IMMERSIVE LEARNING THROUGH TECHNOLOGIES

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Immersive Learning?

- Immersive Learning refers to a digital or physical learning environment that deeply engages, absorbs, or surrounds a person, making them feel completely involved in the experience. It often utilizes 3D technology, virtual reality (VR), or surround audio to create a strong sense of presence.

Immersive Technologies?

- Immersive technologies allow a person to feel part of an artificial, simulated environment.
- These technologies sense the body moment, postures, and gestures of an individual as input, and these inputs are used to interact with the Immersive environment
- These technologies are useful for learning anatomy and procedures because they allow students to prepare, practice, and repeatedly test their work in an environment without real-world consequences.

Types of Immersive Technologies

- **Augmented Reality (AR)**
- **Virtual Reality (VR)**
- **360-degree photographs/video**

Augmented Reality (AR)

Superimposition of computer-generated perceptual information over existing physical surroundings is called Augmented Reality (AR).

Augmented Reality Devices

- Smartphones and tablets are the most common AR devices.
- Augmented Reality (AR) Glasses
- Augmented Reality (AR) Headsets:

Augmented Reality Apps

- **E-Pathshala AR (Augmented Reality)**
- **SkyView**
- **ARloopa**

AR in Learning

- potential to create a constructivist knowledge-building environment, which requires the creation of realistic situations and an active learning environment through interaction with learning software
- Activity-centred education
- can help students become more motivated, collaborate, develop their spatial awareness, and perform better.

Virtual Reality (VR)

A three-dimensional, computer-generated situation that simulates the real world.

Hardware used in Virtual reality (VR):

1. **Virtual Reality (VR) Glasses:** Shutter glasses are an essential technology when considering semi-immersive systems.
2. **Virtual Reality (VR) Headsets:** A MOUNTED DISPLAY (HMD) uses small monitors placed in front of each eye

Virtual Reality Apps for Learning

Virtual reality in education has enabled the possibility of representing abstract concepts and virtually manipulating them, providing a suitable platform for understanding concepts and their relation to the physical world

Virtual Reality (VR)

Importance of VR in Learning

- VR facilitates more profound understanding by promoting hands-on learning experiences,
- VR, with its immersive and interactive capacities, offers a quintessential platform for facilitating such constructivist learning modalities.

360-degree photographs/video

360-degree photos or videos are visuals in which the view in every direction is captured and presented simultaneously.

Key Features of 360-degree photographs/video

Panoramic View: provides a complete and seamless panoramic view of the surroundings, allowing the viewer to explore every angle of the scene

High Resolution: ensure that every detail is captured with clarity and precision.

Motion Detection: allows for the identification and tracking of movement throughout the entire field of view.

Immersive Experience: transforms the way we interact with visual media, offering a level of engagement and realism that traditional formats cannot match.

Virtual Labs

A virtual laboratory is a computer-based activity where students interact with an experimental apparatus or other activity via a computer interface.

Key Features of Virtual Labs

Collaboration Tools: Collaboration tools in virtual labs can enhance the learning experience by promoting teamwork, communication, and problem-solving skills.

Simple and Responsive Interface:

Accessibility: Virtual environments, or hands-on labs, are accessible from a computer with a primary web browser and fast internet connectivity.

Real-time Guidance: This type of guidance is delivered in real-time, allowing students to receive feedback immediately.

Instructor control authorizes teachers to electronically monitor their students' progress, as happens in physical classrooms.

Pedagogy of Virtual Lab

Pre-Lab Session,

students are introduced to the theoretical background and objectives of the lab activity. They might review instructional materials, watch demonstration videos, or complete preparatory assignments to familiarize themselves with the procedures and equipment they will be using.

Performance Session,

students actively engage in conducting the experiment. Utilizing the virtual lab platform, students perform the procedures, collect data, and make observations as they would in a physical lab setting.

