Research Findings in Problem Solving

Learning Objectives

By the end of this session, students will be able to:
• Understand how research supports effective problem solving.
• Identify key findings from research and apply them in real-world contexts.
• Evaluate findings using clarity, accuracy, relevance, and logic tests.
• Apply evidence-based reasoning for better decision-making.

1. Introduction: The Link Between Research and Problem Solving

Research is the process of systematically collecting and analyzing data to understand a situation. Problem solving, on the other hand, is the act of using reasoning and creativity to overcome challenges. When combined, they form an evidence-based approach to decision-making.

Example: Instead of guessing why students skip classes, conduct a survey to identify reasons.

2. Why Use Research Findings in Problem Solving?

Reason	Explanation	Example
Accuracy	Removes bias and guesswork.	Survey instead of assuming why students skip class.
Reliability	Shows consistent patterns.	If 80% employees cite stress, it's valid evidence.
Relevance	Focuses on real needs.	Traffic study helps improve route design.
Objectivity	Replaces opinions with facts.	Verify claims with data, not assumptions.
Innovation	Reveals new solutions.	Discover new study methods through feedback.

3. Process: Applying Research to Problem Solving

• Step 1: Identify the Problem – Define the issue clearly. Example: 'Students have poor attendance in morning classes.'

• Step 2: Gather Data – Collect surveys, interviews, or reports. Example: Survey reasons – transport, health, interest.

• Step 3: Analyze Findings – Identify trends. Example: 50% too early, 30% disinterest, 20% health issues.

• Step 4: Apply Findings – Design realistic actions. Example: Adjust class times, add activities, create incentives.

• Step 5: Evaluate Outcomes – Measure success. Example: Attendance improves 25% after changes.

4. Example Case Studies

Case Study – College Cafeteria Complaint

Problem: Students complain about high canteen prices.
Research: Survey of 200 students – 80% say prices too high, 60% prefer healthy meals.
Solution: Introduce budget 'meal combo' and add healthy options.

Case Study – Employee Stress

Problem: Rising employee turnover.
Research: 70% cite overtime stress.
Solution: Flexible hours, mental health sessions → retention improved by 40%.

Case Study – Pollution in City

Problem: Pollution increasing.
Research: 60% emissions from old vehicles.
Solution: Implement 'no old vehicle zone' → data-driven policy.

5. Extracting Key Findings from Research

Key Findings are evidence-backed conclusions that directly explain the problem.
Example Research: 'Out of 500 surveyed students, 70% said lack of sleep affects concentration.'

✅ Key Finding: Sleep deprivation reduces academic focus.

❌ Not Key Finding: Students enjoy late-night gaming.

6. Applying Research Findings in the Classroom

Research Finding	Application in Problem Solving
Students remember visuals better than text.	Use infographics and visual aids in class.
Short breaks improve focus.	Give 5-min reflection breaks per 30 mins.
Peer teaching enhances understanding.	Encourage student-led lessons.
Group work builds confidence.	Use collaborative projects in assignments.

7. Classroom Activity: Data-to-Decision Challenge (30 min)

Task: Students analyze fictional survey data, identify 3 key findings, and design practical solutions.

Example Dataset (Library Usage, 100 students):

- 60%: Timing not convenient
- 25%: Not enough books
- 15%: Don't know rules

Possible Solution:

- Extend library hours
- Add student-request system
- Conduct orientation

8. Evaluating Research Findings

Always apply critical tests before using research in problem solving:

Test	Question to Ask
Clarity Test	Is the finding clearly stated?
Accuracy Test	Is the data verified and correct?
Relevance Test	Does it address the real issue?
Logic Test	Does the conclusion follow evidence?
Ethical Test	Is the interpretation fair and unbiased?

9. Reflection Questions

1. Why is research more reliable than intuition in problem solving?
2. How can wrong interpretation of data create new problems?
3. How can you ensure a decision is both logical and ethical?

10. Summary

Research provides facts. Critical thinking tests their clarity, accuracy, and fairness. Together, they lead to ethical, logical, and effective solutions.