


Virtual Lab as a teaching learning tool for Chemistry



 **14 JANUARY, 2025**
10:00 AM to 11:00 AM, Tuesday

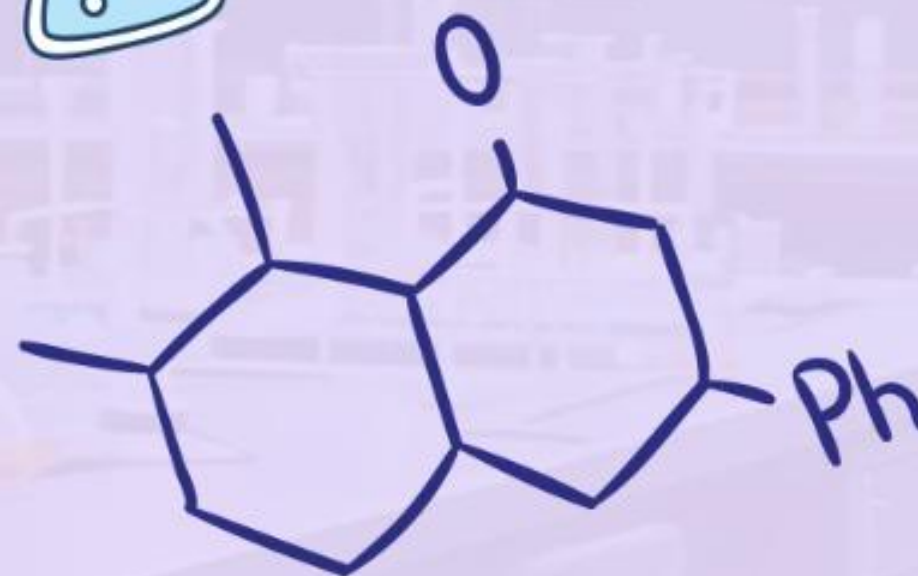
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