

VIRTUAL LAB AS A TEACHING LEARNING TOOL FOR PHYSICS



Physics

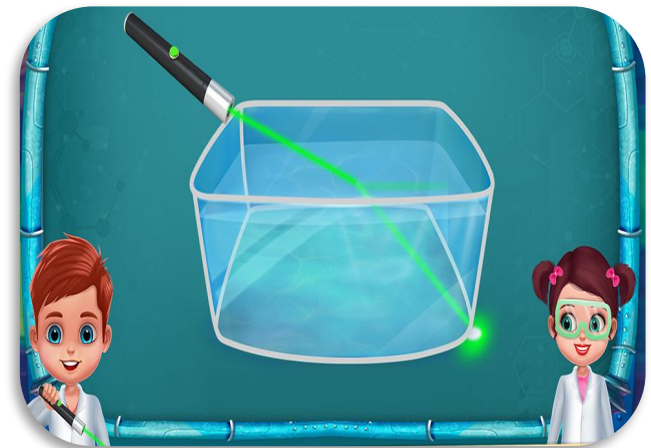
**Deals with
Universal Laws,
Behaviors
and
Relationships
for Physical
Concepts**



**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

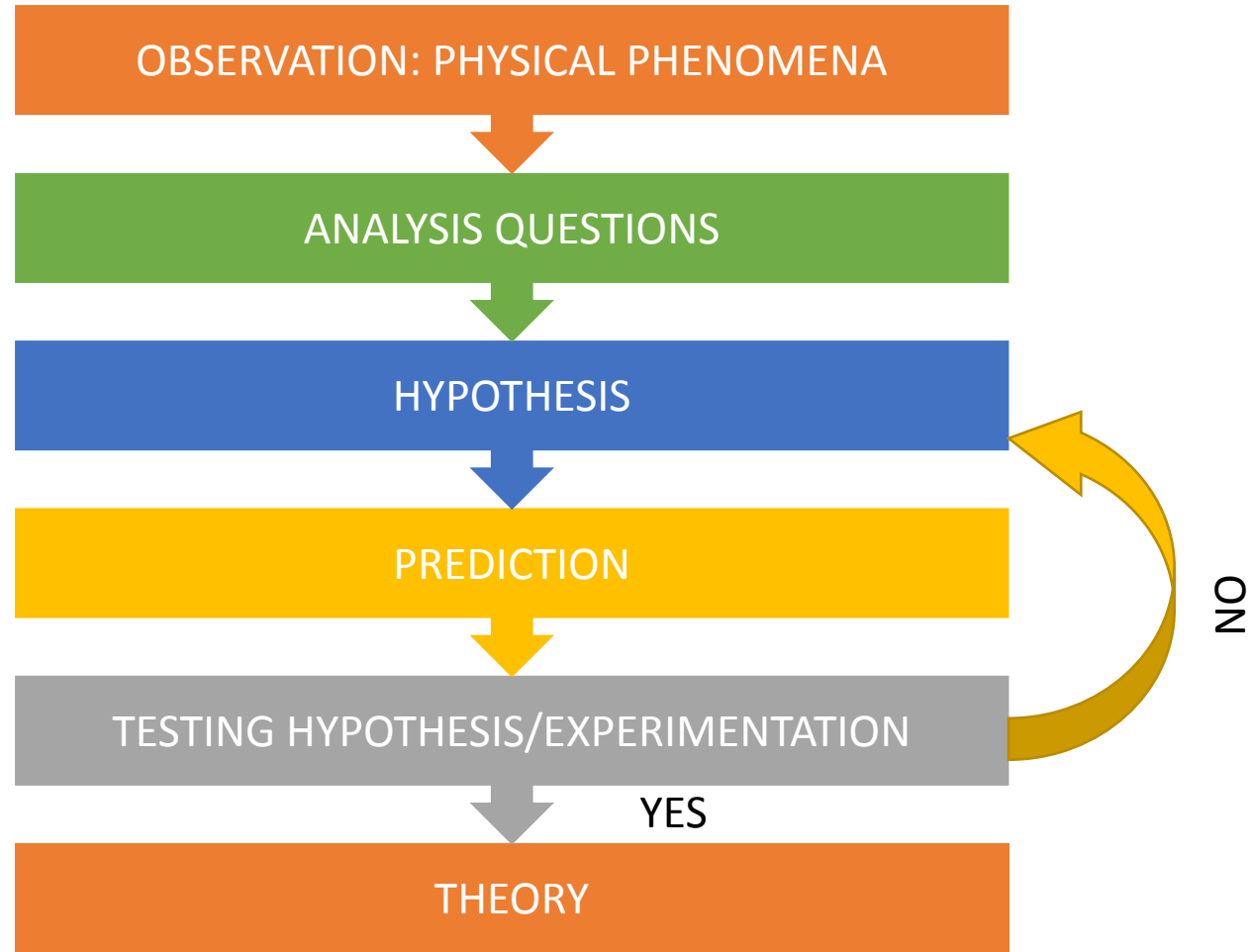
Data Interpretation

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

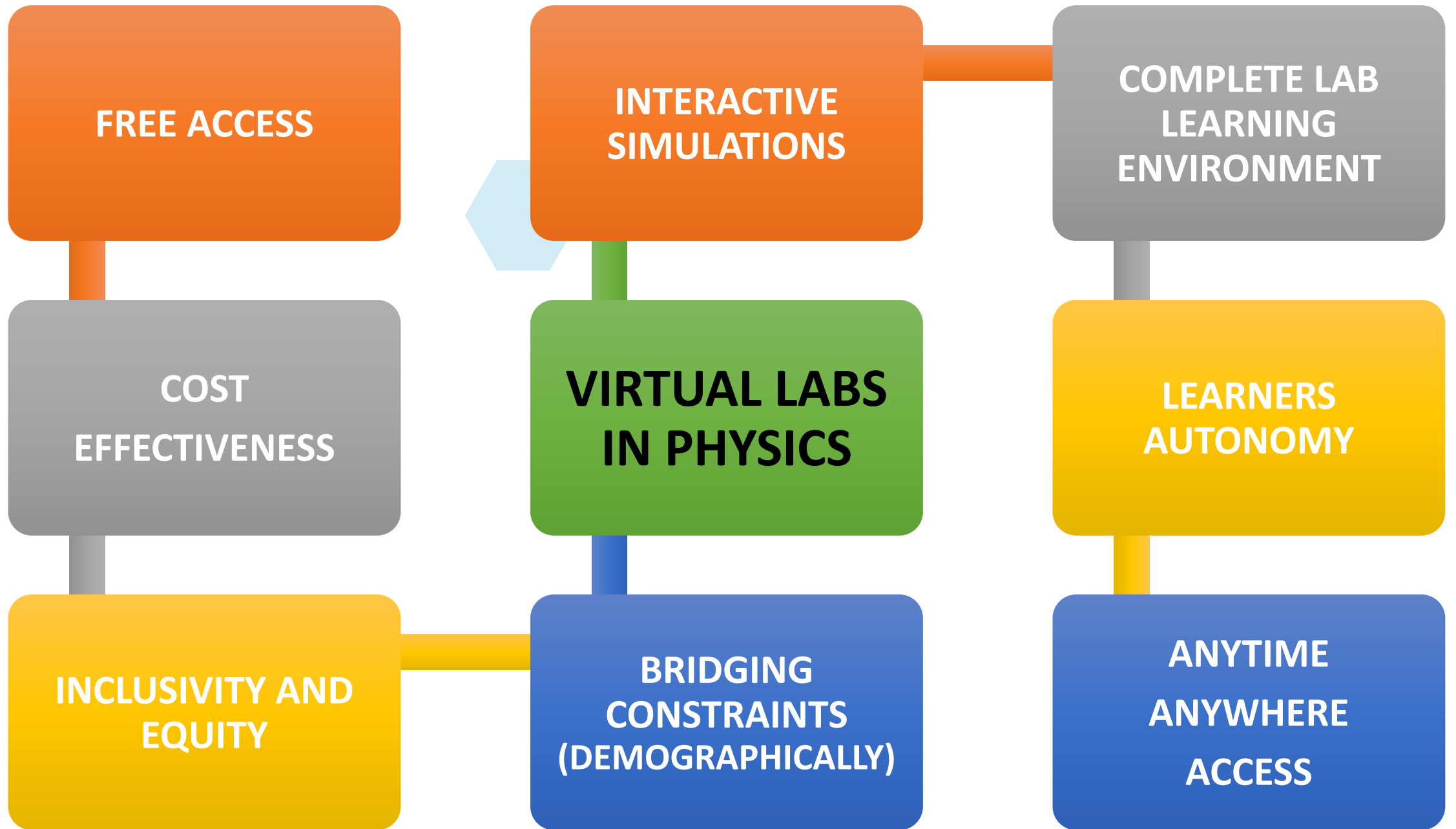
**BASED
ON
CONCEPT OF
REMOTE
EXPERIMENTATION**

