

**EDUC 511**  
Feb. 15, 2011

The graphic features a stylized illustration of educational tools including a laptop with a math equation, a calculator, a pencil, and a desk with a laptop and papers.

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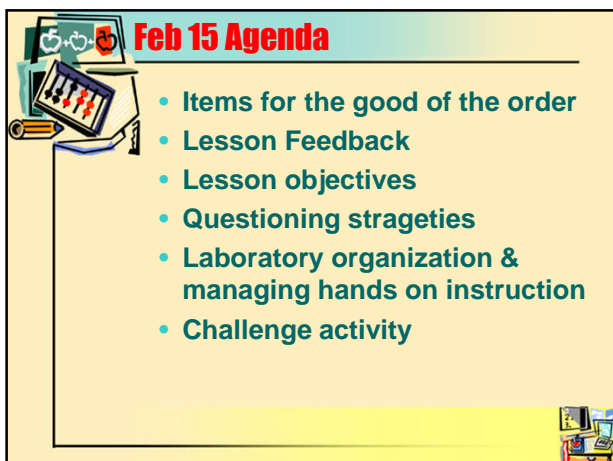
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**Feb 15 Agenda**

- Items for the good of the order
- Lesson Feedback
- Lesson objectives
- Questioning strategies
- Laboratory organization & managing hands on instruction
- Challenge activity

The graphic includes a small illustration of a desk with a laptop and a pencil.

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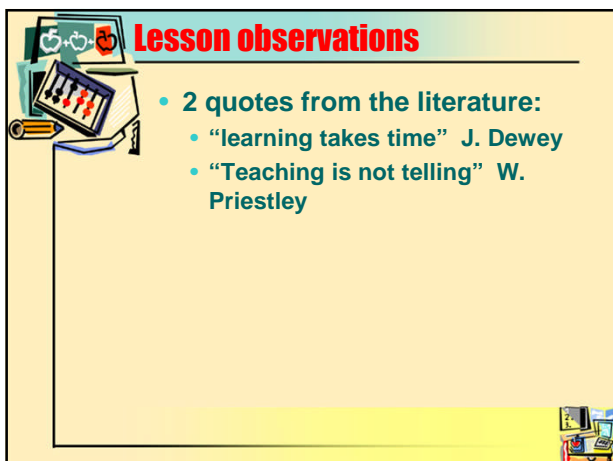
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**Lesson observations**

- 2 quotes from the literature:
  - “learning takes time” J. Dewey
  - “Teaching is not telling” W. Priestley

The graphic includes a small illustration of a desk with a laptop and a pencil.

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### Start a topic with a hands-on activity

- Before lecturing
- No terms introduced
- No ideas introduced
- Data from hands-on activity used to drive instruction.



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### Lesson Criticisms

- Slow down-don't work so hard
- Don't give it away
- It's Hands-on but not inquiry
- Do I have to read the procedure or are you going to tell me everything?
- M. B. Rowe would be disappointed
- Do you really know the science behind the lesson?



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### QUESTIONING STRATEGIES



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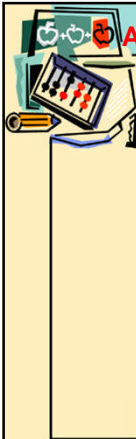
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### All ? Fall into 2 broad Categories

- Convergent
  - Recall
  - Recognition
  - Application
- Divergent
  - Speculation
  - Analysis
  - Synthesis
  - Application

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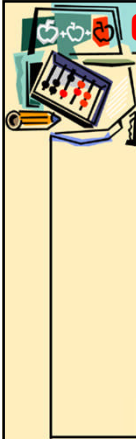
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### Questioning Strategies

- Closing questions
  - Asking for specifics
    - Which towel soaked up the most water?
    - What is this part called?
  - Tends to limit interaction to T-S
- Opening Questions
  - Invite response from all students
    - What do you believe caused the water to be absorbed?
    - What did you see happening...?
  - Opens up the interaction

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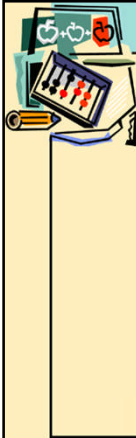
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### Broad Functions

- Provocative
- Evaluative
- Developmental
- Probing
- Consolidating

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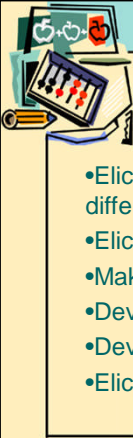
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### Purposes for ?

- Elicit a statement of relationship, differentiation or comparison
- Elicit a fact or idea
- Make a classification
- Develop an hypothesis or conclusion
- Develop an explanation or example
- Elicit a further question

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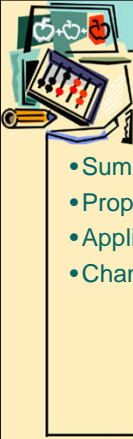
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### Purposes for ?

