शिक्षा मंत्रालय
MINISTRY OF EDUCATION

Virtual Lab
as a teaching learning tool for Physics

VIRTUAL LABS

7 JANUARY, 2025
10:00 AM to 11:00 AM, Tuesday

Resource Persons

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For any further queries, mail to : **diksha.training@ciet.nic.in** or Call : **8800440559**

VIRTUAL LAB
AS A TEACHING LEARNING TOOL
FOR PHYSICS

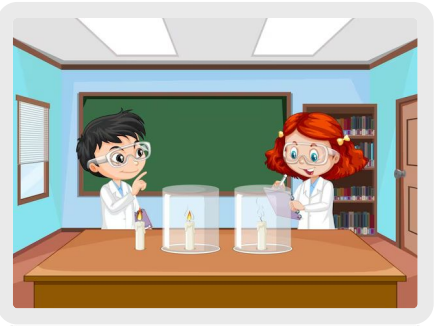
Physics

Deals with Universal Laws, Behaviors and Relationships for Physical Concepts

Relies on Experiments, Questioning, Interpretation and Logical Analysis

Is about understanding by Observing Physical Events around us

SIGNIFICANCE OF EXPERIMENTS



Experiments

Physics relies on experimentation to validate scientific theories, establish the facts

Hypothesis Testing

Concepts in Physics are difficult to grasp without hands on experience. Experiments allow students to visualize concepts for better understanding

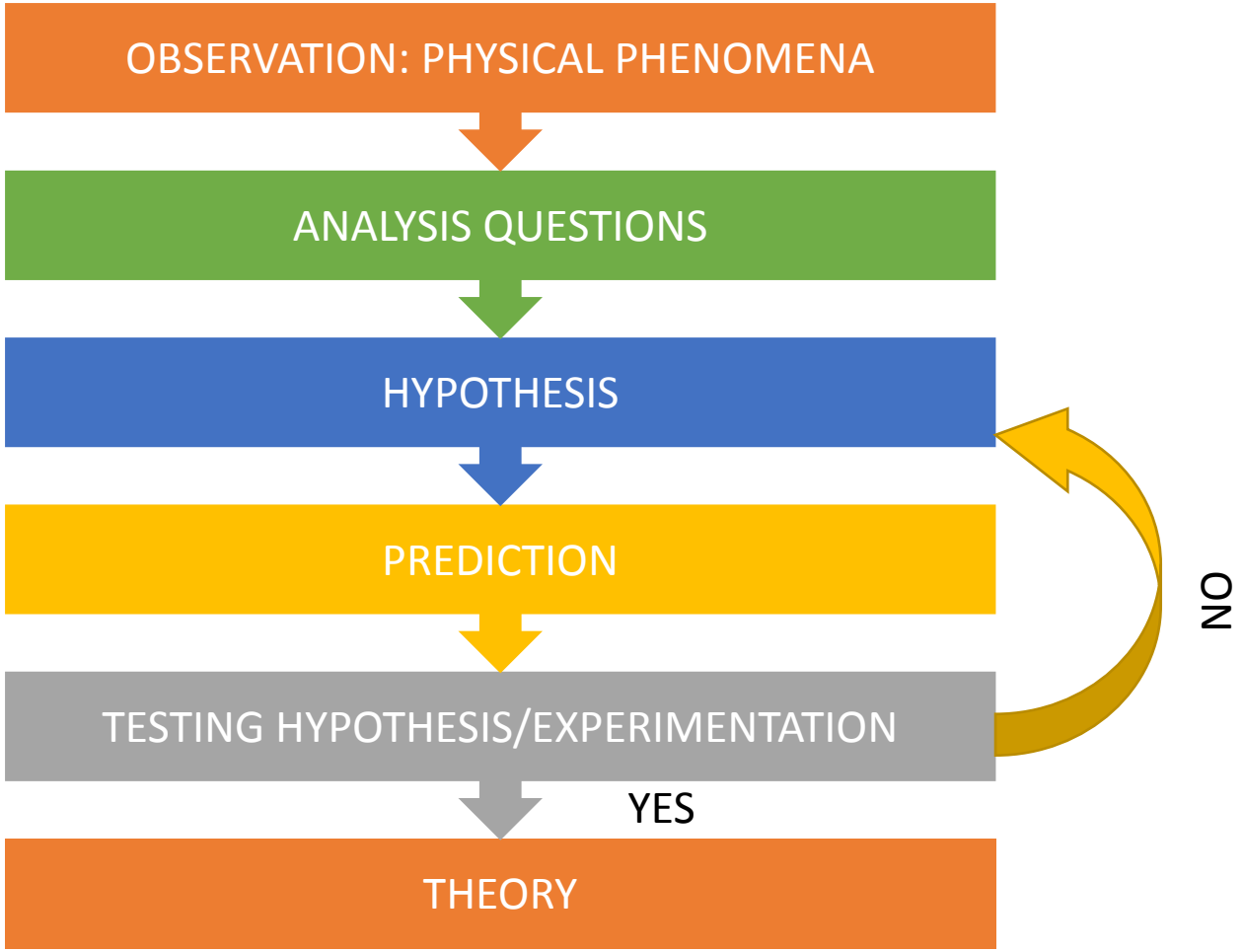
Data Interpretation

Develops essential scientific skills of data collection, analysis, critical thinking, and problem-solving techniques