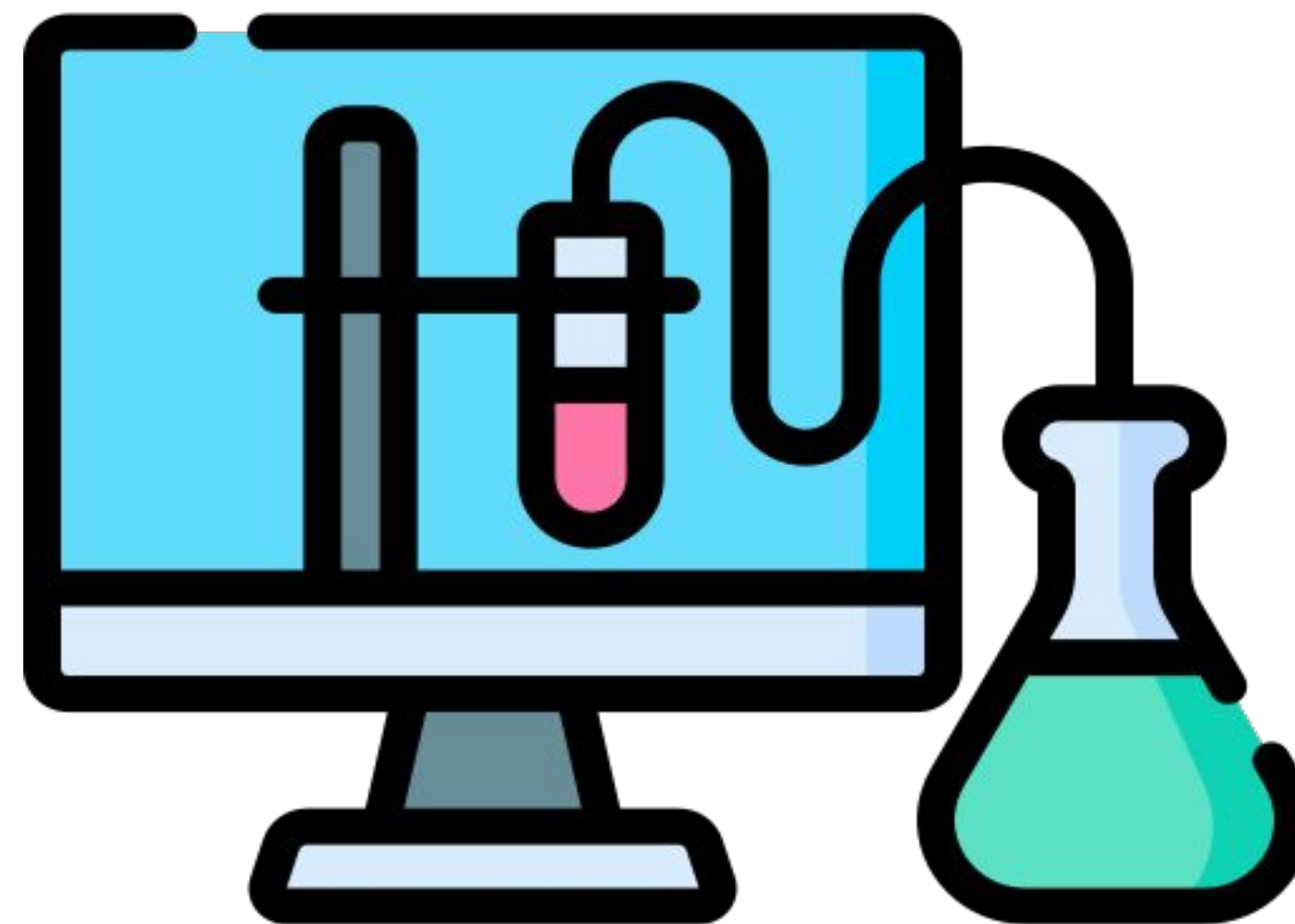
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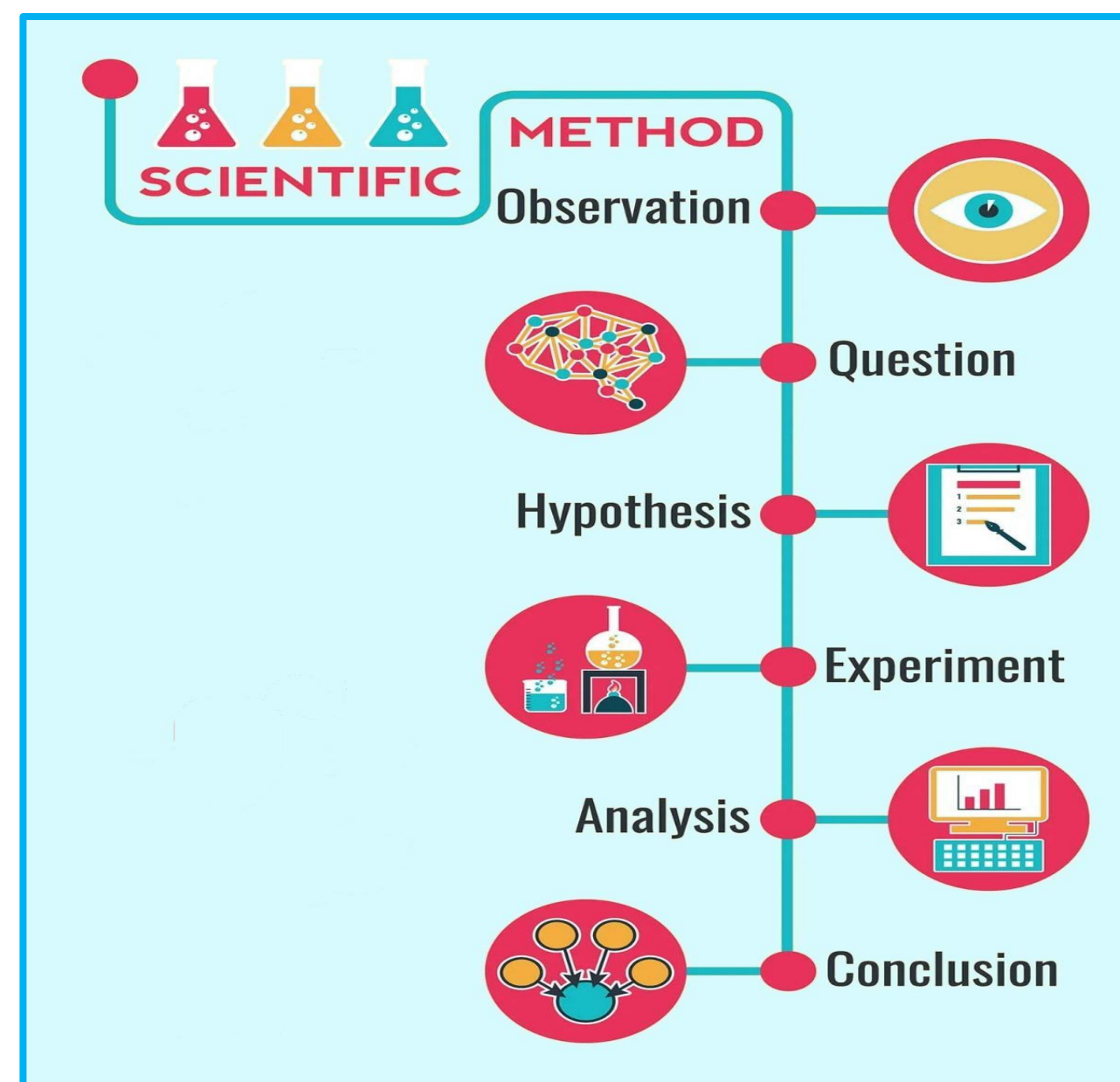
Virtual Lab
as a teaching learning
tool for Chemistry



