

RESEARCH BASED UNDERGRADUATE SCIENCE TEACHING Conference II

Conference Agenda

Sunday, May 20, 2012

5:30 – 8:00 PM **Conference Registration**
Reception – Information Conference participant Interaction:
Bryant Conference Center * Room RAST B

Monday, May 21, 2012

Strand 1: Implementing and Sustaining Reform in Undergraduate Science Teaching

7:30-8:30 AM **Registration and Full Breakfast:** Bryant Conference Center * Room: RAST A

8:30-8:40 AM **Welcome, Introductions, and Overview of the Day:** Bryant Conference Center * Room: RAST B

- *Dennis W. Sunal, The University of Alabama, Science Education*
- *Cynthia Szymanski Sunal, The University of Alabama, Office of Research on Teaching in the Disciplines*
- *Cheryl L. Mason, San Diego State University, Biology and Science Education*

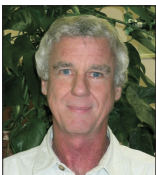
8:40-9:00 AM **Delphi Study 1:** Bryant Conference Center * Room: RAST B

Donna Turner, The University of Alabama, Deborah McAllister, The University of Tennessee at Chattanooga, and April Nelms, University of North Georgia

9:00-9:05 AM **Welcome from The University of Alabama:** Bryant Conference Center * Room: RAST B

Donald Benson, Vice President for Research

9:05-9:35 AM **Keynote Speaker:** Bryant Conference Center * Room: RAST B



Lawrence B. Flick, Dean, College of Education, and Professor, Science and Mathematics Education in Partnership with College of Science, Oregon State University

“Reform or Revolution? Undergraduate Science Education in Diverse Contexts for Learning”

9:35-9:45 AM **Discussion of Keynote Paper:** Bryant Conference Center * Room RAST B

Moderator: Cheryl L. Mason, San Diego State University

9:45-10:00 AM Break

10:00-10:30 AM Panel 1: The Reform Process: Bryant Conference Center * Room RAST B

“An Ambitious Plan in Undergraduate Science STEM Education”

Barbara Burke, Barbara Hoeling, and Edward Walton, California Polytechnic University – Pomona

10:30-10:45 AM Discussion of Panel 1 Presentation: Bryant Conference Center * Room RAST B

Moderator: Dennis W. Sunal, The University of Alabama

10:45-10:55 AM Break

10:55-11:25 AM Panel 2: The Reform Process: Bryant Conference Center * Room RAST B

“Beginnings to New Horizons”

Paul Adams, Germaine Taggart, Fort Hayes State University and Zdeslav Hrepic, Columbus State University

11:25-11:40 AM Discussion of Panel 2 Presentation: Bryant Conference Center * Room RAST B

Moderator: Michael Odell, University of Texas at Tyler

11:40 AM-12:40 PM Lunch will be provided: Bryant Conference Center * Room RAST A

Monday, May 21, 1:00 – 5:00 pm

Strand 2: Teaching STEM Courses: What Works

NOTE: Concurrent Sessions 1A and 1B with follow-up Discussion, occur 12:40-2:10 PM

12:40-1:55 PM Concurrent Session 1A: Strategies for Enhancing Learning: Bryant Conference Center * Room Wilson (2nd Floor)

- **“Combating ‘One and Done’: Maximizing the Impact of an Undergraduate Science Course”**

Peter Holden, University of Massachusetts, Boston

- **“How do Summer Undergraduate Research Experiences Compare to Other Models?”**

Omolola Adedokun, Purdue University

- **“Learning Inquiry and Nature of Science through Undergraduate Research: Mentoring Matters**

Maya Patel, Ithaca College

- **“You Can Learn a Lot about Teaching Undergraduates from Preschoolers”**

Dana Byrd, Texas A&M University at Kingsville and Gene Byrd, The University of Alabama

1:55-2:10 PM Discussion of Concurrent Session 1A: Bryant Conference Center * Room Wilson (2nd Floor)

Moderator: Lloyd Barrow, University of Missouri

12:40-1:55 PM Concurrent Session 1B: Instructional Practices: Bryant Conference Center * Room Lackey (2nd Floor)

- **“Cooking From Scratch: Development of Inquiry Based Activities for the General Microbiology Laboratory”**

Josephine Taylor, Stephen C. Wagner, and Sarah Canterbury, Stephen F. Austin State University

