



# INQUIRY-BASED LEARNING SUPPORTED BY DIGITAL TOOLS

TRANSFORMING CLASSROOMS INTO THINKING SPACES

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# INTRODUCTION

- A student-centered approach
- Learning driven by questions, curiosity, and investigation
- Students explore, analyze, and construct knowledge
- **Key Idea:**  
*“Tell me and I forget, involve me and I learn.”*

# OBJECTIVES

- By the end of this session, participants will:**
- Understand the concept of Inquiry-Based Learning (IBL)
  - Explore stages of inquiry
  - Learn how digital tools enhance inquiry
  - Apply strategies in classroom teaching

## WHY INQUIRY-BASED LEARNING?

- Promotes critical thinking & problem-solving
- Encourages active participation
- Builds research and analytical skills
- Makes learning meaningful and lifelong

# STAGES OF INQUIRY

- Ask (Questioning)
- Investigate (Explore)
- Create (Construct Knowledge)
- Discuss (Share Ideas)
- Reflect (Evaluate Learning)

**This cycle makes learning dynamic and continuous.**

# TYPES OF IBL

- ◉ **Structured Inquiry** - Teacher gives question & method
- ◉ **Guided Inquiry** - Teacher gives question, students explore
- ◉ **Open Inquiry** - Students frame questions & investigate
  - Helps in gradual shift from teacher-led to student-led learning

# 5E MODEL & INQUIRY CONNECTION

- ◉ Engage - Trigger curiosity
- ◉ Explore - Hands-on investigation
- ◉ Explain - Concept building
- ◉ Elaborate - Apply learning
- ◉ Evaluate - Assess understanding

# SAMPLE QUESTIONS

- ◉ Why does the moon change shape?
- ◉ How does pollution affect health?
- ◉ Why do metals rust?
- ◉ What makes a story interesting?

**Questions should be open-ended & thought-provoking**

# DESIGNING ACTIVITIES

## Designing Inquiry Activities:

- Start with real-life problems
- Use multimedia resources
- Encourage group discussion
- Include reflection tasks

# COLLABORATIVE LEARNING IN IBL

- ◉ Group projects
- ◉ Peer discussions
- ◉ Role-based tasks
- ◉ Shared digital boards

Builds teamwork & communication skills

# BLENDED LEARNING

- ◉ Combine offline + online tools
- ◉ Use videos, quizzes, discussions
- ◉ Extend learning beyond classroom

---Makes learning flexible & accessible

# SKILLS DEVELOPED

- Critical thinking
- Creativity
- Communication
- Collaboration
- Digital literacy

-Aligns with **21st-century competencies**

# ASSESSMENT IN IBL

- Formative assessment
- Rubrics
- Peer/self assessment
- Digital quizzes

**Focus on process + product**

# CURRICULUM INTEGRATION

- Align with learning outcomes
  - Use textbook topics as inquiry base
  - Integrate ICT tools meaningfully
- No need for extra syllabus—just better approach

# ROLE OF DIGITAL TOOLS

Digital tools help to:

- Provide instant access to information
- Enable interactive learning
- Support collaboration
- Facilitate assessment & feedback

# DIGITAL TOOLS FOR IBL

Some useful tools:

- ◉ **Google Classroom** - assignment & discussion
- ◉ **Padlet** - idea sharing wall
- ◉ **Kahoot / Quizizz** - interactive quizzes
- ◉ **YouTube / Educational videos** - concept exploration
- ◉ **PhET Simulations** - virtual experiments
- ◉ **Timeline JS**-open-source tool that enables anyone to build visually rich, interactive timelines.
- ◉ **Wordwall**- create better lesson quicker/interactive and printable activities
- ◉ **Nearpod**- Interactive instructional delivery platform

# MORE DIGITAL TOOLS TO SUPPORT INQUIRY-BASED LEARNING

## 1. Research & Exploration Tools

- ◉ Google Scholar - for authentic research
- ◉ National Digital Library of India - Indian academic resources
- ◉ DIKSHA - curriculum-aligned content

Use for: **Ask & Investigate stage**

## 2. Collaboration & Brainstorming Tools

- Jamboard/zite board- live brainstorming
- Miro/MIndmeister - concept mapping
- Mentimeter - instant responses

Use for: **Discuss & Share**

## 3. Inquiry & Questioning Tools

- AnswerGarden - word cloud questions
- Slido - audience questions
- Padlet - idea wall