The Laboratory: A Cornerstone of Chemistry Teaching and Learning

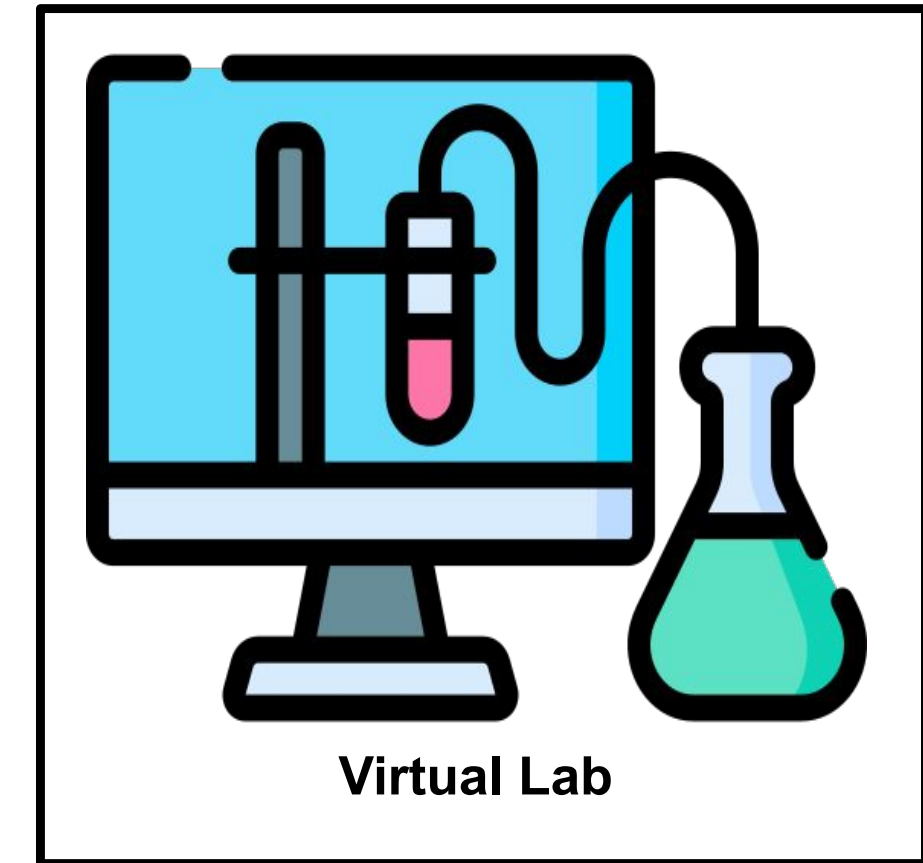
- Hands-On Learning and Engagement
- Immediate Feedback on Theory
- Fostering Inquiry-Based Learning

ACTIVE
LEARNING



Laboratory provides opportunities to “**learn by doing**” to make sense of the world around us.

Learning by doing require laboaratories.....



