

2010 NARST

ANNUAL INTERNATIONAL CONFERENCE

March 21 - 24, 2010

Philadelphia Marriott Downtown

Philadelphia, PA

Science Education Journals

from Routledge/Taylor & Francis



International Journal of Science Education

INCLUDED IN THE SOCIAL SCIENCES CITATION INDEX®

Edited by **John K Gilbert**, *Institute of Education, University of Reading, UK*
18 issues a year

The **International Journal of Science Education (IJSE)** is firmly established as the authoritative voice in the world of science education. It bridges the gap between research and practice, providing information, ideas and opinion.

Individual members of the National Association for Research in Science Teaching (NARST) can subscribe to the **International Journal of Science Education** at a special rate* of US\$118.

Download your order form from www.tandf.co.uk/journals/ijse

Canadian Journal of Science, Mathematics and Technology Education

www.tandf.co.uk/journals/ucjs

Computer Science Education

www.tandf.co.uk/journals/cse

Environmental Education Research

www.tandf.co.uk/journals/eer

International Journal of Mathematical Education in Science and Technology

www.tandf.co.uk/journals/tmes

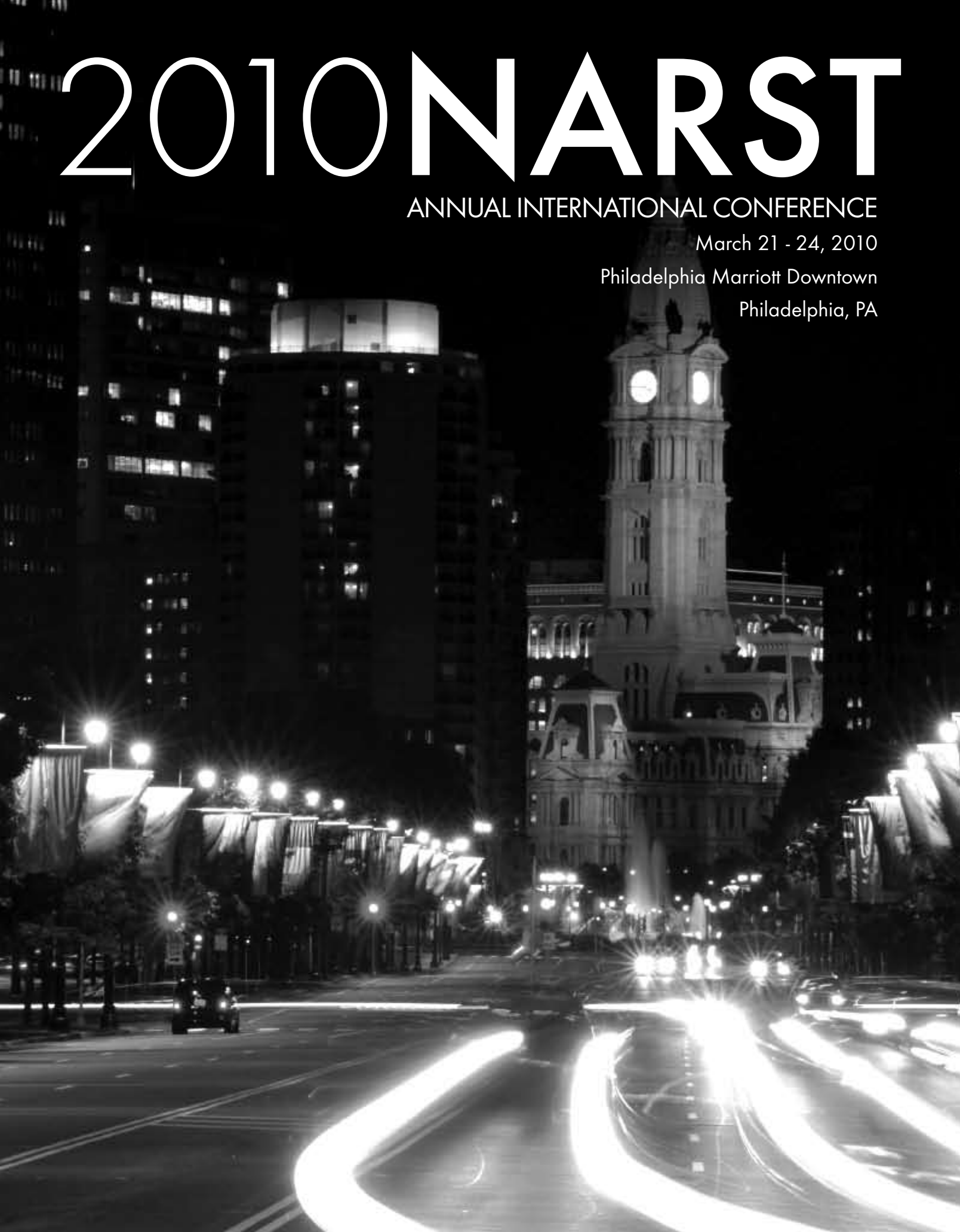
Research in Science & Technological Education

www.tandf.co.uk/journals/riste

Studies in Science Education

www.tandf.co.uk/journals/rsse





2010 NARST

ANNUAL INTERNATIONAL CONFERENCE

March 21 - 24, 2010

Philadelphia Marriott Downtown

Philadelphia, PA

2010 NARST

ANNUAL INTERNATIONAL CONFERENCE

March 21 - 24, 2010

Philadelphia Marriott Downtown

Philadelphia, PA

ACKNOWLEDGMENTS

The following members of the Program Committee helped in preparing and editing the 2010 NARST Annual International Conference Program Book.

Richard A. Duschl, President and Program Committee Chair

Dana L. Zeidler, President-Elect

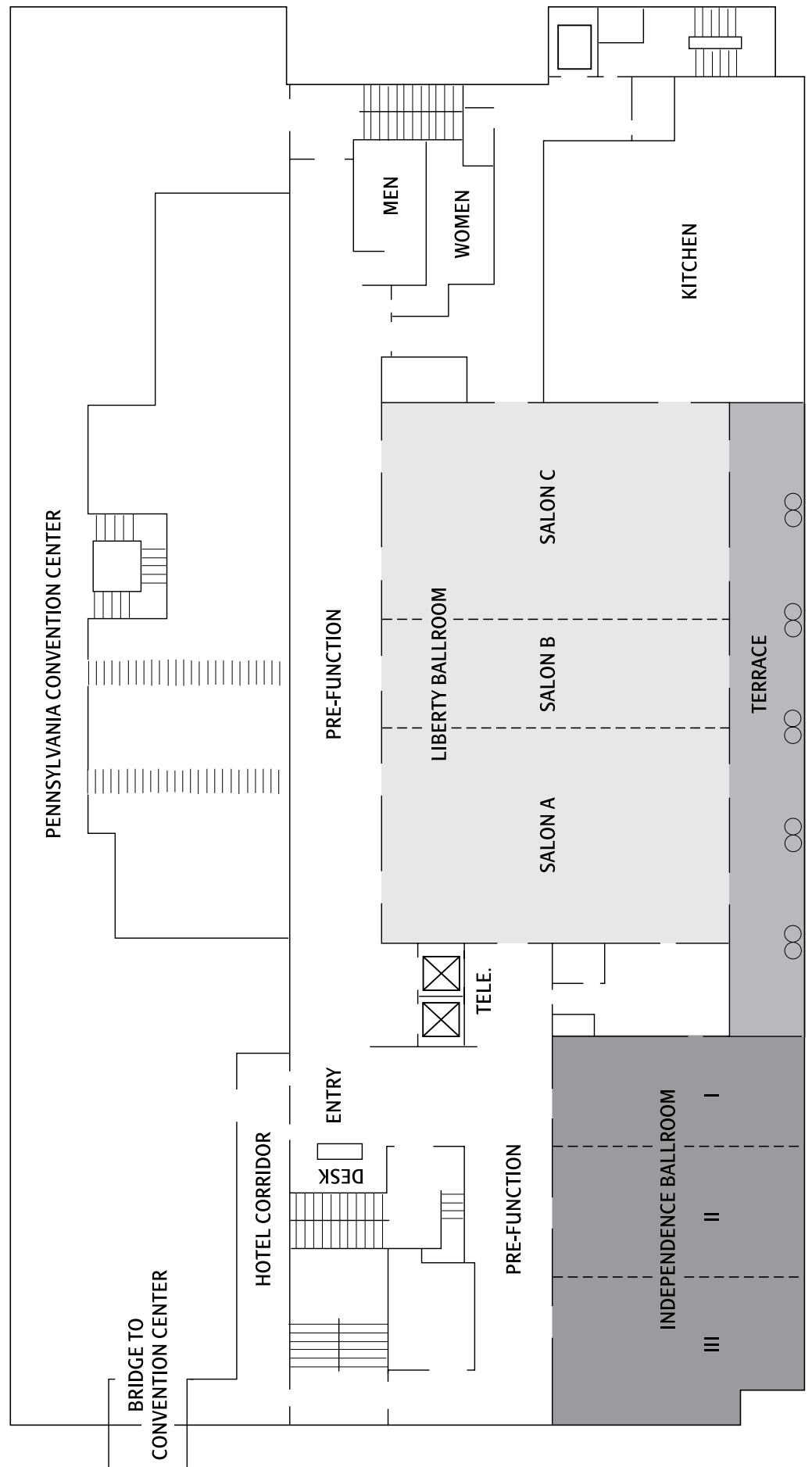
William C. Kyle, Jr., Executive Director

Toni A. Sondergeld, NARST Scheduling Coordinator

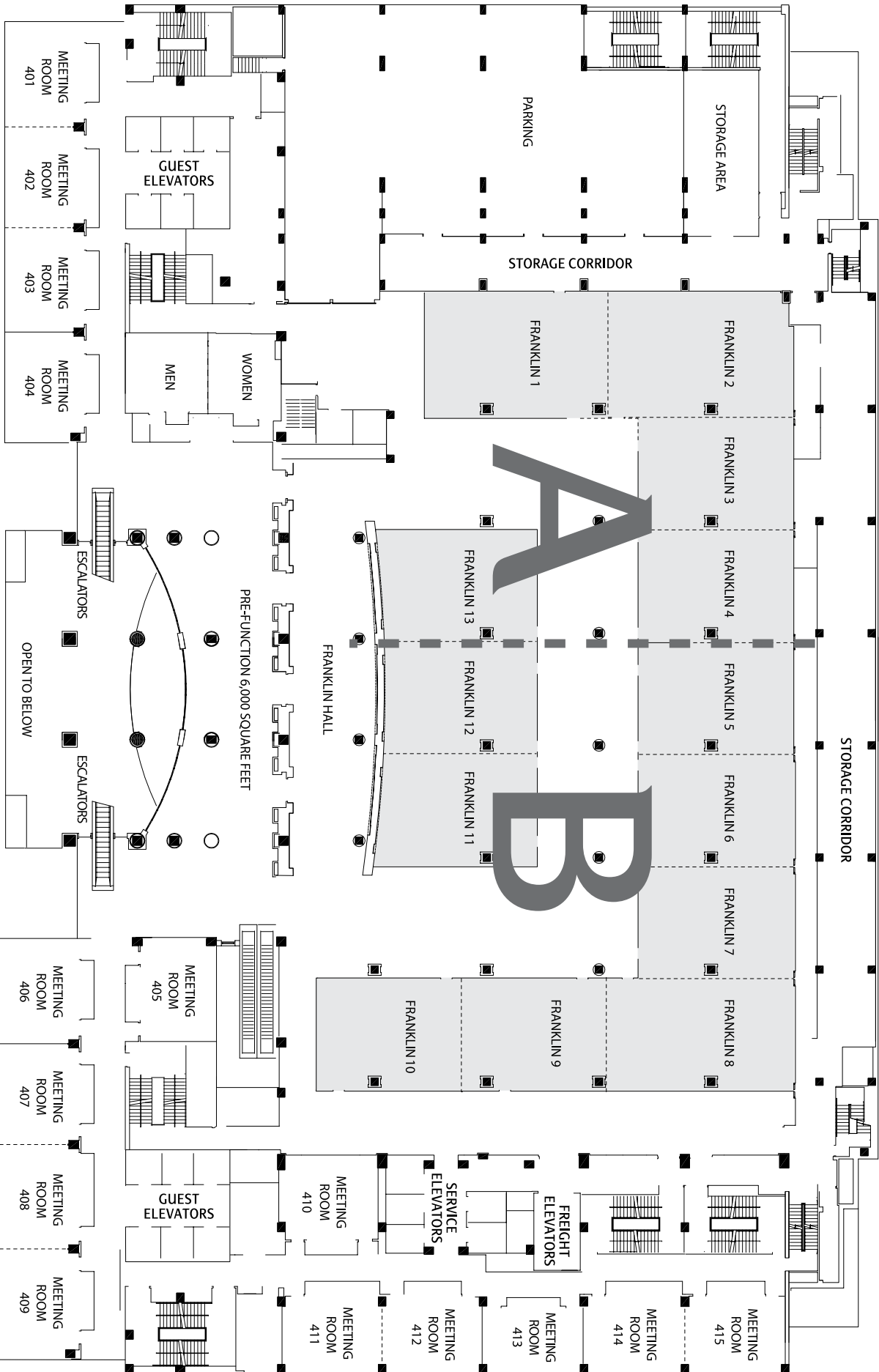
Table of Contents

5	Hotel floor plans
8	General information
8	Information about NARST and NARST Mission Statement
8	Membership benefits
8	Explanation of program session formats
9	Guidelines for presenters
9	Guidelines for presiders and discussants
10	Strand key
10	Exhibits-Sponsors and Publishers
10	NARST leadership team
11	2009 annual conference details
11	Future dates for affiliate groups
12	Strand coordinators
13	Program proposal reviewers
15	NARST Presidents
16	NARST Executive Director
16	NARST Emeritus Members
17	NARST Award Winners
17	Distinguished Contributions to Science Education Through Research
17	JRST Award
18	Outstanding Paper Award
19	Outstanding Doctoral Dissertation Award
19	Outstanding Master's Thesis Award
19	Early Career Research Award
20	Classroom Applications Award
21	NARST Leadership Team and Committees
28	Schedule at a Glance
29	Annual meeting program by date and time
	Abstracts – now on CD
113	Author Index

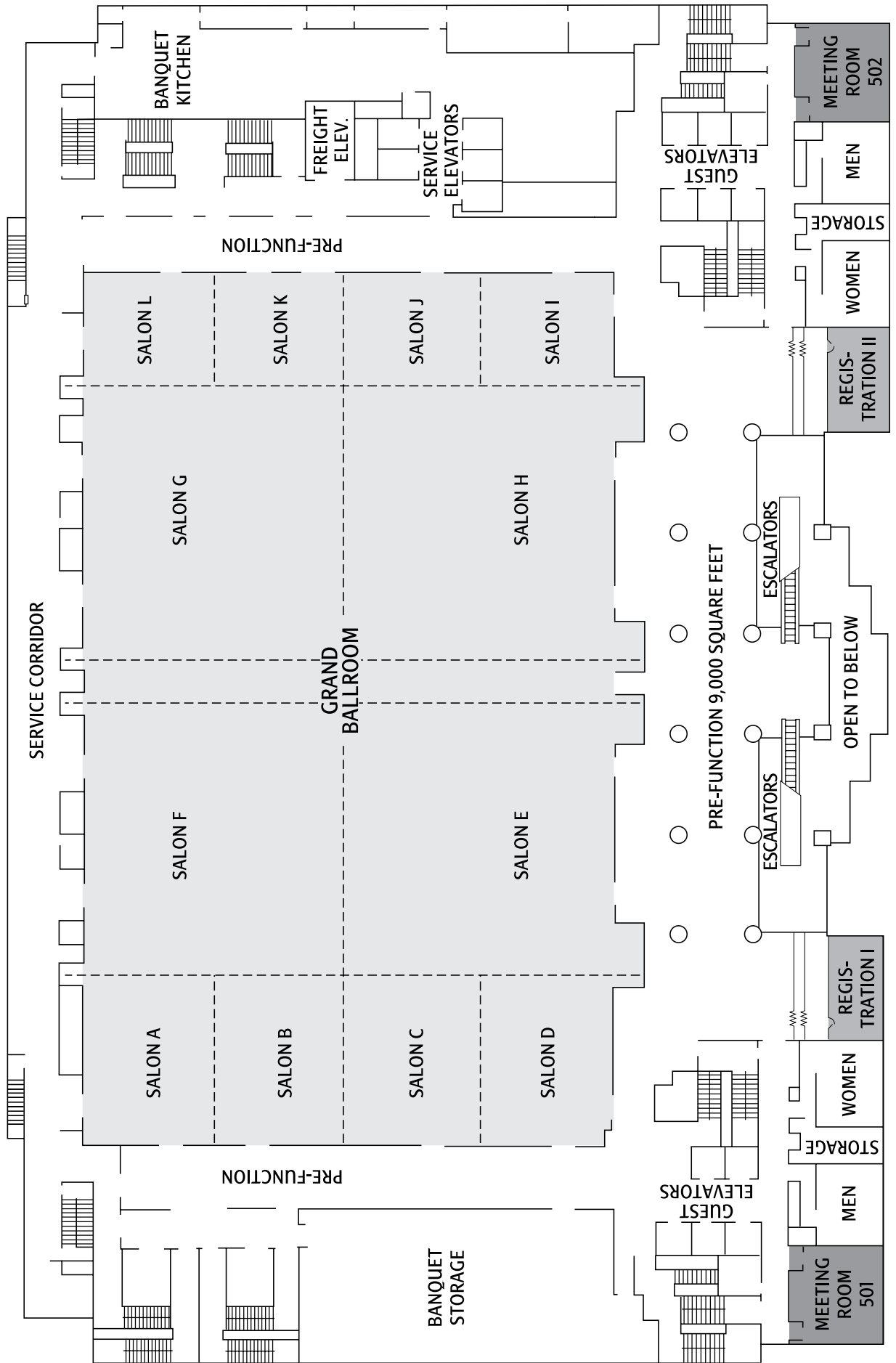
LIBERTY BALLROOM



FRANKLIN HALL



GRAND BALLROOM



General Information

Information about NARST

The National Association for Research in Science Teaching was founded in 1928 for the purpose of promoting research in science education at all educational levels and disseminating the findings of this research in such ways as to improve science teaching and learning. The Association is incorporated as a non-profit corporation in the State of Minnesota. The official publication is the *Journal of Research in Science Teaching*. NARST encourages presentations of a wide variety of investigations in all aspects of science education, including action, historical, philosophical, ethnographic, experimental, and evaluative research studies. Reports of empirical research, critical reviews, and theoretical works are encouraged. Research areas of interest to NARST members include curriculum development and organization, assessment and evaluation, learning theory, teacher education, programs for exceptional students (special needs and talents), equity studies, policy, and methods of teaching.

NARST Mission Statement

The National Association for Research in Science Teaching (NARST) is a worldwide organization of professionals committed to the improvement of science teaching and learning through research. Since its inception in 1928, NARST has promoted research in science education and the communication of knowledge generated by the research. The ultimate goal of NARST is to help all learners achieve science literacy. NARST promotes this goal by: 1) encouraging and supporting the application of diverse research methods and theoretical perspectives from multiple disciplines to the investigation of teaching and learning in science; 2) communicating science education research findings to researchers, practitioners, and policy makers; and 3) cooperating with other educational and scientific societies to influence educational policies. To learn more about NARST you may visit the Association's website at <http://narst.org/> and read the Bylaws approved by the membership in October 2008 at http://www.narst.org/about/NARST_bylaws.pdf.

How NARST Keeps Its Members Informed

- Ten issues of the *Journal of Research in Science Teaching* (JRST) are published each volume year. The Journal has been ranked as one of the highest quality educational journals according to studies published by War, Holland and Schramm (*American Educational Research Journal*) and Guba and Clark (*Educational Researcher*) for the American Educational Research Association (AERA). These authors identified JRST as clearly the top research journal in science education.
- NARST Annual International Conference CD is distributed at the Annual International Conference. This volume includes a compiled list of abstracts (on CD-ROM) for the current Annual International Conference, plus copies of accepted papers submitted voluntarily by authors prior to the conference. Members attending the conference receive a copy on-site and the cost is included in their registration fee.
- E-NARST News describing recent developments in research and in the profession. E-NARST News provides opportunities to work with prominent people throughout the world on research projects and with affiliated organizations such as the National Science Teachers Association (NSTA), the Association for Science Teacher Education (ASTE), and the American Association for the Advancement of Science (AAAS). Our newsletter is now published online twice a year and posted to the NARST website.
- Website and Listserv, allowing access to further information about the Association. You may access this site at the following URL <http://www.narst.org>. There is further information about the Listserv on this site.

Explanation of Program Session Formats

Paper Sessions Organized by the Program Committee

In a paper session, the presider introduces the presenters and monitors the time used for each presentation. All papers will be allotted 15 minutes for presentation, followed by approximately 5 minutes of questions or discussion. The presider and audience will use any time remaining in the session for additional discussion, general review, and suggestions for further research. The overall length of the paper sessions may vary based on the number of papers assigned to that session, but each paper within a particular session will observe the 15-minute presentation guideline. For example, four papers grouped together will be given a 90-minute time period, while two papers grouped together will be given a 45-minute time period for the overall session. This will optimize the grouping of papers by allowing strand coordinators to group papers based on similarity, rather than forcing the grouping of papers to fit a standard time block. Each presenter is expected to disseminate a paper during or immediately following the session, unless the paper is on the NARST 2010 CD, distributed as part of the program.

Symposium

A symposium involves a panel of experts or stakeholders who examines a specific theme or issue. This format does not involve the presentation of individual papers. Therefore, individual papers and authors will not be listed under this format. Rather, the participants are listed as panel members. The proposer controls presentations, discussion, and questioning with the assistance of the presider or discussant (if designated). Discussion should promote the expression of similar or alternative viewpoints and theoretical positions. The proposer of the symposium is expected to disseminate a paper or a summary with references during or immediately following the session, unless a summary of the symposium is on the NARST 2010 CD.

Related Paper Set

This category accommodates, in a single session, three to five related research papers reporting several studies that originate from a common base of research. This format also allows for common elements of design or approach to be presented once rather than repetitively. The proposer and authors may determine the specifics of the session once it is accepted. For instance, those involved may opt for a formal presentation style or they may conduct their session in a more informal, discussion-oriented style. Each presenter is expected to disseminate a paper during or immediately following the session, unless a summary of the related paper set is on the NARST 2010 CD.

Interactive Poster Sessions

This format offers presenters the opportunity to display their work graphically in a traditional poster session format. Displays should fit on the 48" (long) x 36" (high) trifold boards provided and should include a brief abstract in large typescript. Audience members will have approximately 90 minutes to circulate throughout the room to view the posters and interact with the presenters. Each presenter must set up the display prior to the start of the session and then remove it promptly at the end of the session. Each presenter is expected to disseminate a paper during the session, unless a summary of the poster is on the 2010 CD.

Guidelines for Meeting Presenters

- Go to the designated room at least 10 minutes early.
- Greet the presider/discussant.
- NARST provides the LCD and screen in each presentation room. NARST does not provide computers. So, you must have your own notebook computer or you may put your file on a USB flash drive in advance, in case you will be using another presenter's computer for your presentation.
- Check your understanding of the LCD projector and any other audiovisual equipment prior to the session.
- Keep presentation within the designated time limit.
- Invite audience comments and questions.

Guidelines for Presiders and Discussants

We have accommodated most sessions with a presider, whose role is detailed below. For sessions without presiders, we are counting on the presenters to set aside time for discussion so that the audience participants can contribute to a discussion of the papers.

Presider Roles

- Arrive early at designated room and arrange furniture as per desires of presenters.
- Check and focus LCD projector.
- Check pronunciations of the names of the presenter and their institutions.
- With presenters, make a time plan, retaining the order of presenters in the program.
- Start session promptly.
- Introduce presenters and serve as timekeeper. Alert presenters when they have 5, 3, and 1 minute remaining.
- Facilitate discussion, assuring equitable involvement of audience members. Close session on time.

Discussant Roles

- Read papers before the session and have remarks prepared ahead of time.
- Perform presider duties as detailed above, if there is only a discussant for the session.
- After the presentation, make brief and cogent remarks on each paper with suggestions for future research.

Strand Key

STRAND 1 - Science Learning: Understanding and Conceptual Change
STRAND 2 - Science Learning: Contexts, Characteristics, and Interactions
STRAND 3 - Science Teaching-Primary School (Grades preK-6): Characteristics and Strategies
STRAND 4 - Science Teaching-Middle and High School (Grades 5-12): Characteristics and Strategies
STRAND 5 - College Science Teaching and Learning (Grades 13-20)
STRAND 6 - Science Learning in Informal Contexts
STRAND 7 - Pre-service Science Teacher Education
STRAND 8 - In-service Science Teacher Education
STRAND 9 - Reflective Practice
STRAND 10 - Curriculum, Evaluation, and Assessment
STRAND 11 - Cultural, Social, and Gender Issues
STRAND 12 - Educational Technology
STRAND 13 - History, Philosophy, and Sociology of Science
STRAND 14 - Environmental Education
STRAND 15 - Policy

A Special Thanks to our Sponsors and Exhibitors

National Science Teachers Association
Sense Publisher
Springer
Routledge Journals

We acknowledge Wiley-Blackwell and their work as publisher of the *Journal of Research in Science Teaching - JRST*

NARST Leadership Team 2009-2010 Officers and Board of Directors

President

Richard A. Duschl, Penn State University

President-Elect

Dana L. Zeidler, University of South Florida

Immediate Past-President

Charlene M. Czerniak, The University of Toledo

Executive Director

William C. Kyle, Jr., University of Missouri - St. Louis

Executive Board

Valarie Akerson, Indiana University
Mei-Hung Chiu, National Taiwan Normal University
Reinders Duit, University of Kiel, Germany
Carla Zembal-Saul, Penn State University
Elizabeth A. Davis, University of Michigan
Troy Sadler, University of Florida
Phil Scott, University of Leeds, UK
Julie Bianchini, University of California, Santa Barbara
Reneé Schwartz, Western Michigan University
Jan H. Van Driel, Leiden University, Netherlands

NSTA Representative

Julie Luft, Arizona State University

NARST Publication Editors

JRST Co-Editors

Joseph Krajcik, University of Michigan
Angela Calabrese Barton, Michigan State University

E-NARST News Co-Editors

Carla Zembal-Saul, Penn State University
Jan H. Van Driel, Leiden University, Netherlands

Association Management

Robin Turner, Drohan Management Company
Alexandra D'Imperio, Drohan Management Company

2011 NARST Annual International Conference

The Program Chair invites NARST members and others to plan to participate in the 2011 NARST Annual International Conference and especially urges all members to start planning program proposals now during this year's conference.

VENUE: Caribe Royale All-Suite Hotel & Convention Center, 8101 World Center Drive, Orlando, FL 32821 USA

THEME: Global Sustainability and Public Understanding of Science: The Role of Science Education Research in the International Community

DATES: Saturday, April 2 – Wednesday, April 6, 2011

SUBMISSION DEADLINE: The Program Chair or designate must receive your program proposals for the 2011 Annual International Conference by August 15, 2010. The deadline allows sufficient time for processing, reviewing and evaluating the many proposals. The original call for proposals will appear on the NARST website in June 2010.

2011 MEETING BACKGROUND INFORMATION: The 2011 NARST meeting will be at the Caribe Royale All-Suite Hotel & Conference Center. Nestled on 53 lush, tropical acres, the Caribe Royale offers its guests spacious, well-appointed one-bedroom suites, luxurious two-bedroom lakeside villas and a wealth of desirable hotel amenities all conveniently located near Orlando's most popular attractions. While famous for its theme parks, Orlando, Florida, includes the areas of Kissimmee and Lake Buena Vista. Visitors looking for respite from typical tourist attractions can explore museums, malls, state parks, golf courses, unique dining options and nearby small towns.

Next Stop Orlando - see you in the Sunshine State!

