

**PROGRAM — PERC 2002
Boise, Idaho**

Wednesday, 7 August 2002

JOINT AAPT/PERC SESSION — 2:30 – 4:30 pm Special Events Center

SESSION HA: Alternative Approaches to Assessment in Physics Teaching and Research in Physics Learning

2:30 – 3:00 pm: HA01: Alternative Ways to Develop and Assess Conceptual and Process Knowledge*

Alan Van Heuvelen, The Ohio State Univ. 614-292-6956, avanh@mps.ohio-state.edu

3:00 – 3:30 pm: HA02: Formative and Summative Assessment in a Physics Class: Time to Change

Eugenia Etkina, Rutgers, The State Univ. of New Jersey, 732-932-7496, ext. 8339, etkina@rci.rutgers.edu

3:30 – 4:00 pm: HA03: Diagnostic Assessment*

Pamela A. Kraus & Jim Minstrell, Talaria Inc., 206-748-0464, ext. 23, pamkraus@talariainc.com

4:00 – 4:30 pm: HA04: Assessment for Student-Understanding-Driven Instruction

Dewey I. Dykstra, Boise State Univ, 208-426-3105, ddykstra@boisestate.edu

PERC POSTER SESSION — 4:30 – 9:30 pm Jordan Ballroom C & E

(Posters listed by category at the end of the program.)

PERC Buffet — 5:30 – 8:30 pm Jordan Ballroom C

Thursday, 8 August 2002

PLENARY SESSION — 8:30 – 10:00am Jordan Ballroom A & B

8:30 – 9:00 am: NSF Support for Physics Education Research and Related Activities at the Undergraduate Level

Duncan McBride, National Science Foundation, Arlington, Virginia 22230. dmcbride@NSF.gov, (703)292-4630.

9:00 – 9:30 am: Implementing Tutorials in Introductory Physics at an inner-city university in Chicago*

Mel Sabella, Chicago State University, Chicago, IL, ms-sabella@csu.edu, (773) 995-2172

9:30 – 10:00 am: Raising the Bar with Physics Education Research

Stamatis Vokos, Seattle Pacific University, Seattle, WA 98119. vokos@spu.edu, (206) 281-2140

REFRESHMENT BREAK and POSTER SESSIONS — 10:00 – 10:45 am Jordan Ballroom C & E

BREAKOUT SESSIONS — 10:45 am – 12:15 pm

Breakout Session I – Hatch Ballroom C&D

Issues related to quantitative methods and data analysis in PER

David E. Meltzer, Iowa State University and

Richard R. Hake, Indiana University

Breakout Session II – Hatch Ballroom B

Supporting claims about physics thinking and learning using qualitative research methods

Andy Johnson, Black Hills State University and

Cody Sandifer, Towson State University

Breakout Session III – Barnwell Room

Effective methods for the use, creation, analysis, and interpretation of short-answer student conceptual evaluations and questions concerning their possible limitations for predicting student performance

Michael C. Wittmann, University of Maine and

Ronald K. Thornton, Center for Science and Mathematics Teaching, Tufts University.

Breakout Session IV – Hatch Ballroom A

Long-term use of a conceptual diagnostic to compare PER-based instruction with the *status quo*

Dewey I. Dykstra, Jr., Boise State University

PERC LUNCHEON — 12:30 – 2:00 pm Jordan Ballroom A & B

The PERC Why? Awards (otherwise known as the PERKY's)

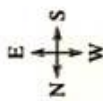
Tom Foster, Southern Illinois University-Edwardsville and Kathy Harper, The Ohio State University

Closing Comments

Dewey Dykstra, Boise State University

ACKNOWLEDGEMENTS

The organizing committee for the PERC 2002 would like to thank all of the presenters for contributing high quality work to the conference. We would also like to thank Carol Heimple of the AAPT Executive Office and Tammy Hodges of the Student Union at Boise State University for their efforts at helping with arrangements for rooms, food and a-v equipment to make our conference successful. Dewey Dykstra, the PERC Chair, would like to thank Melissa Dancy of Davidson College, Kathy Harper of The Ohio State University and Noah Finkelstein of the University of California at San Diego for their contributions as members of the organizing committee this year. We would also like to thank Joe Redish for his help planning the Alternative Assessments session. The PERC could not have been successful without their help.