Post-Lab Session

focuses on reflection, analysis, and consolidation of the learning experience. Students analyze the data they collected, draw conclusions, and compare their results with theoretical expectations.

Virtual Labs

These platforms simulate physical labs on screens, allowing users to perform experiments and learn processes in a virtual environment.

Simulations: These offer students an opportunity to explore scientific and engineering concepts from a remote location. Simulations can range from interactive models of complex systems to step-by-step guides through theoretical scenarios, enabling students to experiment and observe outcomes in a controlled, virtual setting.

Examples

Virtual labs on DIKSHA

Olabs

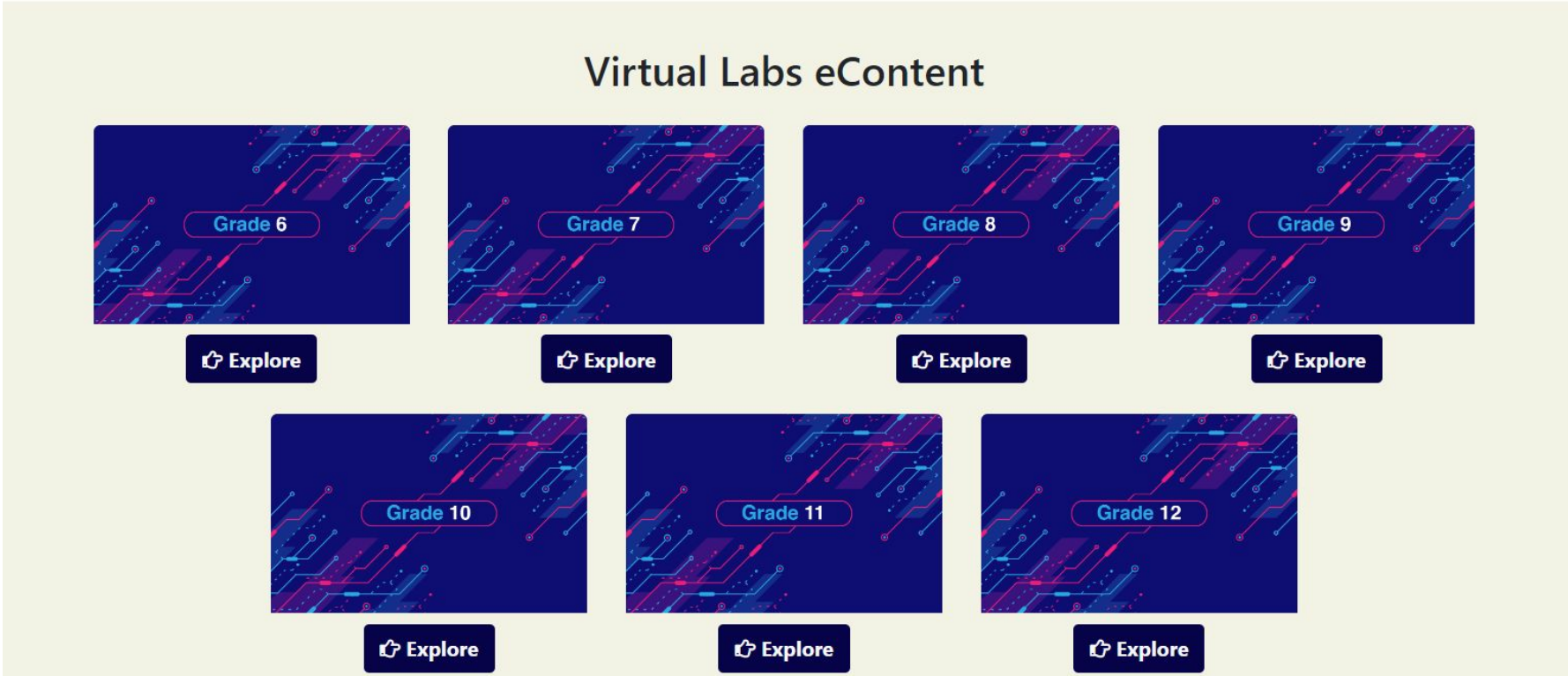
https://www.olabs.edu.in/

PhET Simulations

https://phet.colorado.edu/

DIKSHA Virtual Lab

DIKSHA Virtual Lab



DIKSHA Virtual Lab

Explore

Explore

Explore

Explore

Explore

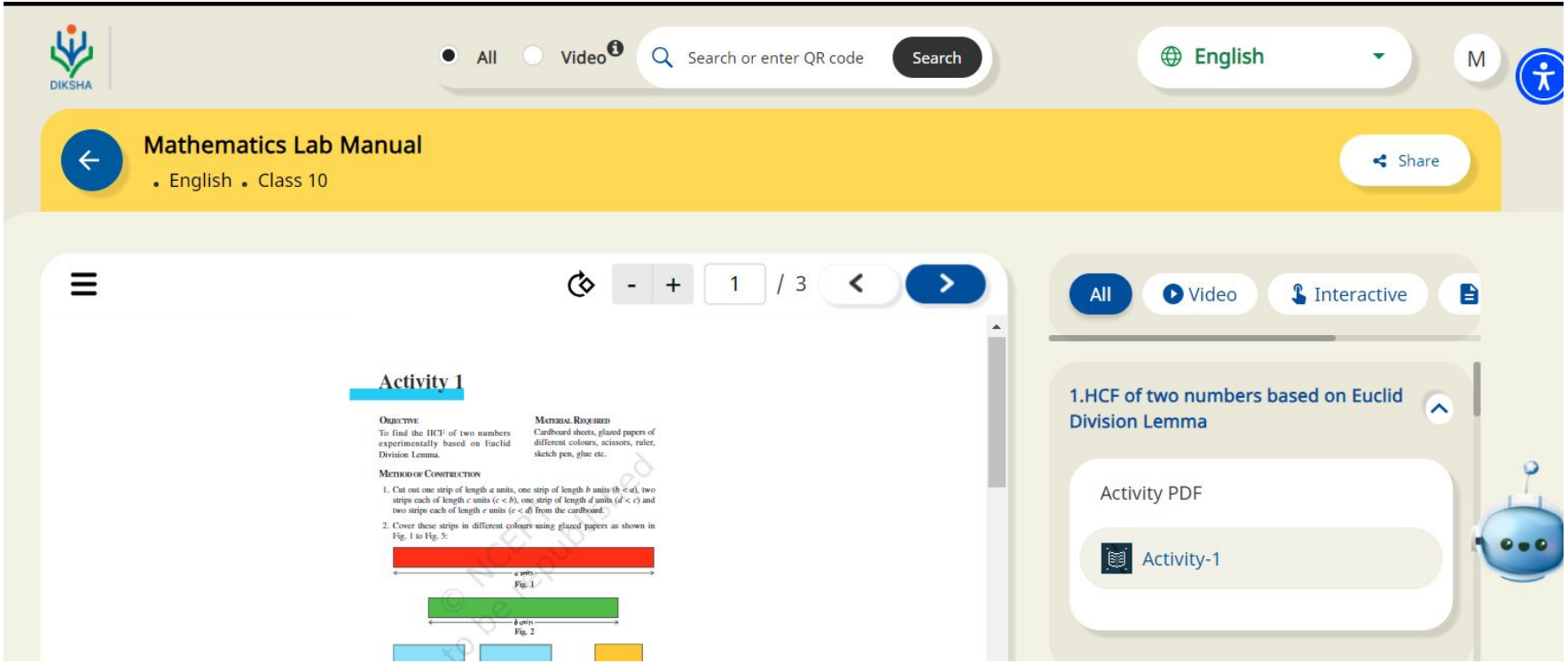
Explore

Explore

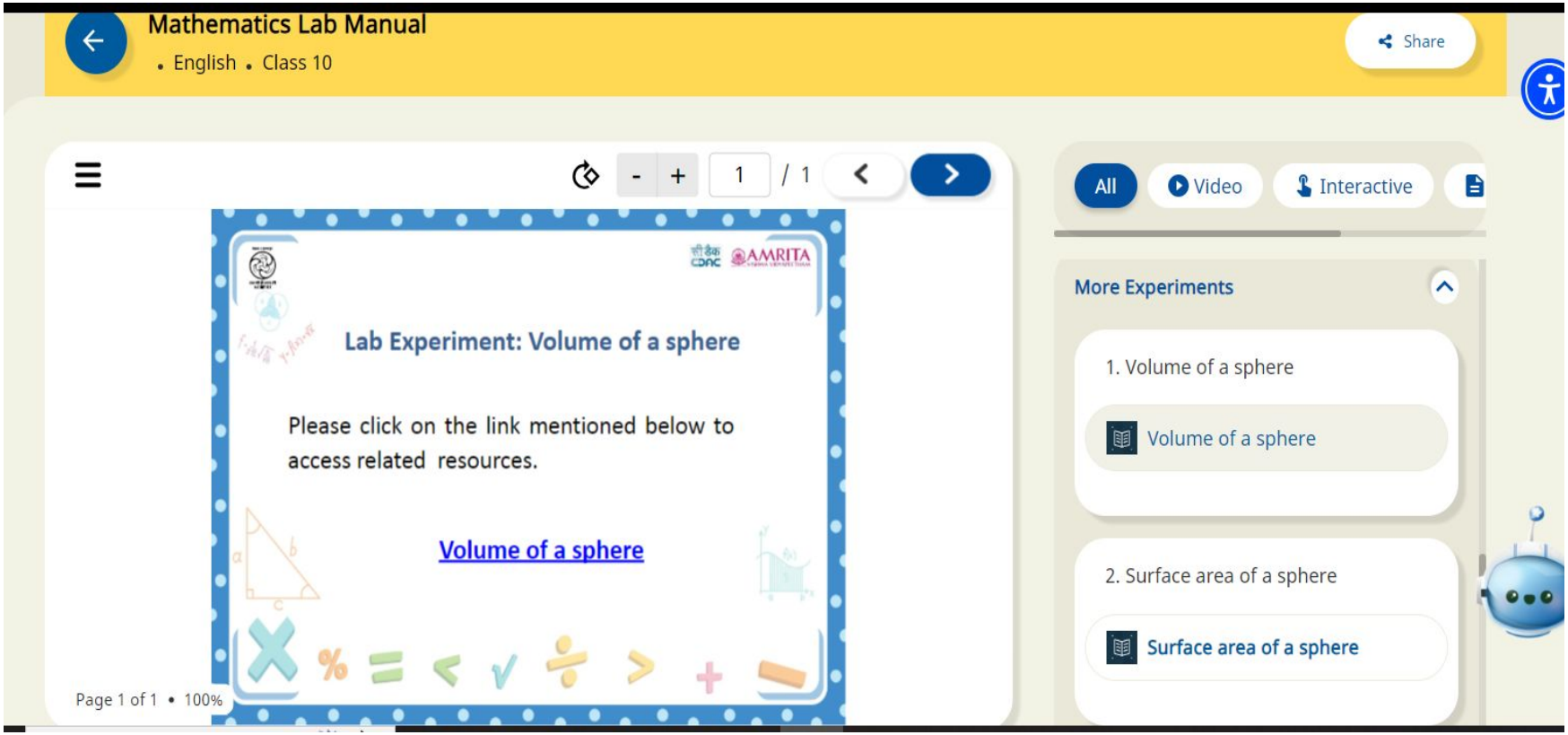
- हिन्दी Medium
- English Medium

- Mathematics
- Science

DIKSHA Virtual Lab



DIKSHA Virtual Lab



DIKSHA Virtual Lab

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you are here-> home-> mathematics-> class 10-> volume of a sphere

Volume of a sphere

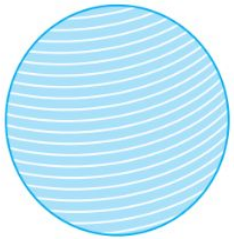
Theory | Procedure | Animation | Simulator | Self Evaluation | Reference | Feedback

Objective:

To give a suggestive demonstration of the formula for the volume of a sphere in terms of its radius.

