन्दी Medium, English Medium. Subjects: Mathematics, Science, English.
- Grade 8:** Explore button. Mediums: हिन्दी Medium, English Medium. Subjects: Mathematics, Science, English.
- Grade 9:** Explore button. Mediums: हिन्दी Medium, English Medium. Subjects: Mathematics, Science, English.
- Grade 10:** Explore button. Mediums: हिन्दी Medium, English Medium. Subjects: Mathematics, Science.
- Grade 11:** Explore button. Mediums: हिन्दी Medium, English Medium. Subjects: Mathematics, Physics, Chemistry, Biology, Computer Science.
- Grade 12:** Explore button. Mediums: हिन्दी Medium, English Medium. Subjects: Mathematics, Physics, Chemistry, Biology.

- Click on the simulation to perform experiment.

The screenshot shows a digital learning interface for a science simulation. At the top, a yellow header contains a back arrow, the text 'Science Activity', and 'English • Class 7'. A 'Share' button is in the top right. The main content area is titled 'Stomata in Leaves' and includes 'RESET', 'HELP', and 'MAXIMIZE' buttons. On the left, a 'Select the Leaf' dropdown menu is set to 'Leaf of Mango'. The central simulation area, labeled 'Mango Leaf', displays a green leaf on a plate, a glass of water, a slide, a coverslip, and a blue microscope. At the bottom of the simulation, it states: 'Developed by Amrita University under research grant from Department Of Electronics & Information Technology'. On the right, a sidebar with tabs for 'All', 'Video', 'Interactive', and 'Docs' lists various resource categories. The 'Learning resource' category is highlighted with a red box, and the item 'Simulation-Stomata in Leaves' is selected within it. Other categories include 'Video', 'Resources', and 'Self-Evaluation'. A 'Credits and Licence information' dropdown is at the bottom of the sidebar.

Virtual Labs provide self paced  
engaging learning experience