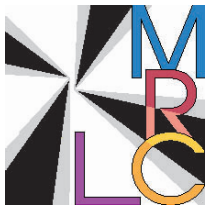
PREM Directors Meeting
September 14, 2012
National Science Foundation
Arlington, VA

Christine S. Jones
Liquid Crystal Materials Research Center
University of Colorado Boulder



Education Directors Network

- Evaluation Projects
  - MRSEC Cross-site REU Assessment
    - Piloted in summers 2010 and 2012
  - Project IMAP-**Meta-Analysis of Programs in MRSEC Educational Outreach**
    - K-12 Cross Site Education Assessment Project
      - Partnership with Robert Tai -NSF PRIME -pending
  - MRSECs participating in the Netway project
- Annual Meetings
  - Meeting since 1999 – more regularly since 2007
    - September 28, 2012
  - Three focus groups
    - Diversity, Evaluation, Education (Science Content)

Evaluation:
Why are we doing this work?

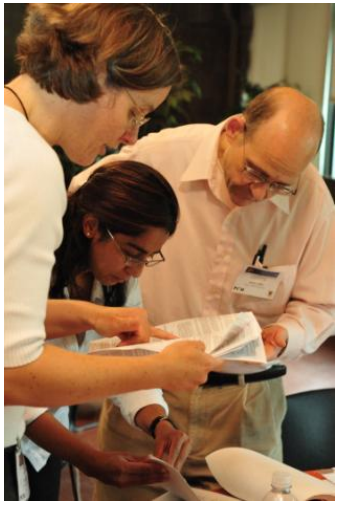
National Academy of Science*: Looking Back Moving Forward*

- Programs that are exemplary in practice are those that can be targeted for rigorous, professional evaluation. Also these programs can be examined for potential replication at other MRSEC Centers.

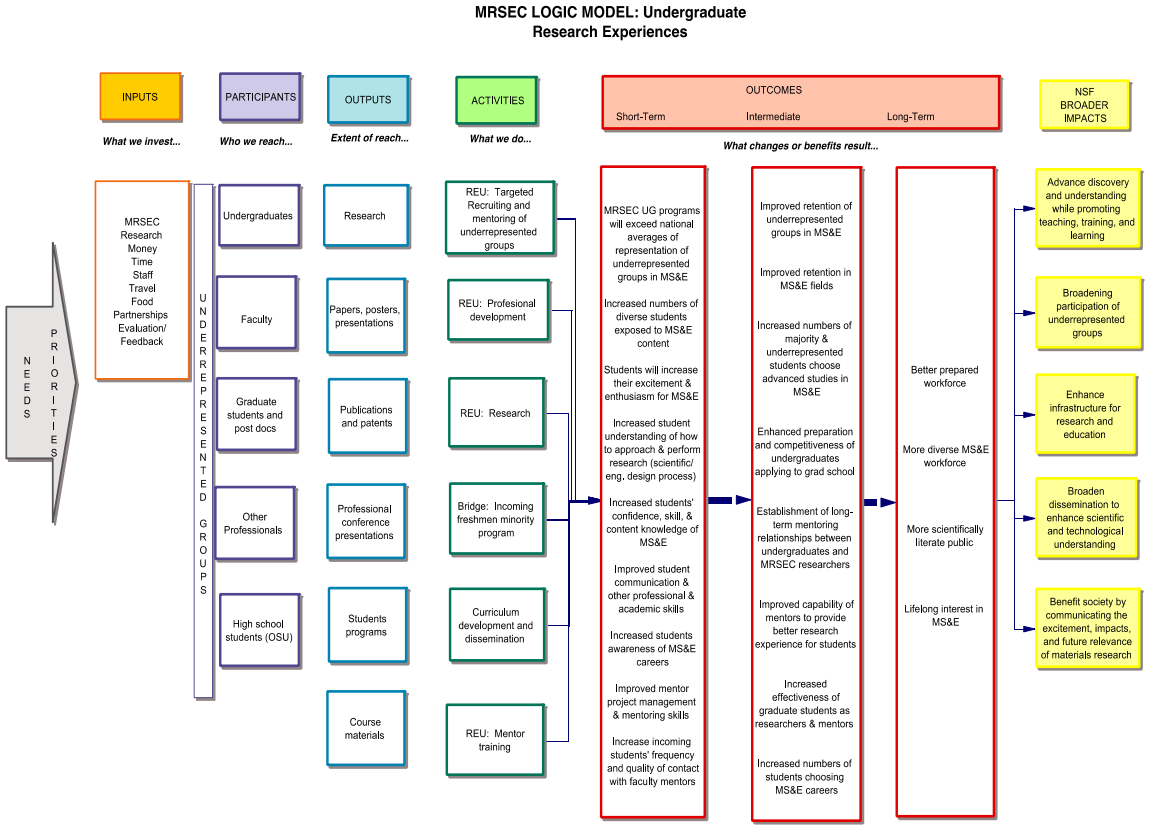
- Cross-site evaluation
  - *The whole is greater than the sum of its parts.*