Dana L. Zeidler, President-Elect

Future Meeting Dates for NARST, NSTA, and AERA

2011	NSTA	San Francisco March 9 – 12
	AERA	New Orleans April 8 – 12
	NARST	Orlando April 2 – 6
2012	NSTA	Indianapolis March 29 – April 1
	AERA	Vancouver April 13 – 17
	NARST	Indianapolis March 24 – 28
2013	NSTA	San Antonio April 11 - 14
	AERA	TBD
	NARST	TBD

2009-10 Strand Coordinators

STRAND 1 Science Learning, Understanding, and Conceptual Change
Eric Wiebe, Julia Plummer

STRAND 2 Science Learning: Contexts, Characteristics, and Interactions
Erin Dolan, Jennifer Eklund

STRAND 3 Science Teaching –Primary School (Grades preK-6)
Terry Shanahan, Meredith Park Rogers

STRAND 4 Science Teaching –Secondary School (Grades 5-12)
Helen Meyer, Danielle Dani

STRAND 5 College Science Teaching (Grades 13-20)
Tahsin Khalid, Sanjay Rebello

STRAND 6 Science Learning in Informal Contexts
Jim Kisiel, John Falk

STRAND 7 Pre-service Science Teacher Education
Amelia Wenk-Gotwals, Kristin Gunckel

STRAND 8 In-Service Science Teacher Education
Kimberly Fluett, Daniel Meyer

STRAND 9 Reflective Practice
Erin Peters, Tom McConnell

STRAND 10 Curriculum, Evaluation, and Assessment
Xiufeng Liu, Joe Engemann

STRAND 11 Cultural, Social, and Gender Issues
Bhaskar Upadhyay, Maria Rivera

STRAND 12 Educational Technology
Hee-Sun Lee, Keisha Varma

STRAND 13 History, Philosophy, and Sociology of Science
Reneé Schwartz, Sherry Southerland

STRAND 14 Environmental Education
Rita Anne Hagevik, Teddie Phillipson-Mower

STRAND 15 Policy
Sharon Lynch, Sarah Carrier

Program Proposal Reviewers

Abi-El-Mona, Issam	Buck, Gayle	Dillon, Justin	Gotwals, Amelia
Adadan, Emine	Bulunuz, Mizrap	Dogan, Nihal	Grady, Julie
Adams, Jennifer D.	Burek, Karey	Dokter, Erin	Gravel, Brian
Akarsu, Bayram	Burrows, Andrea	Dolphin, Glenn	Green, Andre
Akerson, Valarie	Cahill, Clara	Dombkowski, Sara	Griffard, Phyllis
Aktan, Mustafa B.	Cakmakci, Gultekin	Donnelly, Lisa	Griffin, Janette
Albrecht, Nancy	Çam, Aylin	Dorado, Alan	Grillo-Hill, Andrew
Alegria, Adelina	Capps, Daniel	Dowd, Patrick	Grimberg, Bruna
Alkaher, Iris	Carlson, Janet	Drago, Kathryn	Grincewicz, Amy
Almarode, John	Carmichael, Adrian	Dreon, Oliver	Grove, Nathaniel
Alonzo, Alicia	Carney, Karen	Eastwood, Jennifer	Groves, Fred
Alozie, Nonye	Carraher, David	Edmonds, Lori	Groves, Robin
Anderson, Janice	Carrier, Sarah	Eklund, Jennifer	Grueber, David
Antink, Allison	Cartwright, Tina	Elster, Doris	Gunkel, Kristin
Anton, Caesar	Catlin, Janell	Enderle, Patrick	Gunel, Murat
Arora, Anjana	Cebesoy, Umran Betul	Enfield, Mark	Gunstone, Richard
Aryal, Bijaya	Ceglie, Robert	Engemann, Joe	Guo, Miancheng
Asghar, Anila	Chandrasegaran, A. L.	Engle, Randi A.	Gupta, Preeti
Ashmann, Scott	Chapman, Steven	Englehart, Deirdre	Gupta, Adit
Atkins, Leslie	Chen, Jian-jung	Erdemyr, Naki	Guy, Mark
Atwater, Mary	Chen, Ling	Evagorou, Maria	Gwekwerere, Yovita
Augustin, Line	Cheng, Meng-Tzu	Fadigan, Kathleen	Haefner, Leigh
Austin, Barbara	Cheong, Irene	Falk, Andrew	Haertig, Hendrik
Aydeniz, Mehmet	Chin, Chi-Chin	Farhangi, Sanaz	Halim, Lilia
Badara, Joanna	Chiu, Jennifer	Farland-Smith, Donna	Hallar, Brittan
Baldwin, Brian	Choi, Aeran	Fazio, Xavier	Halverson, Kristy
Balgopal, Meena	Choi, Sung-Youn	Feldman, Allan	Hammock, Jessica
Bamberger, Yael	Choi, Soyoung	Figg, Candace	Harkins, Heather
Barak, Miri	Christodoulou, Andri	Firestone, Jonah	Harris, Christopher
Barnes, Marianne	Chu, Hye-Eun	Fischer, Hans E.	Harris, Tina
Baron, Michele	Cihangir, Cihan Gulin	Fitzgerald, Ange	Harrison, Christine
Barreto, Reizelie	Clark, Ted	Fletcher, Steven	Harsh, Joseph
Batiza, Ann	Clary, Renee	Fluet, Kimberly	Hasson, Eilat
Bazzul, Jesse	Cline, David	Forbes, Cory	Haun-Frank, Julie
Beeman-Cadwallader, Nicole	Çobanoglu Aktan, Derya	Fortus, David	Heid, Christy
Bencze, John	Cook, Melissa	Fowler, Samantha	Herbert, Bruce
Berland, Leema	Cooper, James	Friege, Gunnar	Herman, Phillip
Berry, Amanda	Corpuz, Edgar	Fu, Alice	Herrmann-Abell, Cari
Bevan, Bronwyn	Coughlin, Christine	Fulmer, Gavin	Hidayat, Arif
Binns, Ian	Covitt, Beth	Furman Shaharabani, Yael	Hoban, Garry
Black, Alice	Crawford, Barbara	Furuya, Koichi	Hodges, Georgia
Blakely, Alan	Crippen, Kent	Galosy, Jodie	Hoettecke, Dietmar
Blanchard, Margaret	Crowl, Michele	Ganchorre, Athena	Hohenshell, Liesl
Blonder, Ron	Cunningham, Kevin	Gardner, Grant	Holliday, Gary
Bodzin, Alec	D'Angelo, Cynthia	Garik, Peter	Holmes, Shawn
Boeve-de Pauw, Jelle	Dani, Danielle	Gay, Andrea	Holtz, Kevin
Borda, Emily	Davidsson, Eva	Geaney, Edward	Houle, Meredith
Borges, Sheila	Davis, Elizabeth	Genc Kumtepe, Evrim	Hsieh, Jinmeei
Brandt, Carol	DeChenne, Sue Ellen	Ghent, Cynthia	Hsu, Ting-Fang
Brennan, Bridget	DeCoito, Isha	Gilmer, Penny J.	Huang, Hui-Ju
Bricker, Leah	Dell, Laura	Giombetti, Cassondra	Huelskamp, Lisa
Britner, Shari	Deniz, Hasan	Glasson, George	Huling, Milt
Brogt, Erik	Desouza, Shireen	Gleason, Michael	Hutchinson, Anna
Brooks, Lisa	Devonshire, Jodi	Glen, Nicole J	Hutner, Todd
Brunvand, Stein	DeWitt, Jennifer	Goedhart, Martin	Hutto, Nora
Bryan, Lynn	DiGiuseppe, Maurice	Gomez-Zwiep, Susan	Jaber, Lama

Jack, Brady	Lightbody, Mary	Munford, Danusa	Preusch, Peggy
Jackson, Phoebe	Lin, Jing-Wen	Munsell, Darin	Price, Aaron
Jaksha, Amanda	Lin, Min-Jin	Muthersbaugh, Debbie	Purzer, Senay
James, Sylvia	Lindner, Martin	Nagy Catz, Kristin	Qm, Zhang
Jeanpierre, Bobby	Liu, Xiufeng	Naidoo, Kara	Quigley, Cassie
Jensen, Betty	Liu, Ou Lydia	Nargund, Vanashri	Rahm, Jrène
Johnson, Bruce	Liu, Chia-Ju	Nashon, Samson	Randol, Scott
Johnson, Christopher	Loman-Chiodo , Kristy	Nehm, Ross	Rau, Gerald
Jones, M. Gail	Long, David	Nelson, Tamara	Ray, Michael
Kane, Justine	Luft, Julie	Nguyen, Dong-Hai	Rebello, N. Sanjay
Kang, Hosun	Lustick, David	Niaz, Mansoor	Rebello, Carina
Kang, Nam-Hwa	Lynch, Sharon	Nichols, Bryan H.	Reis, Giuliano
Kapon, Shulamit	MacDonald, Teresa	Nichols, Dianne	Rennie, Leonie
Kasper, Lutz	Madden, Lauren	Nieswandt, Martina	Richardson, Katherine
Katz, Phyllis	Maher, Michelle	Nolasco, Michelle	Richmond, Gail
Keen-Rocha, Linda	Maier, Steven	Novodvorsky, Ingrid	Rinke, Carol
Kenyon, Lisa	MaKinster, James	Nugent, Jeff	Rivera Maulucci, Maria
Ketelhut, Diane Jass	Makki, Nidaa	Ochsendorf, Robert	Rivet, Ann
Khalid, Tahsin	Malone, Kathy	Offerdahl, Erika	Robeck, Ed
Khan, Uzma	Marbach-Ad, Gili	Ogunsola-Bandele, Mercy	Roberson, James
Khishfe, Rola	Mark, Sheron	Oh, Heejin	Roberts, Tina
Kim, Hanna	Marrero, Meghan	Okebukola, Peter	Roberts, Elisabeth
Kim, Byoung Sug	Martell, Sandra	Oliveira, Alandeom	Rodriguez, Victor
Kind, Per	Martin, Anita	Oliver, Tammy	Roehrig, Gillian
Kind, Vanessa	Marulcu, Ismail	Oruntegbe, Kunle Oke	Ross, Donna
King, Donna	Mateycik, Frances	Olson, Mark	Rowe, Shawn
Kingir, Sevgi	Mathur, Ashima	Olson, Eric	Rozelle, Jeffrey
Kirch, Susan	Maurer, Matthew	Omoifo, Christiana	Ruggeri, Nancy
Kisiel, James	Maynard, Kathie	O'Neill, Tara	Sadler, Kim
Klosterman, Michelle	McAlister, Diane	Osgood, Marcy	Saha, Gouranga
Koballa, Thomas	McClafferty, Terence	Otto, Charlotte	Salinas, Ivan
Koehler, Catherine	McConnell, Tom	Oyoo, Samuel	Salloum, Sara
Köksal, Mustafa Serdar	McCullagh, John	Ozel, Murat	Sandrin, Susannah
Koskey, Kristin K.	McDonald, Scott	Ozgelen, Sinan	Sawey, April
Krajcik, Joseph	McDonald, Christine	Pabuccu, Aybuke	Saxman, Laura
Krajeski, Steve	McGraw, Jason	Pacifici, Lara	Scalone, Giovanna
Kramer, Laird	McInerney, Joseph	Pamuk, Savas	Schaub, Elsa
Kremer, Kerstin	McNeill, Katherine	Panichas, Michael	Schen, Melissa
Kwon, Yongju	Mendoza, Carmen	Park, HyunJu	Schleigh, Sharon
Lachapelle, Cathy	Menekse, Muhsin	Parlo, Amy	Schnittka, Christine
Lambert, Julie	Mercer-Tachick, Melissa	Paulson, Patricia	Schwartz, Renee'
Lang, Sarah	Merritt, Joi	Payne, Diana	Schwarz, Christina
Lanier, Kimberly	Meshoulam, David	Peck, Debby	Schwendimann, Beat
Lastica, Joelle	Meyer, Helen	Peffer, Tamara	Seiler, Gale
Law, James	Meyer, Daniel	Peker, Deniz	Sen, Tapati
Lazzaro, Christopher	Miller, Chris	Perkins, Matthew	Settlage, John
Lee, Hee-Sun	Milne, Catherine	Peters, Erin	Seung, Eulsun
Lee, Eunmi	Milner, Andrea R.	Peters, John	Sexton, Julie
Lee, Sung-Tao	Minogue, James	Phipps, Molly	Shady, Ashraf
Lee, Michele	Minton, Jessica	Pinzino, Dean	Shanahan, Marie-Claire
Lee, Min-Hsien	Miranda, Rommel	Pirkle, Sheila F.	Sharp, Jennifer
Lee, Yew-Jin	Mittelsten Scheid, Nicola	Plummer, Julia	Shea, Lauren M.
Levine, Suzanne	Moeller, Andrea	Pocová, M. Cecilia	Sherman, Ann
Levitt, Karen	Monhardt, Rebecca	Pop, Margareta	Sherwood, Robert
Lewis, Elizabeth	Montplaisir, Lisa	Popejoy, Kate	Shirley, Melissa
Lewis, Anna	Moore-Mensah, Felicia	Powell, Wardell	Short, Harold
Liang, Ling	Morales, Marlene	Pozzer-Ardenghi, Lilian	Shumaker Jeffrey, Penny
Liang, Jyh Chong	Morrell, Patricia	Preczewski, Paul	Silberglitt, Matt

Silva Pimentel, Diane	Talanquer, Vicente	Vitale, Michael	Wissehr, Cathy
Simon, Shirley	Tarabek, Paul	von Bergmann, HsingChi	Witzig, Stephen
Singh, Mamta	Taylor, Roger	Vondruska, Judy	Wizner, Francine
Siry, Christina	Thomson, Norman	Wade-Miller, Cynthia	Won, Jeong ae
Slaton, Adriane	Tomanek, Debra	Wahbeh, Nader	Wong, Sissy
Slykhuis, David	Topçu, Mustafa Sami	Waight, Noemi	Wood, Nathan
Smetana, Lara	Townsend, Scott	Waldrip, Bruce	Wood, Krista
Smith, Deborah	Tran, Lynn	Wallace, Carolyn	Woytowich, Connie
Smith, Sean	Tran, Natalie	Wan, Zhi Hong	Wright, Ann
Smith, Leigh	Trauth-Nare, Amy	Wang, Chia-Yu	Wu, Hsin-Kai
Smith, M Cecil	Tretter, Tom	Wang, Jingying	Wu, Ying-Tien
Smithenry, Dennis	Trumbull, Deborah	Wang, Tzu-Ling	Xiang, Lin
Snyder, Michele	Tsui, Chi-Yan	Wang, Tzu-Hua	Yacoubian, Hagop
Sondergeld, Toni	Tsurusaki, Blakely	Watson, Bill	Yadav, Aman
Song, Youngjin	Tuan, Hsiao-Lin	Weiland, Ingrid	Yaman, Süleyman
Soong, Benson	Tunncliffe, Sue Dale	Weinstein, Matthew	Yarden, Anat
Sørensen, Helene	Tzou, Carrie	Wendel, Paul	Yeo, Jennifer
Southerland, Sherry	Ucar, Sedat	Wenger, Matthew	Yerdelen Damar, Sevda
Stains, Marilyn	Upadhyay, BHaskar	Whitaker, Audrey Rabi	Yin, Xinying
Stanford, Tina	Urbaitis, Megan	White, Kevin	Yu, Shu-mey
Staples, Kimberly	Urban-Lurain, Mark	White, Peta	Yu, Yuqing
Stefani, Christina	Usak, Muhammet	Whitford, Melinda	Zawicki, Joseph
Stewart, Phillip	van de Kerkhof, Mary	Wiebe, Eric	Zhang, Qinmei
Stinson, Kevin	van Eijck, Michiel	Willcuts, Peggy	Zhao, Xi
Su, Ming	van Oostveen, Roland	Wilson, Mary Elizabeth	Zhao, Ningfeng
Sulsberger, Megan	Vanmali, Bina	Wilson, Rachel	Zhou, Jiangyuan
Sutton-Brown, Camille	Varma, Keisha	Wilson, Yushaneen	Ziegler, Gudrun
Szeto, Alan	Vick, Matthew	Winrich, Chuck	Zimmerman, Timothy

NARST Presidents

1928 W. L. Eikenberry	1954 George G. Mallinson	1980 John W. Renner	2006 James Shymansky
1929 W. L. Eikenberry	1955 Kenneth E. Anderson	1981 Stanley L. Helgeson	2007 Jonathan Osborne
1930 W. L. Eikenberry	1956 W. C. Van Deventer	1982 Stanley L. Helgeson	2008 Penny J. Gilmer
1931 Elliot R. Downing	1957 Waldo W. Blanchet	1983 Carl F. Berger	2009 Charlene M. Czerniak
1932 Elliot R. Downing	1958 Nathan S. Washton	1984 Ann C. Howe	2010 Richard A. Duschl
1933 Francis D. Curtis	1959 Thomas P. Fraser	1985 Ertle Thompson	
1934 Ralph K. Watkins	1960 Vaden W. Miles	1986 David P. Butts	
1935 Archer W. Hurd	1961 Clarence H. Boeck	1987 James P. Barufaldi	
1936 Gerald S. Craig	1962 Herbert A. Smith	1988 Linda DeTure	
1937 Walter G. Whitman	1963 Ellsworth S. Obourn	1989 Patricia Blosser	
1938 Hanor A. Webb	1964 Cyrus W. Barnes	1990 William G. Holliday	
1939 John M. Mason	1965 Frederic B. Dutton	1991 Jane Butler Kahle	
1940 Otis W. Caldwell	1966 Milton P. Pella	1992 Russell H. Yeany	
1941 Harry A. Carpenter	1967 H. Craig Sipe	1993 Emmett L. Wright	
1942 G. P. Cahoon	1968 John M. Mason	1994 Kenneth G. Tobin	
1943 Florence G. Billig	1969 Joseph D. Novak	1995 Dorothy L. Gabel	
1944 Florence G. Billig	1970 Willard D. Jacobson	1996 Barry J. Fraser	
1945 Florence G. Billig	1971 Paul D. Hurd	1997 Thomas R. Koballa, Jr.	
1946 C. L. Thield	1972 Frank X. Sutman	1998 Audrey B. Champagne	
1947 Earl R. Glenn	1973 J. David Lockard	1999 Joseph S. Krajcik	
1948 Ira C. Davis	1974 Wayne W. Welch	2000 David F. Treagust	
1949 Joe Young West	1975 Robert E. Yager	2001 Sandra K. Abell	
1950 N. Eldred Bingham	1976 Ronald D. Anderson	2002 Norman G. Lederman	
1951 Betty Lockwood	1977 O. Roger Anderson	2003 Cheryl L. Mason	
1952 Betty Lockwood	1978 Roger G. Olstad	2004 Andy (Charles) Anderson	
1953 J. Darrell Barnard	1979 James R. Okey	2005 John R. Staver	

NARST Executive Directors

(NARST created the position of Executive Secretary in 1975; the title was changed to Executive Director in 2003)

Paul Joslin 1975 – 1980
Bill Holliday 1980 – 1985
Glenn Markle 1985 – 1990
John Staver 1990 – 1995
Art White 1995 – 2000
David Haury 2000 – 2002
John Tillotson 2002 – 2007
William C. Kyle, Jr. 2007 – 2012

JRST Editors

J. Stanley Marshall 1963 – 1966
H. Craig Sipe 1976 – 1968
James T. Robinson 1969
O. Roger Anderson 1970 – 1974
David P. Butts 1975 – 1979
James A. Shymansky 1980 – 1984
Russell H. Yeany, Jr. 1985 – 1989
Ron Good 1990 – 1993
William C. Kyle, Jr. 1994 – May 1999
Charles A. Anderson & James J. Gallagher August 1999 – 2001
Dale R. Baker & Michael D. Piburn 2002 – 2005
J. Randy McGinnis and Angelo Collins 2006- 2010
Joseph Krajcik and Angela Calabrese Barton 2011 – 2015

NARST Emeritus Members

Gerald L. Abegg
Michael L. Agin
Andrew Ahlgren
Glen Aikenhead
Hans Andersen
Ronald Anderson
Ken Appleton
Guilford H. Bartlett, Jr.
Glenn D. Berkheimer
Paul J. Black
Ted Boyston
David P. Butts
John Christopher
Helmut Dahncke
Robert Dehaan
Rodney Doran
Jerry J. Doyle
Elsa Feher
Peter J. Fensham
Monica G. M. Ferguson-Hessler
Kathleen Fisher
Dorothy Gabel
Uri Ganiel
John Gilbert

Ron Good
Malka Gorodetsky
Richard Gunstone
Chorng-Jee Guo
Richard E. Haney
Ann-Chin Hann
Jack Hassard
Gerry D. Haukoos
Henry Heikkinen
Stanley L. Helgeson
Jack Holbrook
Ann C. Howe
William Jaffarian
Paul H. Joslin
Ehud Jungwirth
Jane Kahle
David Kennedy
Reuven Lazarowitz
Ivo E. Lindauer
Vincent Lunetta
Jacqueline Mallinson
Floyd E. Mattheis
Victor J. Mayer
Alan McCormack

Charles McFadden
Campbell McRobbie
Gottfried Merzyn
Peter A. Mirando
Albert Nous
Joseph D. Novak
Roger G. Olstad
Michael Padilla
Michael Piburn
Robert Poel
Deborah Pomeroy
James Poth
J. Prather
Mary Ellen Quinn
Frederick Reif
Donald Riechard
William C. Ritz
Douglas Roberts
Ryda D. Rose
Patricia Rowell
John F. Schaff
Donald J. Schmidt
Hans-Jurgen Schmidt
Manuel Sequeira

Terry Shaw
William Sidenstick
Ellen Simmons
Doris Simonis
H. Craig Sipe
Gerald Skoog
Joan H. Solomon
Martin D. Stewart
David R. Stronck
Frank X. Sutman
Joyce Swartney
J. Nathan Swift
Pinchas Tamir
Herbert Thier
Marlene Thier
Burton E. Voss
Wayne Welch
Robert Yager
Russell H. Yeany
Catherine Yeotis
Uri Zoller

NARST Award Winners

Distinguished Contributions to Science Education Through Research

This award is presented at the Annual International Conference but is bestowed only when a superior candidate is identified. It is given to recognize an individual who, through research over an extended period of time, has made outstanding and continuing contributions, provided notable leadership, and made a substantial impact in the area of science education.

1986 Anton E. Lawson	1998 James J. Gallagher	2009 Peter W. Hewson
1987 Paul DeHart Hurd	1999 Peter J. Fensham	Léonie Jean Rennie
1988 John W. Renner	2000 Jane Butler Kahle	Wolff-Michael Roth
1989 Willard Jacobson	2001 John K. Gilbert	2010 Reinders Duit
1990 Joseph D. Novak	2002 Audrey B. Champagne	Joseph Krajcik
1991 Robert L. Shrigley	2003 Barry J. Fraser	
1992 Pinchas Tamir	2004 Robert E. Yager	
1993 Jack Easley, Jr.	Paul Black	
1994 Marcia C. Linn	2005 John C. Clement	
1995 Wayne W. Welch	2006 David Treagust	
1996 Carl F. Berger	2007 Kenneth Tobin	
1997 Rosalind Driver	2008 Dorothy Gabel	

JRST Award

The JRST Award is given annually to the Journal of Research in Science Teaching article that is judged the most significant publication for that year.

Year	Awardee	Year	Awardee	Year	Awardee
1974	Donald E. Riechard and Robert C. Olson	1988 (tie)	Robert D. Sherwood, Charles K. Kinzer, John D. Bransford and Jeffrey J. Franks	2001	Fouad Abd-El-Khalick and Norman G. Lederman
1975	Mary Budd Rowe		Anton E. Lawson	2002	Andrew Gibert and Randy Yerrick
1976	Marcia C. Linn and Herbert C. Thier		Glen S. Aikenhead	2003	Sofia Kesidou and Jo Ellen Roseman
1977	Anton E. Lawson and Warren T. Wollman	1989	Richard A. Duschl and Emmett L. Wright	2004	Jonathan Osborne, Sue Collins, Mary Ratcliffe, Robin Millar and Richard Duschl
1978	Dorothy L. Gabel and J. Dudley Herron	1990	E. P. Hart and I. M. Robottom		Jonathan Osborne, Sibel Erduran, Shirley Simon, Troy D. Sadler, Dana L. Zeidler
1979	Janice K. Johnson and Ann C. Howe	1991	John R. Baird, Peter J. Fensham, Richard E. Gunstone, and Richard T. White	2005	Jerome Pine, Pamela Aschbacher, Ellen Roth, Melanie Jones, Cameron McPhee, Catherine Martin, Scott Phelps, Tara Kyle and Brian Foley
1980	John R. Staver and Dorothy L. Gabel	1992	Nancy R. Romance and Michael R. Vitale	2006	Christine Chin
(tie)	Linda R. DeTure		E. David Wong	2007	Kihyun Ryoo
1981	William C. Kyle, Jr.	1993	Stephen P. Norris and Linda M. Phillips		Bryan Brown
1982	Robert G. Good and Harold J. Fletcher	1994	David F. Jackson, Elizabeth C. Doster, Lee Meadows, and Teresa Wood	2010	Helen Patrick, Panayota Mantzicopoulos, and Ala Samarapungavan
(tie)	F. David Boulanger	1995	C.W.J.M. Klassen and P.L. Linjse		
1983	Jack A. Easley, Jr.	1996	Julie Bianchini		
1984	Marcia C. Linn, Cathy Clement and Stephen Pulos	1997	Phillip M. Sadler		
1985	Julie P. Sanford	1998	Allan G. Harrison, J. Grayson, and David F. Treagust		
1986	Anton E. Lawson				
1987	Russell H. Yeany, Kueh Chin Yap, and Michael J. Padilla				
1988	Kenneth G. Tobin and James J. Gallagher				

Outstanding Paper Award

The Outstanding Paper Award is given annually for the paper or research report presented at the Annual International Conference that is judged to have the greatest significance and potential in the field of science education.

Year Awardee

1975	John J. Koran
1976	Anton E. Lawson
1977	no award
1978	Rita Peterson
1979	Linda R. DeTure
1980	M. James Kozlow and Arthur L. White
1981	William Capie, Kenneth G. Tobin, and Margaret Boswell
1982	F. Gerald Dillashaw and James R. Okey
1983	William C. Kyle, Jr., James A. Shymansky, and Jennifer Alport
1984	Darrell L. Fisher and Barry J. Fraser
1985	Hanna J. Arzi, Ruth Ben-Zvi, and Uri Ganiel
(tie)	Russell H. Yeany, Kueh Chin Yap, and Michael J. Padilla
1986	Barry J. Fraser, Herbert J. Walberg, and Wayne W. Welch (tie)
1987	Robert D. Sherwood
1988	Barry J. Fraser and Kenneth G. Tobin
1989	James J. Gallagher and Armando Contreras
1990	Patricia L. Hauslein, Ronald G. Good, and Catherine Cummins
1991	Nancy R. Romance and Michael Vitale
1992	Patricia Heller, Ronald Keith and Scott Anderson
1993	Wolff-Michael Roth
1994	Wolff-Michael Roth and Michael Bowen
1995	Wolff-Michael Roth
1996	Nancy J. Allen
1997	no award
1998	Wolff-Michael Roth, Reinders Duit, Michael Komorek, and Jens Wilbers
1999	Lynn A. Bryan
2000	Joseph L. Hoffman and Joseph S. Krajcik
2001	Allan G. Harrison
2002	Carolyn Wallace Keys, Eun-Mi Yang, Brian Hand and Liesl Hohenshell
2003	Wolff-Michael Roth
2004	Joanne K. Olson, Sharon J. Lynch, Joel Kuipers, Curtis Pyke and Michael Szesze
2005	Chi Yan Sui, David Treagust and Michael Szesze
2006	Leema Kuhn and Brian Reiser
2007	Eugene L. Chiappetta, Tirupalavanam G. Ganesh, Young H. Lee and Marianne C. Phillips
2008	Guy Ashkenazi and Lana Tockus-Rappoport
2009	Jrène Rahm
2010	Mark W. Winslow, John R. Staver, and Lawrence C. Sharmann

Outstanding Doctoral Dissertation Award

This award was established in 1992 to be given annually for the Doctoral Dissertation judged to have the greatest significance in the field of science education.