Engaging Students

Ignites curiosity, foster innovation and inspire learners for further inquiry, leading to technological advancements

SCIENTIFIC METHOD



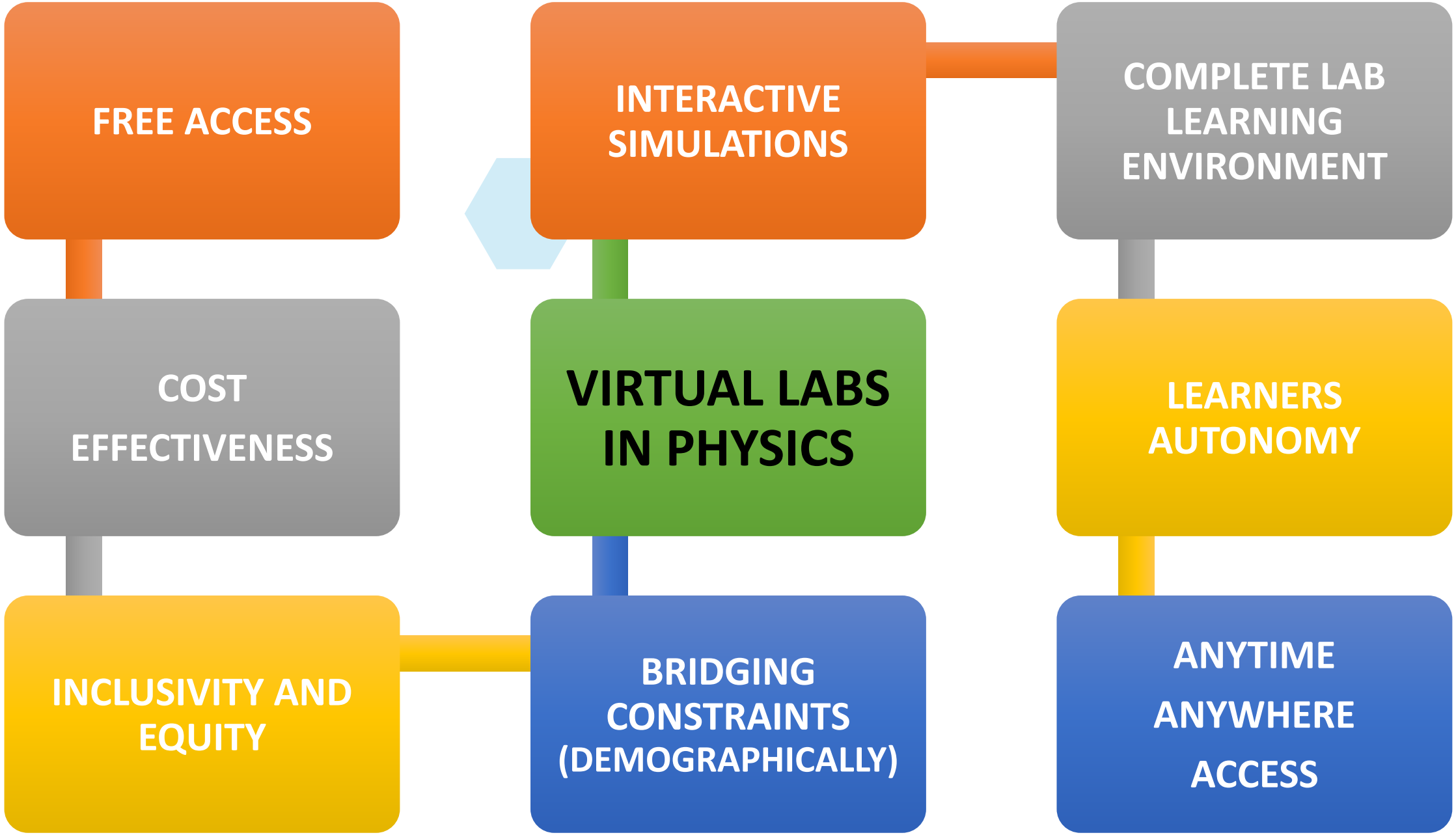
VIRTUAL LABS FACILITATE PHYSICAL LABS

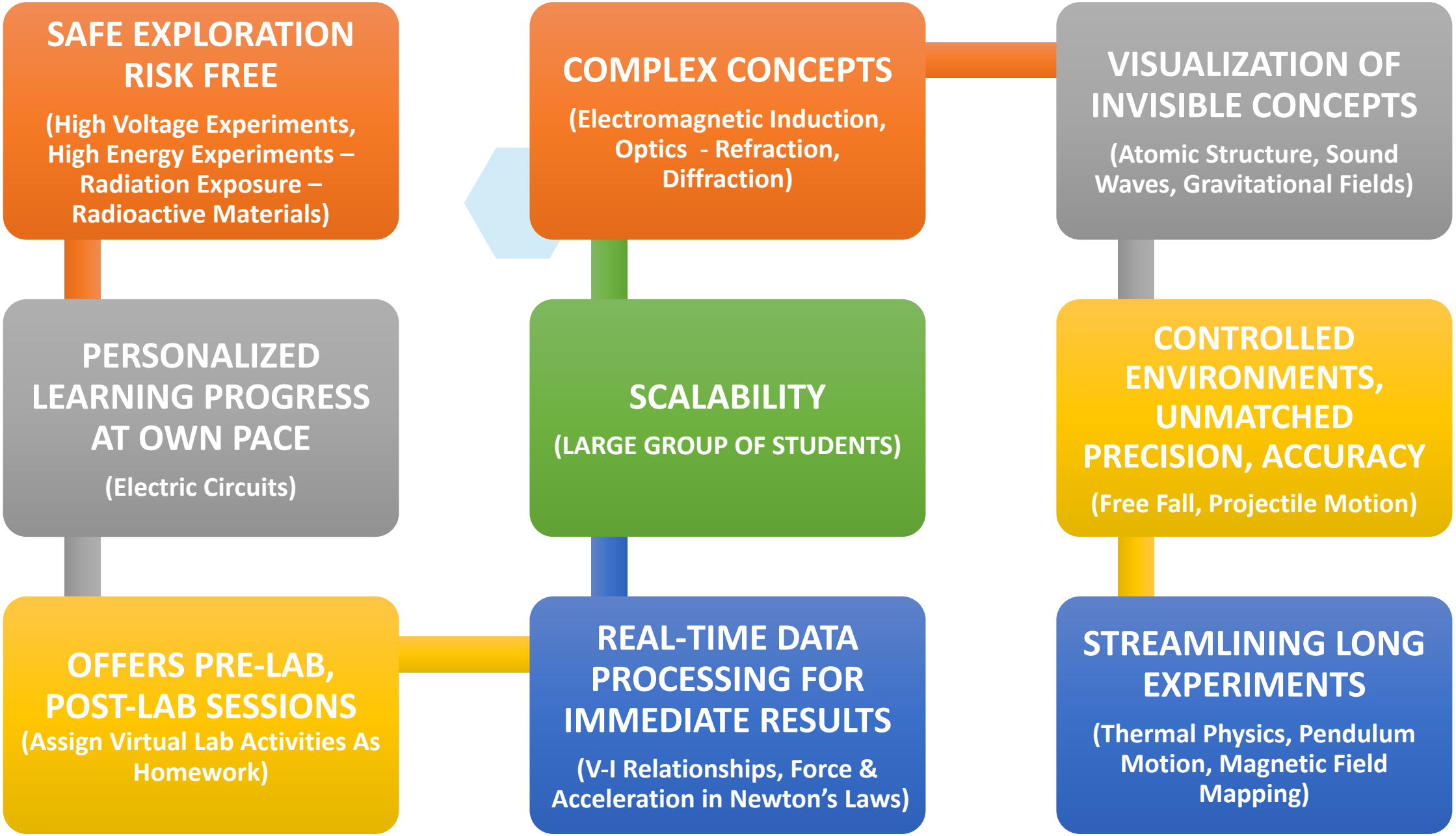
BASED ON CONCEPT OF REMOTE EXPERIMENTATION

IT'S A COMPUTER-BASED ACTIVITY

VIRTUAL LABS HAVE A RESOURCE-RICH LEARNING ENVIRONMENT

INTERACTION WITH AN EXPERIMENTAL APPARATUS OR OTHER ACTIVITY VIA A COMPUTER INTERFACE


FREE ACCESS
INTERACTIVE SIMULATIONS
COMPLETE LAB LEARNING ENVIRONMENT
COST EFFECTIVENESS
VIRTUAL LABS IN PHYSICS
LEARNERS AUTONOMY
INCLUSIVITY AND EQUITY
BRIDGING CONSTRAINTS (DEMOGRAPHICALLY)
ANYTIME ANYWHERE ACCESS


SAFE EXPLORATION RISK FREE
(High Voltage Experiments, High Energy Experiments – Radiation Exposure – Radioactive Materials)
COMPLEX CONCEPTS
(Electromagnetic Induction, Optics - Refraction, Diffraction)
VISUALIZATION OF INVISIBLE CONCEPTS
(Atomic Structure, Sound Waves, Gravitational Fields)
PERSONALIZED LEARNING PROGRESS AT OWN PACE
(Electric Circuits)
SCALABILITY
(LARGE GROUP OF STUDENTS)
CONTROLLED ENVIRONMENTS, UNMATCHED PRECISION, ACCURACY
(Free Fall, Projectile Motion)
OFFERS PRE-LAB, POST-LAB SESSIONS
(Assign Virtual Lab Activities As Homework)
REAL-TIME DATA PROCESSING FOR IMMEDIATE RESULTS
(V-I Relationships, Force & Acceleration in Newton's Laws)
STREAMLINING LONG EXPERIMENTS
(Thermal Physics, Pendulum Motion, Magnetic Field Mapping)

