



Biannual conference of the  
**Southwest Consortium for  
Innovative Psychology in Education**

**Building Capacity for STEM Research through Innovations  
in Psychology and Education**

**November 10-11, 2011  
University of Oklahoma  
Norman, OK**

**Please join us for SCIPIE 2011**

Keeping with our traditions of (a) tackling “sticky issues” at the intersection of education and the learning sciences, and (b) holding highly interactive conference sessions, we invite you to participate in SCIPIE 2011, which will focus on conceptual and methodological challenges in STEM education.

**Overview**

Researchers studying the cognitive, motivational, and emotional factors that influence students’ choices with regard to STEM education and careers face considerable definitional and methodological challenges. Constructs associated with these factors (e.g., engagement, persistence, attitudes towards science careers) may lack conceptual clarity. In addition, the links between psychological beliefs and processes and long-term outcomes of interest have not been well-demonstrated. We propose that STEM projects would profit from an assessment of existing research that leads to a synthesis of “best practices,” conceptually and methodologically, with regard to these cognitive, motivational, and emotional factors.

The two-day SCIPIE conference will be composed of an evolving series of active working groups, which critically discuss definitional and measurement problems associated with key psychological constructs found in major STEM research, application, and intervention projects. Recognized experts will facilitate discussion of the target constructs among researchers who have relevant conceptual and methodological expertise. Discussion will include issues of definition, utility, and measurement. Given any individual construct, a definition may be difficult if not impossible to agree upon, but we can work to reach consensus on the utility of construct, and arrive at a pragmatic set of criteria regarding when it should be used. Subsequent to the conference facilitators will compile the conclusions of the working groups into a set of papers addressing issues of definition, utility, and measurement, and recommending best practices in STEM intervention research.

**Background**

There is a great deal of research devoted to understanding and solving problems related to the growing demand for technology professionals in the US. This body of work includes projects that examine the efficacy and effectiveness of interventions to engage students in the STEM areas, increase student motivation, and help learners prepare for careers in technology fields. Some of this work has been conducted under the auspices of

federal program to create publically available datasets. Additional important work has been conducted by individual researchers.

Researchers working in this area face considerable methodological challenges as they attempt to design and assess projects for their research value, pedagogical value, and effectiveness in changing preparation in the STEM areas. They are called upon to assess such constructs as engagement, persistence, attitudes towards science careers, and other predictors of students' intention to pursue a career in STEM. These constructs are challenging because (a) individuals who are called upon to create some of these projects may not have a background in psychology, so the definition and use of these constructs is not the focus of their expertise; (b) those who do have this expertise have not expended the effort needed to create conceptual clarity—fundamental disagreements persist at the expense of finding points of agreement and overlap, or clearly setting out where and why differences do exist; and (c) from a measurement perspective, although we have scales that demonstrate reliability, the links between psychological beliefs and processes and the long-term outcomes have not been well-demonstrated.

We propose that this line of inquiry would profit from an assessment of existing research that leads to a synthesis of “best practices,” conceptually and methodologically, with regard to the cognitive, motivational, and emotional factors that influence students' choices with regard to STEM education and STEM careers. At present, the lack of clear definitions for the constructs that play a central role in STEM projects, and disagreements regarding how best to measure these constructs, can create methodological and conceptual problems for researchers and practitioners.

The purpose of the SCIPIE 2011 conference will be to examine the current state of construct definition and methodology in the foci identified in the call. A considerable challenge to psychology in education is the lack of standardization in construct definition, methodology, measurement, and approaches to analysis. Our goal is to examine the constructs and methodology to arrive at recommendations for best research practices. We envision the two-day SCIPIE conference to be composed of an evolving series of active working groups, which critically discuss definitional and measurement problems associated with key psychological constructs found in major STEM research projects. The working groups will be composed of *featured participants* and each will be led by designated *facilitators* and *moderators* (roles described below). The facilitators and moderators will also be responsible for pre-conference preparation and for organizing participants to produce the post-conference products.