Unlocking Virtual Labs: The Terms that Shape Science Learning



Simulation



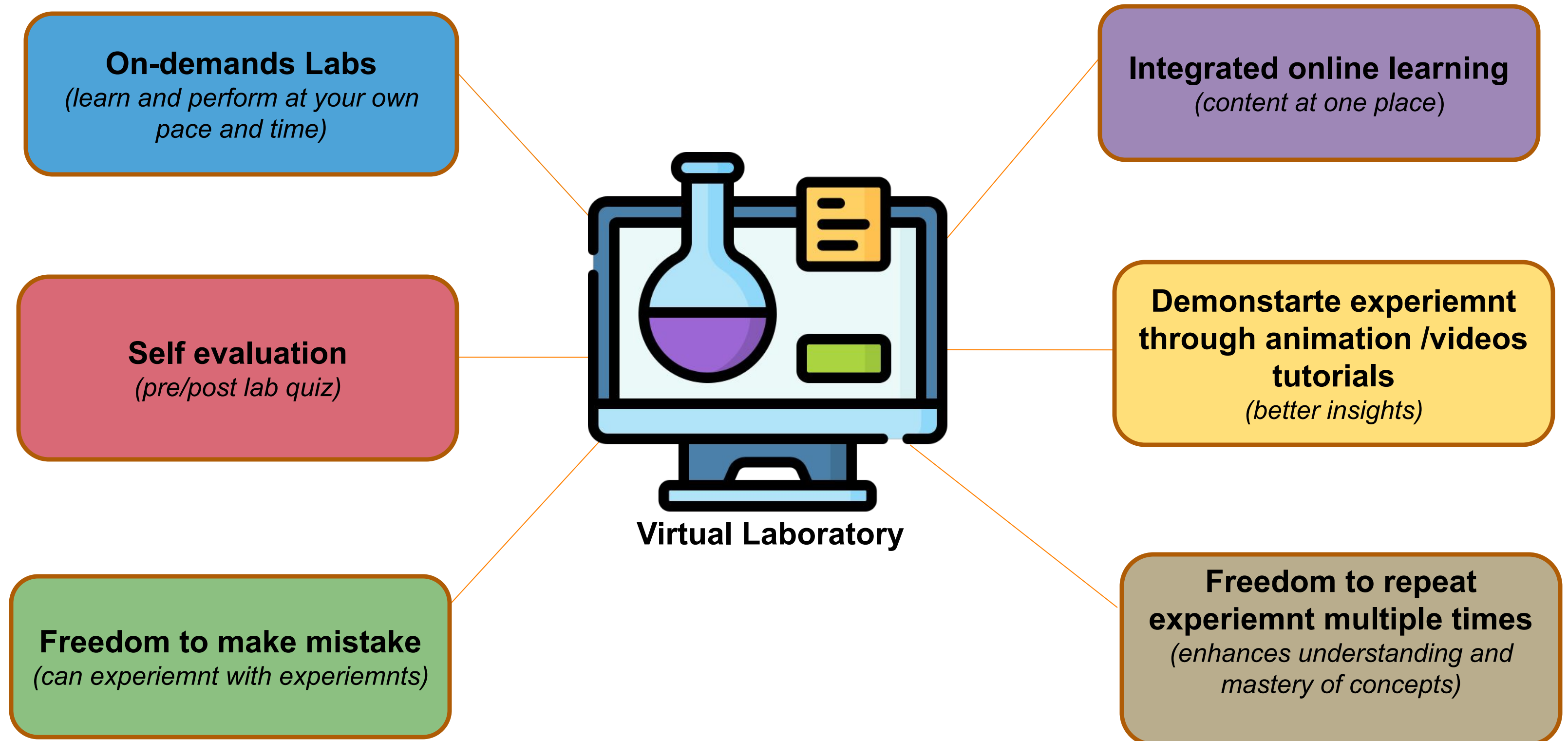
Accessibility



Scalability



Main features of Virtual Labs



Benefits of pedagogical integration of virtual labs

Self-paced learning

Learners can repeat experiments at their own pace

Accessibility

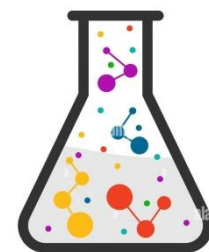
Virtual labs provide access to laboratory experiments for students, enabling anytime, anywhere learning

Interactive learning

Simulations provide hands-on experience and develop a deeper understanding of theoretical concepts

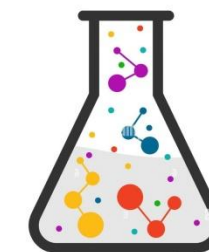
Concept visualization

Visual representations within virtual labs can help learners visualize complex scientific concepts



Data analysis and interpretation

Virtual labs often provide built-in tools for data collection, analysis and drawing conclusions.



How to integrate virtual labs?

Pre-lab activities

Provide learners with information and instructions on the virtual lab experiments before they begin to perform experiments through simulations and animations.



Performance Based

Virtual labs provide consistent, controlled environments for summative assessments, ensuring fairness and reliability.