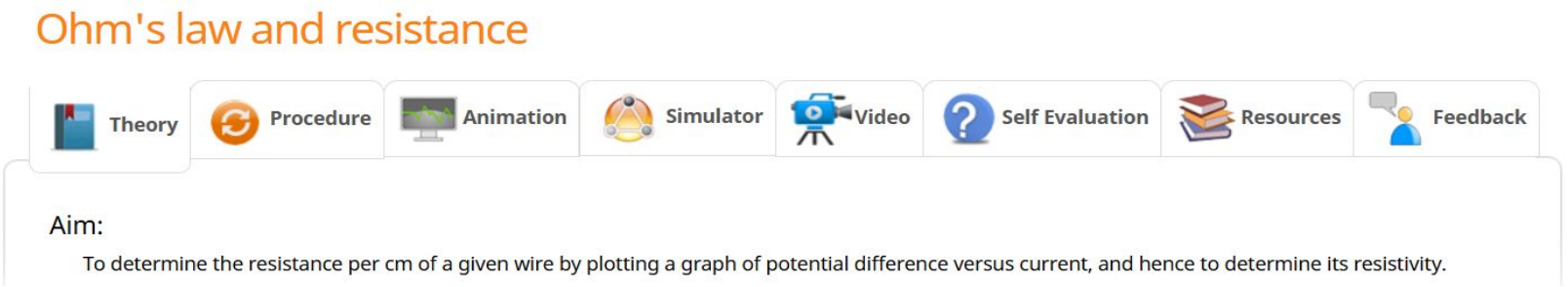
VIRTUAL LAB: HOW DOES IT ENRICH LEARNING

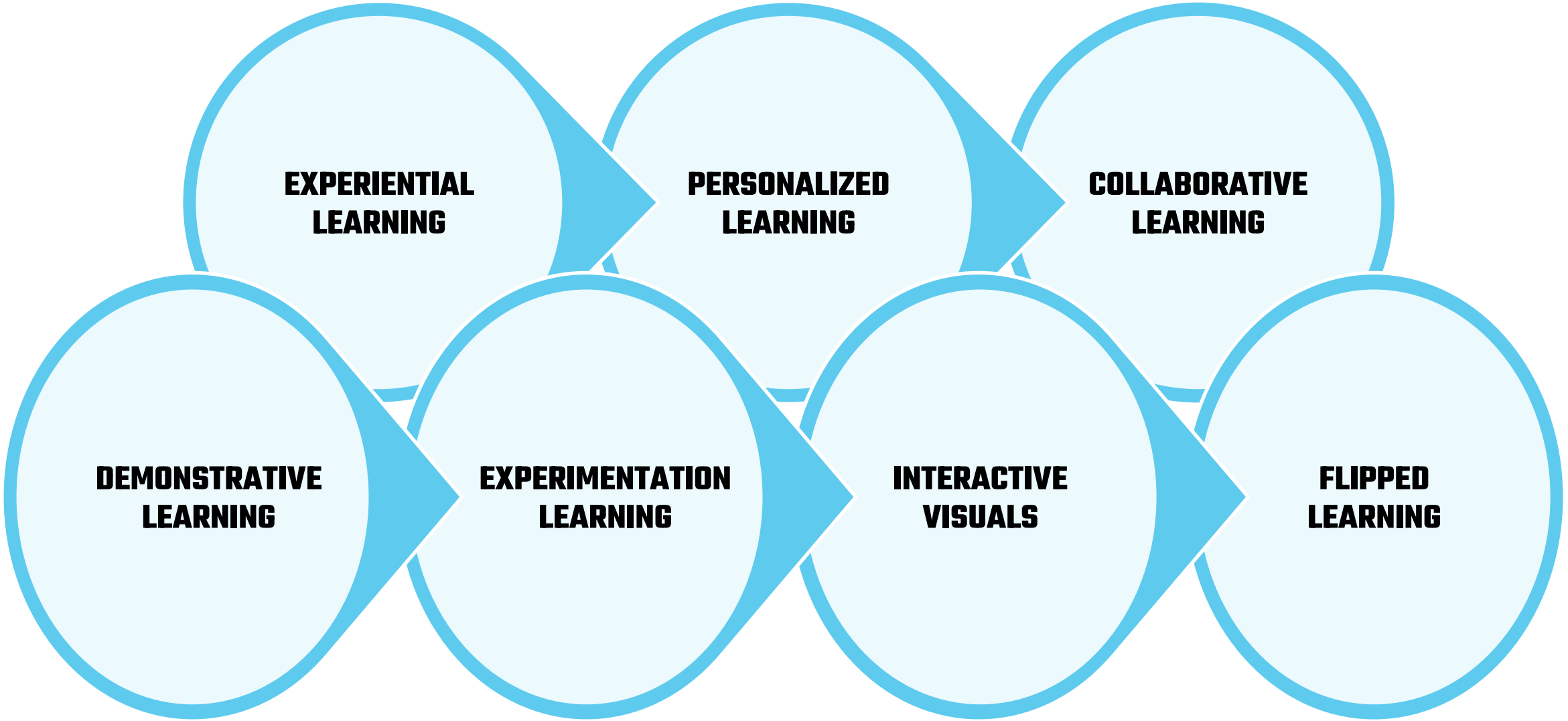
Helps to observe and inquire particular process and phenomena

Keep the learners engaged to manipulate

Deepens conceptual understanding and Motivation

To visualize the invisible phenomena like atomic structures, propagation of waves.