In keeping with the mission of the consortium, SCIPIE conferences are designed to provide new scholars and graduate students with opportunities for legitimate participation in conversations about difficult issues and leading-edge ideas. To this end, graduate students will be invited to apply for participation in the conference and in a graduate student poster fair that will include opportunities for one-on-one research mentoring.

## **Foci**

AREA 1: Attitudes About and Interest in STEM

Session Leaders: Ann Renninger; Jenefer Husman; Terri Flowerday

AREA 2: Emotion

Session Leaders: Jeannine Turner; Lisa Linnenbrink-Garcia; Reinhard Pekrun

AREA 3: Knowledge, Knowing, & Beliefs in STEM

Session Leaders: Marlene Schommer; Lisa Bendixen; Michael Crowson

#### AREA 4: Goals

Session Leaders: Jessica Summers; Duane Shell

#### AREA 5: Inquiry-based Learning

Session Leaders: Martina Nieswandt; Sarah Brem; Gale Sinatra

## Conference Roles

As in the past, SCIEPIE attendees will each play an active role in the conference. The success of the conference hinges on the engagement of the participants. Conference participants will all fall into one of five roles.

**Session Facilitators** provide the content basis for the conversations by drawing on the professional literature. Facilitators will be selected on the basis of their substantive research contributions involving the target constructs.

**Measurement Facilitators** provide the measurement content basis for the conversations by drawing on the professional literature and national data bases. Measurement Facilitators will be selected on the basis of their substantive research contributions involving the target constructs.

**Session Moderators** organize the creative chaos. They will keep the session on topic and on schedule. Like facilitators, moderators will be selected on the basis of their research contributions, but also on their ability to effectively lead the discussion.

**Featured Participants** are scholars who participate actively in the conversations, provide suggestions, initiate questions, and support the Session Facilitators. The Featured Participants are selected because they have active research programs and relevant expertise.

**Session Participants** are all other SCIEPIE conference attendees, including graduate students. Session participants will indicate their construct area of interest when they submit their conference registration. Subsequently, session participants will be given access to important materials prior to the beginning of the conference to assure their full and meaningful participation.

**Poster Presenters** are graduate students or faculty and post-doc members who have had their poster proposals accepted for presentation at SCIEPIE 2011. Instructions for submitting proposals for poster presentations can be found below. Graduate students whose posters are accepted will receive feedback on their research from an assigned SCIEPIE Research Mentor.

**Research Mentors** will serve as discussants for 2-3 papers included in the Graduate Student poster session. In addition, Research Mentors are urged to provide one-on-one research mentoring to the poster authors during the course of the conference.

## Conference Schedule (subject to change)

### Thursday, November 10, 2011: Definition and Measurement

**Goals for the day:** attempt to clarify definitions of constructs that are central to research in STEM education; critically examine measurement practices associated with each construct.

8:45-9:00 **Welcome and Orientation**

9:00-11:45 **Work in Foci Groups – Definitional Clarity**

Five groups, each composed of facilitators, a moderator, and other participants with expertise in the associated constructs, discuss challenges to definitional clarity.

12:00-1:00 **Lunch (provided)**

1:00-3:30 **Work in Foci Groups – Clarity of Measurement**

Five groups, each composed of a measurement facilitator, a moderator, and other participants with expertise in the associated constructs, discuss challenges to measurement of the constructs.

3:45-5:15 **Report out to Whole Group; Discussion and Planning for Cross Talks**

5:30-7:00 **Poster Session and Research Mentoring**

### Friday, November 11, 2011: Conclusions and Project Planning

**Goals for the day:** Today's discussions will focus participants' attention on specific definitional or measurement challenges which may be best addressed in conjunction with members of other areas.

