

# Virtual Labs: Need, Perspective, and Scope



 **6 JANUARY, 2025**  
10:00 AM to 11:00 AM, Monday

## Resource Persons



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Jio TV

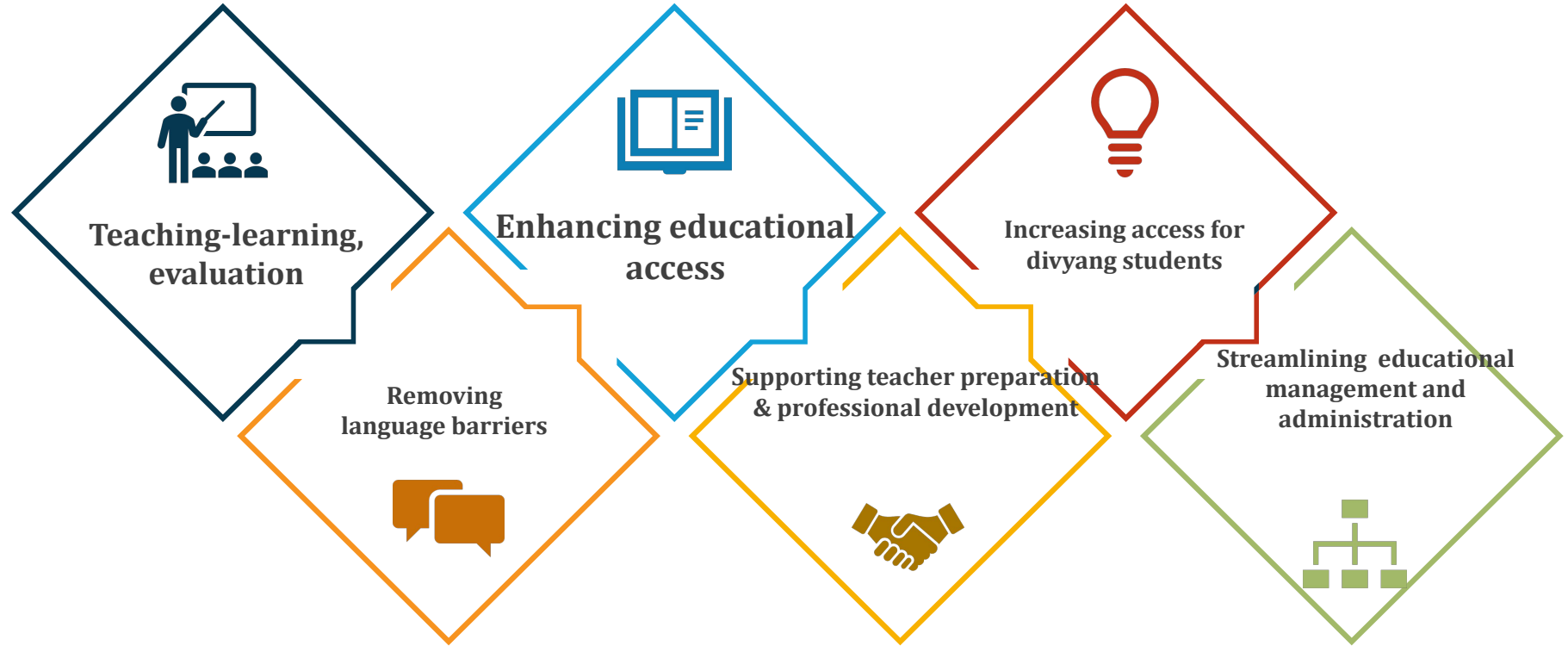
For any further queries, mail to : [diksha.training@ciet.nic.in](mailto:diksha.training@ciet.nic.in) or Call : 8800440559