Post-lab discussions

Encourage classroom discussions where learners can share their observations, analyze data, draw conclusion and compare results from the virtual experiment.

Assessment Techniques in Virtual Labs

Formative

Real-time feedback, Interactivity & Individualized learning



Diagnostic

Identify learning gaps, Personalized Feedback & Data-Driven Intervention



Performance Based

Authentic, Standardized Evaluation & Data Driven Insights



Steps to access the Virtual Lab on the DIKSHA portal

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

Chemistry Virtual Lab on DIKSHA Class IX

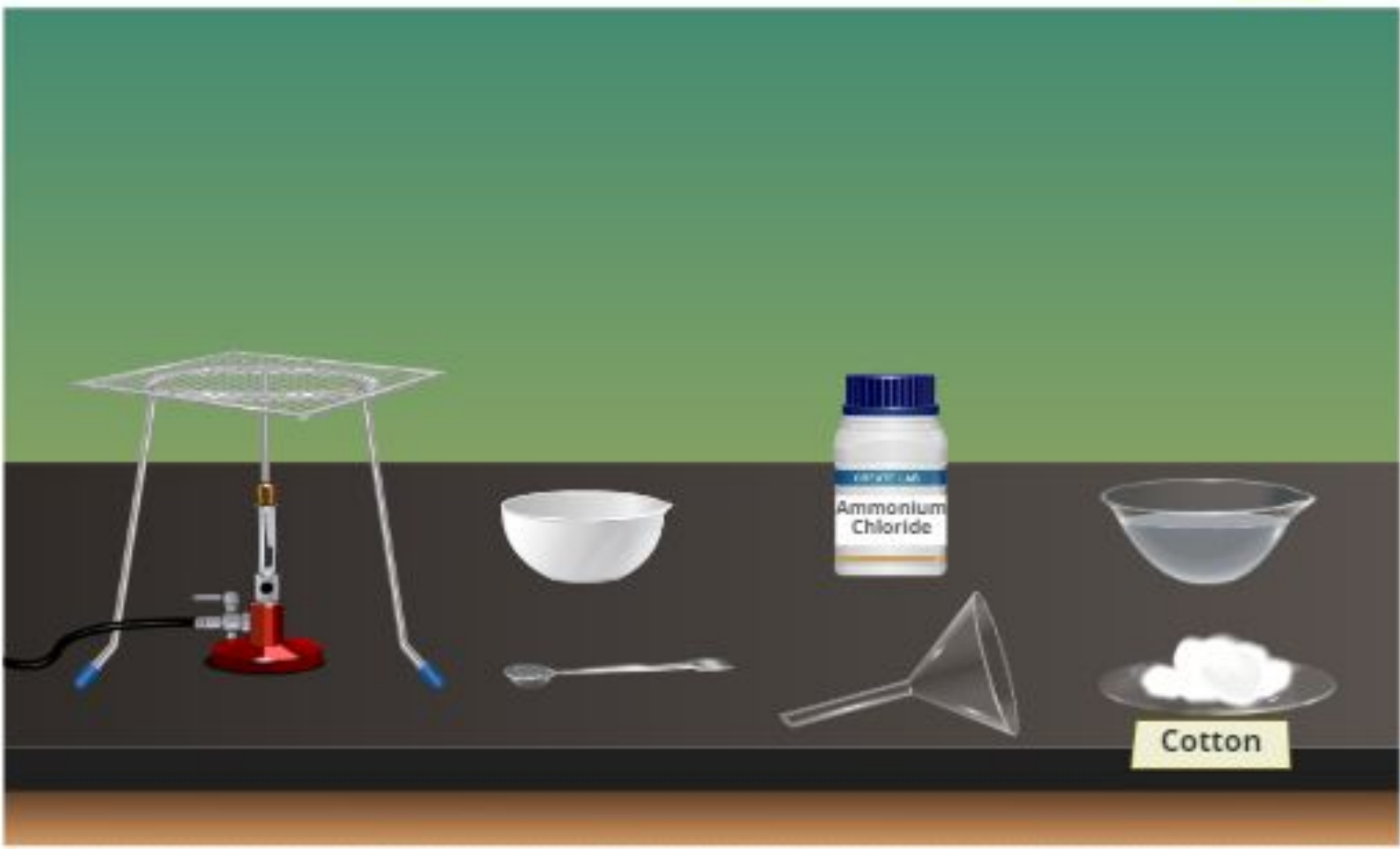
To study the changes in the state of sublimate solids on heating

HELP

Instructions:

1. Click on the cap.
2. Drag and drop the spatula towards the bottle.
3. Drag and drop the funnel towards the china dish.
4. Drag and drop the cotton towards the top of the funnel.
5. Drag and drop the china dish towards tripod stand.
6. Drag and drop the cotton into the glass bowl.
7. Drag and drop the wet cotton into the top of the china dish.
8. Click on the knob of the burner.