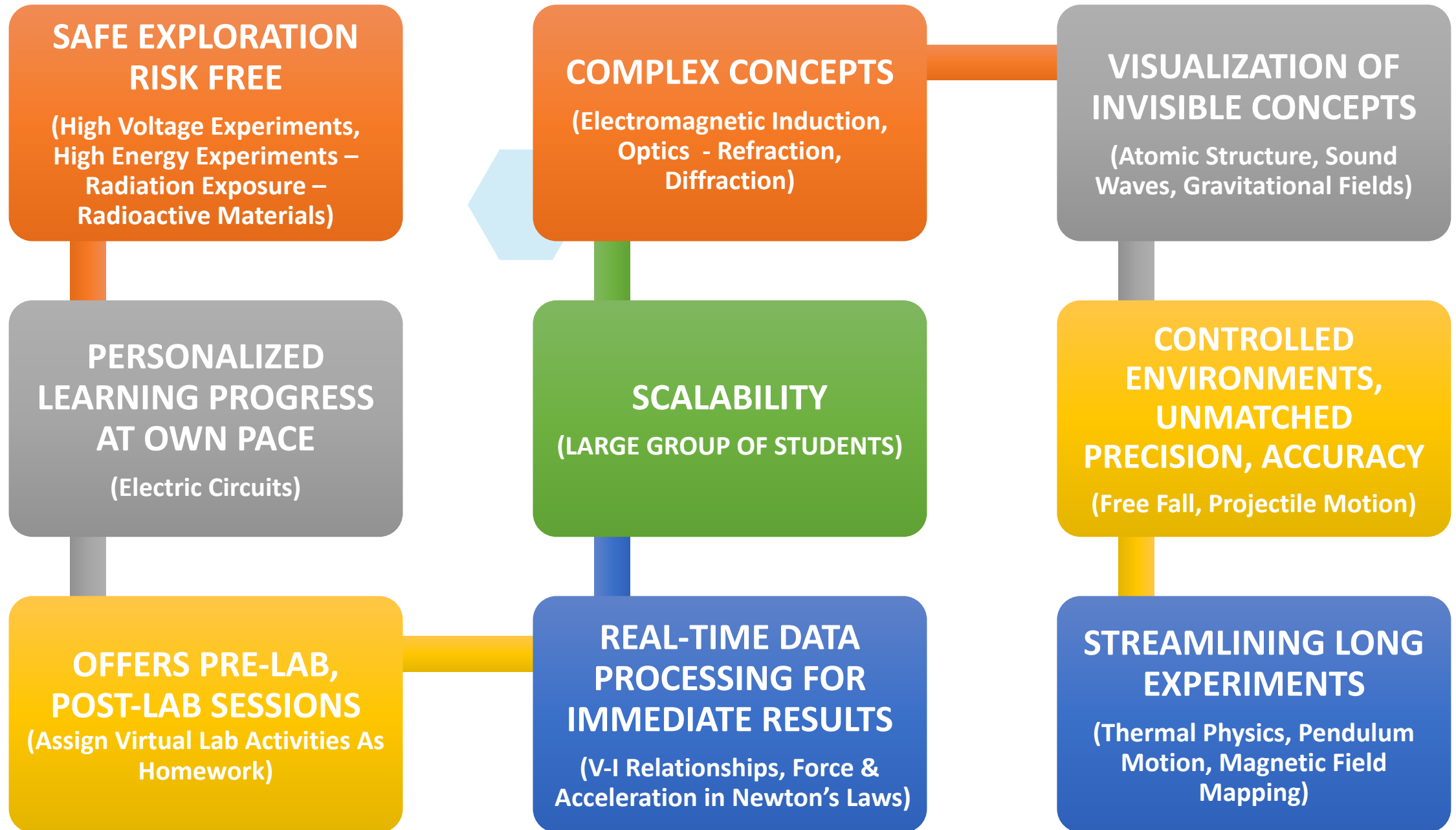
**IT'S A
COMPUTER-BASED
ACTIVITY**



**VIRTUAL LABS
HAVE
A RESOURCE-RICH
LEARNING
ENVIRONMENT**

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





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.