Preparing for Cross-Site Program Assessment

- Logic Model Workshop – September 2008
  - Identify E &O programs at each MRSEC site
  - where our commonalities lie
- Outcome
  - Constructed 6 logic models
    - K-12
    - Public interactions
    - K–12 teacher professional development, RET
    - REU
    - Graduated Student Training programs
    - Education and Outreach



REU Logic Model



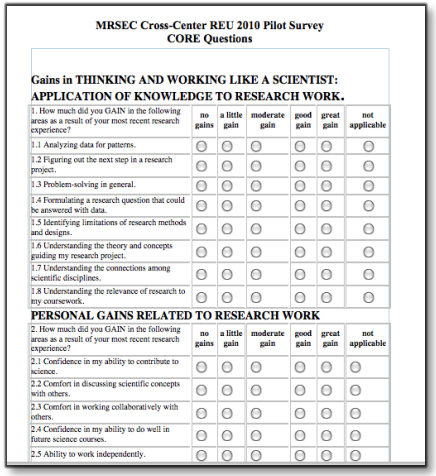
Undergraduate Research Student Self Assessment An REU Student Assessment

URSSA
Undergraduate Research Student Self-Assessment

Essential Elements of a UR Experience

Determined collectively based on a comprehensive review of the literature combined with a follow-up study*

1. Personal/professional gains related to the research work
2. Gains in thinking and working like a scientist: application of knowledge to research work
3. Gains in becoming a scientist: changes in attitudes or behaviors as a researcher
4. Gains of skills
5. Enhanced career and graduate school preparation
6. Confirmation of career paths



MRSEC Cross-Center REU 2010 Pilot Survey
CORE Questions

Gains in THINKING AND WORKING LIKE A SCIENTIST: APPLICATION OF KNOWLEDGE TO RESEARCH WORK.

1. How much did you GAIN in the following areas as a result of your most recent research experience?	no gains	a little gain	moderate gain	good gain	great gain	not applicable
1.1 Analyzing data for patterns.						
1.2 Figuring out the next step in a research project.						
1.3 Problem-solving in general.						
1.4 Formulating a research question that could be answered with data.						
1.5 Identifying limitations of research methods and designs.						
1.6 Understanding the theory and concepts guiding my research project.						
1.7 Understanding the connections among scientific disciplines.						
1.8 Understanding the relevance of research to my coursework.						

PERSONAL GAINS RELATED TO RESEARCH WORK

2. How much did you GAIN in the following areas as a result of your most recent research experience?	no gains	a little gain	moderate gain	good gain	great gain	not applicable
2.1 Confidence in my ability to contribute to science.						
2.2 Comfort in discussing scientific concepts with others.						
2.3 Comfort in working collaboratively with others.						
2.4 Confidence in my ability to do well in future science courses.						
2.5 Ability to work independently.						

* Hunter, Laursen, and Seymour, 2007

Benefits of Using URSSA

- Use URSSA core assessment
  - Generalized REU questions
    - vetted and tested for reliability and validity
    - focus on assessing the research experience, thinking and working like a scientist, skills, attitudes or behaviors as a researcher
- Add MRSEC focused questions
    - assess the added value and impact of participating in a MRSEC REU
    - Each site could add customized questions
- Use URSSA platform
    - center anonymity, student anonymity
    - compiled output data
- Student Responses
    - individual centers gain formative assessment information
    - have baseline data

Netway

http://www.evaluationnetway.com/

- Program to develop a logic model/pathway, and evaluation plan.
  - Cornel Office of Research and Evaluation
  - project educators and managers enter project information about activities, outputs and outcomes
  - The Netway is not yet available publicly yet

https://core.human.cornell.edu/research/systems/netway.cfm

MRSEC Education Directors Meetings
September 28, 2012

- Meeting Goals
  - Examine
    - Existing and validated instruments for assessment of Participant Interest and Engagement
    - Limitations of existing instruments
    - Methods of data analysis and implementation
    - Examples of Data Analysis

- REU
  - Results of the cross-site analysis of 2010-2011 pilot data
    - Comparison to other URSSA users

- Invited Speakers- Science Education and Evaluation Research Community

  - Patricia Campbell, Ph. D.
    - "Making It Better: Using Research Results and NSF Frameworks to Improve the Quality and Usability of Evaluations"
  - Gil Noam, Ed.D., Ph. D.
    - "Assessment Tools of Quality STEM Programming and Engagement: New Developments"
  - Cary Sneider, Ph. D.
    - "The Next Generation Science Standards and MRSEC K-12 Outreach Opportunities"
  - Kirsten Ellenbogen, Ph.D
    - "Measuring the Ephemeral: Effective Evaluation of Informal STEM Learning Experiences"
  - **Robert Tai, Ph.D**
    - Afternoon workshop