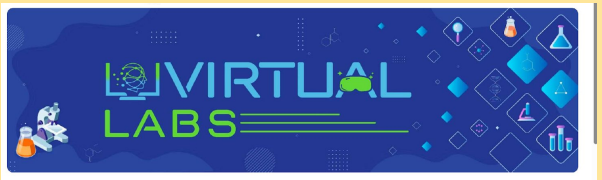



EXPERIENTIAL LEARNING
PERSONALIZED LEARNING
COLLABORATIVE LEARNING
DEMONSTRATIVE LEARNING
EXPERIMENTATION LEARNING
INTERACTIVE VISUALS
FLIPPED LEARNING

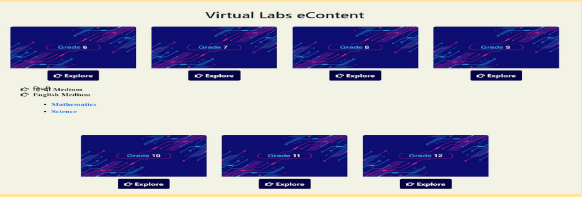
Virtual Labs were launched on DIKSHA PORTAL in 2022, which helps learners and educators for Experiential learning

Using simulator students understand concepts by performing experiments online, not merely by watching videos or reading text.

To access the Virtual labs Vertical on DIKSHA, you can Go to : https://diksha.gov.in/virtuallabs.html

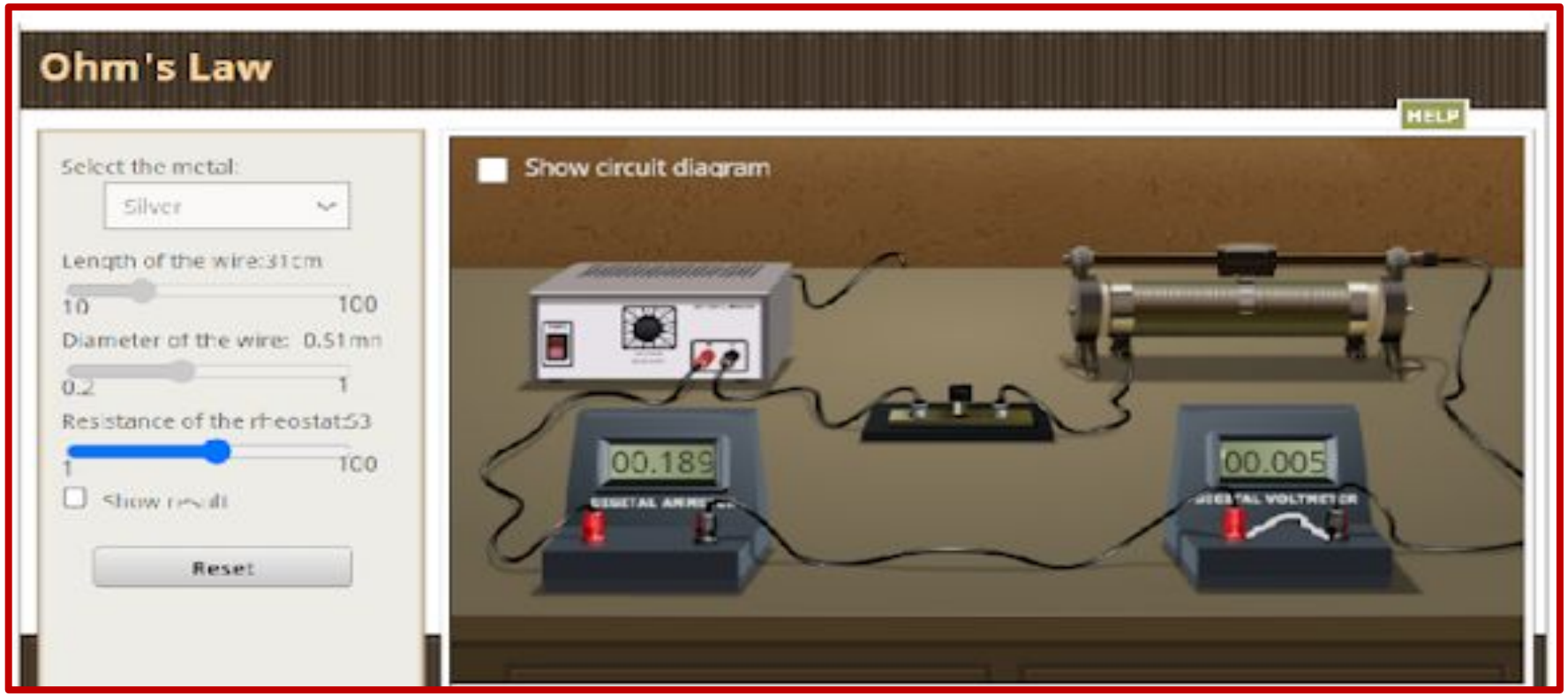


Click the Explore icon for different classes



Virtual Lab Experiment – Class XII

AIM - To determine the resistance per cm of a given wire by plotting a graph of potential difference versus current, and hence to determine its resistivity.