# Virtual Labs: Policy Perspective, Need and Scope

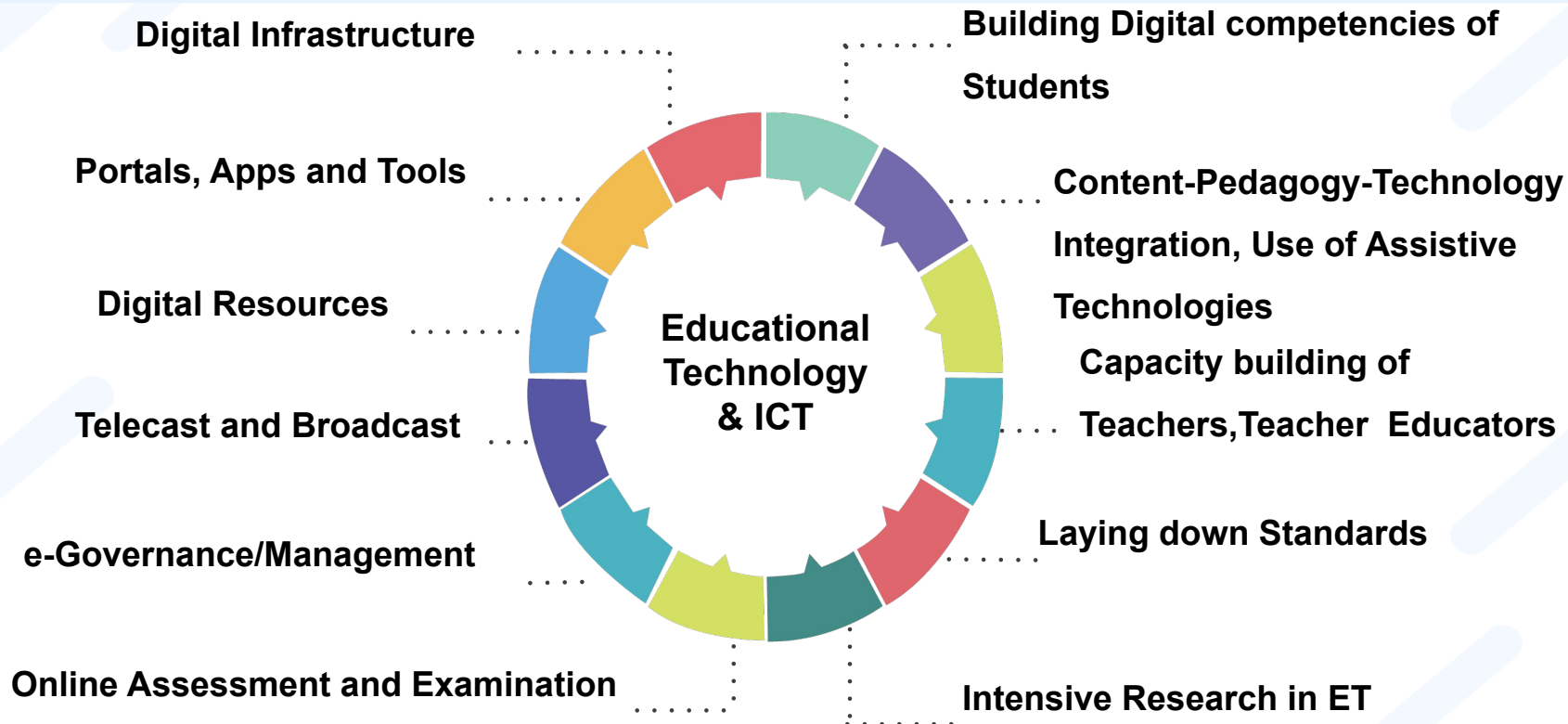


Central Institute of Educational Technology  
NCERT, New Delhi

