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## **Learning to be a Research Scientist: Capturing the Transformation**

### 1. Description of the session

This session engages participants in considering the multiple benefits of self-assessment mechanisms and identifying mechanisms for capturing transformative learning that moves student participants towards recognizing themselves as researchers and scientists.

### 2. Objectives of the session

By the end of the session, participants will:

1. Review self-assessment instruments and consider their multiple uses.
2. Explore the SoTL challenge in the context of an extended undergraduate research learning experience.
3. Consider the challenges of transforming anecdotal stories into systematic assessment acceptable to national (NSF) and foundation (Teagle) funding sources.
4. Review data analysis showing significant self-assessed learning
5. Worked in groups to either:
  - a. Construct/graphically represent their understanding of the research design.
  - b. Work with narrative reflections on learning to identify themes and transformational moments.
6. Propose additional mechanisms to fully explore and capture student's learning transformations

### 3. Ways of involving the audience in the session

Session participants will be invited to brainstorm formative, summative and potential impact uses of self assessment instruments and work in small groups to represent the multi-modal research design of this NSF-Funded undergraduate research initiative, work with narrative and generate additional ideas and mechanisms for

### 4. What attendees can expect to experience and learn

Self assessment instruments and their multiple uses: as advanced organizers foreshadowing summer research experience, as pre-tests and needs assessments to guide team and group formation and set learner challenges.

**SoTL Commons Conference November 1-2, 2007  
Georgia Southern University  
Statesboro, GA**

Example of how to embed SoTL into an effective NSF-funded project with over a decade of experience helping undergraduates take responsibility for research, and meet the evaluative challenge of capturing transformational learning points.

Examples of integrative methodologies and specific quantitative and qualitative findings emerging from specific self-assessment instruments and reflective journaling, such as: Detailed descriptive statistics of SoTL outcomes - Paired-samples t tests for the four areas indicated that that participants reported significant growth in all four areas:

Laboratory and field skills  
 $t(14) = -11.69, p < .001$

Project planning and interdisciplinary teamwork  
 $t(14) = -6.98, p < .001$

Knowledge base and scholarly research practices  
 $t(14) = -5.33, p < .001$

Sharing research  
 $t(14) = -6.35, p < .001$

Figure 1 Growth by Area

[histogram (note: image does not paste in): showing pre-post growth change in Lab & Field Skills (1.22), Project Planning and Interdisciplinary Teamwork (1.09), Knowledge Base and Scholarly Research Practices (.68) and Sharing Research (.91)]

Qualitative Example: A favorite quote that captures a transformative growth as scientists reads:

"... I felt like a real scientist...science has become real to me this summer--the good and the bad. It is no longer some abstract concept sitting up on a pedestal, that I am striving towards--it is all around me."

(Notes: has potential for elements of theme 2: fostering methods of SoTL; Objectives may need to be cut slightly to meet the timeframe)