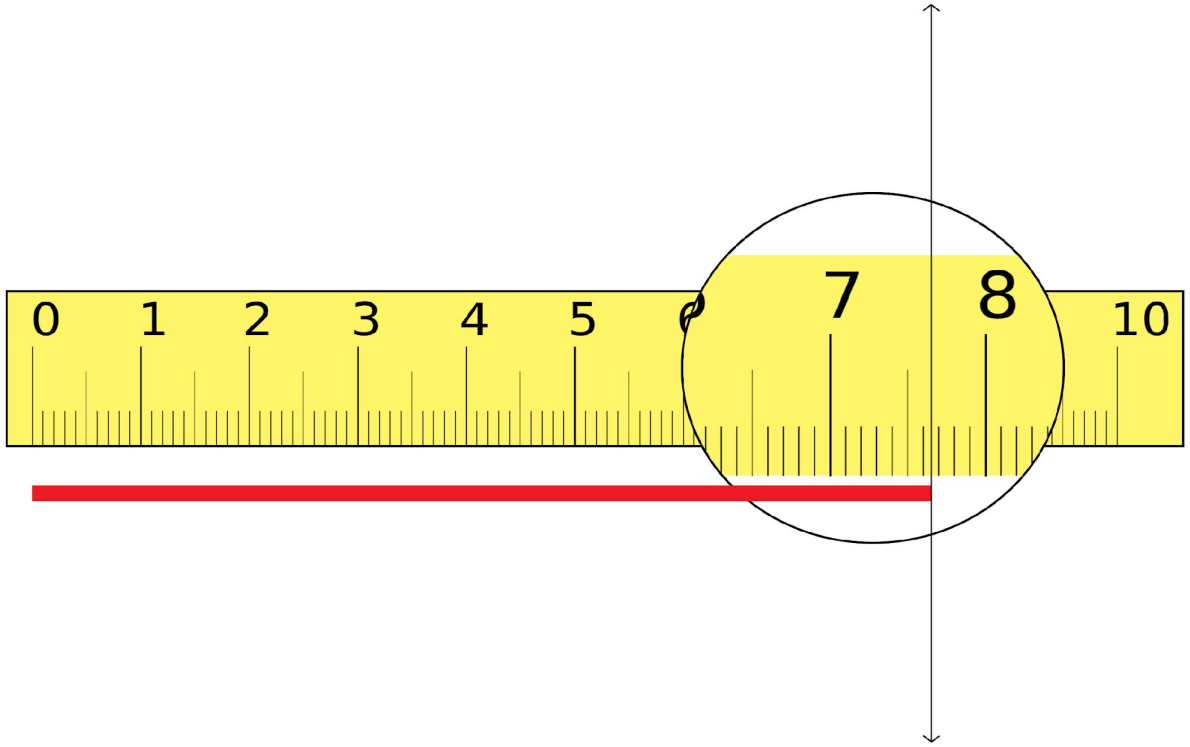
To access this Virtual Lab Experiment you can directly go to the URL mentioned below :

https://diksha.gov.in/play/collection/do_31356155014016204811000?contentId=do_31358351661458227211478