Year	Awardee	Major Professor
1992	René Stofflett	Dale R. Baker
1993	Julie Gess-Newsome	Norman G. Lederman
1994	Carolyn W. Keys	Burton E. Voss
1995	Jerome M. Shaw	Edward Haertel
1996	Christine M. Cunningham	William L. Carlsen
1997	Jane O. Larson	Ronald D. Anderson
1998	Kathleen Hogan	Bonnie K. Nastasi
1999	Fouad Abd-El-Khalick	Norman G. Lederman
2000	Danielle Joan Ford	Annemarie S. Palinscar
2001	Iris Tabak	Brian Reiser
2002	Mark Girod	David Wong
2003	Hsin-Kai Wu	Joseph Krajcik
2004	David L. Fortus	Ronald Marx and Joseph Krajcik
2005	Thomas Tretter	Gail M. Jones
2006	Stacy Olitsky	Kenneth Tobin
2007	Julia Plummer	Joseph S. Krajcik
2008	Victor Sampson	Douglas Clark
2009	Lei Liu	Cindy E. Hmelo-Silver
2010	Heather Toomey Zimmerman	Phillip Bell

Outstanding Master's Thesis Award

This award was established in 1995 to be given annually for the Master's Thesis judged to have the greatest significance in the field of science education. It was last awarded in 2002.

Year	Awardee	Major Professor
1995	Moreen K. Travis	Carol L. Stuessy
1996	Lawrence T. Escalada	Dean A. Zollman
1997	C. Theresa Forsythe	Jeffrey W. Bloom
1998	Reneé D. Boyce	Glenn Clark
1999	Andrew B. T. Gilbert	Randy K. Yerrick
2000	Rola Fouad Khishfe	Fouad Abd-El-Khalick
2002	Laura Elizabeth Slocum	Marcy Hamby Towns

Early Career Research Award

The Early Career Research Award is given annually to the early researcher who demonstrates the greatest potential to make outstanding and continuing contributions to educational research. The recipient will have received his/her Doctoral degree within five years of receiving the award.

Year	Awardee	Year	Awardee	Year	Awardee
1993	Wolff-Michael Roth	2000	Angela Calabrese Barton	2008	Hsin-Kai Wu
1994	Deborah J. Tippins	2001	Julie A. Bianchini	2009	Troy D. Sadler
1995	Nancy B. Songer	2002	Alan G. Harrison	2010	Thomas Tretter
1996	Mary B. Nakhleh	2003	Fouad Abd-El-Khalick		
1997	Peter C. Taylor	2004	Grady J. Venville		
1998	J. Randy McGinnis	2005	Randy L. Bell		
1999	Craig W. Bowen	2006	Heidi Carlone		
	Gregory J. Kelly	2007	Bryan A. Brown		

Classroom Applications Award

The Classroom Applications Award was established in 1979. The award was given annually to authors whose papers were presented at the previous Annual Meeting and judged to be outstanding in terms of emphasizing classroom application of research in science education. The award was last presented in 1991.

Year	Awardee(s)
1980 (Five Equal Awards)	Livingston S. Schneider and John W. Renner Heidi Kass and Allan Griffiths Ramona Saunders and Russell H. Yeany Joe Long, James R. Okey, and Russell H. Yeany M. James Kozlow and Arthur L. White
1981 (Four Equal Awards)	Dorothy L. Gabel, Robert D. Sherwood, and Larry G. Enochs Wayne Welch, Ronald D. Anderson, and Harold Pratt Mary Ellen Quinn and Carolyn Kessler P. Ann Miller and Russell H. Yeany
1982 (Four Equal Awards)	Louise L. Gann and Seymour Fowler Dorothy L. Gabel and Robert D. Sherwood Thomas L. Russell Joseph C. Cotham
1983	Robert D. Sherwood, Larry G. Enochs, and Dorothy L. Gabel
1984 (Four Equal Awards)	Mary Westerback, Clemencia Gonzales, and Louis H. Primavera Kenneth G. Tobin Hanna J. Arzi, Ruth Ben-Zvi, and Uri Ganiel Charles Porter and Russell H. Yeany
1985 (Three Equal Awards)	Dan L. McKenzie and Michael J. Padilla Margaret Walkosz and Russell H. Yeany Kevin C. Wise and James R. Okey
1986 (Four Equal Awards)	Sarath Chandran, David F. Treagust, and Kenneth G. Tobin Darrell L. Fisher and Barry J. Fraser Dorothy L. Gabel, Stanley L. Helgeson, Joseph D. Novak, John Butzow, and V. K. Samuel Linda Cronin, Meghan Tweist, and Michael J. Padilla
1987	Dorothy L. Gabel, V. K. Samuel, Stanley L. Helgeson, Sandra McGuire, Joseph D. Novak, and John Butzow
1988	Uri Zoller and Benn Chaim
1989	James D. Ellis and Paul J. Kuerbis
1990	Dale R. Baker, Michael D. Piburn, and Dale S. Niederhauser
1991	David F. Jackson, Billie Jean Edwards, and Carl F. Berger

NARST Leadership Team & Committees

2009-2010

Officers

President:	Richard A. Duschl	rad19@psu.edu
President-elect:	Dana L. Zeidler	zeidler@coedu.usf.edu
Immediate Past President:	Charlene M. Czerniak	charlene.czerniak@utoledo.edu

Executive Board:

(10) Valarie Akerson	vakerson@indiana.edu
(10) Reinders Duit	duit@ipn.uni-kiel.de
(10) Carla Zembal-Saul	czem@psu.edu
(10) Mei-Hung Chiu	mhchiu@ntnu.edu.tw
(11) Betsy Davis	betsyd@umich.edu
(11) Phil Scott	P.H.Scott@education.leeds.ac.uk
(11) Troy Sadler	tsadler@coe.ufl.edu
(12) Julie Bianchini	jbianchi@education.ucsb.edu
(12) Reneé Schwartz	r.schwartz@wmich.edu
(12) Jan H. Van Driel	Driel@iclon.leidenuniv.nl

Support Team:

Executive Director:	Bill Kyle	bill_kyle@umsl.edu
Annual Meeting Coordinator:	Robin Turner	rturner@drohanmgmt.com
Director of Electronic Services:	Robin Turner	rturner@drohanmgmt.com
	Alexandra D'Imperio	adimperio@drohanmgmt.com

JRST Co-Editor:	Joseph Krajcik	krajcik@umich.edu
JRST Co-Editor:	Angela Calabrese Barton	acb@msu.edu
E-NARST News Co-Editor:	Carla Zembal-Saul	czem@psu.edu
E-NARST News Co-Editor:	Jan H. Van Driel	Driel@iclon.leidenuniv.nl

Awards Committee

Chair:

(11) Phil Scott	P.H.Scott@education.leeds.ac.uk
-----------------	---------------------------------

Members:

NARST Outstanding Paper Award Committee Selection Co-Chairs

(10) Anil Banerjee	banerjee_anil@colstate.edu
(11) Ann Cavallo	cavallo@uta.edu

Outstanding Doctoral Research Award Selection Committee Co-Chairs

(10) Deborah Tippins	debtippins@hotmail.com
(11) Julie Kittleson	jkittl@uga.edu

JRST Award Selection Committee Co-Chairs

(10) Deborah L. Hanson	hanson@hanover.edu
------------------------	--------------------

Early Career Research Award Selection Committee Co-Chairs

(11) Randy Bell	randybell@virginia.edu
(12) Anita Roychoudhury	aroychou@purdue.edu

Distinguished Contributions in Research Award Committee Co-Chairs

(10) Kenneth Tobin	ktobin@gc.cuny.edu
(12) Nancy Romance	romance@fau.edu

Narst Outstanding Paper Award Selection Committee

Co-Chairs:

- | | |
|-----------------------|----------------------------|
| (10) Anil C. Banerjee | banerjee_anil@colstate.edu |
| (11) Ann Cavallo | cavallo@uta.edu |

Members:

- | | |
|---------------------------|----------------------------|
| (10) Jacob Blickenstaff | jacob.blickenstaff@usm.edu |
| (10) Kent Crippen | kcrippen@unlv.nevada.edu |
| (10) Brian Gerber | blgerber@valdosta.edu |
| (10) Shirley Gholston Key | skey@memphis.edu |
| (10) Sonya Martin | sm655@Drexel.Edu |
| (10) Julie A. Thomas | julie.thomas@okstate.edu |
| (10) Danielle Dani | dani@ohio.edu |
| (11) Elaine Howes | EHowes@coedu.usf.edu |
| (11) Ozgul Yilman-Tuzun | ozgul@metu.edu.tr |
| (11) Wendy Frazier | wfrazier@gmu.edu |
| (11) Karleen Goubeaud | Karleen.Goubeaud@liu.edu |
| (11) Rhea Miles | milesr@ecu.edu |
| (11) Sara Salloum | Sara.Salloum@liu.edu |
| (12) Demet Kirbulut | kirbulut@metu.edu.tr |
| (12) Ava Zeineddin | zeineddi@illinois.ed |
| (12) Soon-Hye Park | soonlye-park@uiowa.edu |
| (12) Lisa Martin-Hanson | lmartinhansen@gsu.edu |
| (12) Molly Lawrence | molly.lawrence2@wwu.edu |
| (12) Meg Blanchard | meg_blanchard@ncsu.edu |

Ex-Officio:

- | | |
|------------------------------------|---------------------------------|
| President: Richard A. Duschl | rad19@psu.edu |
| Executive Director: Bill Kyle | bill_kyle@umsl.edu |
| Awards Committee Chair: Phil Scott | P.H.Scott@education.leeds.ac.uk |

Outstanding Doctoral Research Award Selection Committee

Co-Chairs

- | | |
|----------------------|------------------------|
| (10) Deborah Tippins | debtippins@hotmail.com |
| (11) Julie Kittleson | jkittl@uga.edu |

Members:

- | | |
|------------------------|------------------------------|
| (10) Mehmet Aydeniz | maydeniz@utk.edu |
| (10) Alejandro Gallard | agallard@garnet.acns.fsu.edu |
| (10) Jim Shymansky | jshymansky@umsl.edu |
| (10) Ratna Narayan | ratna.narayan@ttu.edu |
| (10) Edward Robeck | ecrobeck@salisbury.edu |
| (11) Tim Slater | timslaterwyo@gmail.com |
| (11) Norm Thomson | nthomson@uga.edu |
| (11) Tracy Hogan | hogan@adelphi.edu |
| (11) Lynn Dierking | dierking@ilinet.org |
| (11) John Lemberger | jlemborg@uwosh.edu |
| (12) Brian Williams | bawilli@gsu.edu |
| (12) Julie Kittleson | jkittl@uga.edu |
| (12) Michelle Cook | mcook@clemson.edu |
| (12) Victor Sampson | vsampson@fsu.edu |
| (12) Michael Ford | mjford+@pitt.edu |
| (12) Barbara Hug | bhug@illinois.edu |
| (12) Lucy Avraamidou | lucya@ucy.ac.cy |
| (12) Fred Finley | finle001@umn.edu |

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu
Awards Committee Chair: Phil Scott	P.H.Scott@education.leeds.ac.uk

JRST Award Selection Committee**Co-Chairs**

(10) Deborah L. Hanson	hanson@hanover.edu
(12) Barbara Buckley	bbuckle@wested.org

Members:

(10) Gayle Buck	gabuck@indiana.edu
(10) Nate Carnes	gncarnes@aol.com
(10) Hasan Deniz	hasan.deniz@unlv.edu
(10) Lisa Donnelly	ldonnell@kent.edu
(10) Benny Yung	hwyung@hkucc.hku.hk
(10) Xiufeng Liu	xliu5@buffalo.edu
(10) Gail Richmond	gailr@msu.edu
(10) James Minoque	minoque@mcsu.edu
(11) Edna Tan	tane@msu.edu
(11) Douglas Huffman	Huffman@ku.edu
(11) Eva Toth	tothe@duq.edu
(11) Magnia George	magnia.george@emory.edu
(11) BaoHui Zhang	bhzhang@nie.edu.sg or baohui.zhang@gmail.com
(11) Jazlin Ebenezer	j.ebenezer@wayne.edu
(11) Huann-shyang Lin	huannlin@faculty.nsysu.edu.tw
(12) Douglas Huffman	Huffman@ku.edu
(12) AyeletBaram-Tsabari	ayelet@technix.technion.ac.il
(12) Carolyn Wallace	csw0013@auburn.edu
(12) Adam Maltese	amaltese@indiana.edu
(12) Michelle Fleming	flemingm@uwosh.edu
(12) Catherine Koehler	Catherine.koehler@uc.edu
(12) David Grueber	grueberd@msu.edu
(12) Baohui Zhang	baohui.zhang@nie.edu.sg
(12) Kate McNeil	kmcneill@bc.edu

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu
Awards Committee Chair: Phil Scott	P.H.Scott@education.leeds.ac.uk

Early Career Research Award Selection Committee**Co-Chairs**

(11) Randy Bell	randybell@virginia.edu
(12) Anita Roychoudhury	aroychou@purdue.edu

Members:

(10) Per-Olof Wickman	per-olof.wickman@lhs.se
(10) Fouad Ab-El-Khalick	fouad@illinois.edu
(10) Ed Marek	eamarek@ou.edu
(11) Hsin-Kai Wu	hkwu@ntnu.edu.tw
(11) Kathy Trundle	trundle.1@osu.edu
(12) Shirley Simon	s.simon@ioe.ac.uk
(12) Bruce Waldrip	wadrip@usq.edu.au
(12) Michael Beeth	beeth@uwosh.edu
(12) Grady Venville	venville@cyllene.uwa.edu.au
(12) Joseph Taylor	jtaylor@bscs.org

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu
Awards Committee Chair: Phil Scott	P.H.Scott@education.leeds.ac.uk

Distinguished Contributions In Research Award Committee**Co-Chairs**

(10) Kenneth Tobin	ktobin@gc.cuny.edu
(12) Nancy Romance	romance@fau.edu

Members:

(10) Peter Hewson	pwhewson@wisc.edu
(10) Meta VanSickle	VansickleM@cofc.edu
(11) Kate Scantlebury	kscantle@UDel.Edu
(11) Justin Dillon	justin.dillon@kcl.ac.uk
(11) Nancy Romance	romance@fau.edu
(12) Nancy Brickhouse	nbrick@udel.edu
(12) Anthony Petrosino	ajpetrosino@mail.utexas.edu
(12) John Clement	clement@educ.umass.edu

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu
Awards Committee Chair: Phil Scott	P.H.Scott@education.leeds.ac.uk

Equity And Ethics Committee**Co-Chairs**

(10) Valarie Akerson	vakerson@indiana.edu
(12) Julie Bianchini	jbianchi@education.ucsb.edu

Members:

(10) Felicia Moore	feliciamm@hotmail.com
(10) Lisa Martin-Hansen	lmartinhansen@gsu.edu
(10) Jrene Rahm	jrene.rahm@umontreal.ca
(11) Michiel van Eijck	m.w.v.eijck@tue.nl
(11) Sumi Hagiwaras	hagiwaras@mail.montclair.edu
(11) Kathy Fadigan	kxf24@psu.edu
(12) Doris B. Ash	dash5@ucsc.edu
(12) Jim Ellis	jdellis@ku.edu
(12) Sarah Barrett	SBarrett@edu.yorku.ca

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu

External Policy And Relations Committee**Chair:**

(11) Betsy Davis	betsyd@umich.edu
------------------	------------------

Members:

(10) Eileen Parsons	rparsons@email.unc.edu
(10) Carla C. Johnson	carla.johnson@uc.edu
(10) Andrew Shouse	awshouse@u.washington.edu
(11) Mike Vitale	VITALE@ecu.edu
(11) Sharon Lynch	slynch@gwu.edu
(11) Kevin Holtz	kjholtz@syr.edu
(12) Mike Barnett	barnetge@bc.edu
(12) Nam hwa Kang	kangn@science.oregonstate.edu
(12) Kathy Malone	kmalone@shadysideacademy.org

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu

International Committee**Chair - International Coordinator:**

(10) Mei-Hung Chiu	mhchiu@ntnu.edu.tw
--------------------	--------------------

Members:

(10) Sibel Erduran	Sibel.Erduran@bristol.ac.uk
(10) Barbara G. Ladewski	Ladewski@umich.edu
(10) Uri Zoller	uriz@research.haifa.ac.il
(11) Irene Osisoma	iosisoma@csudh.edu
(11) Max Dass	dasspm@appstate.edu
(11) Knut Neumann	knut.neumann@uni-due.de
(11) Feral Ogan-Bekiroglu	fbekiroglu@marmara.edu.tr
(12) Young-Shin Park	parkys@chosun.ac.kr
(12) Marie-Claire Shanahan	mcschanahan@ualberta.ca

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu

Membership And Election Committee**Co-Chairs:**

(10) Reinders Duit	duit@ipn.uni-kiel.de
(12) Reneé Schwartz	r.schwartz@wmich.edu
Past President: Charlene M. Czerniak	charlene.czerniak@utoledo.edu

Members:

(10) Mary Atwater	atwater@uga.edu
(10) Julia (Julie) Grady	jgrady@vt.edu
(10) James Tarleton McDonald III	mcdon1jt@cmich.edu
(11) April Adams	adams001@nsuok.edu
(11) Adin Amirshokoochi	aamirshokoochi@mail.fairfield.edu
(12) Corinne Lardy	corinne_lardy@yahoo.com
(12) Julie Luft	Julie.Luft@asu.edu
(12) May Hung May Cheng	maycheng@ied.edu.hk

Ex-Officio:

Executive Director: Bill Kyle	bill_kyle@umsl.edu
-------------------------------	--------------------

Program Committee

Co-Chairs:

President: Richard A. Duschl rad19@psu.edu
President Elect: Dana L. Zeidler zeidler@coedu.usf.edu

Members:

Strand 1: Science Learning, Understanding, and Conceptual Change

(10) Eric Wiebe eric_wiebe@ncsu.edu
(11) Julia Plummer PlummerJ@arcadia.edu

Strand 2: Science Learning: Contexts, Characteristics and Interactions

(10) Erin Dolan Edolan@vt.edu
(11) Jennifer Eklund jleklund@umich.edu

Strand 3: Science Teaching—Primary School (Grades preK-6)

(10) Terry Shanahan tshanaha@uci.edu
(11) Meredith Park Rogers mparkrog@indiana.edu

Strand 4: Science Teaching—Middle and High School (Grades 5-12)

(10) Helen Meyer helen.meyer@uc.edu
(11) Danielle Dani dani@ohio.edu

Strand 5: College Science Teaching and Learning (Grades 13-20)

(10) Tahsin Khalid tahsinkhalid@hotmail.com
(11) Sanjay Rebello srebello@phys.ksu.edu

Strand 6: Science Learning in Informal Contexts

(10) Jim Kisiel jkisiel@csulb.edu
(11) John Falk falkj@science.oregonstate.edu

Strand 7: Pre-service Science Teacher Education

(10) Amelia Wenk-Gotwals gotwals@msu.edu
(11) Kristin Gunckel kgunckel@email.arizona.edu

Strand 8: In-service Science Teacher Education

(10) Kimberly Fluet fluet@iit.edu
(11) Daniel Meyer meyerd@iit.edu

Strand 9: Reflective Practice

(10) Erin Peters erin.peters1@gmail.com
(11) Tom McConnell tommac@msu.edu

Strand 10: Curriculum, Evaluation, and Assessment

(10) Xiufeng Liu xliu5@buffalo.edu
(11) Joe Engemann engemann@brocku.ca

Strand 11: Cultural, Social, and Gender Issues

(10) Bhaskar Upadhyay upadh006@umn.edu
(11) Maria Rivera mriveram@barnard.edu

Strand 12: Educational Technology

(10) Hee-Sun Lee heesun.lee@tufts.edu
(11) Keisha Varma keisha@umn.edu

Strand 13: History, Philosophy and Sociology of Science

- | | |
|-------------------------|----------------------|
| (10) Reneé Schwartz | r.schwartz@wmich.edu |
| (11) Sherry Southerland | southerl@coe.fsu.edu |

Strand 14: Environmental Education

- | | |
|------------------------------|----------------------------------|
| (10) Teddie Phillipson-Mower | t.phillipsonmower@louisville.edu |
| (11) Rita Hagevik | rhagevik@utk.edu |

Strand 15: Policy

- | | |
|--------------------|------------------------|
| (10) Sharon Lynch | slynch@gwu.edu |
| (10) Sarah Carrier | sarah_carrier@ncsu.edu |

Ex-officio:

Executive Director: Bill Kyle	bill_kyle@umsl.edu
-------------------------------	--------------------

Publications Advisory Committee

- | | |
|------------------------|---------------------------|
| (10) Carla Zembal-Saul | czem@psu.edu |
| (12) Jan van Driel | Driel@iclon.leidenuniv.nl |

Members:

- | | |
|------------------------|---------------------------|
| (10) Kathy Roth | kathyr@lessonlab.com |
| (10) Tamara Nelson | tnelson@vancouver.wsu.edu |
| (10) Tali Tal | rtal@tx.technion.ac.il |
| (11) Len Annetta | len_annetta@ncsu.edu |
| (11) Kate Popejoy | kpopejoy@uncc.edu |
| (11) Gill Roehrig | roehr013@umn.edu |
| (12) Heide Carlone | hbcarlon@uncg.edu |
| (12) Martina Nieswandt | mnieswan@iit.edu |
| (12) Debra Tomanek | dtomanek@u.arizona.edu |

J. Randy McGinnis (JRST Co-Ed)	jmcginni@umd.edu
Angelo Collins (JRST Co-Ed)	acollins@kstf.org

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu
NSTA Research Director: Julie Luft	Julie.Luft@asu.edu

Research Committee

Chair:

(11) Troy Sadler	tsadler@coe.ufl.edu
------------------	---------------------

Members:

- | | |
|-------------------------------|-----------------------------|
| (10) Julia V. Clark | jclark@nsf.gov |
| (10) Anita Roychoudhury | aroychou@purdue.edu |
| (11) Dale Baker | DALE.BAKER@asu.edu |
| (11) Gavin Fulmer | GavinFulmer@westat.com |
| (10) James Otuka | jimotuka@yahoo.com |
| (11) Colette Murphy | c.a.murphy@qub.ac.uk |
| (12) Alandeom Oliveira | ao262638@albany.edu |
| (12) Sibel Erduran | Sibel.Erduran@bristol.ac.uk |
| (12) Abdulkadir (Kadir) Demir | kadir@gsu.edu |

Ex-Officio:

President: Richard A. Duschl	rad19@psu.edu
Executive Director: Bill Kyle	bill_kyle@umsl.edu
NSTA Research Director: Julie Luft	Julie.Luft@asu.edu

Schedule at a Glance

Saturday, March 20

4:00 PM – 9:00 PM NARST Executive Board Meeting #1

Sunday, March 21

7:30 AM – 5:00 PM NARST Executive Board Meeting #2
8:00 AM – 5:00 PM Registration
1:00 PM – 5:00 PM Preconference Workshops #1 through #4
5:30 PM – 7:00 PM Plenary Session # 1: James Spillane, Northwestern University (USA)
7:00 PM – 9:30 PM Presidential / Welcome Reception (Free appetizers and cash bar)

Monday, March 22

7:00 AM – 8:15 AM Committee Meetings
8:30 AM – 10:00 AM Concurrent Session # 1
10:00 AM – 10:30 AM Break
10:30 AM – 12:00 Concurrent Session # 2
12:00 – 12:45 PM NARST Business Meeting (Box lunch provided for 1st 100 attendees who sign up)
1:00 PM – 2:30 PM Concurrent Session # 3
2:45 PM – 4:15 PM Concurrent Session # 4
4:30 PM – 6:00 PM Concurrent Session # 5
6:15 PM – 7:15 PM Mentor-Mentee Nexus
6:15 PM – 7:15 PM Graduate Student Forum
7:00 PM – 9:00 PM JRST Board Meeting and Reception

Tuesday, March 23

7:00 AM – 8:15 AM Committee Meetings
8:30 AM – 10:00 AM Plenary Session # 2: Doris Jorde, University of Oslo (Norway)
10:00 AM – 10:30 AM Break
10:30 AM – 11:45 AM Concurrent Session # 6 - Poster Time for All Posters
12:00 – 2:00 PM Awards Luncheon
2:15 PM – 3:45 PM Concurrent Session # 7
4:00 PM – 5:30 PM Concurrent Session # 8
5:45 PM – 6:45 PM IJSME Editorial Board Meeting (By invitation only)
5:45 PM – 6:45 PM New Researcher and Junior Faculty Early Career Discussion
7:00 PM – 9:00 PM Equity Dinner (off site)
7:30 PM – 10:00 PM Routledge/Taylor & Francis Reception (Independence Ballroom - By Invitation)

Wednesday, March 24

7:00 AM – 8:15 AM Strand Meetings
8:30 AM – 10:00 AM Concurrent Session # 9
10:00 AM – 10:30 AM Break
10:30 AM – 12:00 Concurrent Session # 10
12:00 – 1:00 PM Lunch on Your Own
1:15 PM – 2:45 PM Concurrent Session # 11
3:00 PM – 4:30 PM Concurrent Session # 12
5:30 PM – 10:30 PM NARST Executive Board Meeting #3

Saturday, March 20, 2010

4:00pm - 9:00pm

Saturday, March 20, 2010

NARST Executive Board Meeting Session #1

4:00pm – 9:00pm, Franklin 1

Sunday, March 21, 2010

NARST Executive Board Meeting Session #2
7:30am – 5:00pm, Conference Rooms 401 – 402

Pre Conference Workshop—Equity and Ethics Committee Sponsored

W1 Research into Practice: Practice Informing Research for Equity Scholarship and Teaching

1:00pm – 5:00pm, Conference Rooms 407 – 408

Felicia M. Moore-Mensah, Columbia University

Melody Russell, Auburn University

Jomo Mutegi, Sankore Institute

Blakely K. Tsurusaki, Washington State University

Gillian U. Bayne, Lehman College

Rowhea Elmesky, Washington University-St. Louis

Wilbert Butler, Tallahassee Community College

Nate Carnes, University of South Carolina

Mary M. Atwater, University of Georgia

Sumi Hagiwara, Montclair State University

Pre Conference Workshop—Research Committee Sponsored

W2 Writing a Competitive Proposal for the National Science Foundation's (NSF) Division of Research on Learning in formal and Informal Settings (DRL): Strategies and Tips for Novice and Seasoned Proposers

1:00pm – 5:00pm, Conference Rooms 411 – 412

Janice Earle, National Science Foundation

Sharon J. Lynch, National Science Foundation

Gavin Fulmer, National Science Foundation

Charles W. Anderson, Michigan State University

Heidi Carlone, The University of North Carolina at Greensboro

Okhee Lee, University of Miami

Pre Conference Workshop—Research Committee Sponsored

W3 Developing High Quality Reviews for the Journal of Research in Science Teaching

1:00pm – 5:00pm, Conference Rooms 414 – 415

Joseph S. Krajcik, University of Michigan

Angela Calabrese Barton, Michigan State University

Pre Conference Workshop—Research Committee Sponsored

W4 "It's Electric!"- E-Portfolios as Evidence of Teacher Growth: Examining a Growing Trend in Both Research and Practice in Science Teacher Education
1:00pm – 5:00pm, Off Site. Transportation will be provided.

Sonya N. Martin, Drexel University

Christina A. Siry, University of Luxembourg

Rachel Ruggirello, Washington University

Constance Blasie, University of Pennsylvania

Jane Horowitz, University of Pennsylvania

Yushaneen Wilson, University of Pennsylvania

Plenary Session

PL1 Policy in Practice: Instruction & the School Administrative Infrastructure

5:30pm – 7:00pm, Liberty Ballroom

Presider:

Richard A. Duschl, Penn State University

Presenter:

James Spillane, Northwestern University

Presidential/Welcome Reception

Social event: All NARST members are welcome—free appetizers and cash bar.