Related terms

Sphere:



Virtual Lab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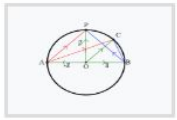
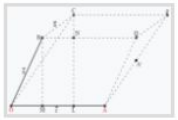
Mathematics

Class 12

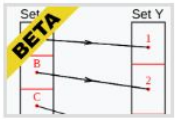


Angle in a semicircle

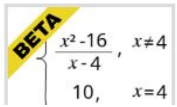


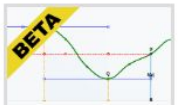
Distributive vector multiplication

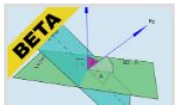
Perimeter of rectangle and area of square

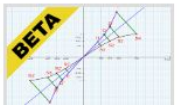


Function that is not one-one but is onto





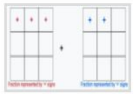




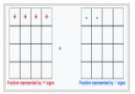
Virtual Lab

Class 6

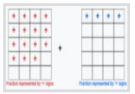
To find fractions equivalent to a given fraction



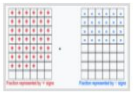
Sum of fractions with same denominators



Subtraction of fractions with same denominator



Sum of fractions witl different denominato



Subtraction of fractions with different

To verify distributive properties of whole

To find HCF of two numbers.

To add integers

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To find fractions equivalent to a given fraction

Theory | Procedure | Animation | Simulator | Self Evaluation | Reference | Feedback

Virtual Lab

Demonstration

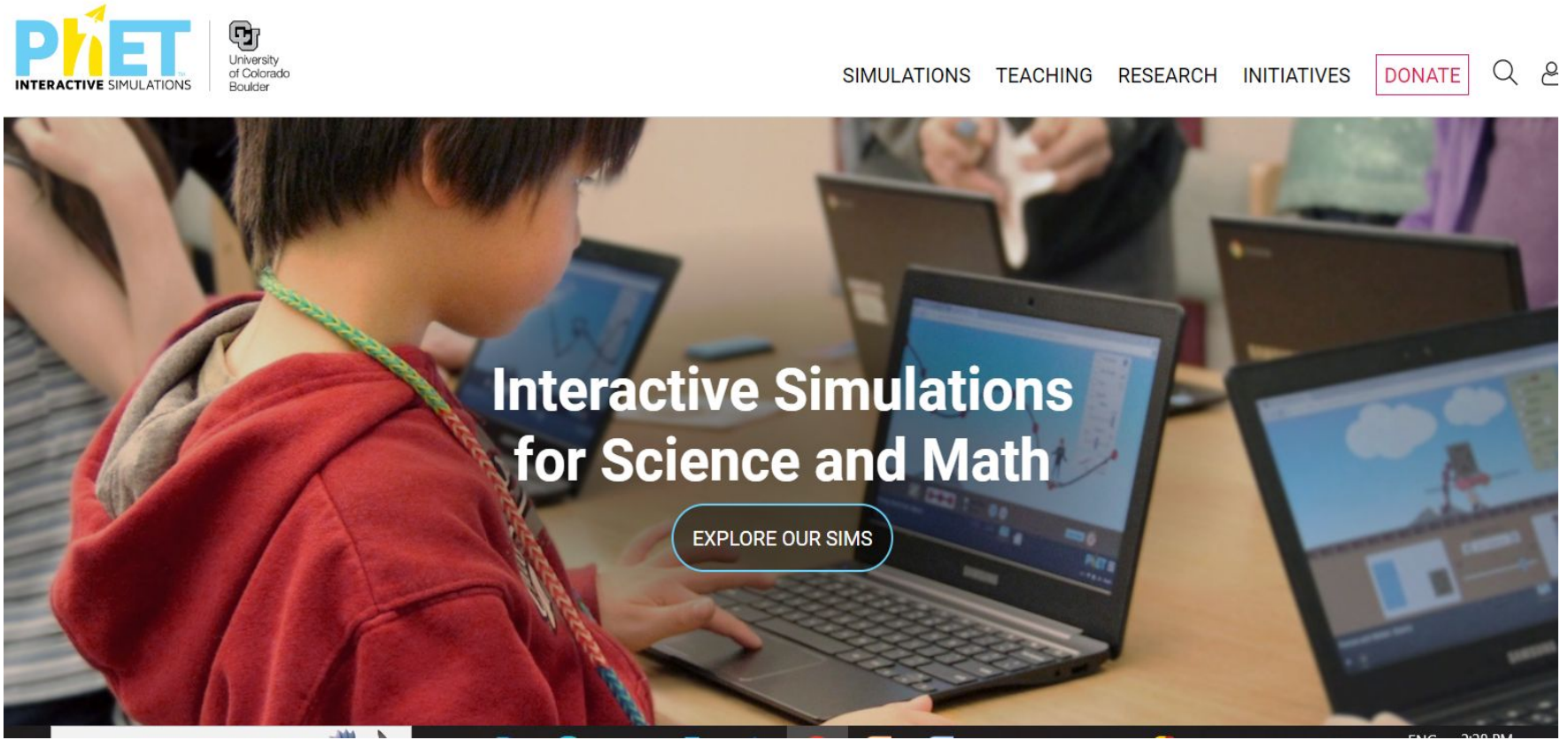
https://cdac.olabs.edu.in/?sub=80&brch=57&sim=256&cnt=809