Beyond the Scale : Precision Unveiled with Vernier Calipers

Carpenters

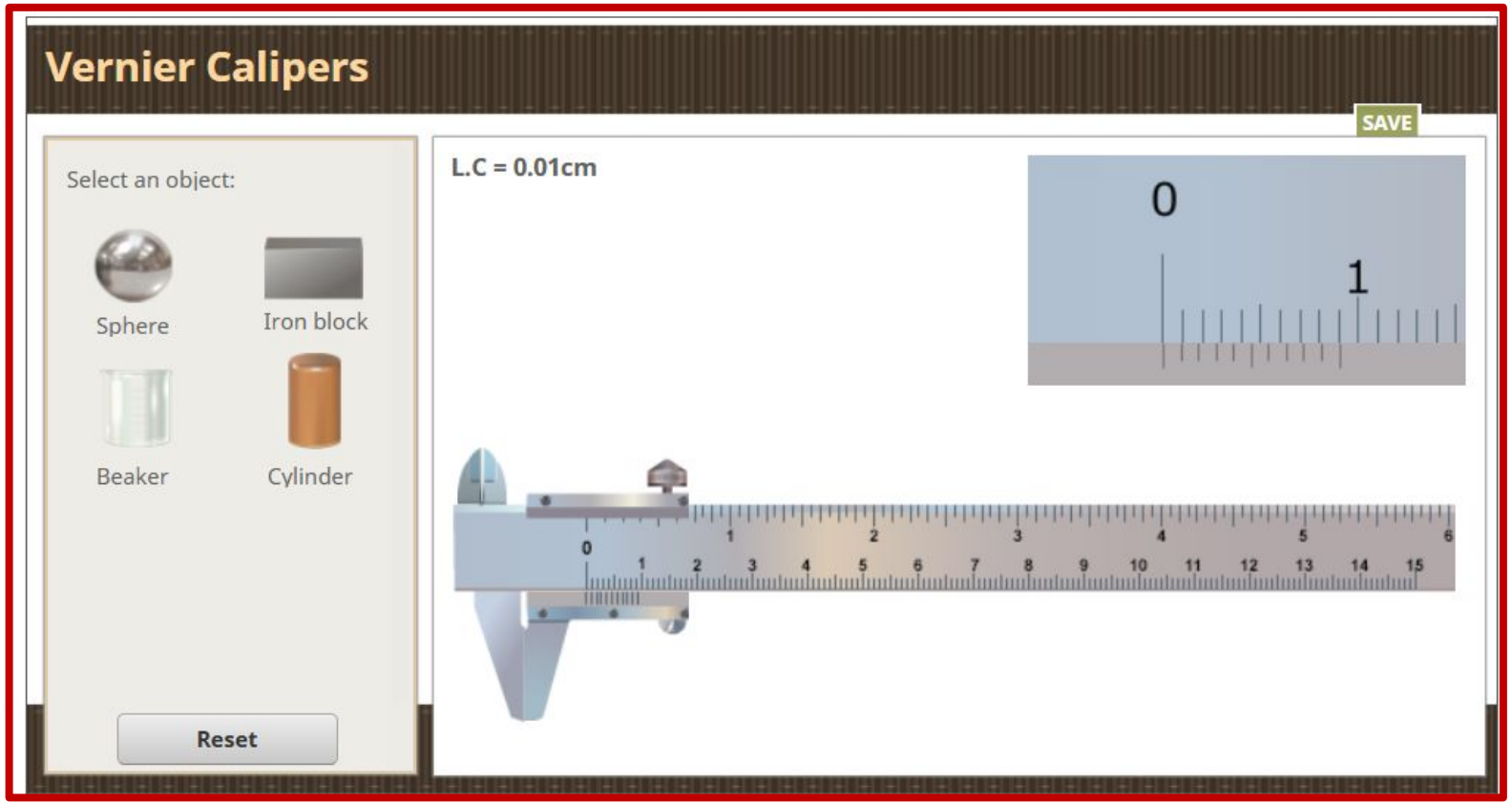
Bolt Length Measurement



Is this length 7.6 cm ?
OR
Is this length 7.7 cm ?

Virtual Lab Experiment – Class XI

AIM – To know the use of Vernier Calipers and measure the diameter (spherical object), length (iron block) and depth (beaker) of an object.