Student Union Building 2nd Floor

- Union Services
- Meeting Rooms
- Bathrooms



POSTER SESSIONS Jordan Ballroom C & E

Assessment

- A1: Gender, Math and the FCI,
Laura McCullough, University of Wisconsin-Stout,
mcculloughl@uwstout.edu
- A2: Developing the Lunar Phases Concept Inventory,
Rebecca Lindell, Southern Illinois University
Edwardsville, rlindel@siue.edu, James Olsen
- A3: CSEM Data From About 500 Students at Boston
University,
Andrew Duffy, Boston University, aduffy@bu.edu
- A4: Relationship of Individual Student Normalized
Learning Gains in Mechanics with Gender and with
Pretest Scores on Mathematics and Spatial
Visualization,
Richard Hake, Indiana University,
rrhake@earthlink.net
- A5: Relationships between Scientific Reasoning Ability,
Student Expectations, and Course Performance,
Melissa Dancy, Davidson College,
medancy@davidson.edu
- A6: Methods for researching group learning in the
SCALE-UP classroom,
Avi Marchewka, NC State University, Avi
marchewka@ncsu.edu, *R. Beichner M. J. Darby*
- A7: A Q-type assessment instrument,
Xueli Zou, California State University, Chico,
xzou@csuchico.edu, *Orion Davies*
- A8: The Effect of Question Order on Student Responses to
Multiple-Choice Questions,
Kara Gray, Kansas State University,
keg9634@ksu.edu, *Dean A. Zollman and N. Sanjay*
Rebello

Cognitive Issues

- C1: Factors Influencing Sense-Making Discussions during
Group Investigations of Force/Motion,
Cody Sandifer, Towson University,
csandifer@towson.edu
- C2: Effectiveness of group interaction on performance on
conceptual standardized tests,
Chandralekha Singh, University of Pittsburgh,
clsingh@pitt.edu
- C3: Analyzing students' use of metacognition during
laboratory activities,
Rebecca F Lippmann, University of Maryland,
lippmann@physics.umd.edu, *University of Maryland*
Physics Education Research Group
- C4: Student Resources in quantum mechanics, or Why
students need meta resources
Keith Oliver, the Ohio State University,
oliver@mps.ohio-state.edu, *Lei Bao*
- C5: Reasoning Strategies Employed by Students to
Understand Equations in Physics,
Jonathan Tuminaro, University of Maryland,
tuminarj@physics.umd.edu
- C6: Secondary Students' Cognitive Process For The Line
Graph From Graph Components,
Tae-Sun, KIM,
scienceducation@hanmail.net, *Beom Ki, KIM*

- C7: Physics Words in Everyday Language and
Implications for Student Learning,
N. Sanjay Rebello, Kansas State University,
srebello@phys.ksu.edu, *Salomon Itza-Ortiz and*
Dean A. Zollman
- C8: Distributed Cognition: A useful theoretical framework
or gibberish,
Tom Foster, Southern Illinois University
Edwardsville, tfoster@siue.edu
- C9: Students' Cognitive Conflict Levels by Provided
Quantitative Demonstration and Qualitative
Demonstration,
Jina Kim, Korea National University of Education,
jina16@chollian.net, *Hyukjoon Choi, Jaesool Kwon*
- C10: The effect of researcher agenda on data collection
and interpretation,
Rachel E. Scherr, University of Maryland Physics
Education Research Group,
rescherr@physics.umd.edu, *Michael C. Wittmann,*
University of Maine Physics Education Research
Laboratory
- C11: Epistemology mediating conceptual knowledge:
Constraints on data accessible from interviews,
Michael C. Wittmann, University of Maine Physics
Education Research Laboratory,
wittmann@umit.maine.edu, *Rachel E. Scherr,*
University of Maryland Physics Education Research
Group

Instructional Development

- D1: Student Reaction to an Innovative way of Teaching
Physics,
Alice D. Churukian, Kansas State University,
churukia@phys.ksu.edu, *Christopher M. Sorensen,*
Dean A. Zollman
- D2: An Interactive Lecture Demonstration for Simple
Harmonic Motion,
Jeff Marx, McDaniel College, jamrx@wmdc.edu
- D3: Effectiveness of Abridged Interactive Lecture
Demonstrations,
Timothy French, Yale University (Formaly
Rensselaer Polytechnic Institute)
timothy.french@yale.edu, *Karen Cummings*
(Southern Connecticut State University and RPI)
- D4: Labs and Final Exams - Any Relationship?
Paul A. Knutson, University of Minnesota,
knut0199@umn.edu, *Vince Kuo, Ken Heller, Pat*
Heller
- D5: A Review of the introduction of PSSC physics
program in Korea during the 1960s and 1970s,
Hyukjoon Choi, Korea National University of
Education, rmb@unitel.co.kr, Jina Kim, Jaesool
Kwon
- D6: Student Use of a Textbook in Introductory Physics
Courses,
Karen Cummings, Southern Connecticut State
University, Karen@rpi.edu, Timothy French
(Rensselaer Polytechnic Institute), Patrick Cooney
(Millersville University), Priscilla Laws (Dickinson
College) and Joe Redish (University of Maryland)