- **“Use of Diagrams with Clicker-Questions in Biology Classrooms”**

Johanna Fitzgerald, University of Massachusetts, Amherst

- **“Teaching Undergraduate Physics Through a Research-based Clicker Methodology”**

Lin Ding, The Ohio State University

1:55-2:10 PM Discussion of Concurrent Session 1B: Bryant Conference Center * Room Lackey (2nd Floor)

Moderator: Mitchell Klett, Northern Michigan University

2:10-2:25 PM Break

NOTE: Concurrent Sessions 2A and 2B, with follow-up Discussion, occur 2:25–4:05 PM

2:25-3:50 PM Concurrent Session 2A: Best Practices in Curriculum: Bryant Conference Center * Room Wilson (2nd Floor)

- **“Alignment of High School and College STEM Curricula”**

Michael Odell, University of Texas at Tyler

- **“An Online Undergraduate Astronomy Lab Course”**

Gene Byrd, The University of Alabama

- **“A Curriculum Experiment in Climate Change Education Using an Integrated Approach of Content Knowledge Instruction and Student-Driven Research, Year 2”**

Paul Adams, Fort Hayes State University

- **“Bridging Gaps between Research and Education in Biofuel Technologies”**

Rong Zhang, Auburn University, Frank Armstead, Tuskegee University, Q. Peter He, Tuskegee University, and Jin Wang, Auburn University

3:50-4:05 PM Discussion of Concurrent Session 2A: Bryant Conference Center * Room Wilson (2nd Floor)

Moderator: Gerald Krockover, Purdue University

2:25-3:50 PM Concurrent Session 2B: Key Issues in Course Reform: Bryant Conference Center * Room Lackey (2nd Floor)

- **“A Research-Based Transformation of Purdue’s Modern Mechanics Course”**

Rebecca Lindell, Jack Doyle, Adam Szewciw, and Andrew Hirsch, Purdue University

- **“Identifying Shifts in Pedagogical Content Knowledge (PCK): Outcomes of a “Scientific Teaching” Course for Biology Graduate Teaching Assistants at a Large Research University”**

Kathleen Hill, Arizona State University

- **“IMPACT’s Role in Improving undergraduate STEM Education at Purdue University”**

Hosi Karzai and Frank Dooley, Purdue University

- **“Promoting Conceptual Change Through Course Design: Supporting the Physics Content Development of Pre-Service Teachers”**

Will Stoll, Kadir Demir, and Brett Criswell, Georgia State University

3:50-4:05 PM Discussion of Concurrent Session 2B: Bryant Conference Center * Room Lackey (2nd Floor)

Moderator: Sytil Murphy, Shepherd University

4:05-4:20 PM Break

4:20-4:40 PM Delphi Study 2: Bryant Conference Center * Room RAST B

Donna Turner, The University of Alabama, Deborah McAllister, The University of Tennessee at Chattanooga, and April Nelms, University of North Georgia

4:40-5:00 PM Wrap-Up: Bryant Conference Center * Room RAST B

- *Cheryl L. Mason, San Diego State University*
- *Dennis W. Sunal, The University of Alabama*

Tuesday, May 22, 2012

Strand 3: Assessing and Evaluating Student Outcomes in Undergraduate Science Courses

7:30-8:30 AM Registration and Full Breakfast: Bryant Conference Center * Room: RAST A

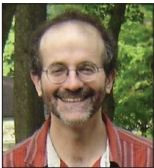
8:30-8:40 AM Welcome, Introductions, and Overview of the Day: Bryant Conference Center * Room: RAST B

- *Cynthia Szymanski Sunal, The University of Alabama, Office of Research on Teaching in the Disciplines*
- *Cheryl L. Mason, San Diego State University, Biology and Science Education*

8:40-8:50 AM Delphi Study Report with Working Groups Established: Bryant Conference Center * Room: RAST B

Donna Turner, The University of Alabama, Deborah McAllister, The University of Tennessee at Chattanooga, and April Nelms, University of North Georgia

8:50-9:20 AM Keynote Speaker: Bryant Conference Center * Room: RAST B



David Hammer, Professor, Departments of Education and Physics and Astronomy, Tufts University

“The Challenges and Possibilities of Meaningful Assessment in Large Lecture Introductory Physics”