To access this Virtual Lab Experiment you can directly go to the URL mentioned below :
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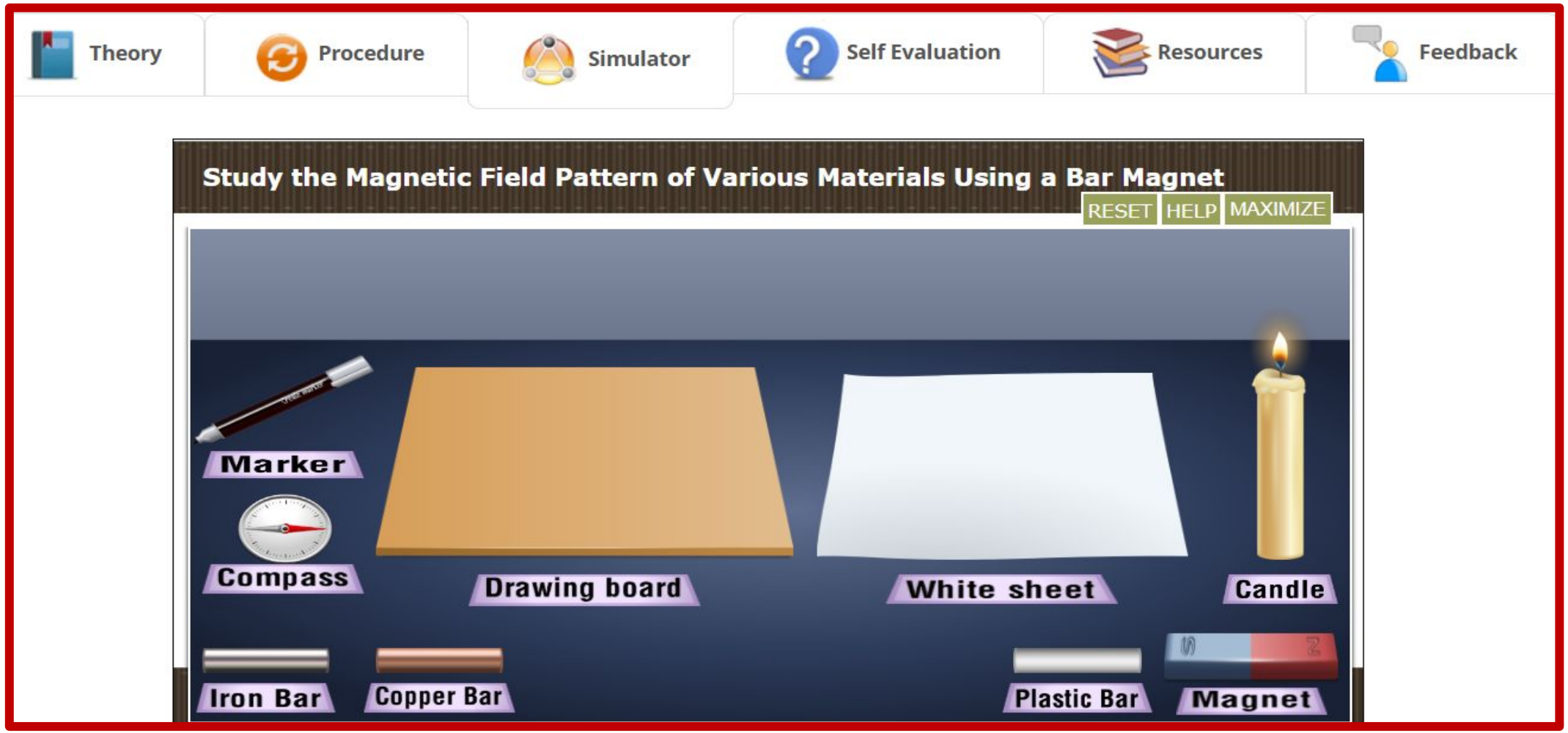
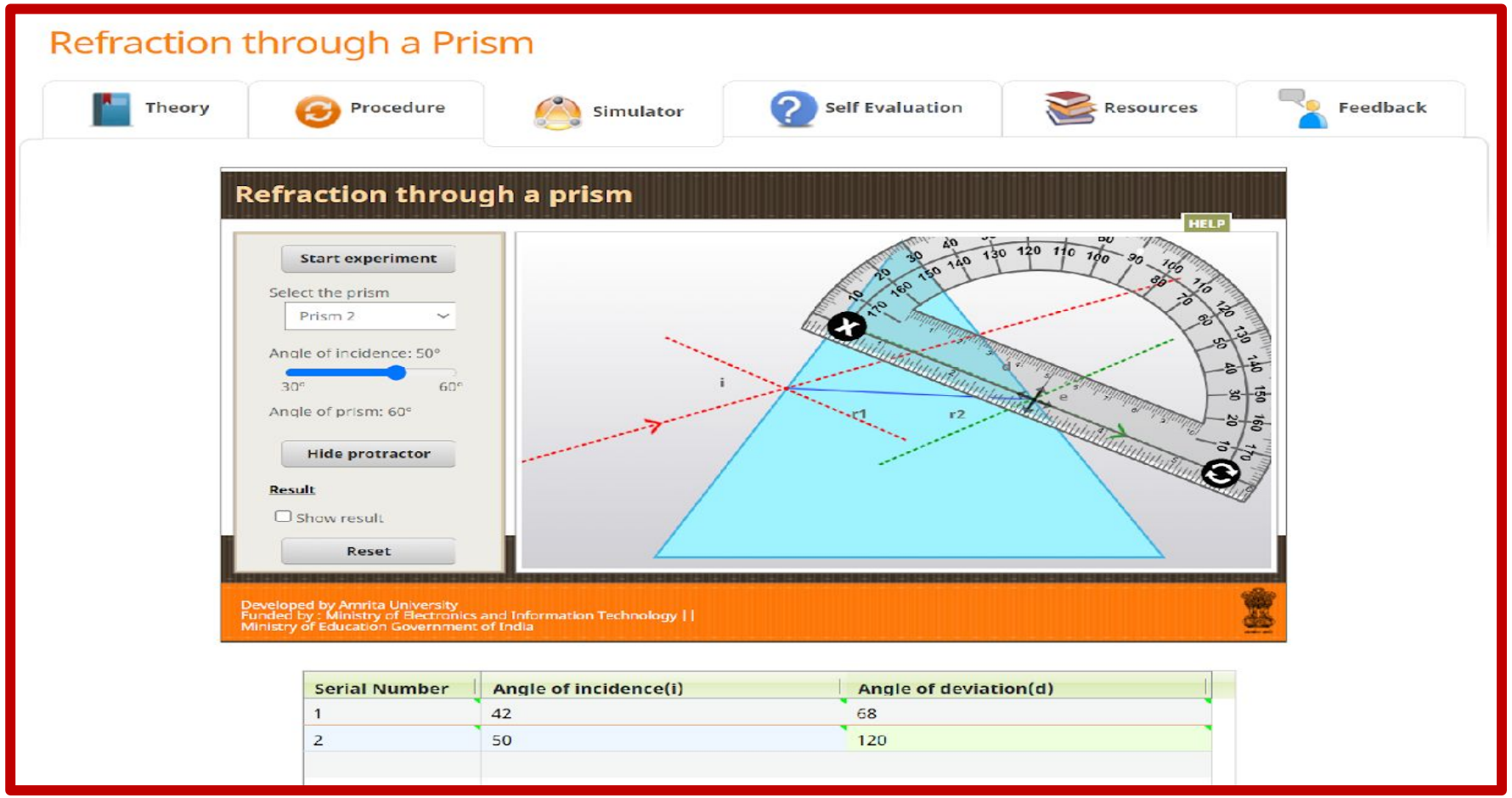
Virtual Lab Experiment – Class XII

AIM - To study the magnetic field pattern of various material using a bar magnet



Virtual Lab Experiment – Class XII

AIM - To determine the angle of minimum deviation for a given glass prism



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