Reset



Ammonium Chloride

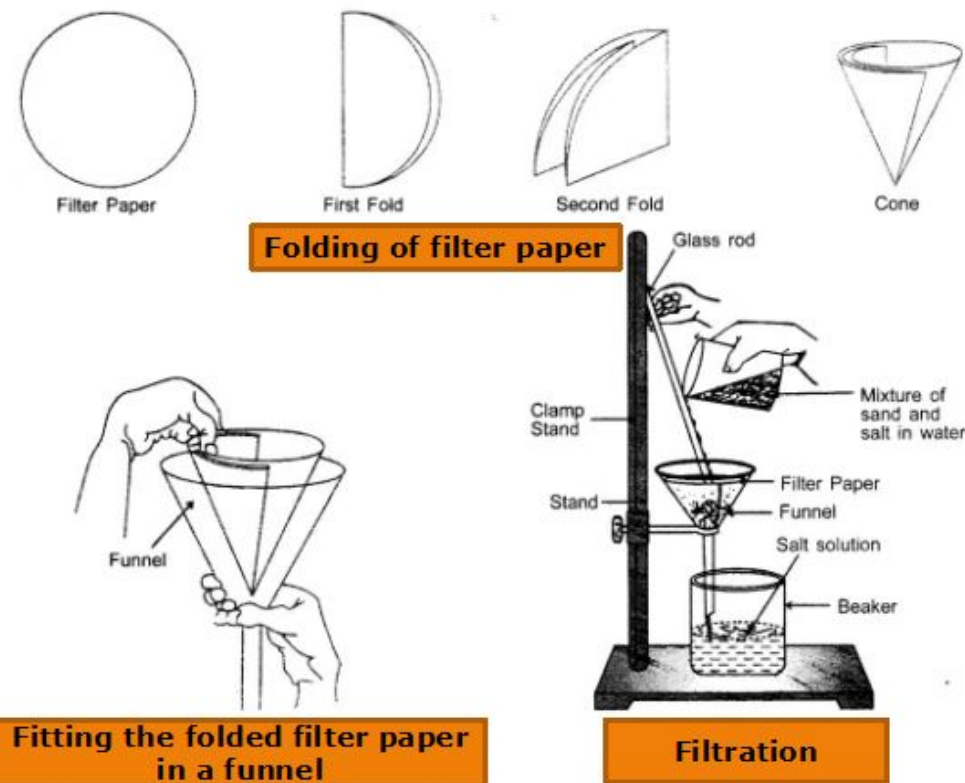
Cotton

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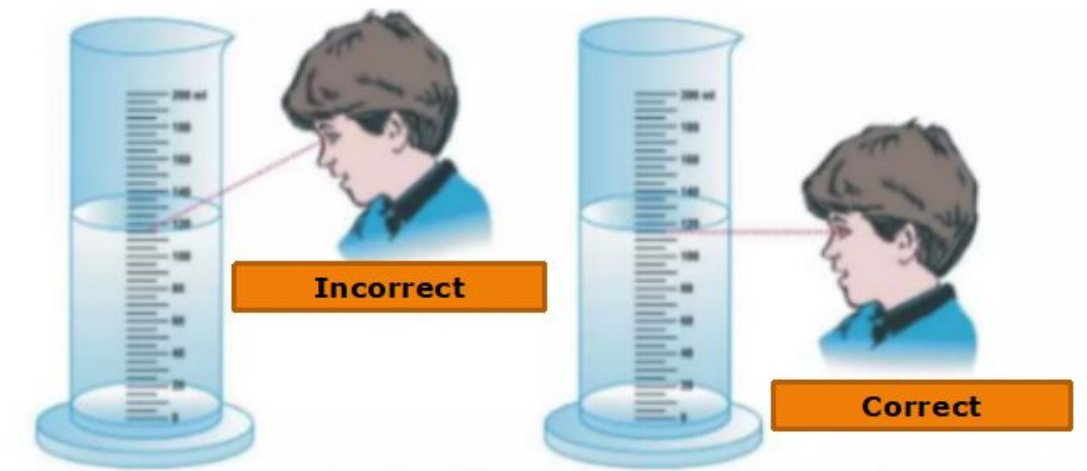
Basic Laboratory Techniques