7:00pm – 9:30pm, Salons E and F

Monday, March 22, 2010

Committee Meetings

7:00am – 8:15am

Awards Committee Chairs & Co-Chairs Meeting

7:00am – 8:15am, Conference Room 401

Equity and Ethics Committee Meeting

7:00am – 8:15am, Conference Room 402

External Policy and Relations Committee Meeting

7:00am – 8:15am, Conference Room 403

Research Committee Meeting

7:00am – 8:15am, Conference Room 404

Membership and Election Committee Meeting

7:00am – 8:15am, Conference Room 405

International Committee Meeting

7:00am – 8:15am, Conference Room 406

Program Committee Meeting

7:00am – 8:15am, Conference Room 407

Publications Advisory Committee Meeting

7:00am – 8:15am, Conference Room 408

Concurrent Session #1

8:30am – 10:00am

Strand 1: Science Learning, Understanding and Conceptual Change

S1.1 SC-Paper Set: New Ideas about Learning Progressions

8:30am – 10:00am, Conference Room 401

Presider:

Gavin Fulmer, NSF

S1.1.1 Towards a Learning Progression Addressing the Seasons: A Comparison of Two Learning Trajectories with Middle School Students

Julia D. Plummer, Arcadia University

Lori Agan, Expeditionary Learning School

S1.1.2 Fifth and Eighth Grade Students' Conceptions about the Nature of Technology

Nicole DiGironimo, University of Delaware

S1.1.3 Progression in Student Understanding of Matter from Middle School to College: Implementation of the Structure and Motion of Matter (SAMM) Survey

Marilyne Stains, University of Massachusetts Boston

Marta Escriu-Sune, University of Massachusetts Boston

Hannah Sevan, University of Massachusetts Boston

S1.1.4 What Progresses in a Learning Progression: A Longitudinal Ground-Truth Study of One Student's Understanding of Energy in Ecosystems

Elisabeth Roberts, The University of Arizona

Bruce Johnson, University of Arizona

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S1.2 Poster Symposium: Applying New Mechanisms and Conceptualizations of the "Transfer-of-Learning" to Science Classrooms: The Dynamic Role of Contexts and Interactions

8:30am – 10:00am, Salon C

Discussant: Charles Anderson

S1.2.1 "Preparation for Future Learning" in Physics

Eugenia Etkina, Rutgers University

Anna Karelina, Rutgers University

Maria Ruibal-Villasenor, Rutgers University

Gregory Suran, Rutgers University

S1.2.2 Approaching Conceptual Representations: A Case of Transfer among Middle School Science Teachers

Cindy E. Hmelo-Silver, Rutgers University

Suparna Sinha, Rutgers University

Steven Gray, Rutgers University

Sameer Honwad, Rutgers University

Catherine Eberbach, Rutgers University

Rebecca Jordan, Rutgers University

Spencer Rugaber, Georgia Tech University

Swaroop Vattam, Georgia Tech University

Ashok Goel, Georgia Tech University

Wendy Ford, Linwood Middle School

Casey Schmidt, Linwood Middle School

S1.2.3 Expansive Framing and Transfer in High School Biology Class: Hybridizing Settings and Promoting Connections within a Larger Learning Community

Randi A. Engle, University of California, Berkeley

Xenia S. Meyer, Cornell University

Jim Clark, Arroyo High School

Jillann White, University of California, Berkeley

Adam Mendelson, University of California, Berkeley

S1.2.4 Individual and Group-Level Dynamics of Framing

Luke Conlin, University of Maryland

Ayush Gupta, University of Maryland

David Hammer, University of Maryland

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S1.3 Poster Symposium: Developing the Skills and Practices of Modeling

8:30am – 10:00am, Salon D

Presenters:

Leona Schauble, Peabody College, Vanderbilt University
 Douglas B. Clark, Peabody College, Vanderbilt University
 Richard Lehrer, Peabody College, Vanderbilt University
 Eve I. Manz, Peabody College, Vanderbilt University
 Christina Schwarz, Michigan State University
 Pratim Sengupta, Vanderbilt University
 Brian J. Reiser, Northwestern University
 Uri Wilensky, Northwestern University
 William Sandoval, University of California at Los Angeles

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S1.4 SC-Paper Set: Representations and Visualizations in Science Learning

8:30am – 10:00am, Conference Room 402

Presenter:

Senay Purzer, Purdue University

S1.4.1 Applying Science Concepts: Factors That Influence Students' Understandings of Surface Area to Volume

Amy R. Taylor, University of North Carolina Wilmington
 Gail Jones, North Carolina State University

S1.4.2 Scale, Magnification, and Zooming: Logical Thinking and Spatial Visualization

Gail Jones, NC State University
 Grant E. Gardner, NC State University
 Amy R. Taylor, University of North Carolina at Wilmington
 Eric N. Wiebe, NC State University
 Jennifer Forrester, NC State University

S1.4.3 Productive Uses of Representation at the Intersection and Mathematics and Biology

Julia Svoboda, University of California, Davis
 Cynthia Passmore, University of California, Davis

S1.4.4 A Content Analysis of Images in Biology and Geoscience Textbooks

Jennifer Cromley, Temple University
 Theodore W. Wills, Temple University
 Carla R. Stephens, Temple University
 Denis Dumas, Temple University
 Mary H. Herring, Temple University
 Ulana A. Luci-Dubas, National Board of Medical Examiners
 Lindsey E. Snyder-Hogan, Temple University
 Derek Burton, Temple University
 Todd Mendelsohn, Temple University

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S1.5 SC-Paper Set: Teaching Science to ALL Learners

8:30am – 10:00am, Conference Room 403

Presenter:

Tara B. O'Neill, University of Hawaii

S1.5.1 Becoming an Inclusive Science Teacher: Exploring the Intersection of Inquiry and Inclusion in the Primary Classroom

Sharon Dotger, Syracuse University
 Vicki McQuitty, Davis College
 Uzma Khan, Syracuse University

S1.5.2 In Search of what it means to Develop Scientific Literacy in a Primary School

Kathy Smith, Monash University
 Amanda K. Berry
 John Loughran

S1.5.3 Elementary Teachers' Strategies for Teaching Science and Supporting Language Development in Urban Elementary Schools

Karen H. Adamson, University of Miami
 Alexandra O. Santau, Duquesne University

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S1.6 SC-Paper Set: Barriers to Inquiry-Based Science Teaching

8:30am – 10:00am, Conference Room 404

Presenter:

Gale Seiler, McGill University

S1.6.1 Resident Scientists' Inquiry Instructional Practice and their Perceived Benefits and Difficulties of Inquiry in Schools

Frackson Mumba, Southern Illinois University
 William F. Mejia, Southern Illinois University Carbondale
 Vivien M. Chabalengula, Southern Illinois University
 Erin Wilson-Miles, Southern Illinois University
 William Hunter, Illinois State University

S1.6.2 The Lack of Separation between Research Questions and Methods in High School Lab Manuals and Its Effects on Teachers' Understanding of the Practice of Science

Eilat Hasson, Weizmann Institute of Science
 Michal Ben-Nun, Weizmann Institute of Science
 Anat Yarden, Weizmann Institute of Science

S1.6.4 Korean Secondary Science Teachers' Views on Barriers in Implementing Inquiry-Based Instructions

HyunJu Park, Chosun University
 Yoonbong Park, Chungnam National University
 Jeong-Min Hong, Boseoung High School
 Bo-Ram Hyun, Incheon Science High School
 Yun-Mi Lee, Jeonnam High School
 Ki-Rak Park, Jeonnam Girl's High School
 Hongseok Kim, Dobong High School
 Eunmi Park, Seokkwan High School

Strand 5: College Science Teaching and Learning (Grades 13-20)

S1.7 SC-Paper Set: Explanation and Reasoning in Undergraduate Chemistry and Physics

8:30am – 10:00am, Conference Room 405

Presenter:

Bridget Brennan, University of Delaware

S1.7.1 Exploring Dominant Types of Explanations Built by General Chemistry Students

Vicente Talanquer, University of Arizona

S1.7.2 Uncovering the Processes by Which Students Form Links between Multiple Modes of Representation In Chemistry

Tosten Haugerud, Western Washington University
 Mathew Lockett, Western Washington University

S1.7.3 Investigating Change and Consistency in Introductory College Students' Understanding about Pulleys

Amy Rouinfar, Florida State University
 Jacquelyn J. Chini, Kansas State University
 Adrian Carmichael, Kansas State University
 Sadhana Puntambekar, University of Wisconsin - Madison
 N. Sanjay Rebello, Kansas State University

Strand 6: Science Learning in Informal Contexts

S1.8 SC-Paper Set: Investigating the Informal-Formal Boundary

8:30am – 10:00am, Conference Room 406

Presenter:

Phyllis Katz, Independent

S1.8.1 In What Ways Do Informal – Formal Science Partnerships For Teacher Development Play A Role In Induction, And Retention Of Urban Science Teachers?

Jennifer Adams, Brooklyn College-CUNY
 Maritza Macdonald, The American Museum of Natural History

S1.8.2 Bridging Learning in Informal Environments and School Contexts: The Nature Learning Camp as Boundary Object

Yew-Jin Lee, National Institute of Education, Singapore
 Jennifer Yeo, National Institute of Education, Singapore

S1.8.3 Capturing Learning across Formal and Informal Contexts

Timothy D. Zimmerman, Rutgers University

S1.8.4 Construction of Science Discourse in an Extracurricular Science and Technology Project

Horace Webb, Georgia State University
 Anton Puvirajah, Georgia State University
 Geeta Verma, Georgia State University

Strand 7: Pre-service Science Teacher Education

S1.9 SC-Paper Set: Methods for Promoting Reflective Practice in Pre-Service Teacher Education

8:30am – 10:00am, Conference Room 407

Presenter:

Julia Clark, NSF

S1.9.1 Pre-Service Teacher Learning From Online, Videocase-Based Modules: Results from the Videocases for Science Teaching Analysis (ViSTA) Study

Kathleen Roth, BSCS
 Karen B. Givvin, UCLA
 Catherine Chen
 Meike Lemmens
 Helen Garnier, UCLA

S1.9.2 Lesson Study with Preservice Elementary Teachers: Perceptions on the Role of Peer Feedback in Supporting Reflective Practice

Ingrid S Weiland, Indiana University, Bloomington
 Valarie L. Akerson, Indiana University, Bloomington
 Meredith A. Park Rogers, Indiana University, Bloomington
 Khemmawadee Pongsanon, Indiana University, Bloomington

S1.9.3 Using Observation Prompts in the Elementary Field Placement

Felicia M. Mensah-Moore, Teachers College, Columbia University

S1.9.4 Reflection in Teacher Education: Exploring Preservice Science Teachers' Understanding and Implementation of Inquiry

Selcen S Guzey, University of Minnesota
 Gillian Roehrig, University of Minnesota
 Barb Billington, University of Minnesota

Strand 8: In-service Science Teacher Education

S1.10 SC-Paper Set: Science Teacher Communities 8:30am – 10:00am, Conference Room 408

President:

Ayelet Weizman, Weizmann Institute

S1.10.1 Examining Topic-Specific Professional Development in a Science Teacher Induction Program

Jeffrey J. Rozelle, Syracuse University
 Jodie A. Galosy, University of California at Davis
 Jamie N. Mikeska, Michigan State University
 Katie R. Green, Michigan State University
 Suzanne M. Wilson, Michigan State University

S1.10.2 Science Teachers as Reform Leaders in their Community

Ayelet Weizman, Haifa University
 Ayelet Egosi, Haifa University
 Lily Orland-Barak, Haifa University

S1.10.3 Teachers and Researchers Learning in Communities: Enhancing Praxis in STSE Education

Erminia G. Pedretti, OISE, University of Toronto
 Katherine Bellomo, University of Toronto

S1.10.4 Membership to a Teacher Professional Learning Community: A Stimulus for Teacher Movement from Central to Periphery

Viola Manokore, Michigan State University
 Gail Richmond, Michigan State University

Strand 9: Reflective Practice

S1.11 SC-Paper Set: Informing Practice

8:30am – 10:00am, Conference Room 409

President:

Amy E. Trauth-Nare, Indiana University

S1.11.1 What Does It Mean To Be Reflective Science Teacher Educators? What/How Can We Learn About Our Practice?

Deborah J. Trumbull, Cornell University
 Kimberly G. Fluet, University of Rochester

S1.11.2 Expanding the Action Research Process to Facilitate Transformation in the Teaching of Science

Kimberly A. Lebak, The Richard Stockton College of New Jersey
 Ron Tinsley, The Richard Stockton College of New Jersey

S1.11.3 A Teacher Inquiry Project: Teachers' Practices of Classroom Inquiry Informing Research on Teacher Knowledge and Learning

Youngjin Song, University of Northern Colorado
 Steve Oliver, University of Georgia

Strand 10: Curriculum, Evaluation, and Assessment

S1.12 SC-Paper Set: Science Curriculum, Instruction and Assessment: Perspectives of Students

8:30am – 10:00am, Conference Room 410

President:

Ling L. Liang, LaSalle University

S1.12.1 Conceptions of Science Assessment among Tenth Graders in Taiwan: A Phenomenographic Study

Min-Hsien Lee, National Taiwan University of Science and Technology
 Chin-Chung Tsai, National Taiwan University of Science and Technology

S1.12.2 What Do Students Know about Engineering and Technology? Effects of a Design Unit

Cathy P. Lachapelle, Museum of Science, Boston
 Brandon J. Orszulak, Museum of Science, Boston
 Alexandra Stein, Museum of Science, Boston
 Lily Zhang, Museum of Science, Boston
 Christine M. Cunningham, Museum of Science, Boston

S1.12.3 Improving Students' Attitudes toward Science: A Case Study of one High School Defying the Odds

Grady J. Venville, University of Western Australia
 Mary Oliver, University of Western Australia
 Nancy Longnecker, University of Western Australia
 Leonie Rennie, Curtin University of Technology

S1.12.4 Science Performance of English Language Learners: Findings from 1996, 2000, 2005 Science NAEP Assessments

Jerome M. Shaw, University of California, Santa Cruz

Strand 11: Cultural, Social, and Gender Issues

S1.13 SC-Paper Set: Gender and Retention in Science: Schooling Effects and Career Trajectories 8:30am – 10:00am, Conference Room 411

President:

Jane L. Lehr, California Polytechnic State University

S1.13.1 Gender Differences in the Timeline of Career Events for Physical Scientists

John T. Almarode, University of Virginia

Zahra Hazari, Clemson University

Robert H. Tai, University of Virginia

S1.13.2 Exploring the Relationship between Self-efficacy and Retention of Students, both Men and Women, in Introductory Physics

Vashti Sawtelle, Florida International University

Eric Brews, Florida International University

Laird Kramer, Florida International University

S1.13.3 Examining the Relationship between Single-Sex Experiences in High School Science and Science Career Choice

Zahra Hazari, Clemson University

Philip M. Sadler, Science Education Department Harvard

Smithsonian Center for Astrophysics Cambridge, Massachusetts

Gerhard Sonnert, Harvard

S1.13.4 Exploring the Experiences of Female Graduate Students in the Physical Sciences: A Comparative Study

Geoff Potvin, Clemson University

Erin Bauknight, Clemson University

Kimberly Cellucci, Clemson University

Robert H. Tai, University of Virginia

Strand 12: Educational Technology

S1.14 SC-Paper Set: Examining the Impact of Multimedia on Science Teaching and Learning 8:30am – 10:00am, Conference Room 412

President:

Diane Jass Ketelhut, Temple University

S1.14.1 How does Multimedia Integrated within a Planetary Science Course Help Students with Difficult Material?

Rebecca R. Deutscher, University of California at Berkeley

S1.14.2 Animated Movies in Science Education: Their Affect on Elementary School Students' Motivation To Learn Science and Achievements

Miri Barak, Technion - Israel Institute of Technology

Tamar Ashkar, Technion - Israel Institute of Technology

Yehudit Judy Dori, Technion - Israel Institute of Technology

S1.14.3 Integrating Virtual Laboratories with Hands-on Inquiry: The Roles of Perceptual Supports for Learning

Eva E. Toth, West Virginia University

Dana Schneider, Duquesne University, School of Education

Becky M. Morrow, Duquesne University

Lisa L. Ludvico, Duquesne University

S1.14.4 Science Process Skills through Interactive Software in Middle School Chilean Learners

Ruby Olivares, University of Chile

Jaime Sanchez, University of Chile

Strand 13: History, Philosophy, and Sociology of Science

S1.15 SC-Paper Set: Biology, Evolution, and Nature of Science

8:30am – 10:00am, Conference Room 413

President:

Catherine Koehler, Illinois Institute of Technology

S1.15.1 College Students' use of Science Content during Socioscientific Issues Negotiation: Evolution as a Prevailing Concept

Samantha R. Fowler, Clayton State University

Dana L. Zeidler, University of South Florida

S1.15.2 Influence of the Nature of Science Instruction on the Learning of Evolution: A Qualitative Study

Wilbert Butler, Tallahassee Community College

Sherry A. Southerland, Florida State University

S1.15.3 No Progress: The Rhetoric of Decline in a Regional Creationist Facility

Paul Wendel, Mansfield University

S1.15.4 Darwin and the Nature of Science: Investigating the Use of Knowledge, Belief, Acceptance, and Understanding in the Origin of Species

Mike U. Smith, Mercer University School of Medicine

Strand 14: Environmental Education

S1.16 SC-Paper Set: Urban Environments and Student Learning in Environmental Education
8:30am – 10:00am, Conference Room 414

President:

Peggy L. Preusch, Townson University

S1.16.1 Bouncing and Trapping the Sun's Rays: Seventh Grade Students' Mental Models of the Greenhouse Effect

Daniel P. Shepardson, Purdue University

Soyoung Choi, Purdue University

Dev Niyogi, Purdue University

Umarporn Charusombat, Purdue University

S1.16.2 Exploring Positionality in Urban Children's Sense of Place

Miyoun Lim, Georgia State University

Monday, March 22, 2010

S1.16.3 Investigating the Implementation of a Land Use Change Curriculum with Urban Middle School Learners

Alec M. Bodzin, Lehigh University

Co-Sponsored Session—External Policy and Relations Committee & Strand 15: Policy

S1.17 Administrative Symposium: "The Opportunity Equation: Transforming Mathematics and Science Education for Citizenship and the Global Economy": A Moment of Urgency and of Research Opportunity

8:30am – 10:00am, Conference Room 415

Discussant:

Steve Robinson, USDOE

Presenters:

Michele Cahill, Urban Education Carnegie Corporation of New York

Sharon J. Lynch, The National Science Foundation

Elizabeth A. Davis, University of Michigan

Break

10:00am – 10:30am

Salons E and F

Concurrent Session #2

10:30am – 12:00pm

Publications and Advisory Committee Sponsored Session

S2.1 Administrative Symposium: Publication in the Journal of Research in Science Teaching
10:30am – 12:00pm, Conference Room 501

Angela Calabrese Barton, Michigan State University

Joseph S Krajcik, University of Michigan

Strand 1: Science Learning, Understanding and Conceptual Change

S2.2 SC-Paper Set: Representational Reasoning
10:30am – 12:00pm, Conference Room 401

President:

Nikki Hanegan, Brigham Young University

S2.2.1 Identifying Cognitive Processes as Learners Engage With Multimedia Presentations

Michelle Cook, Clemson University

S2.2.2 Knowledge of Scale Construction for Graphing in Undergraduate Students

Cesar Delgado, University of Texas at Austin

S2.2.3 Effectiveness of Scientific Visualizations for Supporting Conceptual Development in High School Physics and Chemistry

David R. Geelan, The University of Queensland, Brisbane, Australia

Michelle M. Mukherjee, The University of Queensland, Australia

Brian Martin, The Kings University College, Canada

Peter Mahaffy, The Kings University College, Canada

S2.2.4 Student Summative Assessment in Science: The Effects of an Explicit Representational Focus

Bruce Waldrup, Monash University

Vaughan Prain, La Trobe University

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S2.3 Symposium: Questions and Insights about Blacks in K-Career Science Education: Complexities and Centrality of Contexts from African Diasporic Perspectives

10:30am – 12:00pm, Salon D

Presider:

Malcolm Butler, University of South Florida-Petersburg

Discussants:

Eileen R.C. Parsons, University of North Carolina at Chapel Hill

Mary M. Atwater, University of Georgia

Presenters:

Mary M. Atwater, University of Georgia

Eileen R.C. Parsons, University of North Carolina at Chapel Hill

Jennifer Adams, Brooklyn College-CUNY

Kabba Colley, Edinformatics, Vermont

Christopher Emdin, Teachers College, Columbia University

Shirley G. Key, University of Memphis

Jacqueline T. McDonnough, Virginia Commonwealth University

Obed Norman, Morgan State University

Wesley Pitts, Lehman College, CUNY

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S2.4 SC-Paper Set: Discussion and Interaction in Science Learning

10:30am – 12:00pm, Conference Room 402

Presider:

Phil Scott, University of Leeds

S2.4.1 What Student Talk Teaches Us: Findings from a Study of a Science Professional Development Model Incorporating Student Interaction Strategies

Therese B. Shanahan, University of California, Irvine

Lauren M. Shea, University of California, Irvine

S2.4.2 Engaging Students in Guided Science Inquiry Discussions: Elementary Teachers' Oral Strategies

Alandcom W. Oliveira, State University of New York at Albany

S2.4.3 Identifying Effective Feedback Practices on Student Learning: A Literature Synthesis

Maria Ruiz-Primo, University of Colorado Denver

Min Li, University of Washington

Yue Yin, University of Illinois, Chicago

Andrew E. Morozov, University of Washington

Satprit Kaur, University of Washington

Courtney Courtney, University of Washington

S2.4.4 A Model of Collaborative Discourse to Promote Participatory Classroom Culture and Literacy in a High-school Science Classroom

Jessica Mezei, Teachers College, Columbia University

Ann Rivet, Teachers College, Columbia University

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S2.5 SC-Paper Set: Science as a Catalyst for Interdisciplinary Learning

10:30am – 12:00pm, Conference Room 403

Presider:

Janell Catlin, Teacher College-Columbia University

S2.5.1 Biomusic: Science and Music Interdisciplinary Curriculum Development for the Elementary Classroom

Sarah Carrier, North Carolina State University

Eric N. Wiebe, North Carolina State University

Patricia Gray, University of North Carolina - Greensboro

David Teachout, University of North Carolina - Greensboro

S2.5.2 Teaching about Nature of Science and Scientific Inquiry Integrated With Language Arts at The Elementary Level

Hasan Deniz, University of Nevada Las Vegas

Valarie L. Akerson, Indiana University Bloomington

S2.5.3 To What Extent Do Science Trade Books Provide Vocabulary Support and Promote Inquiry?

Hagop Yacoubian, University of Alberta

Carolyn Freed, University of Alberta

Sun Joo Hur, University of Alberta

Yu Lei, University of Alberta

Michelle Miller, University of Alberta

Linda M. Phillips, University of Alberta

Stephen P. Norris, University of Alberta

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S2.6 SC-Paper Set: Strategies for Improving Student Learning

10:30am – 12:00pm, Conference Room 404

Presider:

William R. Veal, College of Charleston

S2.6.1 The Effect of Science Writing Heuristic Approach on Chemistry Achievement of 9Th Grade Students

Sevgi Kingir, Selcuk University
Omer Geban, Middle East Technical University
Murat Gunel, Ataturk University

S2.6.2 The Use of Learning Contracts on Tenth Grade Urban High School Student Motivation in Biology

Sean Kendall
Issam H. Abi-El-Mona

S2.6.3 Incidental Use of Concept Maps and Its Effects on Student Understanding of Optics

Roland Meijerink, Herbert Vissers College, Nieuw-Vennep (the Netherlands)
Jan T. van der Veen, University of Twente, Enschede (the Netherlands)

S2.6.4 The Effect of Macro-Micro-Symbolic Teaching on Grade Ten Students' Conceptual Understanding of Chemical Reactions

Lama Z. Jaber, American University of Beirut
Saouma BouJaoude, American University of Beirut

Strand 5: College Science Teaching and Learning (Grades 13-20)

S2.7 SC-Paper Set: Assessment of Student Learning and Faculty Teaching in College Science Courses

10:30am – 12:00pm, Conference Room 405

President:

Martin Geodhart, University of Groningen, The Netherlands

S2.7.1 A Way Forward for Mixing Quantitative and Qualitative Methods of Studying Problem Solving

Ozcan Gulacar, Southern Connecticut State University
Herb Fynewever, Calvin College

S2.7.2 Undergraduate Science Assessment in Context: A Case Study of a Biology Professor's Classroom Assessment Environment and Student Assessment Experiences

Michele H. Lee, University of Missouri
Aaron J. Sickel, University of Missouri

S2.7.3 Development of an Assessment Tool for Advanced Observational Skills

J. M. Landin, North Carolina State University

S2.7.4 University Faculty Assessments of Reformed Teaching and Learning Practices: Validating a New Measure

Lisa Martin-Hansen, Georgia State University
Chad D. Ellett, CDE Research
Judy Monsaas, University System of Georgia, Board of Regents
Kadir Demir, Georgia State University

S2.7.5 Students' Geocognition of Deep Time, Conceptualized in an Informal Educational Setting

Renee M. Clary, Mississippi State University
James H. Wandersee, Louisiana State University
Robert F. Brzuszek, Mississippi State University

Strand 6: Science Learning in Informal Contexts

S2.8 SC-Paper Set: Museums and School Field Trips

10:30am – 12:00pm, Conference Room 406

President:

Sandra T. Martell, U Wisconsin Milwaukee

S2.8.1 A Comparison of Views about Nature of Science Among Informal Science Educators and Exhibit Designers

Gary M. Holliday, Illinois Institute of Technology
Norman G. Lederman, Illinois Institute of Technology

S2.8.2 Teachers' Sources of Knowledge for Field Trip Practices

Bryan M. Rebar, Oregon State University

S2.8.3 Communicating Phylogeny: Evolutionary Tree Diagrams in Museums

Teresa E. MacDonald, University of Kansas Natural History Museum

S2.8.4 Experience with an Informal Science Center Exhibit on a Field Trip as Preparation for Future Learning

Bill Watson, The George Washington University

Strand 7: Pre-service Science Teacher Education

S2.9 SC-Paper Set: Pre-Service Teachers Learning To Teach Through Inquiry

10:30am – 12:00pm, Conference Room 407

President:

Meredith Houle, San Diego State

S2.9.1 Preservice Elementary Teachers' Adaptation of Science Curriculum Materials for Inquiry

Cory T. Forbes, University of Iowa College of Education

S2.9.2 Being In The Hot Spot: How Beginning Teachers' Describe Their Experiences Enacting Inquiry Within The Culture Of Schools?

Oliver Dreon, Millersville University
Scott McDonald, Penn State University

S2.9.3 Beyond "Repeating the Textbook" and "Problem Solving": Teacher Candidates Talk about Learning to Teach Physics

Shawn M. Bullock, University of Ontario Institute of Technology

S2.9.4 Promoting PCK Development in an Ecology-specific Methods Course: A Characterization of Teacher Educator's Practice

Danusa Munford, Universidade Federal de Minas Gerais, Brazil
Letícia M. Calab, Universidade Federal de Minas Gerais, Brazil
Paulina M. Barbosa, Instituto de Biociências, Brazil

Strand 8: In-service Science Teacher Education

S2.10 SC-Paper Set: Beliefs

10:30am – 12:00pm, Conference Room 408

Presider:

Lisa Brooks, Washington University

S2.10.1 Inquiry Professional Development: Can We Use Teacher Beliefs to Predict Who Will Enact Reform Practices?