- D7: Preparing Future Teachers Through a Case Studies Approach,
Michael Jabot, Ph.D., State University of New York at Fredonia, jabot@fredonia.edu
- D8: The Effect of a New Homework System on Student Motivation and Learning Behavior
Homeyra R. Sadaghiani, Lei Bao, The Ohio State University hsada@mps.ohio-state.edu

Mental Models

- M1: Students' Mental Models and Their Applications: Newton's Second Law in Electricity and Magnetism, Salomon Itza-Ortiz, Kansas State University, sitza@ksu.edu, N. Sanjay Rebello
- M2: Mental models and context factors - examples from electricity and magnetism,
Rasil Warnakulasooriya, The Ohio State University, rasil@mps.ohio-state.edu, Lei Bao
- M3: Students' Mental Models of Sound Propagation, Zdeslav Hrepic, Kansas State University, zhrepic@phys.ksu.edu, Dean A. Zollman and N. Sanjay Rebello
- M4: Do students treat energy as a material substance?, Michael Loverude, California State University Fullerton, mloverude@fullerton.edu
- M5: Student Learning of Calorimetry Concepts, Ngoc-Loan P. Nguyen, Iowa State University, nguyem@iastate.edu, David E. Meltzer
- M6: Students Inventing Microscopic Models from Modern Physics Data,
Brant Hinrichs, Drury university, bhinrichs@drury.edu
- M7: Context map: A method to represent the interactions between students' learning and multiple context factors,
Gyoungho Lee, Department of Physics, The Ohio State University, lee.1702@osu.edu, Lei Bao
- M8: Consolidating Information About Student Difficulties with Mechanics,
Diane J Grayson, Centre for the Improvement of Mathematics, Science and Technology Education, Faculty of Science, University of South Africa Max Braun, Centre for Science Education, University of Pretoria

Problem Solving

- P1: How Students Learn Problem-Solving: An Initial Model of Instructors' Beliefs,
Charles Henderson, University of Minnesota, hend0007@umn.edu, Pat Heller, Vince Kuo, Edit Yerushalmi
- P2: Helping Students Learn Problem-Solving – An Initial Model of Instructors' Beliefs,
Vince H. Kuo, University of Minnesota, vkuo@physics.spa.umn.edu, Kenneth Heller, Patricia Heller, Charles Henderson, and Edit Yerushalmi
- P3: What Problems Would I Assign? An Analysis of Student-Generated Problems,
Kathleen Andre Harper, The Ohio State University, harper.217@osu.edu, Eugenia Etkina
- P4: Problem Context and Newton's Second Law: A First Look,
Alicia R. Allbaugh, Kansas State University, allbaugh@ksu.edu
- P5: Students' approaches to hard problems I: Traditional course,
Ruth W. Chabay, North Carolina State University, rwchabay@unity.ncsu.edu, Matthew A. Kohlmyer, Bruce A. Sherwood
- P6: Students' approaches to hard problems II: Reform course,
Matthew A. Kohlmyer, North Carolina State University, makohlmy@unity.ncsu.edu, Ruth W. Chabay, Bruce A. Sherwood

Technology in Physics Education

- T1: CAPA (Computer-Assisted Personalized Assignments): The Truth Behind the Student Nickname CRAPA,
Andrea M Pascarella, University of Northern Iowa, pascarella@uni.edu, Valerie K. Otereo
- T2: TEAL/Studio Physics at MIT,
Sen-Ben Liao, Massachusetts Institute of Technology, senben@ceci.mit.edu, Peter Dourmashkin, John W. Belcher
- T3: LAAPhysics & Online Learning Tools,
Gerald W. Meisner, UNCGreensboro, jm@curie.uncg.edu, Harol Hoffman, Mike Turner
- T4: A Study of the Efficacy of a Web-delivered Visualization Tutorial On One-Dimensional Kinematics,
Taha Mzoughi, Mississippi State University, mzoughi@ra.msstate.edu, Paul Hutchison, Robert Atkinson
- T5: Interactive problem-solving tutorials,
Leon Hsu, University of Minnesota, lhsu@umn.edu