# NEP 2020 - Technological thrust areas



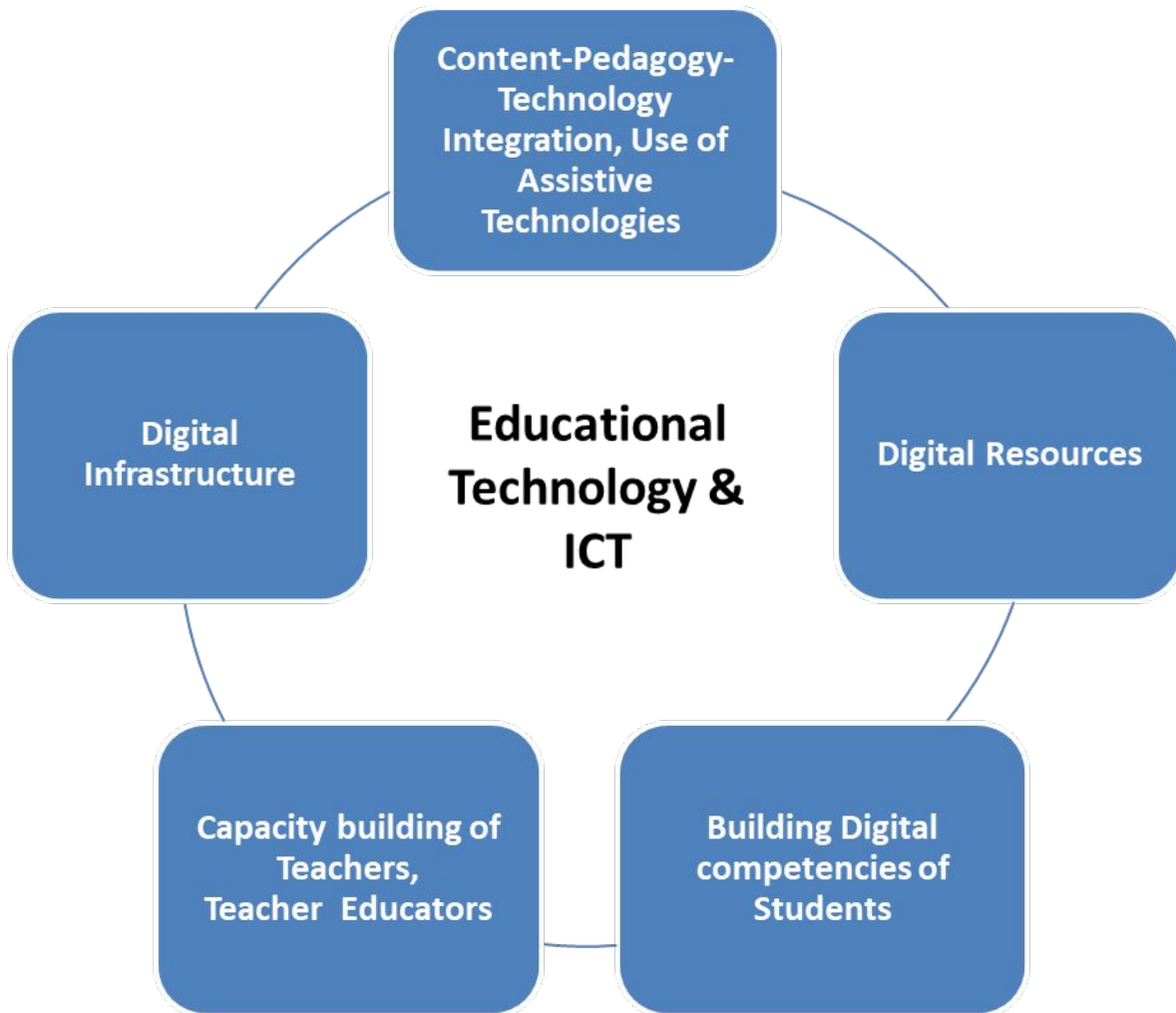
# NEP-2020: Recommendations for Online and Digital Education