Christine R. Lotter, University of South Carolina
Greg Rushton, Kennesaw State University
Jonathan Singer, University of Maryland, Baltimore County

S2.10.2 Teacher Beliefs about Teaching and Learning with a Focus on Teacher Beliefs about How Students Learn

Anita M. Martin, University of Illinois
Brian Hand, University of Iowa
Soonhye M. Park, University of Iowa

S2.10.3 Beginning Secondary Science Teachers in Their First Three Years of Teaching: Changes in Beliefs and Practices

Julie A. Luft, Arizona State University
Krista Adams, Arizona State University
Jonah Firestone, Arizona State University
Irasema B. Ortega, Arizona State University
Sissy S Wong, Arizona State University
Derek Fay, Arizona State University

S2.10.4 Learning and Transfer in a Complex Professional Development Setting: A Cross-Case Analysis of the Perceptions and Practices of Science Teachers

Lisa Brooks, Washington University in St Louis
Carol L. Stuessy, Texas A&M University

Strand 9: Reflective Practice

S2.11 SC-Paper Set: Professional Development

10:30am – 12:00pm, Conference Room 409

Presider:

Penny J. Gilmer, Florida State University

S2.11.1 Expectations to Success—The Contrasting Journeys of a Teacher and His Coach

William L. Romine, University of Missouri
Andrew West, University of Missouri
Mark J. Volkmann, University of Missouri

S2.11.2 Addressing Socioscientific Issues in the Science Classroom: Lessons Learnt in Lesson Study

Isha DeCoito, York University
Maurice DiGiuseppe, University of Ontario

S2.11.3 Embedding Formative Assessment into Middle Level Problem-Based Science: A Participatory Action Research Study

Amy E. Trauth-Nare, Indiana University
Gayle A. Buck, Indiana University
Anndra Morgan, Monroe County Community School Corporation

S2.11.4 Building Professional Learning Communities for Developing Dialogic Practice and Argumentation in Science

Shirley Simon, Institute of Education London

Strand 10: Curriculum, Evaluation, and Assessment

S2.12 Administrative Symposium: Alignment among the Science Content Standards, Textbooks, and Standardized Tests: the Chinese Approach

10:30am – 12:00pm, Conference Room 410

Xiufeng Liu, State University of New York at Buffalo
Xian Chen, Nanjing Normal University
Yu-ying Guo, Beijing Normal University
En-shan Liu, Beijing Normal University
Lei Wang, Beijing Normal University
Zu-hao Wang, East China Normal University
Joe Engemann, Brock University

Strand 11: Cultural, Social, and Gender Issues**S2.13 SC-Paper Set: Language, Culture, and Identity: Pedagogical Implications****10:30am – 12:00pm, Conference Room 411****Presenter:**

Carol Brandt, VirginiaTech University

S2.13.1 Testing a Model for Developing Content Knowledge and Academic Language in Science: The 5 Rs for Teaching Ella

Molly H. Weinburgh, Texas Christian University

Cecilia Silva, Texas Christian University

Tammy Oliver, Texas Christian University

S2.13.2 Access and Equity: A Teacher's Role in Border Crossing

Adriane M. Slaton, Michigan State University

S2.13.3 Cultural Relevance in Science Pedagogy (CRISP): Results of an Action Research Network

Mistilina Sato, University of Minnesota

Stacy A. Ernst, University of Minnesota

S2.13.4 Working Together For Student Success: The Development of a Culturally-Relevant Science Curriculum for a Tribal College

Jessie C. Antonellis

Monday, March 22, 2010

Strand 12: Educational Technology**S2.14 SC-Paper Set: Evaluating Technology Enhanced Learning Tools****10:30am – 12:00pm, Conference Room 412****Presenter:**

Roger Taylor, Vanderbilt University

S2.14.1 The Life Cycles of Technological Tools: Implications for the Science Classroom

Noemi Waight, University at Buffalo

Fouad Abd-El-Khalick, University of Illinois at Urbana-Champaign

S2.14.2 Wiimote Interactive Whiteboards: Outcomes from Three Undergraduate Preservice Student Research Projects

Brian C. Baldwin, Kean University

S2.14.3 Assessing the Technology-Supported Science Learning Environment

Adit Gupta, Model Institute of Education & Research, India

Rekha B. Koul, Curtin University of Technology, Perth, Australia

S2.14.4 Designing and Evaluating Web-Based Interactive Learning Objects

Khang-Miant Sing, National Institute of Education, Singapore

Benson Soong, University of Cambridge, United Kingdom

Strand 13: History, Philosophy, and Sociology of Science**S2.15 SC-Paper Set: Scientists, Teachers, and Epistemology of Science****10:30am – 12:00pm, Conference Room 413****Presenter:**

Michiel van Eijck

S2.15.1 Biotechnology and Risk: Perceptions of Science Instructors

Grant E. Gardner, North Carolina State University

Gail Jones, North Carolina State University

S2.15.2 Purposeful and Targeted Use of Scientists to Support In-Service Teachers' Understanding and Teaching of Scientific Inquiry and Nature of Science

Kevin J. White, Illinois Institute of Technology

Norman G. Lederman, Illinois Institute of Technology

S2.15.3 The Influence of an Authentic Context on Enhancing Teachers' Understandings of Nature of Science

Barbara A. Crawford, Cornell University

Xenia S Meyer, Cornell University

Daniel K. Capps, Cornell University

S2.15.4 Interactions between Inquiry Experiences and Epistemology in Understanding the Nature of Science in an Undergraduate Research Experience

Maya R. Patel, Cornell University

Deborah J. Trumbull, Cornell University

Barbara A. Crawford, Cornell University

Strand 14: Environmental Education**S2.16 Administrative Symposium: The Intersection of Research in Science Education and Environmental Education****10:30am – 12:00pm, Conference Room 414**

Michael Barnett, Boston College

Sheron Mark, Boston College

Alec M. Bodzin, Lehigh University

Charles W. Anderson, Michigan State University

Kristin L. Gunckel, The University of Arizona

Beth Covitt, University of Montana

Lindsey Mohan, Michigan State University

Hui Jin, Michigan State University

Rita Hagevik, The University of Tennessee

Ioana Badara, University of Tennessee

Teddie Phillipson-Mower, University of Louisville

Co-Sponsored Session—External Policy and Relations Committee & Strand 15: Policy**S2.17 Administrative Symposium: A Panel Discussion: How might NARST fit into the “The Opportunity Equation: Transforming Mathematics and Science Education for Citizenship and the Global Economy”?****10:30am – 12:00pm, Conference Room 415*****Presiders:***

Sharon J. Lynch, National Science Foundation

Elizabeth A. Davis, University of Michigan

Presenters:

Richard A. Duschl, Pennsylvania State University

Janice Earle, National Science Foundation

Francis Eberle, National Science Teachers Association

Jo Ellen Roseman, AAAS Project 2061

Sherry A. Southerland, Florida State University

Martin Storesdieck, National Academies of Science

NARST Business Meeting

Free box lunch for first 100 participants who register to attend.

12:00pm – 12:45pm, Salon C**Concurrent Session #3****1:00pm – 2:30pm****Presidential Invited Session****S3.1 Symposium: Learning Progressions and Pathways****1:00pm – 2:30pm, Conference Room 501**

Richard A. Duschl, Penn State University

Richard Lehrer, Peabody College Vanderbilt University

Tom Corcoran, Teachers College Columbia University

Ravit Duncan, Rutgers

Alicia Alonzo, Michigan State University

Cynthia Hamen Farrar, The College Board

Publications and Advisory Committee Sponsored Session**S3.2 Administrative Symposium: Minding the Research–Practice Gap: Attending to the Dialogic Nature of Research AND Practice****1:00pm – 2:30pm, Salon C*****Discussant:***

Carla Zembal-Saul, Penn State University

Panel Members:

Julie A. Luft, Arizona State University

John Settlage, University of Connecticut

Joe Krajcik, University of Michigan

Scott McDonald, Penn State University

Presenters:

Melissa Braaten, University of Washington - Seattle, WA

Bethany Sjoberg, Technology, Engineering, and Communications High School on the Evergreen Campus Highline, WA

Michelle Brown, O.Henry Middle School

Gretchen Kehrberg, O.Henry Middle School

Meena Balgopal, School of Education, Colorado State University

Shaun Cornwall, Shepardson Elementary School, Fort Collins, CO

Strand 1: Science Learning, Understanding and Conceptual Change**S3.3 SC-Paper Set: Learning and Argumentation in the Global Context****1:00pm – 2:30pm, Conference Room 401*****Presider:***

Kristy Loman Chiodo, University of South Florida

S3.3.1 Vygotsky and Primary Science: Theory into Practice

Colette Murphy, Queens University Belfast

S3.3.2 Elementary Children's Preferences for Causal Justification

Aylin Çam, Middle East Technical University
William Sandoval, University of California, Los Angeles

S3.3.3 Profiling and Interpreting East African Students' Science Learning Worldviews

Samson M. Nashon, University of British Columbia
David Anderson, University of British Columbia

S3.3.4 How Do Students' Argumentations Depend On Their Conceptual Understanding And Vice Versa?

Tanja Riemeier, Leibniz University Hannover, Germany
Claudia von Aufschnaiter, Justus-Liebig-University Gießen, Germany
Jan Fleischhauer, Justus-Liebig-University Gießen, Germany
Christian Rogge, Justus-Liebig-University Gießen, Germany

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S3.4 Symposium: What can we Learn from Classroom Videos? Physics Instruction in Finland, Germany, and Switzerland Compared

1:00pm – 2:30pm, Salon D

Knut Neumann, Leibniz-Institute for Science Education (IPN) Kiel
Cornelia Geller, University Duisburg-Essen
Jussi Helaakoski, University of Jyväskylä
Melanie Keller, University Duisburg-Essen
Jennifer Olszewski, University Duisburg-Essen
Hans E. Fischer, University Duisburg-Essen
Jouni Viiri, University of Jyväskylä

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S3.5 SC-Paper Set: Exploring and Assessing Argumentation in Classrooms

1:00pm – 2:30pm, Conference Room 402

President:

Patrick Enderle, Florida State University

S3.5.1 Explanation, Argument and Evidence in Science, Science Class, and the Everyday Lives of Fifth Grade Students

Katherine L. McNeill, Boston College

S3.5.2 Questioning and Argumentation During Group Discussions in Science: Discursive Interactions Associated with Productive Discourse

Christine Chin, National Institute of Education, Singapore
Jonathan F. Osborne, Stanford University

S3.5.3 Assessment of Scientific Argumentation in the Classroom: An Observation Protocol

Patrick Enderle, Florida State University
Joi P. Walker, Florida State University
Catherine Dorgan, Florida State University
Victor Sampson, Florida State University

S3.5.4 Argument-Based Activities in the Wake of the National Science Education Standards: A Review of Argument Activities in K-12 Science Classrooms from 1996-2009

Andy R. Cavagnetto, Binghamton University-SUNY

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S3.6 SC-Paper Set: Assessment

1:00pm – 2:30pm, Conference Room 403

President:

Meredith Houle, San Diego State University

S3.6.1 Development of an Oral Protocol to Assess Young Children's Views of Science

Judith S. Lederman, Illinois Institute of Technology
Norman G. Lederman, Illinois Institute of Technology

S3.6.2 The Development of an Instrument for Assessing Preschoolers' Attitudes toward Science

Mia D. Dubosarsky, University of Minnesota

S3.6.3 Development of a Measure to Guide and Assess Inquiry Science Lessons by Pre-service and In-service Teachers in Elementary Classrooms

Betty J. Young, University of Rhode Island
Kathleen Peno, University of Rhode Island
Elaine S Mangiante, University of Rhode Island
Minsuk Shim, University of Rhode Island
Barbara Fitzsimmons, Morris College South Carolina
Judith K. Paolucci, Yarmouth Public Schools, Maine
Sharon K. Lee, Rhode Island Department of Education

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S3.7 SC-Paper Set: Technology for Science Teaching

1:00pm – 2:30pm, Conference Room 404

President:

Gouranga Saha, Lincoln University

S3.7.1 Examining the Use of Laboratory Activities in Secondary Science Online

Kent J. Crippen, University of Nevada Las Vegas
Leanna M. Archambault, Arizona State University
Cynthia L. Kern, University of Nevada Las Vegas

S3.7.2 Impact of GK12 Fellows on Teachers' Pedagogical Practices and Students' Science Attitudes

Kathryn Scantlebury, University of Delaware

George Watson, University of Delaware

John Madsen, University of Delaware

Jane B. Kahle, Miami University

S3.7.3 Scaffolded Development of Representational Skills in Chemistry: An Instructional Model to Integrate Digital Technologies

Annette I. Hilton, The University of Queensland, Australia

S3.7.4 Everyone Needs a PET – A Predictive Evaluation Tool to Help Teachers Select Technology

Michelle M. Mukherjee, The University of Queensland, Australia

Strand 5: College Science Teaching and Learning (Grades 13-20)

S3.8 SC-Paper Set: Professional Development and Resources for College Faculty and Teaching Assistants

1:00pm – 2:30pm, Conference Room 405

Presider:

Ioana Badara, University of Tennessee

S3.8.1 Synergistic Interactions of K-16 Partnership Work, Research, and Teaching in Higher Education Science Faculty Members

Deborah Pomeroy, Arcadia University

S3.8.2 The Role of Professional Community in Promoting Changes in College Science Instruction and Supporting Successful University-School Partnerships

Stacy Olitsky, Math and Science Partnership of Greater Philadelphia

S3.8.3 Reforming Undergraduate Science Courses: How Much Does Funding Matter?

Corinne Lardy, San Diego State University

Cheryl L. Mason, San Diego State University

S3.8.4 Fostering the Facilitation of Collaboration: An Inquiry into Graduate Teaching Assistant Professional Development

Bridget Brennan, University of Delaware

Strand 6: Science Learning in Informal Contexts

S3.9 SC-Paper Set: Investigating Informal Science Education on a Large-Scale

1:00pm – 2:30pm, Conference Room 406

Presider:

Leonie Rennie, Curtin University

S3.9.1 Measuring the Impact of a Science Center on Its Community

John H. Falk, Oregon State University

S3.9.2 A Multisited Ethnography of Diverse Urban Youths' Forms of Participation and Intercultural Positioning in Community Science Programs

Irene Rahm, Université de Montréal, Canada

Fasal Kanouté, Université de Montréal, Canada

Anne Gorry, Université de Montréal, Canada

Itzel Vazquez, Université de Montréal, Canada

Audrey Lachaine, Université de Montréal, Canada

S3.9.3 The Use of the Nature of Scientific Knowledge Scale as an Entrance Assessment in a Large, Online Citizen Science Project

Aaron Price, Tufts University

S3.9.4 The Impact of Free-Choice STEM Experiences on Girls' Interest, Engagement, and Participation in Science Communities, Hobbies and Careers: Results of Phase 2

Lynn D. Dierking, Oregon State University

Dale McCreedy, Franklin Institute Science Museum

Strand 7: Pre-service Science Teacher Education

S3.10 SC-Paper Set: Content Specific Issues in Pre-Service Teacher Education

1:00pm – 2:30pm, Conference Room 407

Presider:

Claire Hodkin, University of Texas

S3.10.1 Attitudes of Teacher Students towards Fostering Competence-Oriented Teaching of Biology

Doris Elster, University of Vienna

S3.10.2 Backwards Faded Scaffolding Impact on Pre-Service Teachers' Cognition in Astronomy

Stephanie J. Slater, University of Wyoming

Daniel J. Lyons, University of Wyoming

Timothy F. Slater, University of Wyoming

S3.10.3 Examining Student Teachers' Use of Atomic Models in Explaining Subsequent Ionisation Energy Values

Ruth Wheeldon, Institute of Education, London

S3.10.4 Towards Treating Chemistry Teacher Candidates as Human

Brian Lewthwaite, University of Manitoba

Rick Wiebe, St James-Assiniboia School Division

Strand 8: In-service Science Teacher Education

S3.11 SC-Paper Set: Reasoning and Modeling

1:00pm – 2:30pm, Conference Room 408

President:

Leigh K. Smith, Brigham Young University

S3.11.1 Teaching for Transfer: Transforming Knowledge into Practice

Leigh K. Smith, Brigham Young University

Pamela Cantrell, Brigham Young University

S3.11.2 What Makes For An “Exemplary” Science Lesson?: Model Based Reasoning And Science Teachers' Evolving Understanding Of Curriculum

Cynthia Passmore, University of California, Davis

Patrick F. Dowd, University of California, Davis

Connie J. Hvidsten, University of California, Davis

Lin Xiang, University of California, Davis

Arthur C. Beauchamp, University of California, Davis

S3.11.3 Teacher Learning: Co-Constructing An Understanding Of Model-Based Reasoning And Its Implementation In Secondary Classroom Contexts

Connie J. Hvidsten, University of California, Davis

Cynthia Passmore, University of California, Davis

S3.11.4 Hat Are The Differences Between Science Majored And Non-Science Majored In-Service Teachers' Knowledge About Functions Of Models And Modeling Processes?

Jing-Wen Lin, Taipei Municipal University of Education

Hsiu-Fen Lin, Taipei Municipal University of Education

Yu-Lun Wu, Taipei Municipal University of Education

Strand 9: Reflective Practice

S3.12 SC-Paper Set: Uses of Technology

1:00pm – 2:30pm, Conference Room 409

President:

Shirley Simon, University of London

S3.12.1 Cognitive Presence in E-mail Listserv: Secondary Teachers' Reflective Discourses on Food and Nutrition Instruction

Ting-Fang Hsu, Indiana University

S3.12.2 Research into Practice: Using Digital Video to Foster Pre-Service Science Teachers' Collaborative Reflection around Scientific Inquiry

Len Newton, The University of Nottingham, UK

Pete Sorensen, The University of Nottingham, UK

Strand 10: Curriculum, Evaluation, and Assessment

S3.13 SC-Paper Set: Developing Standards-Aligned Items to Assess Student Understanding

1:00pm – 2:30pm, Conference Room 410

President:

George E. DeBoer, AAAS

S3.13.1 Probing Middle and High School Students' Understanding of the Forms of Energy, Energy Transformation, Energy Transfer, and Conservation of Energy Using Content-Aligned Assessment Items

Cari F. Herrmann-Abell, AAAS Project 2061

George E. DeBoer, AAAS Project 2061

S3.13.2 Using Content-Aligned Assessments to Probe Middle School Students' Understanding of Fundamental Concepts for Weather and Climate

Jill A. Wertheim, AAAS/Project 2061

George E. DeBoer, AAAS/Project 2061

S3.13.3 Testing the Validity of an Approach for Developing High Quality Assessment Items in Middle School Science

George E. DeBoer, AAAS Project 2061

Cari F. Herrmann-Abell, AAAS Project 2061

Jill A. Wertheim, AAAS Project 2061

S3.13.4 Probing Students' Ideas about Models Using Standards-Based Assessment Items

Ted Willard, AAAS Project 2061

Jo Ellen Roseman, AAAS Project 2061

Strand 11: Cultural, Social, and Gender Issues

S3.14 SC-Paper Set: Constructing Views of Self and Science through Classroom Discourse

1:00pm – 2:30pm, Conference Room 411

President:

Michiel van Eijck, Eindhoven University of Technology

S3.14.1 Exploring Urban African-American Girls' Understandings of the Nature of Science Through the Use of Worldview Theory

Gayle A. Buck, Indiana University-Bloomington
Cassie F. Quigley, Indiana University-Bloomington
Nicole Beeman-Cadwallader, Indiana University-Bloomington

Valarie L. Akerson, Indiana University-Bloomington

S3.14.2 Interplay of Discourses (D / D1) as Third grade Urban and Suburban Students Learn Science

Carmen Mendoza, University of Cincinnati

S3.14.3 Leveraging Students' Everyday Resources: A Microanalysis of Classroom Interactions in a 4th Grade Lesson

Blakely K. Tsurusaki, Washington State University

S3.14.4 Students' Subject Positioning According to Science Teaching Modalities in Terms of Discourse Register and Language Code

Seung-Ho Maeng, Seoul National University
Chan-Jong Kim, Seoul National University

Strand 12: Educational Technology

S3.15 SC-Paper Set: Technology, Teacher Learning, and Teacher Practice

1:00pm – 2:30pm, Conference Room 412

President:

Miri Barak, Technion

S3.15.1 Using Video Games to Support Pre-Service Elementary Teachers Learning of Basic Physics Principles

Janice L. Anderson, University of North Carolina at Chapel Hill
Michael Barnett, Boston College

S3.15.2 Can A Digital Switchover In Primary Science Switch On The Learner?

John F. McCullagh, Stranmillis University College
Belfast Northern Ireland
Julian G. Greenwood, Stranmillis University College
Belfast Northern Ireland

S3.15.3 Learning in Context: Technology Integration in a Teacher Preparation Program Informed by Situated Learning Theory

Jennifer L. Maeng, University of Virginia
Randy L. Bell, University of Virginia

S3.15.4 Using Peer-Driven Web-based Formative Assessment to Improve Students' e-Learning Effectiveness

Tzu-Hua Wang, National HsinChu University of Education, Taiwan

Strand 13: History, Philosophy, and Sociology of Science

S3.16 Administrative Symposium: Putting Nature of Science Research into Classroom Practice: Real Teachers...Real Teaching

1:00pm – 2:30pm, Conference Room 413

Discussant:

Robin Millar, University of York

Presenters:

Valarie L. Akerson, Indiana University
Robert Pearson, Eddyville Schools, Oregon
Alice Siu Ling Wong, The University of Hong Kong
Ho Yin Lie, Po Kok Secondary School, Hong Kong
Ellen Granger, Florida State University, Florida
Karen Rose, Rickards High School, Florida
Norman G. Lederman, Illinois Institute of Technology
Judith S. Lederman, Illinois Institute of Technology
Norman G. Lederman, Illinois Institute of Technology
Judith S. Lederman, Illinois Institute of Technology
Renee' Schwartz, Western Michigan University
Sherry A. Southerland, Florida State University

Strand 14: Environmental Education

S3.17 SC-Paper Set: Teachers' Impacts on Environmental Education

1:00pm – 2:30pm, Conference Room 414

President:

Carol Brandt, Virginia Tech

S3.17.1 Investigation of Pre-Service Science Teacher's Beliefs Regarding the Nature of Environmental Knowledge

Elif Adibelli, Middle East Technical University
Ozgul Yilmaz-Tuzun, Middle East Technical University

S3.17.2 Revitalization of the Shared Commons: Implications for Eco-Justice and Place-Based Education

George E. Glasson, Virginia Polytechnic Institute and State University

S3.17.3 Exploring Science Teachers' Affinity for Nature

Charles J. Rop, The University of Toledo

S3.17.4 The Piloting of Two Instruments to Measure Prospective and Practicing Teachers' Understanding of and Attitudes about Global Climate Change

Julie Lambert, Florida Atlantic University
 Abdou Ndoeye, University of North Carolina Wilmington
 Cyndy Leard, FutureVision, Inc.
 Joan Lindgren, Florida Atlantic University
 Laura Cottongim, University of Hawaii

Strand 15: Policy

S3.18 SC-Paper Set: Elementary School Science and NCLB: Challenges and Responses

1:00pm – 2:30pm, Conference Room 415

President:

Sarah Carrier, NCSU

S3.18.1 District Leadership and Policy for Science Education under NCLB: The Use of K-12 Departments to Support Elementary Science Education

Christopher L. Miller, University of Illinois at Chicago

S3.18.2 Toward a Curricular Policy for Advancing School Reform by Integrating Reading Comprehension within Time-Expanded Science Instruction in Grades K-5

Michael R. Vitale, East Carolina University
 Nancy R. Romance, Florida Atlantic University

S3.18.3 Elementary Teachers' Beliefs about Teaching Science: Examining the Impact of Pre/Post NCLB Testing in Science

Andrea R. Milner, Adrian College
 Toni A. Sondergeld, Bowling Green State University
 Kadir Demir, Georgia State
 Charlene M. Czerniak, The University of Toledo
 Carla C. Johnson, University of Cincinnati

Concurrent Session #4

2:45pm – 4:15pm

S4.1 Administrative Symposium: The NARST Linking Science Educators Program (LSEP): Enhancing Capacity Building in Science Education in Developing Countries

2:45pm – 4:15pm, Conference Room 501

President:

Mei-Hung Chiu, National Taiwan Normal University, Taiwan

Presenters:

William C. Kyle, Jr., University of Missouri-St. Louis
 Astrid T. Sinnes, Norwegian University of Life Sciences, Norway
 Mercy Kazima, Chancellor College, Malawi
 Dorothy Nampota, Chancellor College, Malawi
 Uchenna Udeani, University of Lagos, Nigeria
 John E. Penick, Sangari, Brasil
 Mei-Hung Chiu, National Taiwan Normal University, Taiwan

Equity and Ethics Committee Sponsored Session S4.2 Administrative Symposium: Equity and Ethics Scholar Symposium: Presenting Examples of Research into Practice and Practice Informing Research

2:45pm – 4:15pm, Salon D

Discussant:

Julie Bianchini, University of California, Santa Barbara

Presenters:

Mamta Singh, Texas State University
 Joi Merritt, University of Michigan
 Fran Mateycik, The Pennsylvania State University, Altoona
 Rashmi Kumar, University of Pennsylvania
 Younkyeong Nam, University of Minnesota
 Femi Otulaja, The City University of New York

Strand 1: Science Learning, Understanding and Conceptual Change

S4.3 SC-Paper Set: Learning in Physics

2:45pm – 4:15pm, Conference Room 401

President:

Laird Kramer, Florida International University

S4.3.1 Concept Networks Organizing Knowledge for Purposes of Physics Teacher Education

Ismo T. Koponen, University of Helsinki, Finland
 Maija Pehkonen, University of Helsinki, Finland

S4.3.2 Cognition in Tackling an Unfamiliar Conceptual Physics Problem

David Schuster, Western Michigan University

Adriana Undreiu, University of Virginia's College at Wise

S4.3.3 Facilitating Students' Problem Solving Across Representations in Introductory Physics

Dong-Hai Nguyen, Kansas State University

N. Sanjay Rebello, Kansas State University

S4.3.4 Public Physics Lectures as an Instructional Resource: Tracing Changes in Students' Knowledge

Shulamit Kapon, University of California, Berkeley

Uri Ganiel, Weizmann Institute of Science

Bat-Sheva Eylon, Weizmann Institute of Science

Strand 1: Science Learning, Understanding and Conceptual Change

S4.4 SC-Paper Set: Students' Learning in the Biological Sciences

2:45pm – 4:15pm, Conference Room 413

President:

Lisa Brooks, Washington University

S4.4.1 A More Fine-Grained Measure of Students' Acceptance of Evolution: Development of The Inventory of Student Evolution Acceptance– I-SEA

Sherry A. Southerland, Florida State University

Louis S Nadelson, Boise State University

S4.4.2 Differentiation and Development of Five Levels in Scientific Inquiry Skills: A Longitudinal Assessment of Biology Students in Grade 5 to 10

Andrea Moeller, Justus-Liebig-University, Germany

Stefan Hartmann, Justus-Liebig-University, Germany

Juergen Mayer, Justus-Liebig-University Giessen

S4.4.3 The Impact of Classroom Argumentation about Socio-scientific Issues on High School Students' Understanding of Genetics

Vaille M. Dawson, Curtin University

Grady J. Venville, University of Western Australia

S4.4.4 "Ascending the Pyramid": Levels of Systems Thinking amongst 10th Grade Students while Studying Human Biology

Jaklin Tripto, Ben Gurion University of the Negev, Israel

Orit Ben-Zvi Assaraf, Ben Gurion University of the Negev, Israel

Anat Yarden, Weizmann Institute of Science, Israel

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S4.5 SC-Paper Set: Agency and Equity in Science Classrooms

2:45pm – 4:15pm, Conference Room 402

President:

Carrie T. Tzou, University of Washington

S4.5.1 The Impact of the SETGO (Science, Engineering, and Technology Gateway of Ohio) Program Mentoring on Student Attitude Changes and Retention

Tracy L. Huziak-Clark, Bowling Green State University

Moria van Staaden, Bowling Green State University

Anne Bullerjahn, Owens Community College

S4.5.2 Helping Minority Students Get into the Game: Research Outcomes of a Technology-Enhanced STEM Development Program

Sheron Mark, Boston College

David Blustein, Boston College

Michael Barnett, Boston College

Emily Hoffman, Urban Ecology Institute

S4.5.3 Discourse in Science Classrooms: The Relationship between Teacher Perceptions and their Practice

Diane Pimentel, Boston College

Katherine L. McNeill, Boston College

S4.5.4 Students Discussing Science: Individual and Collective Agency Challenging Structure and (Re) Shaping Identities in Science Classrooms

Lilian Pozzer-Ardenghi, McGill University

Gale Seiler, McGill University

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S4.6 SC-Paper Set: Curriculum and Content Knowledge

2:45pm – 4:15pm, Conference Room 403

President:

Therese B. Shanahan, UC Irvine

S4.6.1 Elementary Science Kits: Differential Use for Instruction and Assessment

Laura Robertson, North Carolina State University

Gail Jones, North Carolina State University

Grant E. Gardner, North Carolina State University

Sharon Dotger, Syracuse University

S4.6.2 Using Multiple Representations as a Means of Accessing Elementary Teachers' Insights and Misconceptions About Science Principles

Suzanne M. Levine, University at Albany
Cheryl Sheehan, University at Albany
Audrey B. Champagne, University at Albany
Vicky L. Kouba, University at Albany

S4.6.3 The Particulate Model of Matter – An Instructional Challenge for Primary Education (Sixth Grade)

Georgios Tsapralis, University of Ioannina
Paraskevi Dalaouti, Primary State Education, Ioannina, Greece

S4.6.4 Comparing Reform-Based and Traditional Curricula in a Large-Scale, Randomized Cluster Design Study: The Interaction between Curriculum and Teachers' Knowledge and Beliefs

Yavuz Saka, Florida State University
Ellen M. Granger, Florida State University
Todd H. Bevis, Florida State University
Sherry A. Southerland, Florida State University

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S4.7 SC-Paper Set: Developing, Assessing, and Describing Science Teachers' Pedagogical Content Knowledge

2:45pm – 4:15pm, Conference Room 404

Presenter:

David R. Geelan, The University of Queensland

S4.7.1 Improved Science Assessments Using Student Perceptions

Rekha B. Koul, SMEC, Curtin University of Technology

S4.7.2 Teachers' Approaches to Teaching Biological Evolution and the Nature of Science

Lisa A. Donnelly, Kent State University

S4.7.3 Examining Experienced Mentor Teachers' Pedagogical Content Knowledge for Teaching Osmosis and Diffusion

Deanna M. Lankford, University of Missouri Columbia, Missouri
Patricia M. Friedrichsen, University of Missouri Columbia

S4.7.4 Development and Evaluation of an Instrument for Measuring Biology Teachers' Pedagogical Content Knowledge (PCK)

Stephan Schmelzing, University Duisburg-Essen
Stefanie Wuesten, University Duisburg-Essen
Angela Sandmann, University Duisburg-Essen
Birgit Neuhaus, University LMU

Strand 5: College Science Teaching and Learning (Grades 13-20)

S4.8 SC-Paper Set: Research Experiences for Undergraduates

2:45pm – 4:15pm, Conference Room 405

Presenter:

Toni A. Sondergeld, Bowling Green State University

S4.8.1 Assessing the Educational Contribution of the International Genetically Engineered Machine [iGEM] Research Project: Students' and Mentors' Perspective

Yehudit Judy Dori, Technion, Israel Institute of Technology and
Massachusetts Institute of Technology
Gili Marbach-Ad, University of Maryland
Natalie Kuldell, Massachusetts Institute of Technology

S4.8.2 Student Learning Gains through Undergraduate Research Experiences with Two-Year College Students

Jeffrey S Carver, West Virginia University
Morna R. Brothers, Harold Washington College
Thomas Dowd, William Rainy Harper College
Kate Edler, Illinois State University
Gregory Ferrence, Illinois State University
Yvonne Harris, William Rainy Harper College
Thomas B. Higgins, Harold Washington College
Roger House, William Rainy Harper College
William Hunter, Illinois State University
Stephanie Persson, Illinois State University

S4.8.3 Does Chem-Research Make a Difference?

