

## Dissertation Outline – **Dav Clark** – Dissertation Year Fellowship Application 2012

1. Introduction
  - a. The problem of climate change and motivating a “science education” approach to policy
  - b. An overview of numerical information: effects on learning, decision making and reasoning
    - i. Review of Numerically Driven Inferencing (NDI) program
  - c. An overview of causal explanation: effects on learning, decision making and reasoning
2. Learning with NDI and an argument for multiple routes for learning policy-relevant (and other) information
  - a. Detailed explanation of the EPIC paradigm
  - b. Description of the experiment reported in Clark & Ranney (2010), with additional variations from replication experiments
  - c. Results and interim conclusions
3. NDI for climate change education
  - a. Changes in attitudes and self-assessment in UC Berkeley undergraduates
    - i. Description of experimental paradigm – presentation of numerical facts building or eroding support for climate change belief
    - ii. Report of major results – attitude changes and changes in self-assessed scored knowledge
    - iii. Discussion of the relative efficacy of individual items and sets of items for affecting climate change attitudes and self-assessment
    - iv. Report of secondary results – an analysis of demographic factors (i.e., political affiliation, gender, religion)
  - b. Longitudinal assessment of changes in the American population at large
    - i. Description of changes to experimental paradigm, notably the shift to digital survey methods and the inclusion of followup surveys
    - ii. Report on replications of previous results
    - iii. Report on longitudinal effects of the intervention
4. Mechanistic explanation for climate change education
  - a. Changes in attitudes, real knowledge and self-assessment in UC Berkeley undergraduates
    - i. Description of experimental paradigm – presentation of a 400-word explanation of the physical mechanism of the greenhouse effect
    - ii. Report of major results – attitude changes and changes in both self-assessed and objectively scored knowledge
    - iii. Report of secondary results – the role of surprise and an analysis of demographic factors

- b. Longitudinal assessment of changes in the American population at large
    - i. Description of changes to experimental paradigm, notably the shift to digital survey methods and the inclusion of followup surveys
    - ii. Report on replications of previous results
    - iii. Report on longitudinal effects of the intervention
- 5. Conclusions and future directions
  - a. Summary and comparison of the magnitudes of effects of the causal explanation and numerical information interventions
  - b. Suggestions for the employment of such intervention in public communications efforts
  - c. Discussion of how this work might be extended through integration with complementary behavioral change methods