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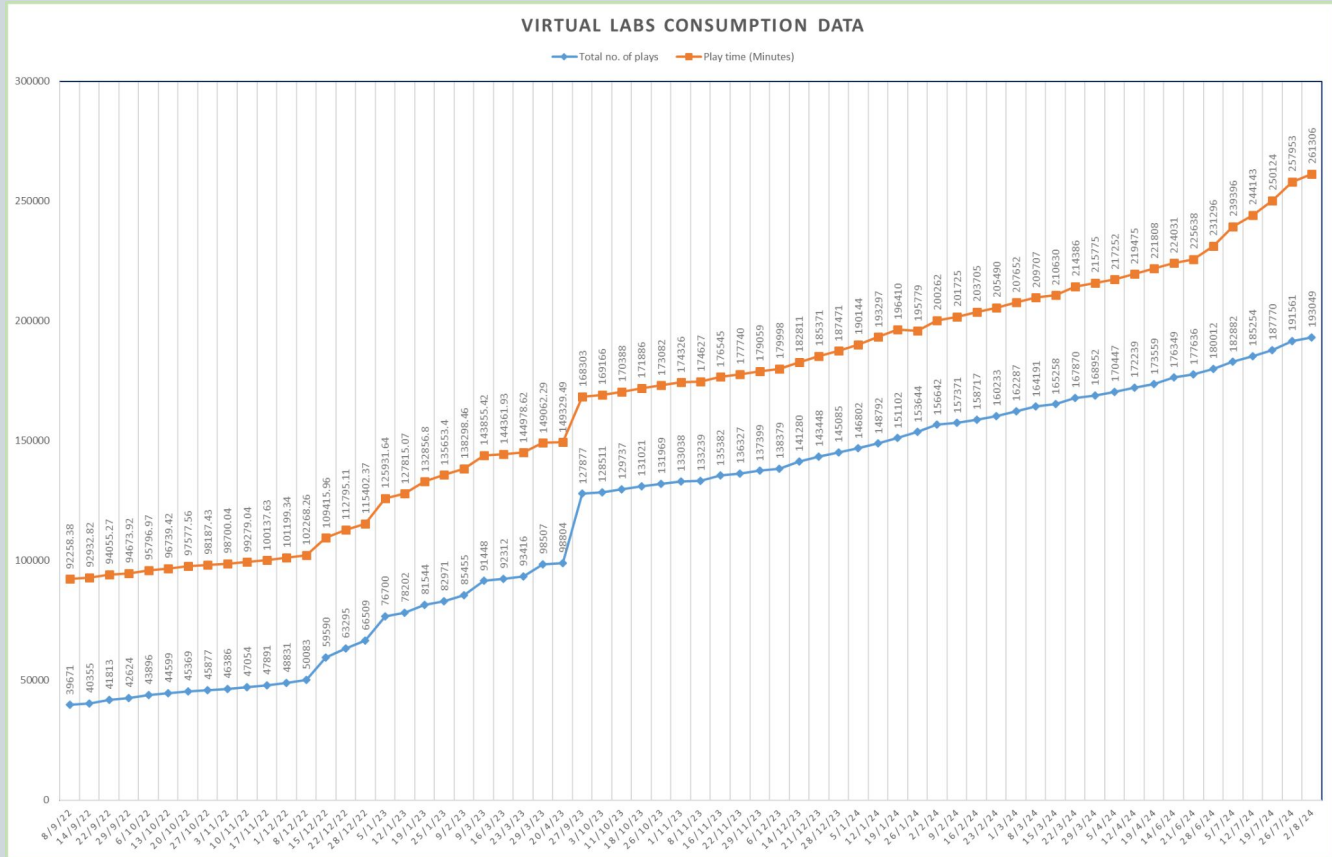
Virtual labs can help **teachers** in following ways:

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

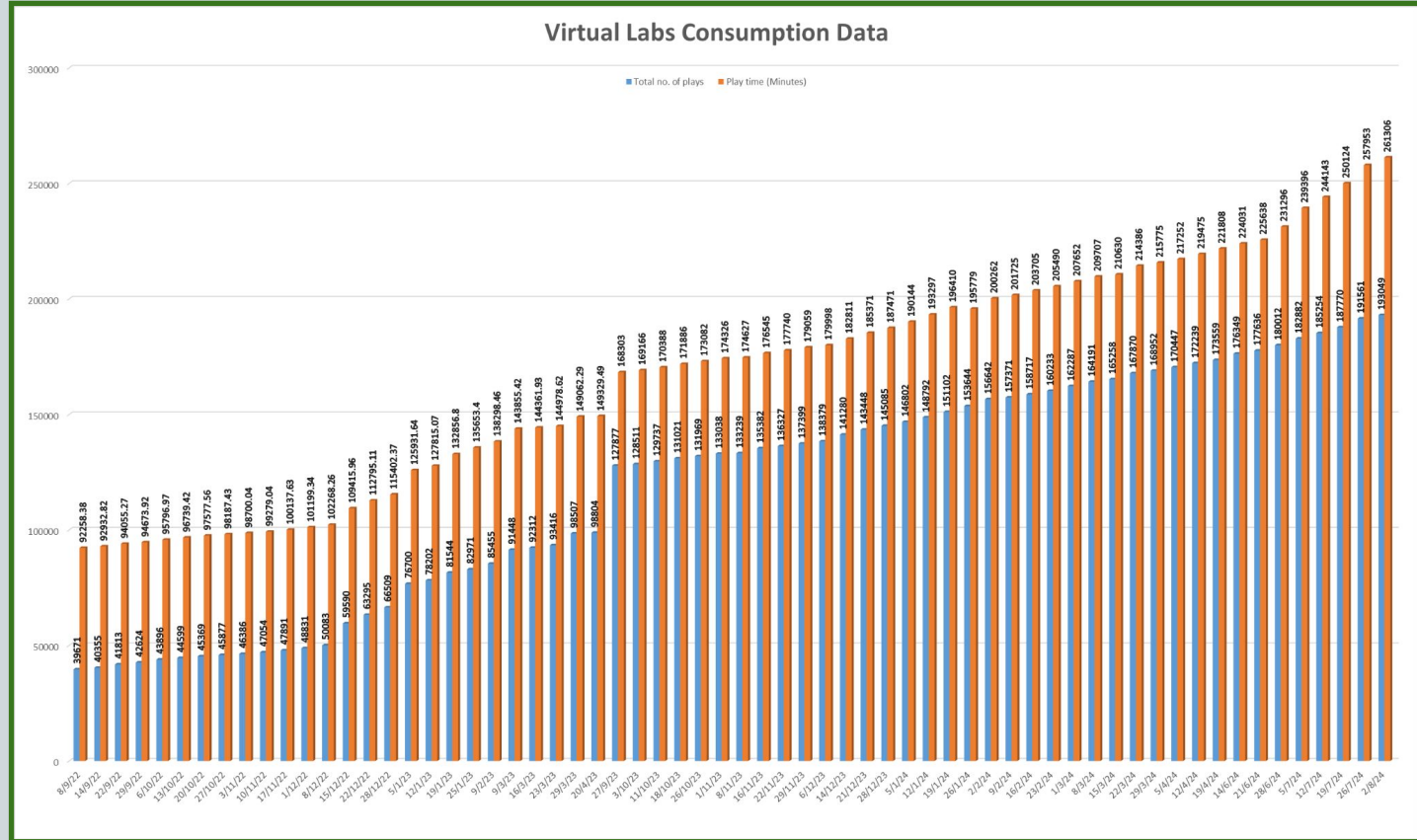


# Virtual Labs was launched on 29th July, 2022

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

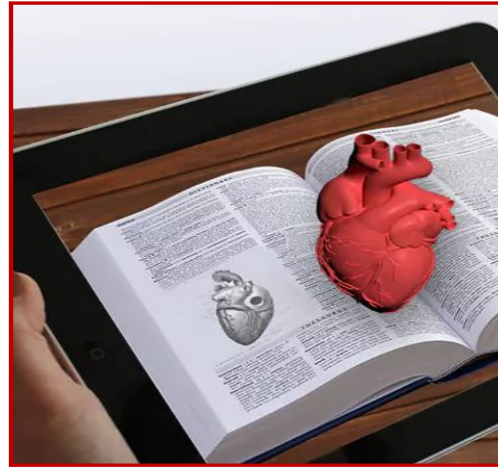




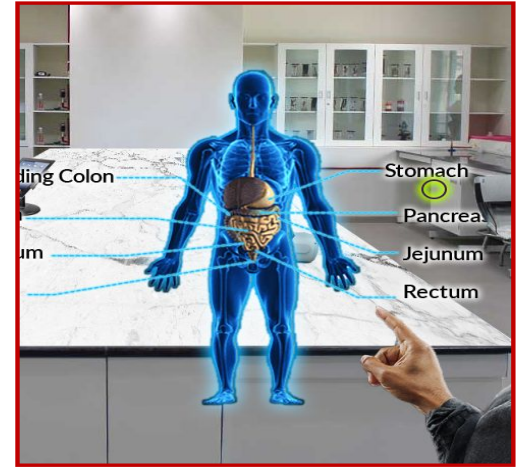
# The Spectrum of Reality-Virtuality Continuum