Ted M. Clark, The Ohio State University
Jane B. Kahle, Miami University
Sarah B. Woodruff, Miami University
Yue Li, Miami University

S4.8.4 Undergraduate Research Experiences from a Longitudinal Perspective

Joseph A. Harsh, Indiana University
Adam V. Maltese, Indiana University
Robert H. Tai, University of Virginia

Strand 5: College Science Teaching and Learning (Grades 13-20)

S4.9 SC-Paper Set: Learning and Retention in Undergraduate Chemistry

2:45pm – 4:15pm, Conference Room 414

Presenter:

Erika G. Offerdahl, North Dakota State University

S4.9.1 Designing and Evaluating a Teaching Intervention in Chemical Kinetics: Towards Research Evidence-Based Practice

Gultekin Cakmakci, Hacettepe University, Turkey
Cemil Aydogdu, Hacettepe University, Turkey

S4.9.2 Concurrent Enrollment in General Chemistry Lecture and Laboratory Decreases Withdrawal Rates and Increases Final Grades in the Lecture

Rebecca L. Matz, University of Michigan
Edward D. Rothman, University of Michigan
Joseph S Krajcik, University of Michigan
Mark M. Banaszak Holl, University of Michigan

S4.9.3 Academic Performance in Organic Chemistry: A Longitudinal Examination

Evan Szu, Stanford University
Kiruthiga Nandagopal, Stanford University
Richard J. Shavelson, Stanford University
Enrique J. Lopez, Stanford University
Geannine W. Hill, Pacific Graduate School
Maureen Scharberg, San Jose State University

Strand 6: Science Learning in Informal Contexts

S4.10 SC-Paper Set: Investigations of Affect in Informal Settings

2:45pm – 4:15pm, Conference Room 406

President:

Shawn Rowe, Oregon State University

S4.10.1 High School and College Students' Evaluations of Scientific Media Reports: Questions Asked and Knowing What to Do with the Answers

Connie A. Korpan, Grande Prairie Regional College

S4.10.2 Raising Interest in Science Careers through Informal After-School Experiences Raising Interest in Science Careers through Informal After-School Experiences

Lorraine Savage, Temple University
Diane Jass Ketelhut, Temple University
Susan J. Varnum, Temple University
Judith Stull, Temple University

S4.10.3 Changes in Views of Scientists and Nature of Science: A Case Study of Middle School All Female Science Camp

Kristen J. Molyneaux, National High Magnetic Field Laboratory
Roxanne Hughes, Florida State University
Pat Dixon, National High Magnetic Field Laboratory

S4.10.4 When Was the Last Time You Saved a World? Children's Informal Science Learning in a Multi-User Virtual Environment (MUVE)

Sherman Rosenfeld, The Weizmann Institute of Science
Ron Blonder, The Weizmann Institute of Science

Strand 7: Pre-service Science Teacher Education

S4.11 SC-Paper Set: Features & Effects of Pre-Service Teacher Education Reform

2:45pm – 4:15pm, Conference Room 407

President:

Cory T. Forbes, University of Iowa

S4.11.1 Can a UTeach-type Teacher Preparation Program Reduce Science Expert Blind Spot by Teaching the Inquiry Cycle?

David E. Kanter, Temple University
Teresa Chen, Temple University

S4.11.2 The Impact of Critical Learning Experiences on Science Teacher Development

Monica J. Young, Syracuse University
John W. Tillotson, Syracuse University
Glenn R. Dolphin, Syracuse University
Lauren Jetty, Syracuse University

S4.11.3 Systemic Reform in Pre-Service Science Teacher Education and Its Impact across the K-16 Educational Continuum

Margaret G. Shroyer, Kansas State University- College of Education
Amanda R. Morales, Kansas State University-College of Education
Cindi K. Dunn, Office of Educational Innovation and Evaluation
Cecilia Hernandez, Kansas State University

S4.11.4 Teaching About Teaching Science: What do Science Teacher Educators do and Why?

Amanda K. Berry, Monash University
Jan H. van Driel, ICLON, Leiden University, The Netherlands

Strand 8: In-service Science Teacher Education

S4.12 SC-Paper Set: Knowledge, Practice and Content

2:45pm – 4:15pm, Conference Room 408

President:

Maurice DiGiuseppe, University of Ontario Institute of Technology

S4.12.1 Meeting Teachers Where They Are and Helping Them Integrate Geospatial Technology into Their Teaching

Nancy M. Trautmann, Cornell University
James G. MaKinster, Hobart and William Smith Colleges

S4.12.2 Addressing Numeracy in a Science Lesson: A Case of Lesson Study

Maurice DiGiuseppe, University of Ontario Institute of Technology
Isha DeCoito, York University

S4.12.3 Facilitating Teacher Development towards a Tetrahedral Orientation in the Teaching of High School Chemistry

Rick Wiebe, St. James-Assiniboia School Division
Brian Lewthwaite, University of Manitoba
Harvey Peltz, River East-Transcona School Division

S4.12.4 Teachers' Understanding of Context in Teaching Thermodynamics within a Construction Context

Lawrence B. Flick, Oregon State University
Sue DeChenne, Oregon State University

Strand 8: In-service Science Teacher Education

S4.13 SC-Paper Set: STS, Curriculum and Science Teacher Professional Development

2:45pm – 4:15pm, Salon C

President:

Andrew H. Falk, University of Michigan

S4.13.1 Teachers' Integration of Science and Social Issues Using an Avian Influenza Curriculum Module

Tina M. Roberts, University of Missouri
Marcelle A. Siegel, University of Missouri
William L. Romine, University of Missouri

S4.13.2 Surveying K-12 Science Teachers' Needs from Scientists for Curriculum Materials

Timothy F. Slater, University of Wyoming
Stephanie J. Slater, University of Wyoming

S4.13.3 Opportunities for Science Teacher Learning Through Approximations of Whole-Class Discussions

Andrew H. Falk, University of Michigan
LeeAnn M. Sutherland, University of Michigan

S4.13.4 Science Teachers' Knowledge of, and Decisions on Integrating Science, Technology and Society (STS) Issues in the Science Curriculum

Azza A. Hashem, University of Exeter
Nasser Mansour, University of Exeter

Strand 9: Reflective Practice

S4.14 SC-Paper Set: Teacher-Based Instructional Design

2:45pm – 4:15pm, Conference Room 409

President:

Philip Clarkson, Australian Catholic Univ.

S4.14.1 Inquiry Into Teacher-initiated Curriculum Reform Work at the Illinois Mathematics and Science Academy

Tang Wee Teo, University of Illinois (Urbana-Champaign)

S4.14.2 Teachers' Interpretations of the Design and Implementation of Inquiry Activities

Mónica M. Baptista, Centro de Investigação em Educação
Ana M. Freire, Universidade de Lisboa

Strand 10: Curriculum, Evaluation, and Assessment

S4.15 SC-Paper Set: National Science Curriculum and Assessment Reforms

2:45pm – 4:15pm, Conference Room 410

President:

Christine Harrison, King's College - London

S4.15.1 Linking Physics Textbooks' Content and the Content Validity of Nationwide Tests

Hendrik Haertig, University Duisburg-Essen, Germany
Alexander Kauertz, University of Education, Weingarten Germany
Knut Neumann, Leibniz Institute for Science Education, Germany
Hans E. Fischer, University Duisburg-Essen

S4.15.2 Science and Mathematics Curriculum Reform in Senior Secondary Education in the Netherlands: First Results of a Comprehensive and Longitudinal Evaluation Study

Wilmad Kuiper, Netherlands Institute for Curriculum Development / University of Utrecht
Elvira Folmer, Netherlands Institute for Curriculum Development
Wout Ottevanger, Netherlands Institute for Curriculum Development
Lucia Bruning, Netherlands Institute for Curriculum Development

S4.15.3 Multiple Aims in the Development of a Major Reform of the National Curriculum for Science in England

Jim Ryder, University of Leeds
Indira Banner, University of Leeds, UK

S4.15.4 Re-Conceptualization of Scientific Literacy for the 21st Century in Korea

Kyunghee Choi, Ewha Womans University

Sung-won Kim, Ewha Womans University, Korea

Hyunju Lee, Ewha Womans University, Seoul, Korea

Joseph S Krajcik, University of Michigan

Strand 11: Cultural, Social, and Gender Issues

S4.16 SC-Paper Set: Students, Teachers, And Scientists From Underrepresented Groups: Where Does Success Lie?

2:45pm – 4:15pm, Conference Room 411

President:

Felicia M. Moore-Mensah, Teachers College

S4.16.1 Islam, Evolutionary Science, and Education: Paradoxes and Challenges in Muslim Cultures and Societies

Anila Asghar, The Johns Hopkins University

Saouma BouJaoude, American University of Beirut

Jason Wiles, Syracuse University

Brian Alters, McGill University

S4.16.2 Informing Science Teacher Retention and Attrition in the Rural Black Belt Region of Georgia

Georgia W. Hodges, University of Georgia

Steve Oliver, UGA

Deborah J. Tippins, UGA

S4.16.3 From Access to Success: Comparing Black Students' and Black Scientists' College Going Experiences

Bryan A. Brown, Stanford University

Bryan Henderson, Stanford University

Salina Gray, Stanford University

S4.16.4 To Iron or to Do Science: A Storied Life of a Latina from Scientist to Science Teacher

Sarida Hoy, Georgia State University

Geeta Verma, Georgia State University

Strand 15: Policy

S4.18 SC-Paper Set: Schools and University Partnerships for K-12 Science: Working Together for Change and Improvement

2:45pm – 4:15pm, Conference Room 415

President:

Carol L. Stuessy, TAMU

S4.18.1 Strand Zero: A Request to De-Balkanize the Strands Structure within NARST

John Settlege, University of Connecticut

S4.18.2 What is a Partnership?

Andrea Burrows, University of Cincinnati

S4.18.3 Effect of STEM Faculty Engagement in the Math and Science Partnership Program

Xiaodong Zhang, Westat

Joseph McInerney, Westat

Monday, March 22, 2010

S4.18.4 Trends and Outcomes of NSF Stem Education Grants at the City University Of New York: Implications for Policy, Practice, and Future Initiatives

Angela M. Kelly, Lehman College

Serigne Gningue, Lehman College

Jinlin Chen, Queens College

Subash Shankar, Hunter College

Rathika Rajaravivarma, New York City College of Technology

Concurrent Session #5 4:30pm – 6:00pm

S5.1 Administrative Symposium: The NARST Digital

Archives Project: A Repository and Resource for the History of Science Education Research

4:30pm – 6:00pm, Salon C

Fouad Abd-El-Khalick, University of Illinois at

Urbana-Champaign

John L. Rudolph, University of Wisconsin-Madison

Nancy Ruggeri, University of Wisconsin-Madison

Equity and Ethics Committee Sponsored Session

S5.2 Administrative Symposium: Learning to Participate in the Culture of Science through Connecting Research and Practice: Equity and Access in Science Education

4:30pm – 6:00pm, Conference Room 501

Discussant:

Irene Rahm, Universite de Montreal

Presenters:

Doris Ash, University of California, Santa Cruz

Bryan A. Brown, Stanford University

Pauline Chinn, University of Hawaii, Manoa

Noah R. Feinstein, University of Wisconsin, Madison

Sumi Hagiwara, Montclair State University

Maria S Rivera Maulucci, Barnard College

Research Committee Sponsored Session**S5.3 Poster Symposium: Science Research Institute
4:30pm – 6:00pm, Salon D****S5.3.1 Beginning Secondary Science Teachers' Pedagogical Content Knowledge and Their Use of Instructional Resources**

Krista Adams, Arizona State University

S5.3.2 Science Teachers' Voices: Eliciting Students' Knowledge during InstructionComfort Atheh, University of California, Davis
Cynthia Passmore, University of California, Davis**S5.3.3 Teachers' Perceptions of Implementing a Food Chemistry Unit within a National Chemistry Curriculum Reform**Shirly Avargil, Technion - Israel Institute of Technology
Orit Herscovitz, Technion - Israel Institute of Technology and Ort
Braude Academic College of Engineering, Israel
Yehudit Judy Dori, Technion - Israel Institute of Technology**S5.3.4 From Gatekeepers to Dreamkeepers: Exploring the Role of Teacher Identity in Improving Cultural Competency for Science Teachers**

Edith L. Blackwell, Morgan State University

S5.3.5 Mirror, Mirror & Preservice Teachers Reflect on their Initial Teaching Experience Using Video Analysis: A Cultural-Historical Explanatory Perspective

Elisebeth Boyer, Pennsylvania State University

S5.3.6 Elementary Teachers' Science Practice, Beliefs and Content Knowledge During and Following a Reform-based Professional Development Program

Dina Drits, University of Utah

S5.3.7 Beliefs about Teaching and the Nature of Science of Certified and Non-Certified Secondary Science TeachersJonah Firestone, Arizona State University
Julie A. Luft, Arizona State University**S5.3.8 Science, Technology, and Pedagogy: Exploring Secondary Science Teachers' Uses of Technology**

Selcen S Guzey, University of Minnesota

S5.3.9 An Exploration of Urban Elementary Teachers'**Perspectives on Science Education Reform**
Jessica Hammock, Emory University**S5.3.10 A Beginning Researcher's Narratives on Learning How to Do Research through the NARST Summer Research Institute**

Hosun Kang, Michigan State University

S5.3.11 Affordances of Mass Media as Teaching Tools in the Science Classroom: Perspectives from Secondary Science Teachers

Michelle Klosterman, University of Florida

S5.3.12 Transformations of Intentions in State Educational Policy: An Analysis of Science Teacher Professional Development Policy

Michele H. Lee, University of Missouri

S5.3.13 Using Activity Systems Analysis to Evaluate the Implementation of Science Curriculum at Multiple Illinois SchoolsJason McGraw, Northern Illinois University
Lisa Yamagata-Lynch, Northern Illinois University**S5.3.14 Remediation of University-Based Science Teacher Education**

Deborah Morrison, University of Colorado at Boulder

S5.3.15 Beliefs and Practices of a Beginning Science teacher of ELLs: A Longitudinal Study

Irasema B. Ortega, Arizona State University

S5.3.16 An Interpretive Case Study of How Elementary Science Students Use Science Notebooks During Science Instruction in Elementary Science ClassroomsLori Petty, Texas Tech University
Ratna Narayan, Texas Tech University**S5.3.17 Middle School Science Teachers' Reflections on Video Cases about Their Use of informal Formative Assessments (IFA)**Asli Sezen, Pennsylvania State University
Gregory Kelly, Pennsylvania State University**S5.3.18 Action Research: How Science Teachers Integrate Educational Technology**

Demetrice Smith, Morgan State University

S5.3.19 Contextualizing Instruction for Cultural and Social Relevance: Exploring Preservice Secondary Science Teachers' Beliefs, Knowledge, and Practices

Sara Tolbert, University of California - Santa Cruz

S5.3.20 Teachers' Transformation of Nanoscience Subject Matter Knowledge

Emily Wischow, Purdue University

Lynn Bryan, Purdue University

George M. Bodner, Purdue University

S5.3.21 Developing a Dissertation Study: What Knowledge for Science Teaching Do University Science Instructors Use to Inform Their Planning and Teaching in Science Courses?

Stephen B. Witzig, University of Missouri

S5.3.22 The Impact of Induction: Beliefs and Practices of Beginning Science Teachers

Sissy S Wong, Arizona State University

Strand 1: Science Learning, Understanding and Conceptual Change

S5.4 Administrative Symposium: Representational Reasoning in the Teaching and Learning of Science 4:30pm – 6:00pm, Conference Room 409

Discussant:

Marcia Lynn, University of California, Berkeley

Presenters:

Eric N. Wiebe, North Carolina State University

James Minogue, North Carolina State University

Michael Carter, North Carolina State University

John C. Bedward, North Carolina State University

Lauren P. Madden, North Carolina State University

John K. Gilbert, The University of Reading

Maurice Cheng, University of Hong Kong

Peggy Van Meter, Pennsylvania State University

Zhihui Zhang, University of California, Berkeley

Strand 1: Science Learning, Understanding and Conceptual Change

S5.5 SC-Paper Set: Childrens' Learning about Science 4:30pm – 6:00pm, Conference Room 401

Presenter:

Lei Liu, University of Pennsylvania

S5.5.1 Large-Scale, Reandomized-Cluster Design Study of Reform-Based and Traditional/Verification Curricula to Support Student Science Learning

Ellen M. Granger, Florida State University

Todd H. Bevis, Florida State University

Yavuz Saka, Florida State University

Sherry A. Southerland, Florida State University

S5.5.2 Small Group Interviews: Gaining Valuable Insights into Elementary Students' Astronomy Understandings and Thinking

Timothy R. Young, The University of North Dakota

Mark D. Guy, The University of North Dakota

Brent Miller

S5.5.3 Student Understanding of Scale: From Additive to Multiplicative Reasoning in the Construction of Scale Representation by Ordering Objects in a Number Line

Eun Jung Park, Northwestern University

Su Swarat, Northwestern University

Greg Light, Northwestern University

Denise Drane, Northwestern University

S5.5.4 Children's Conceptions of Shadows

Robert Louisell, St. Ambrose University

Francis Kazemek, St. Cloud State University

Jennifer Wilhelm, University of Kentucky

Strand 1: Science Learning, Understanding and Conceptual Change

S5.6 SC-Paper Set: Models and Modeling in Science 4:30pm – 6:00pm, Conference Room 413

Presenter:

Vaille M. Dawson, Curtin University

S5.6.1 Development of Students' Mental Models of Electrochemistry Using Multiple Model-Based Approaches

Mei-Hung Chiu, National Taiwan Normal University

Shiao-Lan Chung, National Taiwan Normal University

S5.6.2 High School Students' Modeling Knowledge

David Fortus, Weizmann Institute of Science

Sherman Rosenfeld, Weizmann Institute of Science

Yael Shwartz, Weizmann Institute of Science

S5.6.3 The Effect of Linear Versus Branching Depictions of Evolutionary History on Students' Interpretations of Evolution as an Anagenic Process

Laura R. Novick, Vanderbilt University

Courtney K. Shade, Vanderbilt University

Kefyn M. Catley, Western Carolina University

S5.6.4 What is a Model? Experienced Students' Beliefs about the Nature and Purpose of Scientific Models Across Modeling Contexts

Brandy L. E. Buckingham, Northwestern University
Brian J. Reiser, Northwestern University

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S5.7 SC-Paper Set: Science Learning Within and Beyond the Classroom

4:30pm – 6:00pm, Conference Room 402

President:

Maria-Pilar Jimenez-Aleixandre, Universidade de Santiago de Compostela

S5.7.1 Examining the Relationship between Students' Connections to Out-of-School Experiences and Learning Outcomes

Natalie A. Tran, California State University - Bakersfield

S5.7.2 The Influence of Context-Oriented Learning in Biology Education

Marion Haugwitz, University of Duisburg-Essen
Sabine Fechner, University of Duisburg-Essen
Angela Sandmann

S5.7.3 Aspects and Outcomes of a Research Apprenticeship: Perspectives of High School Student Participants

Stephen R. Burgin, University of Florida
Troy D. Sadler, University of Florida
Jamie E. Mann, University of Florida

S5.7.4 Opportunities-to-Learn at Home: Profiles of Students with and without Reaching Science Proficiency

Xiufeng Liu, State University of New York at Buffalo
Melinda Whitford, State University of New York at Buffalo

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S5.8 SC-Paper Set: Developing Teacher Knowledge

4:30pm – 6:00pm, Conference Room 403

President:

Meredith A. Park Rogers, Indiana University - Bloomington

S5.8.1 How Long-Term Teaching Practices Foster Teacher Learning In Inquiry-Based Environments

Mohammad A. Basir
Brian Hand
Lori Norton-Meier

S5.8.2 The Teachers' Pedagogical Content on Inquiry that Conducts Science Activities in Basic Education

Flor Reyes, Universidad Nacional Autónoma de México, Facultad de Química
Andoni Garriz, Universidad Nacional Autónoma de México

S5.8.3 Elementary School Teachers' Perceptions of Science Teaching

John M. Reveles, California State University, Northridge

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S5.9 SC-Paper Set: Inquiry-Based Science Teaching and Student Learning

4:30pm – 6:00pm, Conference Room 404

President:

Andrea R. Milner, Adriane College

S5.9.1 Teacher Effects in a Comparative Study of Direct and Inquiry Science Instruction Efficacy

William Cobern, Western Michigan University
David Schuster, Western Michigan University
Betty Adams, Western Michigan University
Adriana Undreiu, The University of Virginia's College at Wise
Brandy A. Skjold, Western Michigan University
Brooks Applegate, Western Michigan University
Cathleen C. Loving, Texas A&M University
Janice D. Gobert, Worcester Polytechnic Institute

S5.9.2 The Relationship between Teachers' Knowledge and Beliefs about Science and Inquiry and Their Classroom Practices

Saouma BouJaoude, American University of Beirut, Lebanon
Rayana F. Saad, American University of Beirut, Lebanon

S5.9.3 Taking Science Outside the Classroom: A Study of Teachers Enacting Urban Ecology Field Investigations

Amanda P. Jaksha, University of Arizona
Christopher J. Harris, SRI International

S5.9.4 The Relationship of Teacher Facilitated Inquiry-Based Instruction to Student Higher-Order Thinking

Jeff C. Marshall, Clemson University

Strand 5: College Science Teaching and Learning (Grades 13-20)

S5.10 SC-Paper Set: Beliefs and Teaching Practices of College Science Faculty

4:30pm – 6:00pm, Conference Room 405

President:

Kristen L. Hutchins, Howard Payne University

S5.10.1 Assessing University Students' Perceptions of the Physics Teacher's Pedagogical Content Knowledge Using a Developed Instrument

Syh-Jong Jang, Chung-Yuan Christian University

S5.10.2 The Analysis of Speech Acts of University Science Teachers

Roeland M. Van der Rijst, ICLON - Leiden University

Jan H. van Driel, ICLON - Leiden University

S5.10.3 Examining College Science Teachers' Belief Systems about Inquiry-based Teaching in the Context of a Faculty Development Program

Kristen L. Hutchins, Howard Payne University

Patricia M. Friedrichsen, University of Missouri

Strand 6: Science Learning in Informal Contexts

S5.11 Symposium: Facilitating Informal Science Learning: People, Places and Technologies

4:30pm – 6:00pm, Conference Room 406

Heather T. Zimmerman, Penn State University

Lynn U. Tran, University of California at Berkeley

Cathlyn D. Stylinski, University of Maryland

Catherine Eberach, Rutgers

Kathleen Fadigan, Pennsylvania State University

Lisa Bouillion Diaz, University of Illinois at Urbana-Champaign

Lynn D. Dierking, Oregon State University

Heather King, King's College London

Strand 7: Pre-service Science Teacher Education

S5.12 SC-Paper Set: The Influence of Identity and Attitude on Pre-Service Teachers' Knowledge and Practices

4:30pm – 6:00pm, Conference Room 407

President:

Tara B. O'Neill, Hawaii

S5.12.1 Toward Retaining Second Career STEM Teachers: The Influence of Transitioning Professional Identities

Carol C. Johnston, Mount Saint Marys College Los Angeles

Jeanne M. Grier, California State University Channel Islands

S5.12.2 A Grounded Theory Analysis of the Career Paths of Math and Science Teachers in High Need Schools

Allison L. Kirchhoff, University of Minnesota

Frances Lawrenz, University of Minnesota

Anica Bowe, University of Minnesota

S5.12.3 "If You Struggle, You Turn Away From It": Finding Connections between Pre-service Elementary Teachers' Struggles as Science Learners and Their Orientations to Science Teaching and Learning

Rachel E. Wilson, The University of Georgia

Julie M. Kittleson, The University of Georgia

S5.12.4 Cognitive and Attitudinal Predictors Related to Line Graphing Achievement among Pre-Service Elementary Teachers

Sebastian Szyjka, Central Michigan University

Frackson Mumba, Southern Illinois University Carbondale

Kevin Wise, Southern Illinois University Carbondale

Strand 8: In-service Science Teacher Education

S5.13 SC-Paper Set: Literacy and Elementary Science Education

4:30pm – 6:00pm, Conference Room 408

President:

Larry D. Yore, University of Victoria

S5.13.1 Exploring Connections between Learning Science and Mathematics Content and English Language Acquisition: A Literacy Framework for English Language Learners

David J. Carrejo, University of Texas at El Paso

Judy Reinhartz, University of Texas at El Paso

S5.13.2 Integrating Literacy into Elementary Science: Moving from Questions and Challenges to Solutions and Successes

Jerine M. Pegg, University of Alberta

S5.13.3 Combining Research and Practice to Investigate What Young Children Know and Can Do in Science

Robert A. Williams, University of Texas at Austin

Mary E. Hobbs, University of Texas at Austin

James P. Barufaldi, University of Texas at Austin

S5.13.4 Evidence-Based Practice in Science Literacy for All: A Case Study of NSTA Articles as Self-Directed Professional Development

Larry D. Yore, University of Victoria

Susan Jagger, University of Toronto

Strand 10: Curriculum, Evaluation, and Assessment

S5.14 SC-Paper Set: Developing Reform-Based Science Curriculum Materials

4:30pm – 6:00pm, Conference Room 410

President:

Joseph S. Krajcik, University of Michigan

S5.14.1 Curriculum Coherence: A Three Year Study of Middle School Students Understanding of Chemical Concepts

Joi Merritt, University of Michigan
 Kathryn F. Drago, University of Michigan
 LeeAnn M. Sutherland, University of Michigan
 Joseph S Krajcik, University of Michigan

S5.14.2 Local Instructional Design in High School Science: A Distributed Leadership Perspective on the Practice of Curriculum Innovation and Adaptation

Matthew A. Clifford, Learning Point Associates

S5.14.3 Stuck in the Margins? The Place of STSE Themes in Québec Junior High School Textbooks

David I. Waddington, Concordia University
 Amanda Imbriglio, Concordia University
 Kamran Sheikh,

S5.14.4 Comparing Children's Simple Machines Learning in LEGO-Engineering Design-Based and Non-LEGO Engineering Design-Based Science Environments

Kathleen G. Connolly, Tufts University
 Kristen Bethke Wendell, Tufts University - Center for Engineering Education and Outreach (CEEEO)
 Linda Jarvin, Tufts University
 Chris Rogers, Tufts University
 Christopher G. Wright, Tufts University

Strand 11: Cultural, Social, and Gender Issues**S5.15 SC-Paper Set: Cultural Perspectives on the Science Pipeline in Middle and High School**
4:30pm – 6:00pm, Conference Room 411**Presenter:**

Zahra Hazari, Clemson University

S5.15.1 Competing or Complementary? Home and School Identity Formation of Haitian Youth in South Florida

Neporcha T. Cone

S5.15.2 Sociocultural and School Contexts of High Performance: Finnish and South Korean Cases

Nam-Hwa Kang, Oregon State University
 Miyoung Hong, Korea Institute of Curriculum & Evaluation
 Jari Lavonen, University of Helsinki

S5.15.3 Gender, Socioeconomic Status and Race/Ethnicity Interactions for Factors Affecting Urban 12th Graders' Aspirations to Major in Science in College

Hannah Sevan, University of Massachusetts Boston
 Shiqi Hao, Michigan Department of Education
 Marilyne Stains, University of Massachusetts Boston

S5.15.4 How Does Science Feel to High School Students? A Comparison by Gender and Subject Area

Jennifer A. Schmidt, Northern Illinois University

Strand 12: Educational Technology**S5.16 Related Paper Set: Examining the Classroom Implementation of Using Geospatial Technologies to Teach Science**

4:30pm – 6:00pm, Conference Room 412

Discussant:

Joseph Kerski, Environmental Systems Research Institute (ESRI)

S5.16.1 Understanding the Use of Geospatial Technologies to Teach Science: TPACK as a Lens for Effective Teaching

James G. MaKinster, Hobart and William Smith Colleges
 Nancy M. Trautmann, Cornell Lab of Ornithology

S5.16.2 Lonely Trailblazers: Examining the Early Implementations of Geospatial Technology in Science Classrooms

Tom Baker, Environmental Systems Research Institute (ESRI)
 Joseph Kerski, Environmental Systems Research Institute (ESRI)

S5.16.3 Examining the Implementation of a Geospatial Information Technologies-supported Energy Unit in an Urban Middle School

Violet A. Kulo, Lehigh University
 Alec M. Bodzin, Lehigh University
 David J. Anastasio, Lehigh University
 Tamara Pfeffer, Lehigh University
 Dork O. Sahagian, Lehigh University
 Lori Cirucci, Lehigh University

S5.16.4 What Happens After the Professional Development: Case Studies on Implementing GIS in the Classroom

Bob Kolvoord, James Madison University
 Michael Charles, Pacific University
 Steve Purcell, James Madison University

Strand 15: Policy**S5.17 SC-Paper Set: Ferment of Accountability: Leadership and Legal Issues**

4:30pm – 6:00pm, Conference Room 415

Presenter:

Gavin Fulmer, NSF

S5.17.1 Where Theory and Law Meet: An Inquiry into the Impact of U.S Federal Court Rulings on the Presentation of Evolution and Religion in K-12 Science Curriculum

Lance E. King, Florida State University

Sherry A. Southerland, Florida State University

S5.17.2 A Principal's Instructional Leadership in Science: What Factors Influence Teacher Acceptance of Instructional Change?