Virtual Lab

Practice

https://cdac.olabs.edu.in/?sub=80&brch=57&sim=256&cnt=4

Simulations (PhET Interactive simulations)



Simulations (PhET Interactive simulations)

Browse Filter

Physics

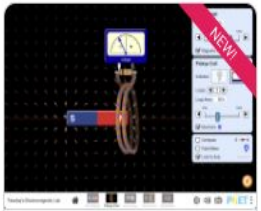
Buoyancy: Basics

Buoyancy

Generator

Magnets and Electromagnets

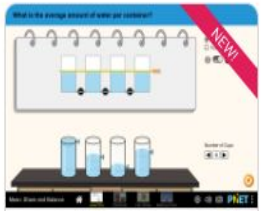
Magnet and Compass



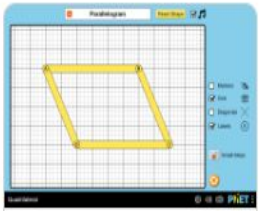
Faraday's Electromagnetic Lab

Projec

Math & Statistics



Projectile Sampling



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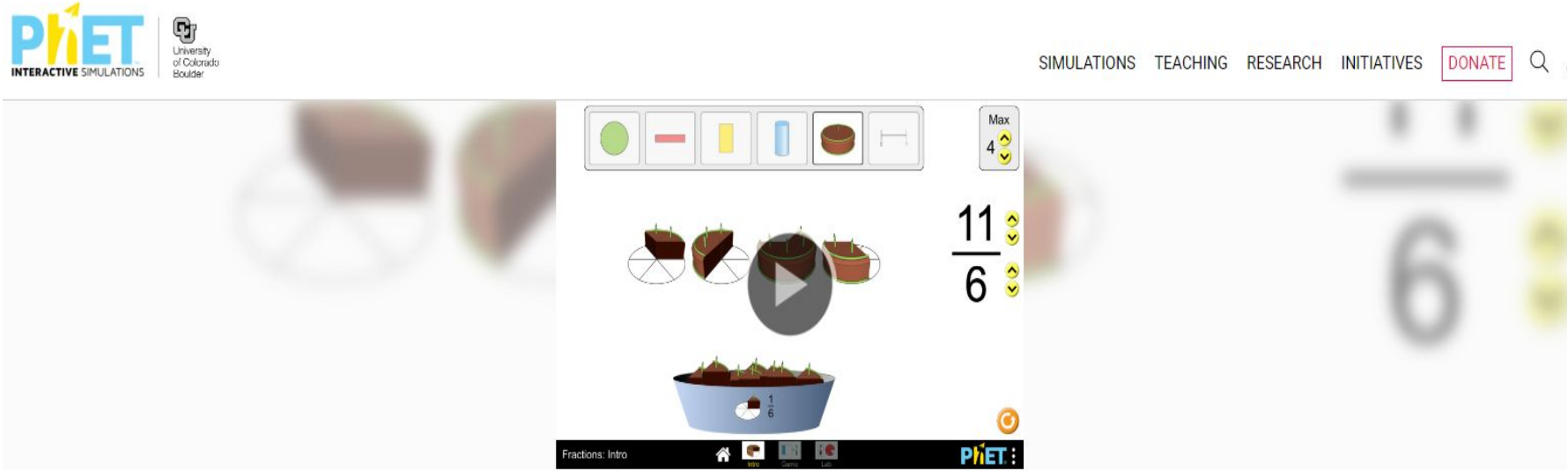


Simulations (PhET Interactive simulations)