Ohm's law and resistance



Theory



Procedure



Animation



Simulator



Video



Self Evaluation



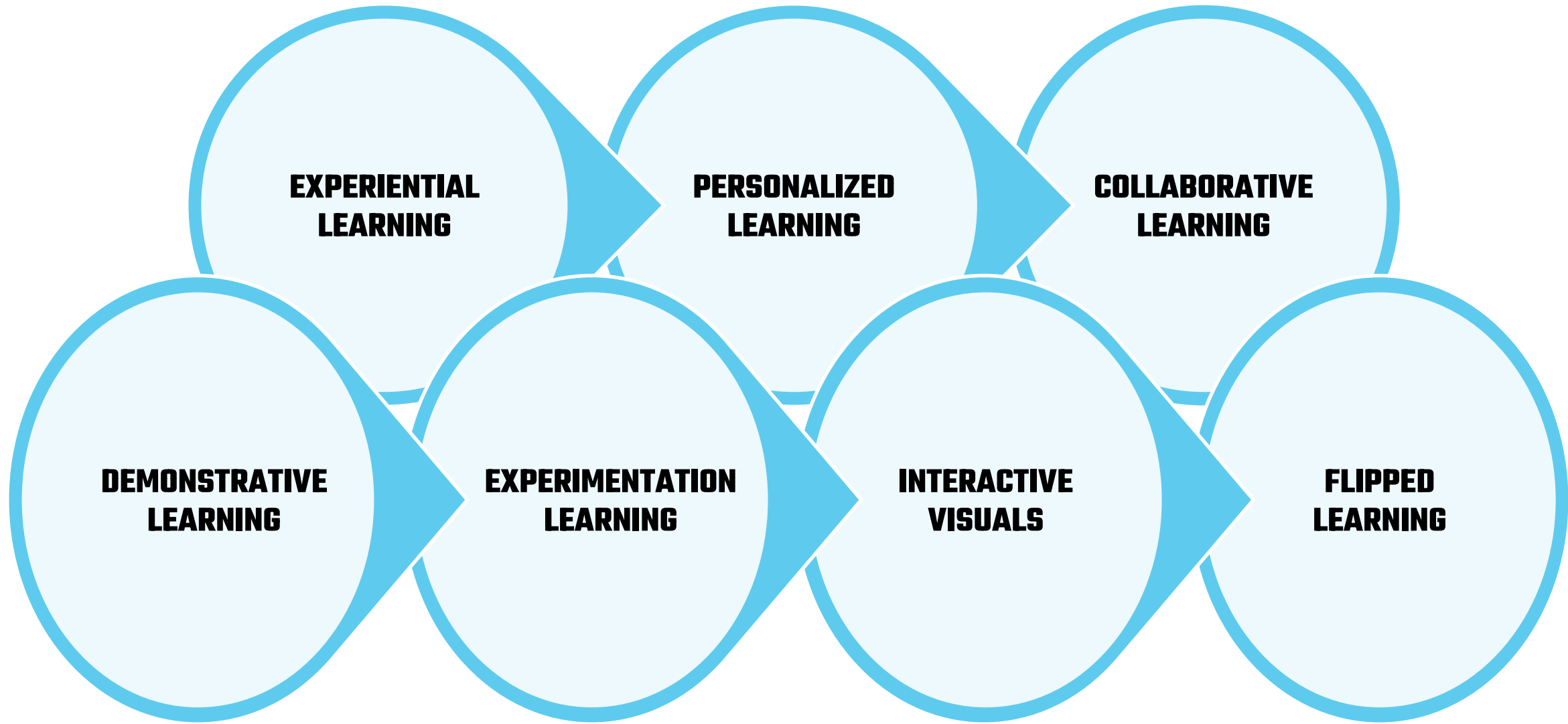
Resources



Feedback

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.