**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/>

The screenshot shows the homepage of the DIKSHA platform. At the top left is the DIKSHA logo. The navigation menu includes Home, Dashboard, About, Get App, Contribute, and User Guide. On the top right, there are buttons for 'Explore DIKSHA' and 'Login'. The main banner features the text 'DIKSHA ONE NATION ONE DIGITAL PLATFORM' in large, bold letters, with an illustration of a computer monitor displaying a video player, a keyboard, and books. Below the banner, a yellow bar contains the text: 'An initiative of the National Council of Educational Research and Training (Ministry of Education, Govt of India)'. The central heading reads 'View DIKSHA world of open digital content'. At the bottom, there are four filterable categories: NCERT (National Council of Educational Research and Training), CBSE (Central Board of Secondary Education), NIOS (National Institute of Open Schooling), and STATE / UT BOARD (with a dropdown menu for 'Select State').

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.

Virtual Labs eContent

The image displays a grid of seven buttons, each representing a grade level from 6 to 12. The buttons are arranged in two rows: the top row contains Grade 6, 7, 8, and 9; the bottom row contains Grade 10, 11, and 12. Each button features a dark purple background with a glowing blue and red circuit pattern. The grade level is written in white text within a rounded rectangle in the center of each button. Below each button is a dark blue rectangular button with a white cursor icon and the word 'Explore' in white text.

Grade 6	Grade 7	Grade 8	Grade 9
Grade 10	Grade 11	Grade 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 a grid of seven cards for grades 6 through 12. Each card features a dark blue background with a circuit-like pattern and a central 'Grade' label. Below each card is a dark blue 'Explore' button with a white icon. Underneath the buttons, the available media options are listed: 'हिन्दी Medium' and 'English Medium'. Below these, a list of subjects is provided for each grade level.

Grade	Media Options	Subjects
Grade 6	हिन्दी Medium, English Medium	Mathematics, Science
Grade 7	हिन्दी Medium, English Medium	Mathematics, Science, English
Grade 8	हिन्दी Medium, English Medium	Mathematics, Science, English
Grade 9	हिन्दी Medium, English Medium	Mathematics, Science, English
Grade 10	हिन्दी Medium, English Medium	Mathematics, Science
Grade 11	हिन्दी Medium, English Medium	Mathematics, Physics, Chemistry, Biology, Computer Science
Grade 12	हिन्दी Medium, English Medium	Mathematics, Physics, Chemistry, Biology

- Click on the simulation to perform experiment.

The screenshot shows a digital learning interface for a science activity. At the top, a yellow header contains a back arrow, the text 'Science Activity', 'English', 'Class 7', and a 'Share' button. Below the header, on the left, is a menu icon. The main content area is titled 'Stomata in Leaves' and features a 'Mango Leaf' simulation. On the left side of the simulation, there is a 'Select the Leaf' dropdown menu with 'Leaf of Mango' selected. The simulation area shows a mango leaf on a plate, a 'Slide', a 'Coverslip', a 'Water' dropper, and a blue microscope. At the top right of the simulation area are 'RESET', 'HELP', and 'MAXIMIZE' buttons. Below the simulation, a footer states: 'Developed by Amrita University under research grant from Department Of Electronics & Information Technology'. On the right side of the interface, there is a sidebar with filters: 'All', 'Video', 'Interactive', and 'Docs'. Below these are categories: 'Video', 'Resources', 'Learning resource', and 'Self-Evaluation'. The 'Simulation-Stomata in Leaves' item under 'Learning resource' is highlighted with a red box. At the bottom of the sidebar is a 'Credits and Licence information' dropdown.

Virtual Labs provide self paced  
engaging learning experience