

## The Standard Based Science Fair

### Is Coming to Rainbow!

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## The Standards Based Science Fair

- Students are not compared to each other but to the inquiry standards
- Many legitimate winners
- It puts the “fair” back into science fairs
- Students get opportunities to present their projects
- Specific feedback given to the students

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## Standard Based Rubrics for Different Levels

- Kindergarten/PSCD
- Grades 1-3
- Grades 4-6

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## Problems of Traditional Fairs

- Judging
  - Takes a lot of judges
  - Weak inter-rater reliability
  - Can be perceived as not fair
  - K-8 setting students don't explain their projects to judges and answer questions
  - Little or no judges feedback
- Students are compared to students
  - A child does a great project but another does a little better. So first child does not get the award
  - There are only a few winners
  - Losing is discouraging
- Parents and mentors focus on producing a winning project and push it too far beyond student centered.

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## Projects Should:

- Promote inquiry
- Be experiments
- Communicate results

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## Projects Should be Experiments

- Children naturally experiment
- In experiments we change something to see what happens
  - Science Language: We manipulate a variable

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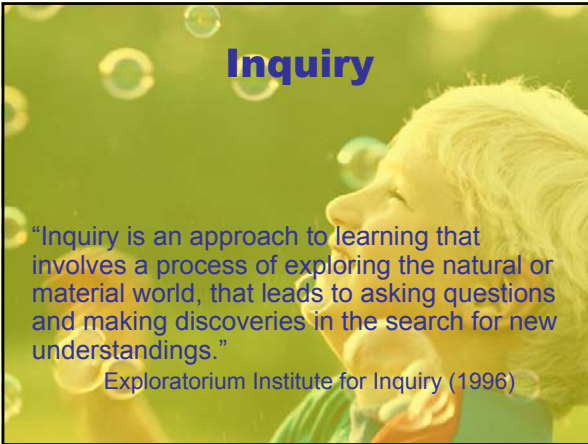
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## Inquiry

“Inquiry is an approach to learning that involves a process of exploring the natural or material world, that leads to asking questions and making discoveries in the search for new understandings.”

Exploratorium Institute for Inquiry (1996)

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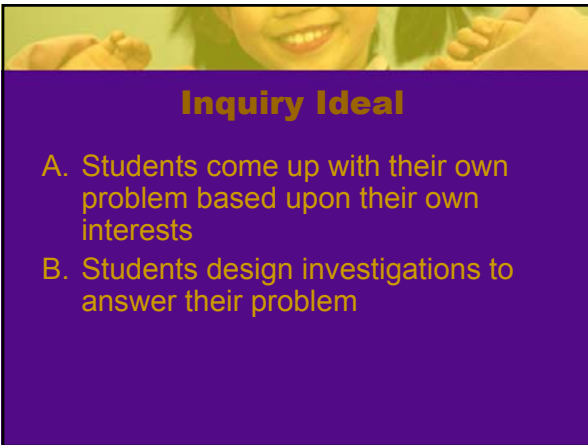
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## Inquiry Ideal

- A. Students come up with their own problem based upon their own interests
- B. Students design investigations to answer their problem

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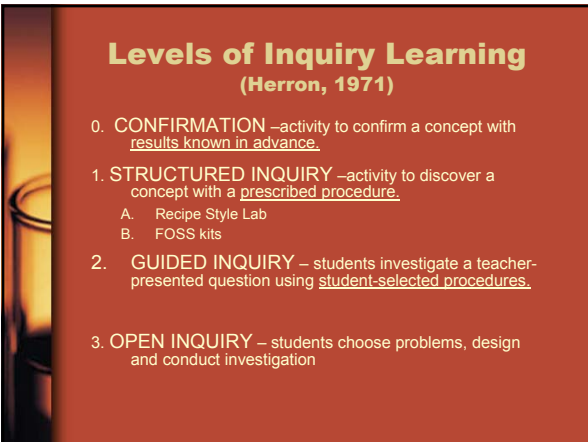
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## Levels of Inquiry Learning (Herron, 1971)

- 0. CONFIRMATION –activity to confirm a concept with results known in advance.
- 1. STRUCTURED INQUIRY –activity to discover a concept with a prescribed procedure.
  - A. Recipe Style Lab
  - B. FOSS kits
- 2. GUIDED INQUIRY – students investigate a teacher-presented question using student-selected procedures.
- 3. OPEN INQUIRY – students choose problems, design and conduct investigation

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## Activities that are **not** experiments

- Measuring plant growth
- Building a
  - Model of a volcano
  - Robot
- Doing library research on skin cancer

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## Problems that Lend Themselves to Experiments

- How do coffee grounds affect the growth of plants?
- Which type of surface can my robot walk on best?
- Which sunscreen blocks UV light the best?

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## The biggest problem... is choosing a problem.

Most challenging and creative aspect of science:

Choosing a problem that can be solved

“The formulation of a problem is often more essential than its solution.”

• --Albert Einstein



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## Which are good problems for a science fair?

- A. Why is the sky blue?
- B. What food do mealworms like best?
- C. Can I make a filter to clean water?
- D. How long will a candle burn before it goes out?
- E. How does the mass of a car influence its speed down a pine wood derby track?

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## Quantitative Data

- Above Grade 4, required
- Quantitative Data is data with a number
- Measurements: height, mass, voltage, time
- Count: 20 birds

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# Communicate Results

Science Display Board Presentation



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## The Science Expo

- May 11, 2007
- From 12:30-2:00
- Multi-Purpose Room



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