**EXPERIENTIAL
LEARNING**

**PERSONALIZED
LEARNING**

**COLLABORATIVE
LEARNING**

**DEMONSTRATIVE
LEARNING**

**EXPERIMENTATION
LEARNING**

**INTERACTIVE
VISUALS**

**FLIPPED
LEARNING**

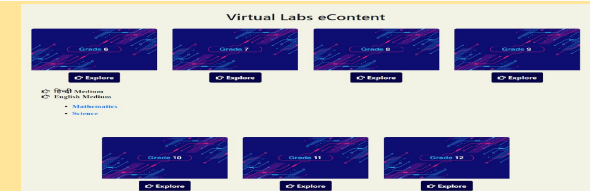
Virtual Labs were launched on DIKSHA PORTAL in 2022, which helps learners and educators for Experiential learning

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



Electrostatic Shielding Demonstration

Class XII

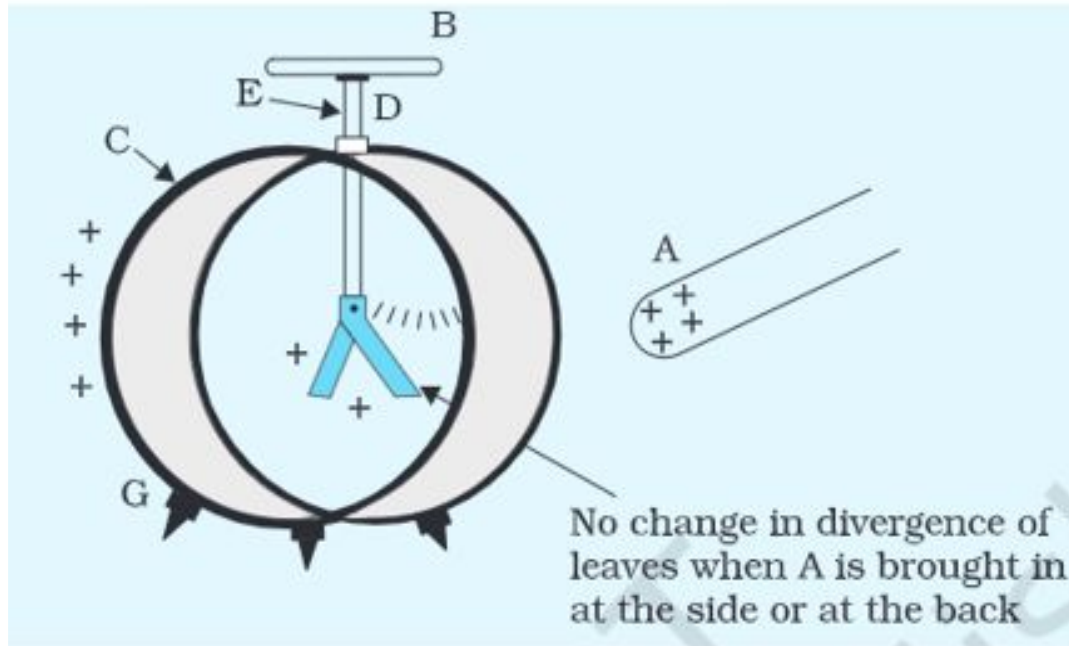


Fig. D 2.2 A shielded electroscope

Electrostatic shielding is a technique that protects a specific area from the effects of an external electric charge.

Electrostatic shielding works by placing a grounded enclosure around the component or circuit to be protected. It is derived from the principle that electric field lines or electric flux penetrating through the walls of metal containers is zero..

Virtual Lab Experiment – Class XII

AIM - To demonstrate the Electrostatic Shielding

To demonstrate Electrostatic Shielding

RESET HELP MAXIMIZE

Stand with Metal Can Wire Tape Charged Electroscope Silk Cloth Glass Rod Stand

Resources

Learning Resources

Simulation

Viva Voce

Credits and Licence information

Developed by Amrita University under research grant from Department Of Electronics & Information Technology