https://phet.colorado.edu/en/simulations/fractions-intro

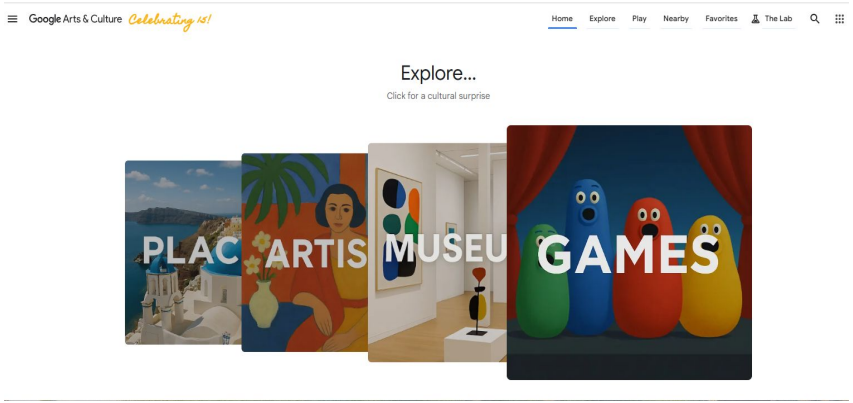
360 degree Photographs and Videos

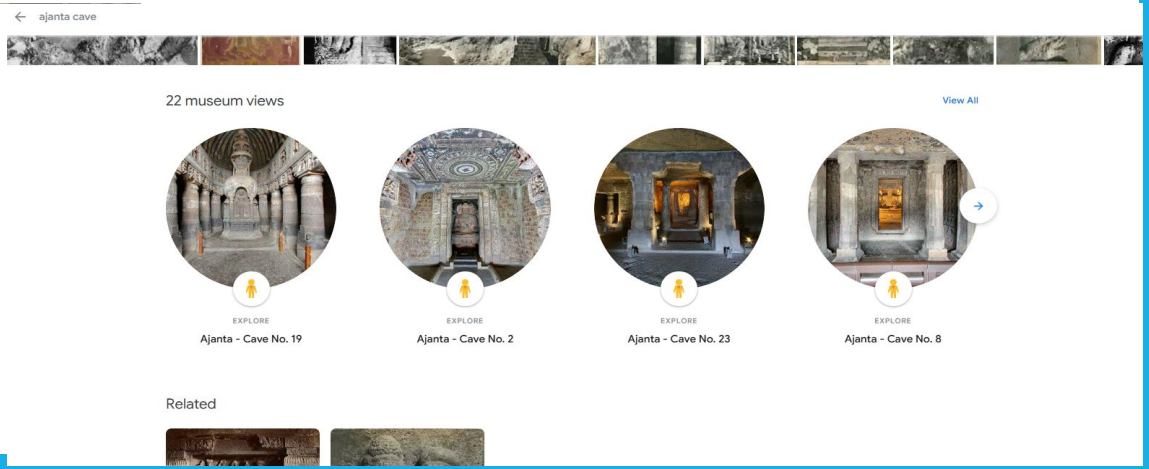
Google Arts & Culture

This collection of 360° degree immersive Photographs and videos allow your students to step right into some of the most amazing locations.

https://artsandculture.google.com/

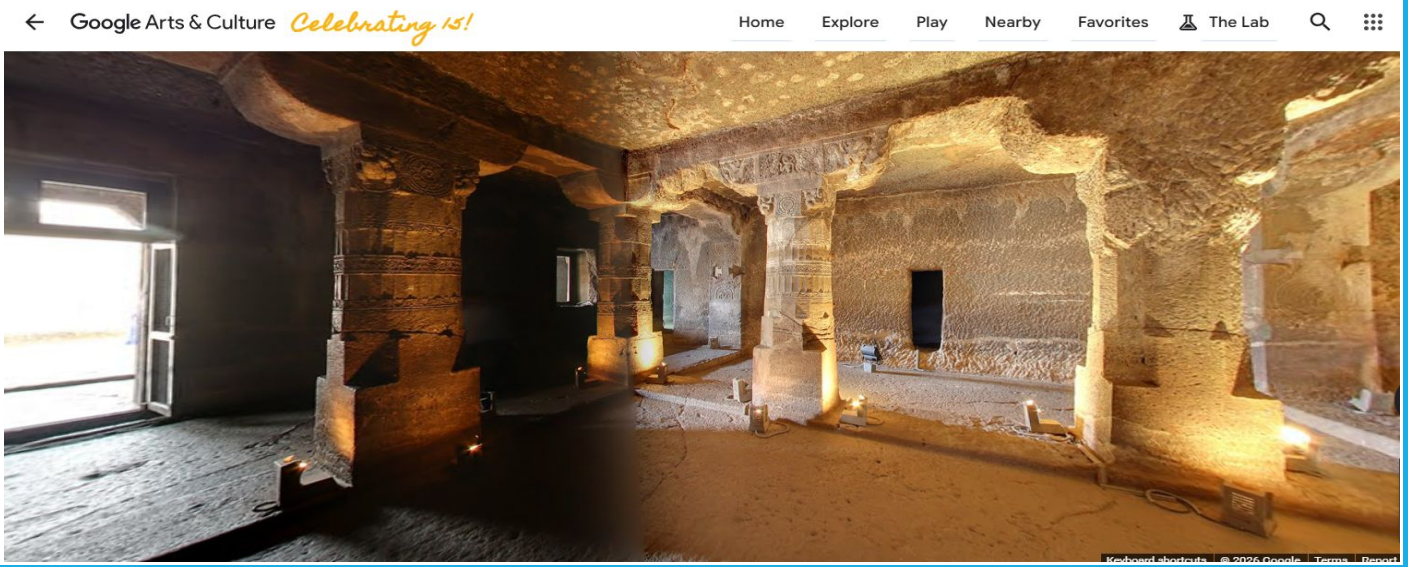
360-degree photos/video in Learning





360-degree photos/video in Learning

- enable users to experience and interact with virtual content and environments directly.



Conclusion

VR and AR technologies create immersive, interactive experiences by overlaying digital content onto the real world (AR) or generating entirely simulated environments (VR).

These technologies have revolutionised digital education, offering diverse tools and methods to enhance teaching and learning experiences, expand accessibility, and cater to the individual needs and preferences of learners in a dynamic and evolving educational landscape.

Thanks