- Summarize or organize
- Propose a procedure
- Application of an idea or principle
- Change a frame of reference

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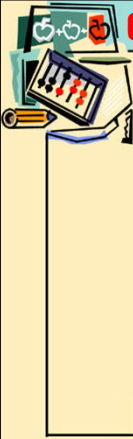
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### Characteristics of Effective ?

- Clear & definite
- Purposeful
- Brief
- Natural
- Thought provoking
- Limited in scope
- Appropriate to the level of the class

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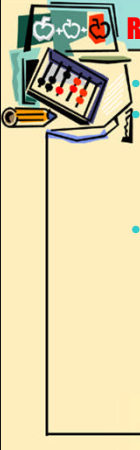
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### Requirements for opening questions

- Must have the students cooperation
- May require a fair amount of experience on the children's part
  - Used to yes/no or one word answers
- Reinforcement to help elicit student responses
  - Avoid negative or rejecting
  - Try accepting student response and asking for expansion

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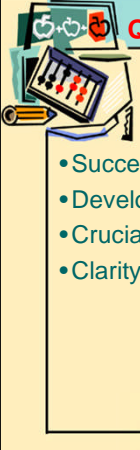
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### Questioning In the Classroom

- Success depends on questioning
- Developed by practice
- Crucial in every teaching situation
- Clarity and non-ambiguity –effective Questions

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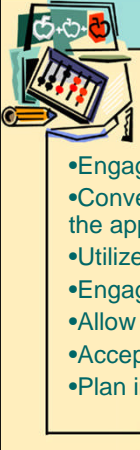
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### Guidelines

- Engage the attention of the students
- Convey clues about what kind of answer and the appropriateness
- Utilize a range of questions
- Engage a broad base of students
- Allow time for an answer
- Accept student responses
- Plan in advance

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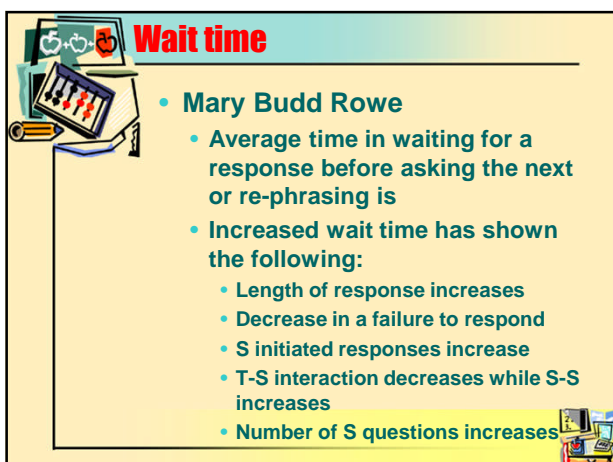
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**Wait time**

- **Mary Budd Rowe**
  - Average time in waiting for a response before asking the next or re-phrasing is
  - Increased wait time has shown the following:
    - Length of response increases
    - Decrease in a failure to respond
    - S initiated responses increase
    - T-S interaction decreases while S-S increases
    - Number of S questions increases

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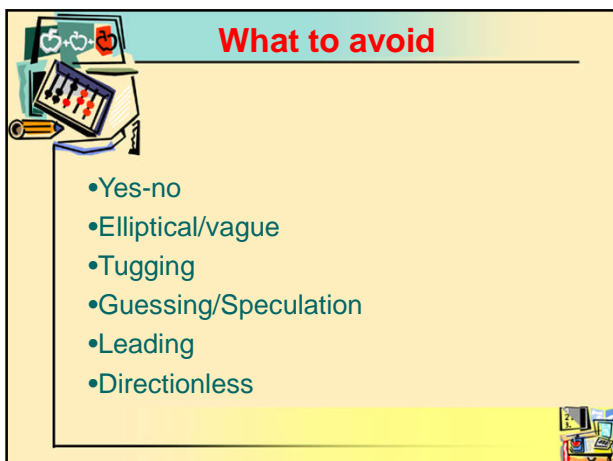
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**What to avoid**

- Yes-no
- Elliptical/vague
- Tugging
- Guessing/Speculation
- Leading
- Directionless

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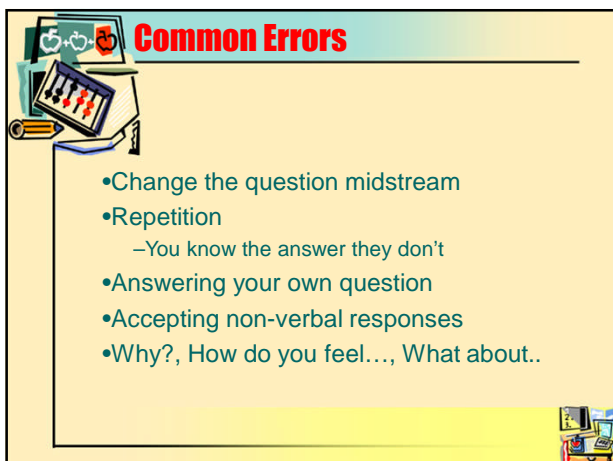
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**Common Errors**

- Change the question midstream
- Repetition
  - You know the answer they don't
- Answering your own question
- Accepting non-verbal responses
- Why?, How do you feel..., What about..