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_43139629002143825921100617

Concave Mirrors Around Us



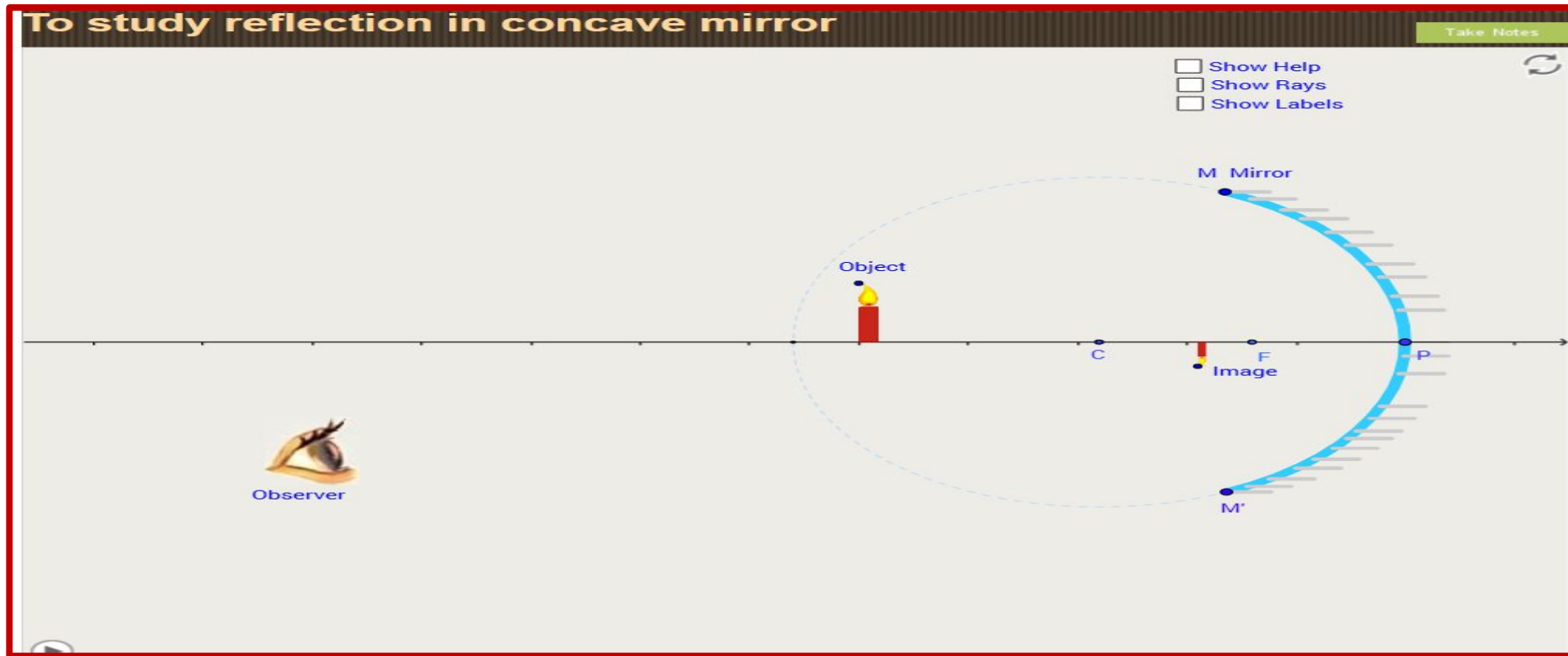
Dental Examination



Image at Inner Side of Spoon

Virtual Lab Experiment – Class X

AIM - To study reflection in concave mirror and observe image formations for different positions of the object.



To access this Virtual Lab Experiment you can directly go to the URL mentioned below :
https://diksha.gov.in/play/collection/do_3135614393797099521445?contentId=do_3135806317306101761237

Virtual Lab Experiment – Class XII

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

The screenshot shows a virtual lab interface with a navigation bar at the top containing six buttons: Theory, Procedure, Simulator, Self Evaluation, Resources, and Feedback. The main workspace is titled "Study the Magnetic Field Pattern of Various Materials Using a Bar Magnet" and includes "RESET", "HELP", and "MAXIMIZE" buttons. The workspace contains several labeled items: a Marker, a Compass, a Drawing board, a White sheet, a Candle, an Iron Bar, a Copper Bar, a Plastic Bar, and a Magnet.

The navigation bar includes the following options:

- Theory
- Procedure
- Simulator
- Self Evaluation
- Resources
- Feedback

The main workspace is titled "Study the Magnetic Field Pattern of Various Materials Using a Bar Magnet" and includes control buttons: RESET, HELP, and MAXIMIZE.

The workspace contains the following labeled items:

- Marker
- Compass
- Drawing board
- White sheet
- Candle
- Iron Bar
- Copper Bar
- Plastic Bar
- Magnet

Virtual Lab Experiment – Class XII

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

Refraction through a Prism

Theory Procedure Simulator Self Evaluation Resources Feedback

Refraction through a prism

Start experiment

Select the prism
Prism 2

Angle of incidence: 50°
30° 60°

Angle of prism: 60°

Hide protractor

Result
 Show result
Reset

Developed by Amrita University
Funded by - Ministry of Electronics and Information Technology ||
Ministry of Education Government of India

Serial Number	Angle of incidence(i)	Angle of deviation(d)
1	42	68
2	50	120

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_3135840083702087681257