7:30-8:30 **Moderators Meeting to Confirm Groups**

8:45-9:00 **Orientation and Cross-Talk Group Assignments**

9:00-10:15 **Work in Assigned Cross-Talk Groups**

Cross-talk groups will discuss their assigned problems and suggest best practices to address the problem.

10:30-11:45 **Work in Open Cross-Talk Groups**

Cross-talk groups will discuss their assigned problems and suggest best practices to address the problem.

12:00-12:45 **Lunch (provided)**

1:00-2:30 **Foci Closure Meeting**

2:45-4:00 **Project Planning Groups**

Next steps: Planned follow-up products will be announced by facilitators/moderators and on-going project work groups will be organized. Products will be fleshed out in product work groups; and schedules, procedures, responsibilities will be structured.

**Graduate Student  
Professional Development**

4:00-5:00 **Project Groups Report Out**

5:00-5:15 **SCIPIE Business Announcements**

6:30

**Banquet**

## **Registration Deadline Nov. 1<sup>st</sup>, 2011**

**There is no on-site registration**

On-line registration can be found at [www.sciPie.org](http://www.sciPie.org)

Conference Registration: Faculty and Post-docs		Conference Registration: Student	
Before October 8, 2011		Before October 8, 2011	
Member	\$60.00	Member	\$25.00
Non-member	\$110.00	Non-member	\$50.00
Beginning October 8, 2011		Beginning October 8, 2011	
Member	\$90.00	Member	\$55.00
Non-member	\$140.00	Non-member	\$80.00

SCIPIE Membership	
Faculty and post-docs	\$50.00
Student	\$25.00

### **How to Submit a Poster Proposal**

Submissions to the poster session are not limited to STEM topics, and we look forward to a diverse set of topics being covered in the poster session.

Submit a 2000 word proposal; the word limit does not include tables and references. In your submission, please include the research objectives, theoretical framework, description of participants, discussion of data, data collection tools, and/or methodology, and results and/or conclusions.

Do not include identifying information in the body of the proposal.

Proposals should be submitted no later than 11:59pm Pacific Time on September 16th.

Submit the proposal electronically to Dr. Terri Flowerday ([tflower@unm.edu](mailto:tflower@unm.edu)). Be sure to include your proposal title and your contact information in the email message.

Poster session participants will be selected by the SCIPIE executive committee. Graduate students, post-doctoral scholars, and faculty are encouraged to submit posters. However, the criteria for acceptance differ depending on whether the submitter is a graduate student or a post-doc/faculty member.

#### *For Graduate Students*

Graduate students are encouraged to submit both completed work, with data analysis, as well as works-in-progress. Works-in-progress may be submitted provided the study is fully enough developed to provide the basis for meaningful feedback. Graduate students will be matched with a mentor based on their research interests as indicated by their proposal.

#### *For Post-doctoral Scholars and Faculty*

More senior scholars are strongly encouraged to include completed data collections as part of their proposal. Although the work may still be evolving, empirical evidence is highly desirable. Faculty and post-docs will not receive mentorship; the experience will be more similar to a traditional poster session.

Notification of acceptance will be sent out by September 30<sup>th</sup>.

## **Housing Information**

Sooner Legends Inn & Suites  
1200 24th Avenue SW  
Norman, OK 73072  
Ph: 405-701-8100

Sooner Legends Inn & Suites is a family-owned and operated full-service hotel offering complimentary wireless internet, a fully equipped business center, a fitness center, and an outdoor heated swimming pool. Also on site, a full-service bar and restaurant.

[www.soonerlegends.com](http://www.soonerlegends.com)  
[reservations@soonerlegends.com](mailto:reservations@soonerlegends.com)

**Mention SCIPIE when you reserve your room to get the conference rate of \$87 for a double queen or king room.**

## **Banquet**

The conference will end with a BBQ Buffet on Friday evening. Banquet tickets (\$25 for faculty and post-docs; \$10 for students) can be purchased on the conference registration site.

## **Transportation information is forthcoming**