Kimberly S Lanier, Florida State University

Sherry A. Southerland, Florida State University

S5.17.3 Teachers Goals for Education and the Confluence of Beliefs, the National Reform Documents, and Accountability

Todd L. Hutner, The University of Texas at Austin

Sherry A. Southerland, Florida State University

Victor Sampson, Florida State University

S5.17.4 Support Programs for New Science Teachers Can Increase Student Test Scores: Policy Implications

Donna R. Sterling, George Mason University

Wendy M. Frazier, George Mason University

Evening/Social Events

Membership and Elections Committee Sponsored Session

Mentor-Mentee Nexus

Informal discussion: Early career NARST members are matched with more seasoned members to help launch or expand professional networks. We encourage all NARST members who are early in their professional career to attend this session.

6:15pm – 7:15pm, Conference Room 501

April Adams, Northeastern State University

Julia Grady, Arkansas State University

Membership and Elections Committee Sponsored Session

Graduate Student Forum

The Graduate Student Forum aims to guide and encourage beginning researchers by discussing various problems that may arise, e.g. when completing the dissertation or searching for a position. Attendees of the forum are given the opportunity to question a panel of experienced colleagues on all matters of academic interest.

6:15pm – 7:15pm, Salon D

Discussant:

Mary M. Atwater, University of Athens

Presenters:

Corinne Lardy, San Diego State University

Malcolm Butler, University of South Florida at St. Petersburg

Tonjua B. Freeman, University of Georgia

Alejandro Gallard, Florida State University

Nam-Hwa Kang, Oregon State University

Corinne Lardy, San Diego State University

Melody Russell, Auburn University

Strand 6: Science Learning in Informal Contexts Symposium: Informal Science Education Research and Practice at NSF

6:00pm – 7:45pm, Conference Room 406

Presider:

Angela Calabrese Barton, Michigan State University

Presenters:

David A. Ucko, National Science Foundation

Sylvia M. James, National Science Foundation

Alphonse DeSena, National Science Foundation

Larry E. Suter, National Science Foundation

Angela Calabrese Barton, Michigan State University

JRST Editorial Board Meeting/Reception

Meeting is open to all, reception is invitation only.

7:00pm – 9:00pm, Salon C

Tuesday, March 23, 2010

Committee Meetings

7:00am – 8:15am

Equity and Ethics Committee Meeting
7:00am – 8:15am, Conference Room 402

External Policy and Relations Committee Meeting
7:00am – 8:15am, Conference Room 403

Research Committee Meeting
7:00am – 8:15am, Conference Room 404

Membership and Election Committee Meeting
7:00am – 8:15am, Conference Room 405

International Committee Meeting
7:00am – 8:15am, Conference Room 406

Program Committee Meeting
7:00am – 8:15am, Conference Room 407

Publications Advisory Committee Meeting
7:00am – 8:15am, Conference Room 408

Outstanding Doctoral Research Award Committee Meeting
7:00am – 8:15am, Conference Room 409

NARST Outstanding Paper Award Selection Committee Meeting
7:00am – 8:15am, Conference Room 410

Early Career Research Award Selection Committee Meeting
7:00am – 8:15am, Conference Room 411

JRST Award Selection Committee Meeting
7:00am – 8:15am, Conference Room 412

Distinguished Contributions in Research Award Committee Meeting
7:00am – 8:15am, Conference Room 413

Plenary Session

A European Perspective on Science Education: A Multi-National Challenge

8:30am – 10:00am, Salons E and F

President:

Dana L. Zeidler, University of South Florida

Presenter:

Doris Jorde, University of Oslo, Norway

Break

10:00am – 10:30am

TBD

Concurrent Session #6

10:30am – 11:45am

Strand 1: Science Learning, Understanding and Conceptual Change

S6.1 Poster Session

10:30am – 11:45am, Conference Room 401

S6.1.1 Kindergarteners' Idiosyncratic Representations of Linear Motion

Jason Kahn, Tufts University

S6.1.2 Students' Conceptions of Heredity: Levels of Understanding

Philipp Schmiemann, University of Duisburg-Essen

Angela Sandmann, University of Duisburg-Essen

S6.1.3 Crafted Experience: The Interplay between Manipulative Tools and Conceptual Learning in Science Classrooms

Ji Shen, University of Georgia

S6.1.4 Middle School Students' Ideas about Transpiration and Stomata

Jacqueline Wong, UCLA

Melissa S Cook, UCLA

Suna Ryu, UCLA

William Sandoval, UCLA

S6.1.5 Cognitive Architecture of Common and Scientific Concepts

Paul Tarabek, College of Applied Economical Studies, Czech Republic

S6.1.6 Using Analogy and Model to Enhance Conceptual Change in Thai Middle School Students

Sittichai Wichaidit, Srinakharinwirot University, Thailand
 Somsan Wongyounoi, Srinakharinwirot University, Thailand
 Parin Chaivisuthangkura, Srinakharinwirot University, Thailand
 Precharn Dechsri, The Institute for the Promotion of Teaching Science and Technology, Thailand

S6.1.7 Revealing the Science Learner: Examining Middle School Students' Use of Evidence in Revising Scientific Models

James A. Hagerty, University of Michigan
 Elizabeth A. Davis, University of Michigan
 Sarah Clowes, University of Michigan

S6.1.8 Using Open-Ended Questions to Diagnose Student Understanding of Inter- and Intramolecular Force

Patcharee Rompayom, Srinakharinwirot University, Thailand
 Chinda Tambunchong, Srinakharinwirot University, Thailand
 Somsan Wongyounoi, Srinakharinwirot University, Thailand
 Precharn Dechsri, The Institute for the Promotion of Teaching Science and Technology, Thailand

S6.1.9 Third Grade Elementary African American Students' Views of the Nature of Science

Leon Walls, University of Vermont

S6.1.10 Facilitating Transfer as Students Solve Context - Based Physics Problem

Bijaya Aryal, Lake Superior State University

S6.1.11 Project-Based Science and the Driving Question: Supporting Students as they Make Connections Between Science Content and Everyday Life

Nonye M. Alozie, University of Michigan,
 Consuelo Morales, University of Michigan
 Jennifer Eklund

Strand 2: Science Learning: Contexts, Characteristics and Interactions**S6.2 Poster Session**

10:30am – 11:45am, Conference Room 402

S6.2.1 Effects of a Collaborative Learning Model vs. a Traditional Apprenticeship Model on Undergraduate Student Self-Efficacy and Achievement during a Summer Research Experience

Shari L. Britner, Bradley University
 Phillip Gagne, Georgia State University
 Melissa K. Demetrikopoulos, Institute for Biomedical Philosophy
 Karen L. Falkenberg, Concept Catalysts, Inc.
 John L. Pecore, Wake Forest University
 Brian A. Williams, Georgia State University
 Laura L. Carruth, Georgia State University
 Chris Goode, Georgia State University
 Robert L. DeHaan, Emory University
 Kyle J. Frantz, Georgia State University

S6.2.2 Students' Views of a Project-Based Elementary Science Intervention

Lucy Avraamidou, University of Nicosia, Cyprus
 Maria Evagorou, University of Nicosia, Cyprus

S6.2.3 Using Photographs in Discussion-Oriented Pedagogy for the Concepts of Day-Night and Cause of Seasons

Hyunju Lee, University of Massachusetts Amherst
 Allan Feldman, University of South Florida

S6.2.4 Hands-On and Online: Student Experimentation in a Distance Learning Environment

Mary V. Mawn, SUNY Empire State College

S6.2.5 Reading Scientifically: Practices Supporting Intertextual Reading Using Science Knowledge

Mark T. Enfield, Elon University

S6.2.6 Occupational Orientation – A Foreign Concept to Chemistry Lessons

Nina Bertels, Freie Universität Berlin Didaktik der Chemie Takustr
 Claus F. Bolte, Freie Universität

S6.2.7 The Impact of Epistemological Beliefs on Scientific Reasoning among College Science Students: Comparing Two Epistemology Assessments

Ava A. Zeineddin, Wayne State University
 Fouad Abd-El-Khalick, University of Illinois at Urbana-Champaign

S6.2.8 Learning in the Prairie: Using Fieldwork Experiences to Promote Understanding of Ecological Concepts

Meredith L. Beilfuss, Butler University
 Li-Ling Yang, Roger Williams University

S6.2.9 Expressions of Student Agency in the Context of a Climate Change Curriculum: Possibilities and Challenges

Azza Sharkawy, Queen's University
Richard Reeve, Queen's University

S6.2.10 Analyzing Science Argumentation in a Knowledge Building Environment

Jennifer Yeo, Nanyang Technological University
Yew-Jin Lee, National Institute of Education, Nanyang Technological University

S6.2.11 Cross-sectional Study on Conception and Perception of Evolution According to Creationism Concern

Minsu Ha, The Ohio State University
Heeyoung Cha, Korea National University of Education
Seulae Ku, Korea National University of Education

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S6.3 Poster Session

10:30am – 11:45am, Conference Room 403

S6.3.1 Exploring Elementary Science Teachers' Perceived Self-Efficacy toward Pedagogical Content Knowledge for Science Teaching

Ying-Tien Wu, National Taichung University, Taiwan

S6.3.2 Books and Stories in Children's Science. The Findings of the BASICS Project

John F. McCullagh, Stranmillis University College
Belfast Northern Ireland
Glenda A. Walsh, Stranmillis University College
Belfast Northern Ireland
Julian G. Greenwood, Stranmillis University College
Belfast Northern Ireland

S6.3.3 Examining Elementary Science Teacher Identity through Science Notebooks: A Case Study of Three Exemplar Teachers

Lauren P. Madden, North Carolina State University
Eric N. Wiebe, North Carolina State University
John C. Bedward, North Carolina State University
James Minogue, North Carolina State University
Michael Carter, North Carolina State University

S6.3.4 Introducing an Elementary Atomic Model to Primary Education (Sixth Grade) – Maintaining the Particulate Perspective, but also Introducing the Concept of Electron Cloud

Georgios Tsapalis, University of Ioannina
Paraskevi Dalaouti, Primary State Education, Ioannina, Greece

S6.3.5 The Scientific Thinker Project: A Design-based Research Study of Teaching and Learning Concepts of Evidence and Nature of Scientific Evidence in Primary School

Susan A. Kirch, New York University
Ranyee Chiang, New York University
Christine Coughlin, New York University
Sanaz Farhangi, New York University
Kara McKeown, New York University
Catherine E. Milne, New York University
Anna Stetsenko, CUNY

S6.3.6 Influences on Pre-Service Elementary Science Teaching Self-Efficacy: A Professional Development School Collaboration Pilot Study

Lara K. Smetana, Southern Connecticut State University

S6.3.7 Understanding Taiwanese Elementary Science Teachers' Professional Conceptions, Competencies, and Needs

Sheau-Wen Lin, National Pingtung University of Education
Kuo-Yao Huang, National Pingtung University of Education
Jing-Ru Wang, National Pingtung University of Education
Huey-Lien Kao, National Pingtung University of Education

S6.3.8 The Use of Analogies in the Topic "The Food is a Source of Energy" in Textbooks and by Primary Teachers

Hilda G. Álvarez-Díaz, Cinvestav DIE-Unidad Monterrey
Adrianna Gómez-Galindo, Cinvestav Unidad Monterrey
Huang Xiang, Cinvestav Metodología de la Ciencia

S6.3.9 Navajo and Anglo Students' Perceptions of Their World: Implications for Classroom Practice

Rebecca M. Monhardt, Loras College Education

S6.3.10 The Vision of the NSES and the Vignettes from Classrooms

Eun Kyung Ko, National-Louis University
Byoung S Kim, Roosevelt University
Norman G. Lederman, Illinois Institute of Technology

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S6.4 Poster Session

10:30am – 11:45am, Conference Room 404

S6.4.1 Exploring Novice Teachers' Reflective Practices of Lifeworld Consideration

Miyoun Lim, Georgia State University
John L. Pecore, Wake Forest University

S6.4.2 Teachers' Use of Visual Representations in the Science Classroom

Michelle Cook, Clemson University

S6.4.3 Forging the Relationship to Science Content for Adolescents in Problem-Based Science

Gayle A. Buck, Indiana University

Amy E. Trauth-Nare, Indiana University

Kristin L. Cook, Indiana University

S6.4.4 Preservice Secondary Science Teachers' Understanding of Testing Hypotheses

Byoung S Kim, Roosevelt University

Yeon-A Son, Dankook University

Seok Jun Hong, Dankook University

S6.4.5 Teachers' Practical Arguments in a Professional Discourse Community

David J. Grueber, Wayne State University

Shamarion Green, Wayne State University

S6.4.6 Design, Implementation, and Assessment of a Geospatial Science-Technological Pedagogical Content Knowledge Professional Development Model

Tamara Pepper, Lehigh University

Alec M. Bodzin, Lehigh University

Violet A. Kulo, Lehigh University

Dork O. Sahagian, Lehigh University

David J. Anastasio

Lori Cirucci, Bethlehem School District

S6.4.7 Evaluation of Children's Literature

Vincent Amodeo

S6.4.8 Lessons Designed To Test Relative Effectiveness of Inquiry VS Direct Instruction

Betty Adams, Western Michigan University

Adriana Undreiu, University of Virginia's College at Wise

David Schuster, Western Michigan University

William Cobern, Western Michigan University

S6.4.10 Examining the Impacts of the Science Writing Heuristic (SWH) Approach on 7th Grade Students' Achievements on Summary Writing and Oral Argumentation Tasks

Jeonghee Nam, Pusan National University

Brian Hand, University of Iowa

Kyunghwa Kwak, Pusan National University

Aeran Choi, Kent State University

Strand 5: College Science Teaching and Learning (Grades 13-20)

S6.5 Poster Session

10:30am – 11:45am, Conference Room 405

Presider:

Leslie Atkins, California State University, Chico

S6.5.1 Biochemistry Students' Thinking about Nucleic Acids as Revealed by Reading Questions

Sarah Hjelseth, North Dakota State University

Erika G. Offerdahl, North Dakota State University

Lisa M. Montplaisir, North Dakota State University

S6.5.2 A Longitudinal Study of Undergraduates' Science Literacy: Exploring Responses to Policy-Driven Survey Items

Sanlyn R. Buxner, University of Arizona

Jessie C. Antonellis, University of Arizona

Chris D. Impey, University of Arizona

S6.5.3 Learning to Write in Undergraduate Chemistry: The Impact of Argument-Driven Inquiry

Victor Sampson, Florida State University

Joi P. Walker, Tallahassee Community College

Katrina Dial, Florida State University

Jon Swanson, Florida State University

Tuesday, March 23, 2010

S6.5.4 An Investigation of the Development of University Students' Science Process Skills and Reasoning Ability Through a Process-Oriented Chemistry Laboratory Curriculum

Eulsun Seung, Indiana State University

Beverly Pestel, Indiana State University

Aeran Choi, Kent State University

S6.5.5 Evolution Acceptance and Epistemological

Views of College Biology Students

Lisa A. Donnelly, Kent State University

S6.5.6. The Interaction of Who and Where You Are: How Context Interacts with Belief to Influence Undergraduate Faculty Members Engagement with Reform

Patrick Enderle, Florida State University

S6.5.7 Student Perceptions of the Role of College General Education Biology on their Learning: Comparing Problem-based Learning and Traditional Expository Instructional Models

John S Peters, College of Charleston

Steve Fifield, University of Delaware

S6.5.8 Exploring the Reading of the Uncertain Science Issue: An Eye Movement Approach

Fang-Ying Yang, National Taiwan Normal University
I-Ju Tsai, National Taiwan Normal University

S6.5.9 Content in Evolution-Selective Traditions in Teacher Reasoning on Educational Content for Upper Secondary School

Maria I. Petersson, Dalarna University, Sweden

S6.5.10 Beginning Chemistry College Students Notions of Basic Quantum Chemistry Concepts: A Qualitative Study with Concept Mapping as Qualitative and Quantitative Analytic Tool

Christina D. Stefani, Lykeion Anavriton Athens Greece
Georgios Tsapralis, University of Ioannina Greece

S6.5.11 Faculty Grading of Quantitative Problems: Are Values Consistent with Practice?

Heather L. Petcovic, Western Michigan University
Herb Fynewever, Calvin College
Charles Henderson, Western Michigan University
Jacinta M. Mutambuki, Western Michigan University
Jeffrey A. Barney, Western Michigan University

S6.5.12 Issues Effecting African American Students in Science Majors at Predominantly White Universities

Andre M. Green, University of South Alabama
George E. Glasson, Virginia Tech
Brenda R. Brand, Virginia Tech

Strand 6: Science Learning in Informal Contexts**S6.6 Poster Session**

10:30am – 11:45am, Conference Room 406

Presider:

James Kisiel, Cal State University Long Beach

S6.6.1 Science Fair Judges' Perceptions of the Benefits of Student Participation and Mentoring

Kathleen Fadigan, Pennsylvania State University

S6.6.2 A Case Study of Urban Student and Teacher Experiences Surrounding an Outdoor Environmental Science Field Trip

Peggy L. Preusch, Towson University

S6.6.3 The Circularity of Teaching and Practice: Supporting Pre-Service Teachers by Removing Emotional Barriers to Quality Teaching in Informal Educational Environments

Steven B. Chapman, University of London

S6.6.4 Free-choice Family Learning Experiences at Telescope Observing Events

Matthew C. Wenger, University of Arizona
Christopher J. Harris, SRI International
Kathy Carter, University of Arizona

S6.6.5 Exploring Middle School Students' Sense of Place and Engagement in Science Learning

Deborah E. Peck, University of New Brunswick
Karen S Sullenger, University of New Brunswick

S6.6.6 Car Cards for Carbon: Can Light Rail Mass Transit be Used to Teach Riders Science?

David S Lustick, University of Massachusetts Lowell
Jill H. Lohmeier, University of Massachusetts Lowell

S6.6.7 The Importance of Visual Materials for Educating Latino Farmworkers About Pesticide Risks

Catherine E. LePrevost, North Carolina State University
Margaret R. Blanchard, North Carolina State University
Julia F. Storm, North Carolina State University
Cesar R. Asuaje, University of Florida
Gregory Cope, North Carolina State University

S6.6.8 Utilizing Reflective Practice and Coaching Techniques in a Formal-Informal Education Partnership for Constructivist Science Teacher Preparation

Laura Saxman, CUNY
Barbara Schroder, CUNY
Preeti Gupta, The New York Hall of Science

S6.6.9 Atom Surprise: Science Theater under Investigation

Ayelet Baram-Tsabari, Technion, Israel
Ran Peleg, Technion, Israel

S6.6.10 Patterns of Youth and Family Interaction during Informal Science Activity: Implications for Learning Science In Formal and Informal Environments

Leah A. Bricker, Loyola University Chicago
Philip Bell, University of Washington

S6.6.11 Public Engagement with Science in Informal Science Education: An Analysis of Five Case Studies in Science Theatre

Jane L. Lehr, California Polytechnic State University
Ellen McCallie, Carnegie Museum of Natural History
Robin Meisner, MIT Museum
Cora Olson, Virginia Polytechnic Institute & State University
John Durant, MIT Museum
John H. Falk, Oregon State University
Saul Halfon, Virginia Polytechnic Institute & State University
Bruce Lewenstein, Cornell University
Cynthia Needham, ICAN Productions
Debra Wise, Underground Railway Theater

S6.6.12 Using Cogenerative Dialogues in a Science Center

Preeti Gupta, New York Hall of Science
Correa H. Jennifer, New York Hall of Science

Strand 7: Pre-service Science Teacher Education

S6.7 Poster Session

10:30am – 11:45am, Conference Room 407

S6.7.1 Service Learning for Science Teacher Education: A Synthesis of Theory and Research

Carolyn S Wallace, Auburn University

S6.7.2 Aligning Preservice Teacher Knowledge about Models and Modeling with a Scientific Modeling Learning Progression

Barbara Hug, University of Illinois Urbana-Champaign
Tang Wee Teo, University of Illinois Urbana-Champaign

S6.7.3 The Role of Coteaching in Valuing and Using the Disturbances of Learning to Teach Science

Catherine E. Milne, NYU
Kathryn Scantlebury, University of Delaware
Jason Blonstein, NYU
Susan Gleason, Middletown High School Delaware

S6.7.4 Student-teachers Promoting Actions on Socioscientific Issues: Impetus from Their Science Inquiries

John L. Bencze, OISE, University of Toronto
Gervase M. Bowen, Mount Saint Vincent University
Lyn Carter, Australian Catholic University, Melbourne, Australia

S6.7.5 From PCK to TPACK: Developing A Transformative Model of Pre-Service Science Teachers

Syh-Jong Jang, Chung-Yuan Christian University
Kuan-Chung Chen, Chung-Yuan Christian University

S6.7.6 Development of Science Pedagogical Content Knowledge: A Model Proposed for Elementary Teacher Education in Alberta

Saiqa Azam, University of Calgary, AB, Canada

S6.7.7 Using Video Reflection to Foster Pre-Service Science Teacher Reflection and Identity Development: Nicole's Story

Maria S Rivera Maulucci, Barnard College, Columbia University

S6.7.8 Writing In Science: Developing Positive Attitudes and Pedagogical Knowledge in a Teacher Education Course

Isha DeCoito, York University
Shelley Peterson, University of Toronto

S6.7.9 Factors Mediating the Quality of Teacher Workforce: Finnish and South Korean Cases

Miyong Hong, Korea Institute for Curriculum and Evaluation, South Korea
Nam-Hwa Kang, Oregon State University
Jari Lavonen, University of Helsinki, Finland

S6.7.10 What Makes A "Good" Argument? A Metacognitive Approach to Science Teacher Candidates' Ideas About Quality Criteria of Argument

Nicola Scheid

S6.7.11 Confirmation of the Psychometric Properties of the Context-Modified Questionnaire of Attitude Toward Statistical Graphs (QASG) for Measuring Pre-service Teachers' Attitudes Toward Line Graphs in Science (QALGS)

Sebastian Szyjka, Central Michigan University
Frackson Mumba, Southern Illinois University Carbondale
Kevin Wise, Southern Illinois University Carbondale

S6.7.12 Establishing and Diagnosing Prospective Teachers' Diagnostic Competence

Claudia von Aufschnaiter, Justus Liebig University Giessen
Gabi Duebbelde, Justus Liebig University Giessen
Janine Cappell, Justus Liebig University Giessen
Marco Ennemoser, Justus Liebig University Giessen
Juergen Mayer, Justus Liebig University Giessen
Joachim Stiensmeier-Pelster, Justus Liebig University Giessen
Rudolf Straesser, Justus Liebig University Giessen
Anett Wolgast, Justus Liebig University Giessen

Strand 8: In-service Science Teacher Education

S6.8 Poster Session

10:30am – 11:45am, Conference Room 408

Presenter:

Jim Minstrell, FACET Innovations, LLC

S6.8.1 School Culture: Understanding the Interaction between School Culture and Beginning Science Teachers' Induction Experiences

Yavuz Saka, Florida State University
Sherry A. Southerland, Florida State University
Barry W. Golden, Florida State University

S6.8.2 Entrepreneurial Leadership in STEM Teaching and learning (EnLiST) a Longitudinal Case Study

Anita M. Martin, University of Illinois
Fouad Abd-El-Khalick, University of Illinois

S6.8.3 Building an Online Community of Practice: A Pilot Study of the NASA Endeavor Fellows

Meghan E. Marrero, U.S Satellite Laboratory, Inc.
 Jessica F. Riccio, Teachers College, Columbia University
 Glen S. Schuster, U.S Satellite Laboratory, Inc.