9:20-9:30 AM Discussion of Keynote Paper: Bryant Conference Center * Room RAST B

Moderator: Christy McKinnon, University of Incarnate Word

9:30-9:40 AM Break

9:40-10:10 AM Paper Presentations: Bryant Conference Center * Room RAST B

- **“Learning Through Action Research While Teaching Undergraduate Science”**

Penny Gilmer, Florida State University

- **“Improving Student Outcomes in Organic Chemistry Through Action Research”**

Gail Horowitz and Laura Rabin, Brooklyn College, City University of New York

10:10-10:20 AM Discussion of Paper Presentations: Bryant Conference Center * Room RAST B

Moderator: Corinne Lardy, San Diego State University

Strand 4: Using Research to Evaluate the Success of Reform

10:20-10:50 Keynote Speaker: Bryant Conference Center * Room: RAST B



John Dantzler, Educational Research, The University of Alabama

“Researching Reform: Designing studies to understand the impact of reform methods in undergraduate science classrooms.”

10:50-11:00 AM Discussion of Keynote Paper: Bryant Conference Center * Room RAST B

Moderator: Dianne Robinson, Hampton University

11:00 AM-12:15 PM Symposium: National Reform Study Results: Bryant Conference Center * Room RAST B

- **“Brief Overview of the NASA/NOVA Faculty Professional Development Program – 1995-2006”**

Michael Odell, University of Texas at Tyler

- **“National Study of Education in Undergraduate Science – 2006-2012 – What Was Learned”**

Dennis Sunal, Cynthia Szymanski Sunal, Erika Steele, Donna Turner, The University of Alabama; Cheryl Mason, Corinne Lardy, San Diego State University; Dean Zollman, Kansas State University; Mojgan Matloob-Haghanikar, Winona State University; and Sytil Murphy, Shepherd College

- **"Investigating the Impact of Professional Development on the Pedagogical Content Knowledge of University Faculty".**

Donna Turner, The University of Alabama

- **“The Impact of Science Education Reform on Students’ Perceptions of the Learning Environment”**

Erika Steele, The University of Alabama

- **“Students’ Reasoning and the Level of Interactivity in Science Content Courses”**

Dean A. Zollman, Kansas State University, Mojgan Matloob-Haghanikar, Winona State University and Sytil Murphy, Shepherd University

- **“Impact of reformed courses on the science teaching self-efficacy beliefs of preservice and inservice elementary teachers”**

Corinne Lardy and Cheryl L. Mason, San Diego State University

12:15-12:25 PM Discussion of Symposium: Bryant Conference Center * Room: RAST B
Moderator: Emmett Wright, Kansas State University

12:25-1:30 PM Lunch will be provided: Bryant Conference Center * Room RAST A

Strand 5: Developing a Research Agenda and Action Plan

Tuesday, May 22, 1:30 – 5:00 pm

1:30-1:40 PM Overview of Strand 5 Activities: Bryant Conference Center * Room RAST B

The afternoon will focus on developing a research agenda in a collaborative group. The outcome will be the identification of groups of higher education faculty whose intent is to develop and seek funding regarding research on reform of undergraduate entry-level science courses.

- *Dennis W. Sunal, The University of Alabama*
- *Cheryl L. Mason, San Diego State University*

1:40-2:40 Working Groups Meet – Develop Elements of a Research Agenda: Bryant Conference Center * Rooms RAST B, Wilson, Lackey, RAST A

NOTE: Each Working Group will have a Facilitator who has expressed interest in the area with which the group is working

2:40-3:00 PM Initial Whole Group Sharing of Their Research Agenda by Working Groups: Bryant Conference Center * Room RAST B

Moderator: Cheryl L. Mason, San Diego State University

3:00-3:15 PM Break

3:15-4:30 PM Working Groups Meet – Develop Action Plans for Your Working Group: Bryant Conference Center * Rooms RAST B, Wilson, Lackey, RAST A

4:30-5:00 PM Wrap Up Discussion and Closing Comments: Bryant Conference Center * Room RAST B

Moderators: Dennis W. Sunal, Cynthia Szymanski Sunal, The University of Alabama and Cheryl L. Mason, San Diego State University

6:30-8:30 PM Wrap-Up Dinner: Hotel Capstone

Information regarding the conference is available on the NSEUS website, <http://nseus.org>

Conference committee co-chairs: Dennis W. Sunal, The University of Alabama, dwsunal@bamaed.ua.edu; Cynthia Szymanski Sunal, The University of Alabama, cvsunal@bamaed.ua.edu; Cheryl L. Mason, San Diego State University, cmason@mail.sdsu.edu; and Dean A. Zollman, Kansas State University, dzollman@ksu.edu



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