Filtration technique

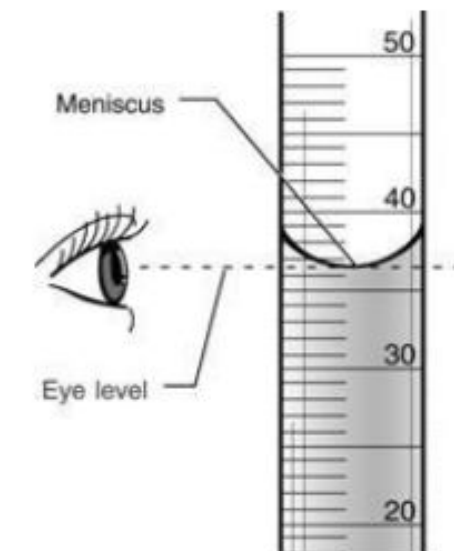
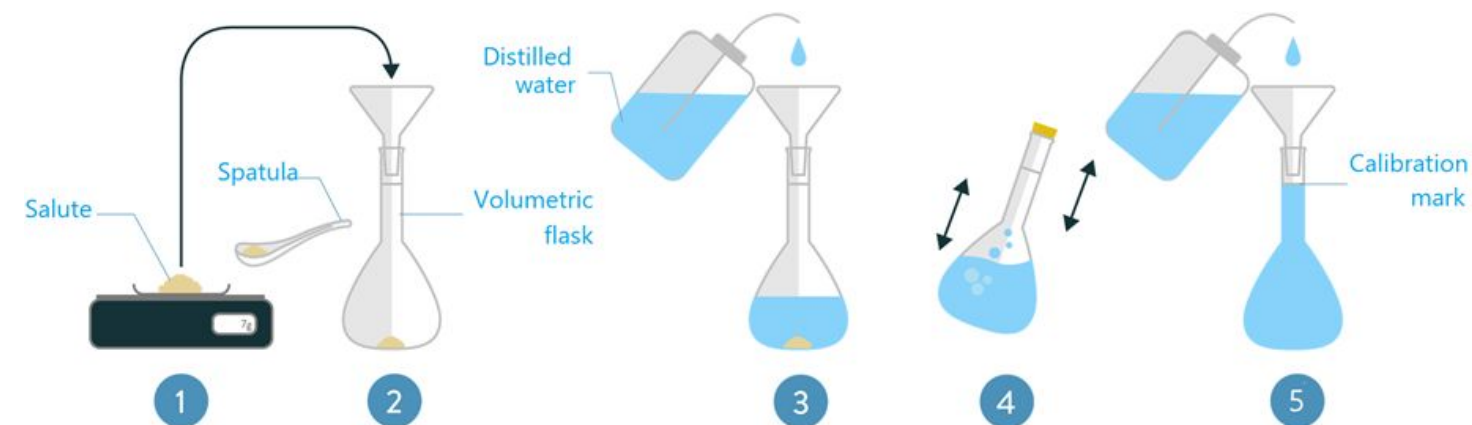


- Pouring
- Measuring
- Filtering
- Making standard solutions
- Preparing reagents
- Using gas burners
- Using glassware

Measuring volume



Making a solution of known concentration



Chemistry Virtual Lab on DIKSHA Class XI

Preparation of (250 mL of 0.1M) Standard Solution of Oxalic


HELP

Instructions


1. Drag the watch glass to the top of the weighing scale.
2. Click on the oxalic acid bottle cap to open.
3. Drag the spatula towards the top of the oxalic acid bottle.
4. Drag the spatula towards the top of the watch glass.

Reset

NEXT



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Chemistry Virtual Lab on DIKSHA Class XI

Study the Process of Filtration

RESET HELP MAXIMIZE

Instructions:

1. Drag the funnel and drop it above the tripod stand.
2. Click on the filter paper box to open.
3. Click the filter paper box.
4. Click the filter paper.
5. Click and drag the distilled water and drop it in the filter paper.
6. Drag the beaker containing muddy water and drop it above the funnel.