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### Common Errors

- Precision of the question
  - What is a light bulb?
  - Or
  - What are the parts of a light bulb?
  - What does the bulb do?
  - Or
  - What is the role of the light bulb in the circuit?
- Pacing
- Too fast
- Too many
- Change the question midstream



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### ACTIVITY ORGANIZATION



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### Giving Directions

- Managerial & Instructional
  - Engage the attention
  - Establish eye contact
  - Speak slowly
  - Be specific
  - Small increments
- Think before you speak



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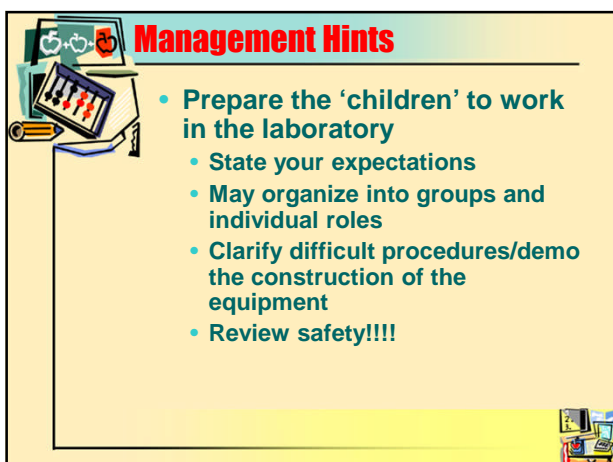
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### Management Hints

- Prepare the 'children' to work in the laboratory
  - State your expectations
  - May organize into groups and individual roles
  - Clarify difficult procedures/demo the construction of the equipment
  - Review safety!!!!

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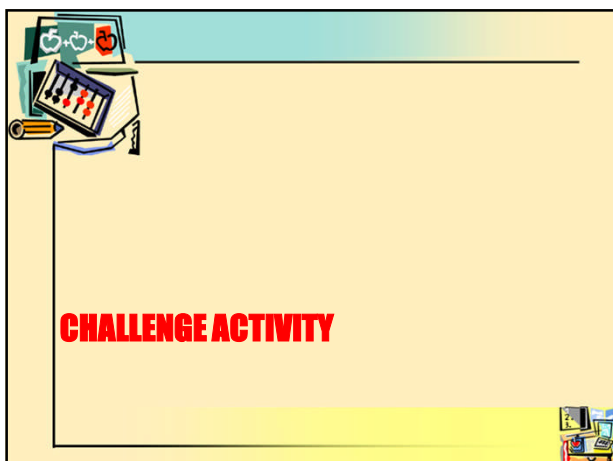
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### CHALLENGE ACTIVITY

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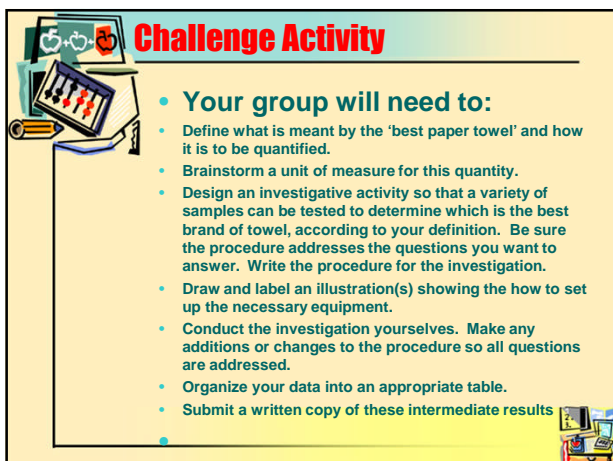
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### Challenge Activity

- Your group will need to:
  - Define what is meant by the 'best paper towel' and how it is to be quantified.
  - Brainstorm a unit of measure for this quantity.
  - Design an investigative activity so that a variety of samples can be tested to determine which is the best brand of towel, according to your definition. Be sure the procedure addresses the questions you want to answer. Write the procedure for the investigation.
  - Draw and label an illustration(s) showing the how to set up the necessary equipment.
  - Conduct the investigation yourselves. Make any additions or changes to the procedure so all questions are addressed.
  - Organize your data into an appropriate table.
  - Submit a written copy of these intermediate results

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### Activity submission

- **Final Group Report:**
  - Now that you have completed the development cycle (design/test/revise) and obtained some sample results, you are to prepare a final copy that could be sent to a practicing teacher. You must provide the following:
    - A list of equipment/materials required
    - Lesson Objective(s)
    - A neatly prepared copy of the students' procedure complete with data table
    - Diagram of the equipment setup
    - Teacher instructions
    - Must be neatly typed/word processed.
    - Date due:



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