Use for: **Ask & Reflect**

## 4. Simulation & Experimentation Tools

- PhET Interactive Simulations - virtual labs/olabs
- Tinkercad - STEM inquiry
- GeoGebra - math exploration

Use for: **Investigate & Create**

## MORE DIGITAL TOOLS TO SUPPORT INQUIRY-BASED LEARNING

### 5. Content Creation Tools

- ◉ Canva - student presentations
- ◉ Flip - student reflections
- ◉ Powtoon - explain concepts

Use for: **Create & Present**

### 6. Assessment & Feedback Tools

- Quizizz/wayground
- Kahoot!
- Google Forms
- Testmoz
- Socrative

Use for: **Reflect & Evaluate**

# EXAMPLE: PHOTOSYNTHESIS

**Topic:** Photosynthesis

**Inquiry Question:**

“Why do plants need sunlight to survive?”

**Process:**

- Students watch a video
- Explore simulation
- Discuss in groups
- Present findings

## EXAMPLES: WHY DOES THE MOON CHANGE SHAPE? (PHASES OF MOON)

### IBL Steps:

- **1. Ask (Engage)**  
Teacher asks: *Why does the moon appear different every night?*  
Tool: Mentimeter (collect student responses)
- **2. Investigate (Explore)**  
Students observe moon images/videos  
Tool: YouTube, PhET Interactive Simulations
- **3. Create (Explain)**  
Students draw moon phases / make model  
Tool: Canva
- **4. Discuss (Elaborate)**  
Group discussion on findings  
Tool: Padlet
- **5. Reflect (Evaluate)**  
Quiz or reflection  
Tool: Quizizz

# HOW DOES POLLUTION AFFECT HEALTH?

## IBL Steps:

- **1. Ask**  
*Why do people fall sick more in polluted areas?*  
Tool: Slido
- **2. Investigate**  
Analyze data, watch case studies  
Tool: Google Scholar, DIKSHA
- **3. Create**  
Students prepare charts/posters  
Tool: Canva
- **4. Discuss**  
Debate on causes & prevention  
Tool: Miro
- **5. Reflect**  
Quiz or awareness campaign idea  
Tool: Google Forms

# WHY DO METALS RUST?

## IBL Steps:

- **1. Ask**  
*Why does iron get reddish after some time?*  
Tool: AnswerGarden
- **2. Investigate**  
Perform experiment (iron + water + air)  
Tool: PhET Interactive Simulations
- **3. Create**  
Explain chemical reaction  
Tool: GeoGebra
- **4. Discuss**  
Share observations  
Tool: Padlet
- **5. Reflect**  
MCQ quiz  
Tool: Kahoot!

## WHAT MAKES A STORY INTERESTING? (LANGUAGE SUBJECT)

### IBL Steps:

- **1. Ask**  
*/Why do we like some stories more than others?*  
Tool: Mentimeter/wordwall
- **2. Investigate**  
Read/watch different stories  
Tool: YouTube
- **3. Create**  
Students write their own story  
Tool: Google Docs /Timeline JS
- **4. Discuss**  
Peer feedback  
Tool: Padlet
- **5. Reflect**  
Self-evaluation  
Tool: Flipgrid

# TEACHER'S ROLE

- Facilitator
- Guide students in questioning
- Provide digital resources
- Encourage discussion
- Assess learning continuously

# LEARNER'S ROLE

- Ask questions
- Explore Resources
- Collaborate with peers
- Think critically
- Reflect on learning

# CHALLENGES

- Limited access
- Time constraints
- Large classes
- Lack of training

# SOLUTIONS

- Use low-cost/free tools
- Plan structured activities
- Provide teacher training
- Encourages Peer learning

# TIPS FOR TEACHERS

- Start small(one activity)
- Use simple tools
- Encourage curiosity
- Be flexible and patient

# KEY TAKEAWAYS

- IBL is active learning
- Digital tools enhance engagement
- Teacher as facilitator
- Student as explorer

# CONCLUSION

- Inquiry-based learning develops **21st-century skills**
- Digital tools make learning **interactive & engaging**
- Teachers must shift from **teaching to facilitating**  
“Learning happens best when students discover.”

PRACTICE YOURSELF-----

THANK YOU  
(धन्यवाद)