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Chemistry Virtual Lab on DIKSHA Class XII

Paper Chromatography

HELP

Select the mixture:
Red ink + Blue ink

Select the solvent:
Isopropyl alcohol + water

Show scale

Result

Distance travelled by the solvent
=

Distance travelled by blue ink
=

Distance travelled by red ink
=

Red ink + Blue ink

Isopropyl alcohol + Water

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Ministry of Education Government of India

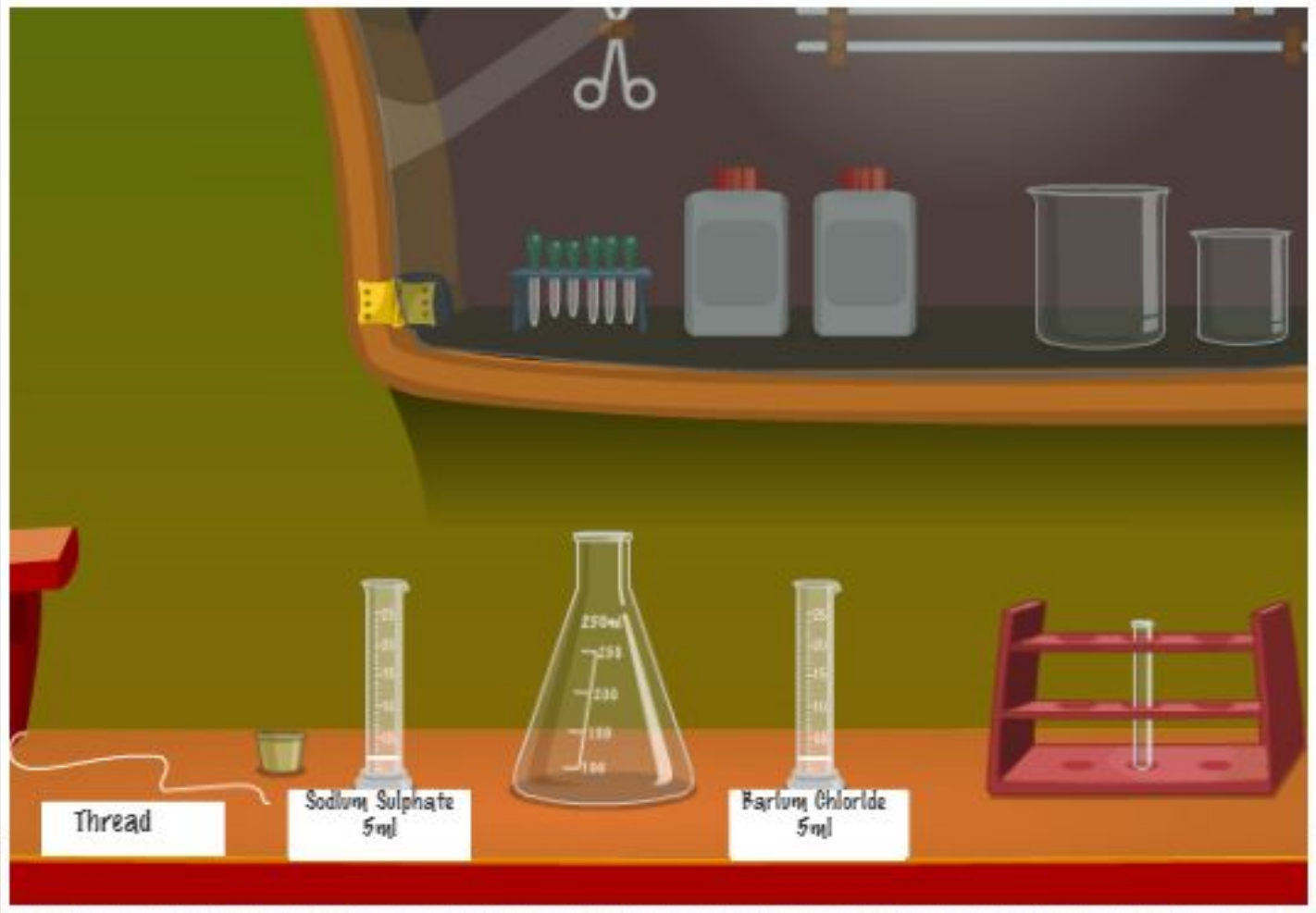
Chemistry Virtual Lab on DIKSHA Class IX

The Law of Conservation of Mass in a Chemical Reaction SAVE

Instructions

Click on the measuring cylinder containing sodium sulphate solution to pour it into the conical flask.

Reset



Thread Sodium Sulphate 5ml Barium Chloride 5ml

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