



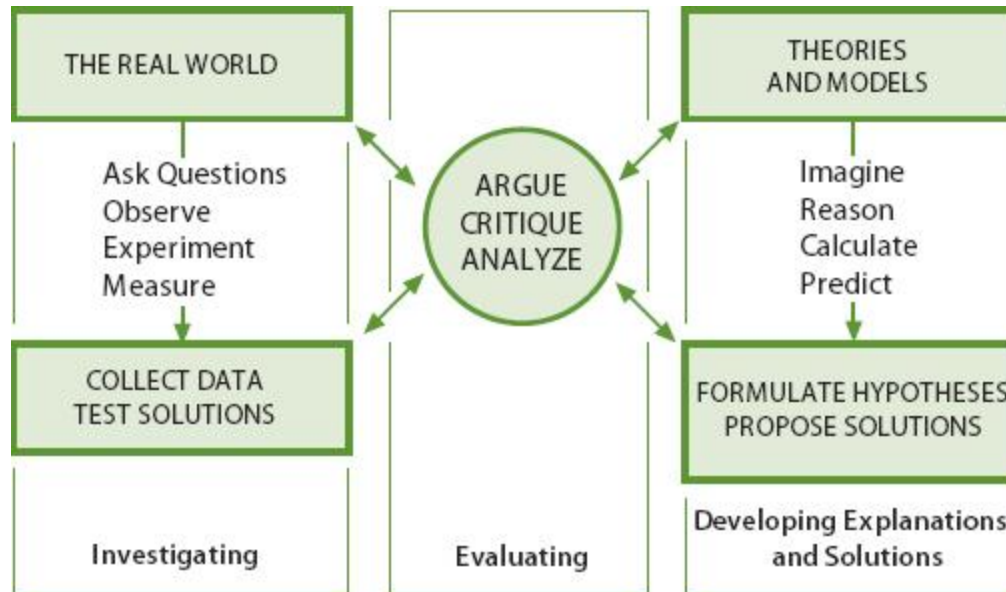
Cary Institute
of Ecosystem Studies

Data Exploration in Ecology Project (DEEP)

T. Irish
A. Berkowitz
C. Harris
S. Root
K. Trudeau

Association for Science Teacher Education Northeast Chapter Annual Meeting, 2013

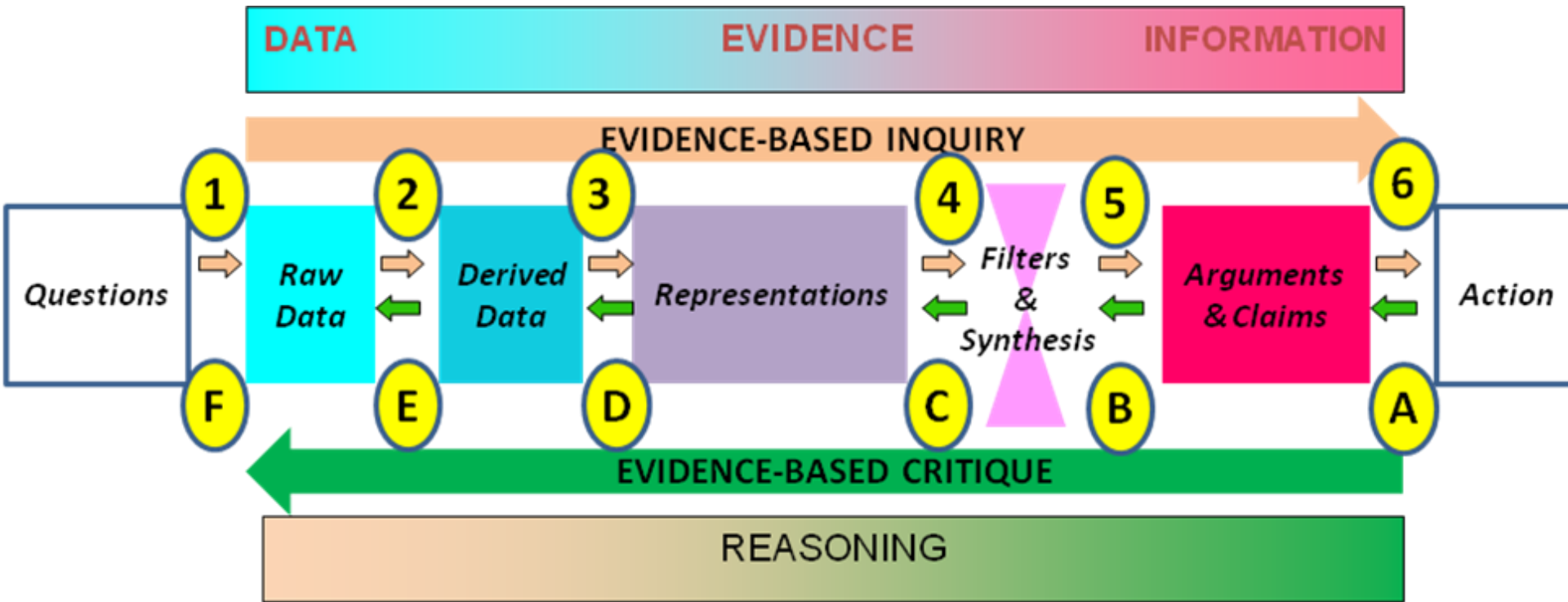
NGSS Framework



NGSS considers eight practices to be essential elements of the K-12 science and engineering curriculum:

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

An Evidence- and Reasoning-Based Inquiry and Critique Framework



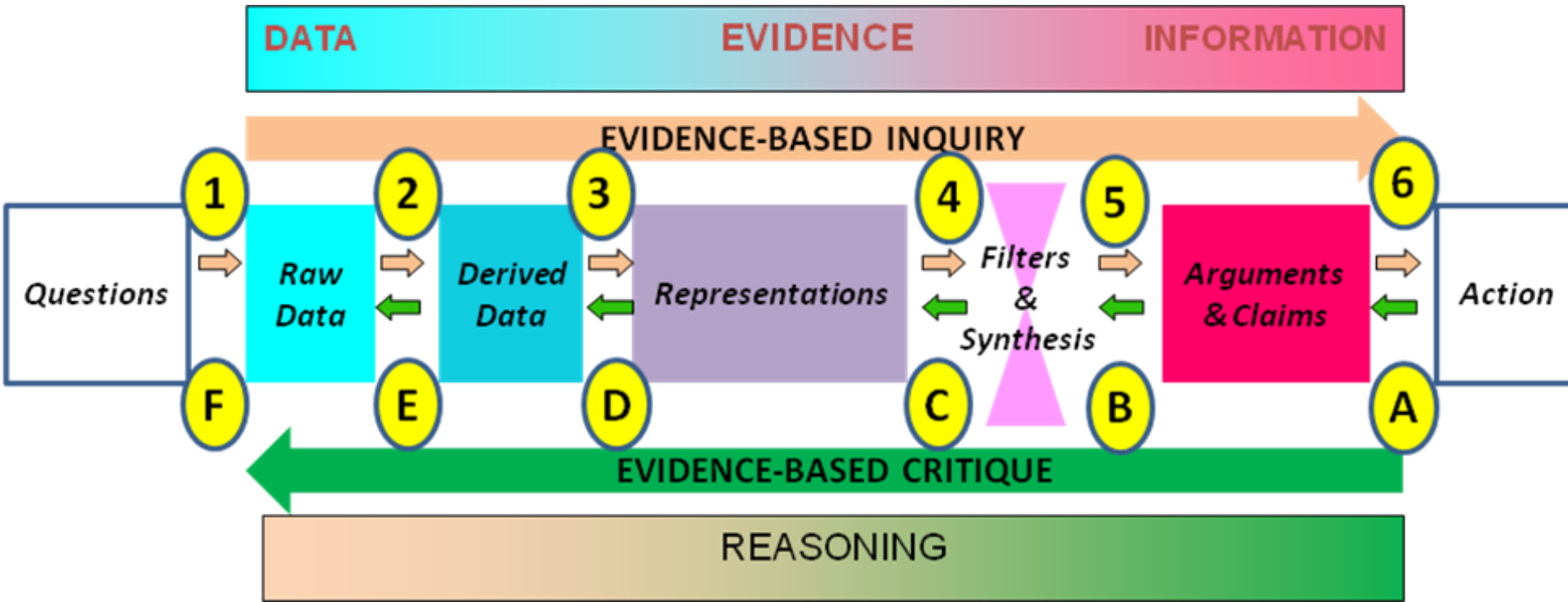
Inquiry Practices:

1. Primary research – question/hypotheses, study design, data collection
2. Data manipulation – descriptive statistics, sub-setting data, indices
3. Summarizing results – graphing, diagrams, tables, bottom line, statistical tests
4. Filtering results – selecting salient, relevant, and reliable results
5. Synthesizing – combining, integrating, meta-analysis
6. Communicating and recommending

Critique Practices:

- A. Evaluating claims
- B. Evaluating the synthesis in the claim
- C. Evaluating the filtering of evidence used in the claim
- D. Critiquing the representation – right graph? Adequate information about it?
- E. Evaluating manipulated data – descriptive statistics, sub-setting data, indices
- F. Evaluating questions/hypotheses, study design, data collection

An Evidence- and Reasoning-Based Inquiry and Critique Framework



Question/hypotheses, study
 n
 descriptive statistics, sub-setting
 graphing, diagrams, tables,
 l tests
 icting salient, relevant, and

- Critique Practices:
- A. Evaluating claims
 - B. Evaluating the synthesis
 - C. Evaluating the filtering of
 - D. Critiquing the representativeness of information about it?
 - E. Evaluating manipulated data, sub-setting data, indices
 - F. Evaluating questions/hypotheses collection

PCK and Skills for Data Exploration Teaching