S6.8.4 The Role of Teacher Belief Systems and Classroom Discourse in the Interpretation of Reform-Based Instruction

Lynn M. Sikma, University of Illinois Urbana-Champaign

S6.8.5 Developing Secondary Science Teachers' Knowledge of Adolescent Identity Development

M. C. Smith, Northern Illinois University
 B. K. Kitts, Northern Illinois University
 Penny Billman, University of Illinois College of Medicine

S6.8.6 What is Known about Mentoring in Support of Reform-Based Science Teaching

Thomas R. Koballa, University of Georgia
 Leslie U. Bradbury, Appalachian State University

S6.8.7 Toward a Model of Effective Instructional Coaching in Science

Jim Minstrell, FACET Innovations, LLC
 Eric Magi, Spokane School District
 Cheryl Allendoerfer, FACET Innovations, LLC
 Ruth Anderson, FACET Innovations, LLC

S6.8.8 Professional Development at the Cutting-Edge of Science: Teacher Experiences and Perspectives on Biotechnology Education

Jamie E. Mann, University of Florida
 Troy D. Sadler, University of Florida

S6.8.9 Effectiveness of a Network-based Collaborative Professional Development Project on Teacher Professional Development: A case study

Kun-Yi Shih, National Changhua University of Education, Taiwan
 Huey-Por Chang, National Changhua University of Education, Taiwan
 Kuo-Hua Wang, National Changhua University of Education, Taiwan
 Chien-Kuo Hsieh, National Changhua University of Education, Taiwan

S6.8.10 Using Structural Equation Modeling to explore the Relationships among Factors and Science Teachers' Professional Competences

Ming-Liang Lin, National Kaohsiung Normal University, Kaohsiung, Taiwan
 Ming-Jun Su, Shu-Te University, Taiwan
 Jeng-Fun Hung, National Kaohsiung Normal University, Taiwan

S6.8.11 Changes in High School Chemistry Teacher Beliefs and Practice after a Professional Development Program

Ralph E. Spraker, South University
 Christine R. Lotter, University of South Carolina
 Greg Rushton, Kennesaw State University

S6.8.12 Engaging In-Service Teachers in Staff Development Through Model-Based Inquiry

Christopher A. Bogiages, Scholars Academy Conway, SC
 Christine R. Lotter, University of South Carolina

Strand 9: Reflective Practice

S6.9 Poster Session

10:30am – 11:45am, Conference Room 409

S6.9.1 Successes and Frustrations of High School Students during Their First Experience with Student-Driven, Problem-Based Physics Instruction

Jeffrey C. Nordine, Trinity University

S6.9.2 Understanding High School Science Teachers' Perceptions of Inquiry Teaching

Issam H. Abi-El-Mona
 Sharon Blong

S6.9.3 How Does Being in a Journal Club Improve My Understanding of the Skills and Knowledge of Educational Research?

Karen A. Tallman, University of Massachusetts Amherst
 Allan Feldman, University of South Florida

S6.9.4 Beginning the Development of SAPP: Self-Analysis Professional Portfolio

Philip Clarkson, Australian Catholic University
 Lyn Carter, Australian Catholic University
 Anne Scott, Australian Catholic University
 Andrea McDonough, Australian Catholic University

S6.9.5 E-Portfolios as Portraits of Growth: Enacting Inquiry in an In-Service Chemistry Education Program

Rachel Ruggirello, Washington University in St. Louis
 Wesley Pitts, Lehman College

Strand 10: Curriculum, Evaluation, and Assessment

S6.10 Poster Session

10:30am – 11:45am, Conference Room 410

President:

Joe Engemann, Brock University

S6.10.1 Inquiry Based Performance Assessment Tasks

Ann W. Wright, Canisius College
 Joe Engemann, Brock University
 Rodney Doran, State University of New York at Buffalo
 Ethel Bournia-Petrou, Erie County Community College
 Joe Zawicki, Buffalo State College
 Gail Zichitella

S6.10.1 Comparative Analysis of the Presentation of the Nature of Science in U.S High School Biology and Korea High School General Science Textbooks

Young H. Lee, University of Houston
 Eugene L. Chiappetta, University of Houston
 Yeon-A Son, Dankook University
 Seok Jun Hong, Dankook University

S6.10.2 Assessing Scientific Reasoning in a High School Classroom: The Translation of a Research Instrument into an Instructional Tool

Edward R. Geaney, University of California, Santa Cruz
 Jerome M. Shaw, University of California, Santa Cruz

S6.10.3 Exploring a Science Teacher's Assessment Beliefs and Practices through the Assessment Triangle Model

Edward R. Geaney, University of California, Santa Cruz

S6.10.4 Meta-Content Informal Formative Assessment and its Influence on Middle School Students' Developing Science Knowledge

Joseph A. Brobst, University of Delaware
 Eric M. Eslinger, University of Delaware

S6.10.5 Developing and Applying a Framework of Scientific Imagination and Measurement Scale for Scientific Imagination (MSI)

Jiyeong Mun, Ewha Womans University
 Kongju Mun, Ewha Womans University
 Sung-won Kim, Ewha Womans University

S6.10.6 Stakeholder Discourse Dynamics in an Elementary School Science Reform Effort

Meena M. Balgopal, Colorado State University
 Shaun Cornwall, Shepardson Elementary School

S6.10.7 Investigating the Effectiveness of Design Method for Science Class Combined Two-Dimensional Teaching Method with One Page Portfolio Assessment: Grade Fourth Students Understanding of Phase Change

Koichi Furuya, Hokkaido University of Education, Japan
 Tetsuo Hori, University Yamanashi, Japan

S6.10.8 Development of an Instrument to Assess Science Teachers' Perceived Technological Pedagogical Content Knowledge

James G. MaKinster, Hobart and William Smith Colleges
 William J. Boone, University of Miami
 Nancy M. Trautmann, Cornell Lab of Ornithology

S6.10.9 Designing and Using Simulation-based Assessments in Balanced State Assessment Systems

Matt Silbergliitt, WestEd
 Barbara C. Buckley, WestEd
 Edys Quellmalz, WestEd

S6.10.10 Development of Attitudes toward Socioscientific Issues Scale

Mustafa S Topcu, Yuzuncu Yil University

S6.10.11 A Case Study of a Virtual High School Biology Curriculum using the National Science Education Standards and the Revised Bloom's Taxonomy

Matthew E. Vick, University of Wisconsin-Whitewater

S6.10.12 Studying Evaluative Process: Critical Thinking around Observing Science Professional Development Workshops

Kristin Bass, Rockman et al
 Sarah Mushlin, Rockman et al
 Molly Reisman, Rockman et al

S6.10.13 EQUIP (Electronic Quality of Inquiry Protocol): A Valid Measure for Assessing Inquiry-Based Instruction

Jeff C. Marshall, Clemson University

Strand 11: Cultural, Social, and Gender Issues

S6.11 Poster Session

10:30am – 11:45am, Conference Room 411

S6.11.1 Teaching Students with Learning Disabilities in the General Education Science Classroom: Examining Middle Grades Science Teachers Instructional Practices

Marlene Morales, Florida State University
 Sherry A. Southerland, Florida State University
 Penny J. Gilmer, Florida State University

S6.11.2 Influences on the Evolution of a STEM Teacher in an Under-Resourced School: The Case of Andrew

Athena R. Ganchorre, University of Arizona

S6.11.3 Growth in Elementary Teachers' Personal and Professional Beliefs about Diversity

Brian Fortney, University of Texas at Austin

Nancy Albrecht, University of Minnesota

Bhaskar Upadhyay, University of Minnesota

S6.11.4 The Effects of School Type, Grade Level and Gender on High School Students' Metacognition

Sevda Yerdelen-Damar, Yuzuncu Yil University

Haki Pesman, Firat University

S6.11.5 Investigating Parents' View about Involvement in Their Children's Education Through a Parental Science Learning Group

Yi-Ting Cheng, National Changhua University of Education

Huey-Por Chang, National Changhua University of Education

Wen-Yu Chang, National Changhua University of Education

Jun-Yi Chen, National Chiayi University

S6.11.6 One Person Can Change a Village: The Differential Impact of Nutrition Education on Non-US Born Students and their Families

Penny M. Shumaker Jeffrey, North Carolina State University

Gail Jones, North Carolina State University

S6.11.7 Empowering English learners in the Science Classroom

Adelina V. Alegria, Occidental College

S6.11.8 From Tri-Cultural Conflict to Tri-Cultural Connection: How Successful Urban Science Educators Become Culturally Connected

Marlina N. Duncan, University of Massachusetts Amherst

S6.11.9 A Portrait of Middle Grades Science Teachers' Beliefs about the Inclusion of Student with Learning Disabilities

Marlene Morales, Florida State University

Sherry A. Southerland, Florida State University

Penny J. Gilmer, Florida State University

S6.11.10 Science as a Tool for Social and Economic Transformation: Exploring African American Students' Experiences in an Early College of Health Science Academy

Julie L. Haun-Frank, The University of North Carolina at Greensboro

S6.11.11 'Strangers in a Strange Land': Bridging the Gap between Preservice Early Childhood Teachers'

Valarie L. Akerson, Indiana University

Cary A. Buzzelli, Indiana University

Jennifer L. Eastwood

Strand 12: Educational Technology

S6.12 Poster Session

10:30am – 11:45am, Conference Room 412

S6.12.1 Tracing the Development of Crystal Island: Uncharted Discovery: An Intelligent Game-based Learning Environment

James Minogue, North Carolina State University

Bradford Mott, North Carolina State University

John Nietfeld, North Carolina State University

Hiller Spires, North Carolina State University

James Lester, North Carolina State University

Marc Russo, North Carolina State University

S6.12.2 The Effect of Computerized Peer Assessment on Scientific Writing Achievement of Secondary School Peer Assessors

Cees Terlouw, Saxion University, The Netherlands

Floris B. Bos, University of Twente, The Netherlands

Albert Pilot, University Utrecht, The Netherlands

S6.12.3 Developing Ecological Stewardship in Elementary School through Student Participation in Virtual Worlds

Janice L. Anderson, University of North Carolina at Chapel Hill

S6.12.4 SURGE: Integrating Tacit and Formal Understanding of Mechanics in a Digital Game

Douglas B. Clark, Vanderbilt University

Brian C. Nelson, Arizona State University

Cynthia M. D'Angelo, Arizona State University

Kent Slack, Arizona State University

Mario M. Martinez-Garza, Vanderbilt University

Muhsin Menekse, Arizona State University

S6.12.5 A System for High-throughput Capture of Assessment Data from Pilot Tests

Francis Molina, AAAS - Project 2061

George E. DeBoer, AAAS - Project 2061

Cari F. Herrmann-Abell, AAAS - Project 2061

Brian Sweeney, AAAS - Project 2061

S6.12.6 Evaluating the Potential Effects of Scaffolding Features on Student Learning of Science

Kasey L. McCall, University of Michigan

Namsu Shin, University of Michigan

LeeAnn M. Sutherland, University of Michigan

S6.12.7 A Study of Achievement, Attitudes, and Motivation in a First-Year High School Chemistry Classroom Using an Audience Response System

Douglas G. Balmer, Warwick High School

S6.12.8 Racing into the 21st Century: Usability Testing Results from a Serious Educational Game

Leonard A. Annetta, North Carolina State University
Marta Klesath, North Carolina State University

S6.12.9 Embedding Assessment in Serious Educational Games: Impacting the Hawthorne Effect

Shawn Y. Holmes, North Carolina State University

S6.12.10 Assessing Post Serious Educational Game Attitudes through Naturalistic Inquiry

Meng-Tzu Cheng, National Chaio Tung University
Elizabeth Folta, North Carolina State University

Strand 13: History, Philosophy, and Sociology of Science

S6.13 Poster Session

10:30am – 11:45am, Conference Room 413

Presider:

Gerald Rau

S6.13.1 The Influence of Argumentation on Students' Understandings of Nature of Science

Rola F. Khishfe, American University of Beirut
Saouma BouJaoude
Shannon Palouci
Todd Medintz

S6.13.2 Examining Professional Scientists' Epistemological Views of Science

Elizabeth H. Redman, University of California, Los Angeles
William Sandoval, University of California, Los Angeles

S6.13.3 Facilitating Students' Conceptual Understanding of Stoichiometry

Mansoor Niaz, Universidad de Oriente, Venezuela
Luis Montes, Escuela Tecnica de Pesca, Venezuela

S6.13.4 Exploring Ideas of Representation by Epistemological Language and Scientific Meta-Language in Hybrid Adapted Primary Literature

Marie-Claire Shanahan, University of Alberta

S6.13.5 Searching for Representations of Nature of Science in Middle and High School Textbooks Adopted in a Large Urban Public School District in Western United States

Hasan Deniz, University of Nevada Las Vegas
Cynthia L. Kern, University of Nevada Las Vegas
Thomas J. Bussey, University of Nevada Las Vegas
Kristoffer R. Carroll,

S6.13.6 Teaching the Conceptual History of Physics to Teachers

Charles Winrich, Boston University
Peter Garik, Boston University
Deb Nolan, School of Education, Boston University
Arthur Eisenkraft, University of Massachusetts Boston
Andrew Duffy, Boston University
Manher Jariwala, Boston University
Luciana Garabayo, Boston University
Nicholas Gross, Boston University

S6.13.7 Presentation of Atomic Structure in Turkish General Chemistry Textbooks

Bayram Costu, Karadeniz Technical University, Turkey
Mansoor Niaz, Universidad de Oriente, Venezuela

S6.13.8 Secondary School Students' Conceptions of Theories and Evidence: The Development and Implementation of a Qualitative Instrument for Assessment

Andri Christodoulou, King's College, London
Jonathan F. Osborne, Stanford University
Christina Howell-Richardson, King's College, London
Katherine Richardson, Institute of Education
Shirley Simon, Institute of Education

S6.13.9 The Impact of a U.S-Chinese Collaboration in Chemistry and Chemical Engineering: Scientists' Views of Collaboration and Science as a Global Enterprise

Anne S. Wrigley Collins, University of California, Santa Barbara

S6.13.10 Using Popper's 3-Worlds to Situate Metascientific (NOS) Knowledge

Jesse T. Bazzul, University of Toronto
John L. Bencze, University of Toronto

Strand 14: Environmental Education

S6.14 Poster Session

10:30am – 11:45am, Conference Room 414

S6.14.1 Assessing Extended Outdoor Experiences using FiNE Model for Learning in Nature

Tali Tal
Orly Morag

S6.14.2 Building Elementary Teachers' Background Knowledge and Confidence Enriches Environmental Curriculum and Enhances Teaching and Learning

Penny J. Gilmer, Florida State University
Dawn Pack, Destin Elementary School
Cindy Phillips, Port St. Joe Elementary School

S6.14.3 Validating a Learning Environment Instrument for use in Diverse Settings

David B. Zandvliet, Simon Fraser University
 Carlos G. Ormond, Simon Fraser University
 Rekha B. Koul, Curtin University of Technology
 Souraya Mansour, Royal Roads University

S6.14.4 Students Acting on Socioscientific Issues: Motivation from Their Science Inquiries

John L. Bencze, OISE, University of Toronto
 Margaret Bent, University of Toronto
 Erin Sperling, University of Toronto
 Steve J. Alsop, York University

S6.14.5 The Effect of Facilitator on Environmental Knowledge Construction of Learners in Field-Based Collaborative Inquiry

Cihan Cihangir, Giresun University
 Ozgul Yilmaz-Tuzun, Middle East Technical University

S6.14.6 Outdoor Education Centres and Place-Based Education: Paradigms and Possibilities

Gabriel R. Ayyavoo, OISE/University of Toronto
 Erminia G. Pedretti, University of Toronto

S6.14.7 Teaching Identity in Environmental Education: The Pedagogic Roles Assumed by Environmental Educators And Their Impact On Teaching Practice

Patrick F. Dowd, University of California at Davis

S6.14.8 The Development of a Place-Based Learning Environment

Carlos G. Ormond
 David B. Zandvliet
 Susan Teed
 Laura Piersol

S6.14.9 Muddying the Waters: Promoting Environmental Education through Practice-Theory

Erminia G. Pedretti, OISE, University of Toronto
 Katherine Bellomo, University of Toronto

S6.14.10 A Climate Change Course for College Students

Younkyeong Nam, University of Minnesota
 Emi Ito, University of Minnesota

S6.14.11 Seventh Graders' Concepts and Ways of Reasoning about the Impact of Global Warming on Tornadoes and Hurricanes

Soyoung Choi, Purdue University
 Daniel P. Shepardson, Purdue University

Strand 15: Policy**S6.15 Poster Session**

10:30am – 11:45am, Conference Room 415

S6.15.1 Engaging STEM Faculty in K–20 Reforms—Implications for University Policies and Practices

Joseph McInerney, Westat
 Xiaodong Zhang, Westat

S6.15.2 An Analysis of Science Achievement in Wisconsin's Urban Charter Schools

Matthew E. Vick, University of Wisconsin-Whitewater

S6.15.3 From the Trenches: Understanding the Impact of Policy on Science Education in Rural Schools in the Black Belt Region of Georgia from the Teachers' Perspective

Georgia W. Hodges, UGA

S6.15.4 Trends in Science Education Research Published in the Journal of Research in Science Teaching: A Longitudinal Policy Perspective

Michael R. Vitale, East Carolina University
 Nancy R. Romance, Florida Atlantic University
 Frank Crawley, East Carolina University

S6.15.5 Teachers' Response to Reform: Attitudes and Practice of Inquiry-Oriented Instruction

Jeffrey D. Thomas, Central Connecticut State University
 Ann Rivet, Teachers College, Columbia University

Awards Luncheon

12:00pm – 2:00pm

Salons E and F

Concurrent Session #7

2:15pm – 3:45pm

International Committee Sponsored Session**S7.1 Administrative Symposium: Research into Practice: Practice Informing Research**

2:15pm – 3:45pm, Salon D

Presenters:

Mei-Hung Chiu, National Taiwan Normal University, Taiwan
 Reinders Duit, IPN Kiel, Germany

Strand 1: Science Learning, Understanding and Conceptual Change

S7.2 SC-Paper Set: Knowledge Organization

2:15pm – 3:45pm, Conference Room 401

Presider:

Robert Louisell, St. Ambrose University

S7.2.1 Students' Rating of Problem Similarity as a Measure of Problem-Solving Expertise

Frances A. Mateycik, Pennsylvania State University - Altoona

David H. Jonassen, University of Missouri - Columbia

N. Sanjay Rebello, Kansas State University

S7.2.2 Students' Conceptions – Coherent or Fragmented? And what Difference Does it Make?

David E. Brown, University of Illinois at Urbana-Champaign

S7.2.3 Thinking Like a Scientist: Using Vee-Maps to Connect Scientific Process with Scientific Concepts

Christine M. Knaggs, University of Toledo

Rebecca M. Schneider, University of Toledo

S7.2.4 Using Knowledge Space Theory to Analyze Concept Maps in an Undergraduate Immunology Course

Laura A. Cathcart, University of Maryland

Mike Stieff, University of Maryland

Gili Marbach-Ad, University of Maryland

Ann C. Smith, University of Maryland

Kenneth A. Frauwirth, University of Maryland

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S7.3 SC-Paper Set: Language, Identity, and Epistemology Development in Science Learning

2:15pm – 3:45pm, Conference Room 402

Presider:

Alandeom W. Oliveira, SUNY Albany

S7.3.1 Engaging Underrepresented Students in Science through Authentic Investigation

Xenia S Meyer, Cornell University

Barbara A. Crawford, Cornell University

S7.3.2 Exploring Science Teaching and Learning with English Language Learners in Urban Settings

Gillian U. Bayne, Lehman College of the City

University of New York

Romil Amin, Lehman College of the City University of New York

S7.3.3 Young African American Children's Representations of Self, Science, and School: Making Sense of Difference

Maria Varelas, University of Illinois at Chicago

Justine M. Kane, University of Illinois at Chicago

Caitlin Wylie, University of Cambridge

S7.3.4 Grounding Teaching in Naturalistic Descriptions of Teacher and Student Action in the Science Classroom

Karim M. Hamza, Stockholm University

Per-Olof Wickman, Stockholm University

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S7.4 SC-Paper Set: Inquiry Learning and Inquiry Teaching: Stories from the Classroom

2:15pm – 3:45pm, Conference Room 403

Presider:

Deborah Smith, Penn State University

S7.4.1 Hiring a Science Specialist to Improve Elementary Science Instruction is Just the Beginning: Supporting Schools to Maximize the Impact of Science Specialists

Wendy M. Frazier, George Mason University

Donna R. Sterling, George Mason University

Amy Bordeaux, George Mason University

S7.4.2 Emerging Science in Teachers: Trials and Successes

Diana C. Rice, Florida State University

Angela I. Canto, Florida State University

Sibel Kaya, Florida State University

Carol Connor, Florida State University

S7.4.3 Early Science Teaching and Students' Achievement in Kindergarten and First-Grade

Refika Olgan, Middle East Technical University

S7.4.4 Teachers Managing Students' Ideas, Questions, and Contributions in the Context of an Innovative Inquiry-Based Elementary Science Unit

Rachel S Phillips, University of Washington

Christopher J. Harris, SRI International

William R. Penuel, SRI International

Britte Cheng, SRI International

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S7.5 SC-Paper Set: Developing Science Teachers' Content Knowledge

2:15pm – 3:45pm, Conference Room 404

Presenter:

Nader Wahbeh, University of Illinois at Urbana Champaign

S7.5.1 A Shadow Curriculum: How Would the Biology Syllabus Look if it was Written by Students?

Ayelet Baram-Tsabari, Technion, Israel

Galit Hagay, Technion, Israel

S7.5.2 New Tools for Investigating the Relationship between Teacher Content Knowledge and Student Learning

Sean Smith, Horizon Research, Inc.

Melanie J. Taylor, Horizon Research, Inc.

S7.5.3 “We are Taking their Brilliant Minds”: Exploring the Use of Linguistic Devices to Mark Expertise in a Scientist-Teacher Collaboration

Marie-Claire Shanahan, University of Alberta

Robert E. Bechtel, University of Alberta

S7.5.4 Teacher Responses to Assessments of Understanding of Water in Socio-Ecological Systems: A Learning Progressions Approach

Kristin L. Gunckel, University of Arizona

Beth Covitt, University of Montana

Charles W. Anderson, Michigan State University

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S7.6 SC-Paper Set: Argumentation and Socioscientific Issues

2:15pm – 3:45pm, Conference Room 406

Presenter:

Allan Feldman, University of South Florida

S7.6.1 Examining Images of Scientific Inquiry through the Lens of Teacher Classroom Argumentation

Ron Gray, Oregon State University

Nam-Hwa Kang, Oregon State University

S7.6.2 Socio-Scientific Issues – A Way to Improve Students' Interest and Learning?

Britt Lindahl, Kristianstad University, Sweden

Margareta Ekborg, Malmö University, Sweden

Mikael Winberg, Umeå University, Sweden

Christina Ottander, Umeå University, Sweden

Maria Rosberg, Kristianstad University, Sweden

Eva Nyström, Umeå University, Sweden

Malin Ideland, Malmö University, Sweden

Claes Malmberg, Malmö University, Sweden

Agneta Rehn, Malmö University, Sweden

S7.6.3 Writing Differently about a Socioscientific Issue: Developing Students' Scientific Literacy through the Writing of Hybridised Scientific Narratives

Louisa Tomas, James Cook University, Australia

Stephen M. Ritchie, Queensland University of Technology, Australia

S7.6.4 How Middle School Students and High School Students Evaluate the Arguments Found within Articles Written For the Popular Press: A Comparison Study

Leeanne K. Gleim, Florida State University

Victor Sampson, Florida State University

Melanie Hester, Florida State University

Kiesha Williams, Florida State University

Strand 5: College Science Teaching and Learning (Grades 13-20)

S7.7 SC-Paper Set: Students' Views and Beliefs in Undergraduate Biology and Biotechnology

2:15pm – 3:45pm, Conference Room 405

Presenter:

Kristy L. Halverson, University of Southern Mississippi

S7.7.1 Exploring Student Generated Questions using Media and Self-selected Science Information in an Undergraduate Non-science Major's Biology Course

Michele A. Snyder, Clinton Community College

S7.7.2 “Genetically Modified Foods are the Only Foods that have DNA”: Epistemological Beliefs and Conceptual Understanding in a Non-Majors Biotechnology Course

Carina M. Rebello, University of Missouri - Columbia

Marcelle A. Siegel, University of Missouri - Columbia

Sharyn K. Freyermuth, University of Missouri - Columbia

Bruce A. McClure, University of Missouri - Columbia

S7.7.3 Pre-Service Elementary Education Students' Scientific Content Knowledge of Biotechnology and Its Implications for Teaching and Learning

Brandy A. Skjold, Western Michigan University
Renee' Schwartz, Western Michigan University
Carrie McKean, Western Michigan University

S7.7.4 Undergraduate and Teaching Assistant Nature of Science Understanding in an Explicit / Reflective Biology Laboratory

Elisabeth E. Schussler, University of Tennessee
Nazan U. Bautista, Miami University
Melanie A. Link-Perez, SUNY College at Oneonta

Strand 6: Science Learning in Informal Contexts & Strand 14: Environmental Education Co-Sponsored

S7.8 Symposium: Beyond Citizen Science: Science Learning and Public Participation in Environmental Research

2:15pm – 3:45pm, Conference Room 414

Discussants:

Carol Brandt, Virginia Polytechnic Institute and State University
Jennifer Shirk, Cornell Lab of Ornithology Ithaca, NY
Rebecca Jordan, Rutgers
Heidi L. Ballard, University of California at Davis
Terry M. Tomasek, Elon University

Strand 7: Pre-service Science Teacher Education S7.9 SC-Paper Set: Pre-Service Teachers' Knowledge of Content and Students

2:15pm – 3:45pm, Conference Room 407

President:

Tom J. McConnell, Ball State University

S7.9.1 Depicting a Comprehensive Picture of Science Teacher's PCK: A Theoretical Model

Saiqa Azam, University of Calgary, AB, Canada
HsingChi von Bergmann, University of Calgary, Canada

S7.9.2 Finding Connections between Pre-service Elementary Teachers' Understandings of Science and Mathematics Teaching and Learning

Julie M. Kittleson, University of Georgia
Rachel E. Wilson, University of Georgia
Amber Jarrard, University of Georgia

S7.9.3 Teaching Science as Argument: Prospective Elementary Teachers' Knowledge

Reizelie Barreto, Towson University
Carla Zembal-Saul, The Pennsylvania State University

S7.9.4 Integrating ICT into the Science Curriculum: Teacher Knowledge (TPACK) and Strategies to Support K-8 Science Skills and Concepts

Candace B. Figg, Brock University
Kamini Jaipal, Brock University

Strand 8: In-service Science Teacher Education S7.10 SC-Paper Set: Teacher-Scientist Collaborations 2:15pm – 3:45pm, Conference Room 408

President:

Kalani J. Eggington, QU

S7.10.1 How Research Experiences for Teachers (RET'S) Effect Science Teachers' Knowledge, Beliefs and Practices

Barry W. Golden, Florida State University
Patrick Enderle, Florida State University
Yavuz Saka, Florida State University
Sibel Uysal, Florida State University

S7.10.2 A Study of Teacher-Scientist Collaboration Settings

Kalani J. Eggington, The University of Queensland, Australia

S7.10.3 The Impact of Scientist Mentors on Science Teachers' Perceptions of Scientists and Understanding of Science

Roxanne Hughes, Florida State University
Patrick Enderle, Florida State University
Pat Dixon, Florida State University
Barry W. Golden, Florida State University
Jose Sanchez, Florida State University

S7.10.4 Development of Teachers as Scientists in a Research Experiences for Teachers Program

Lisa C. Benson, Clemson University
Emily G. Medders, Southern Wesleyan University
Cheryl P. Cass, Clemson University

Strand 8: In-service Science Teacher Education S7.11 Related Paper Set: The Effect of Professional Development on Teachers' Knowledge, Skills, and Classroom Implementation and Their Students' Ability to Write Scientific Explanations 2:15pm – 3:45pm, Salon C

S7.11.1 The Effect of Context and Activities on Teachers' Scientific Explanations

Dale R. Baker, Arizona State University
 Nievita Bueno Watts, Arizona State University
 Gita Perkins, Arizona State University
 Tapati Sen, Arizona State University
 Elizabeth B. Lewis, University of Nebraska-Lincoln
 Michael G. Lang, Maricopa Community College
 District Offices

S7.11.2 Growth in High School English Teachers' Understanding of the Science Concept of Energy

Gita Perkins, Arizona State University
 Dale R. Baker, Arizona State University
 Nievita Bueno Watts, Arizona State University
 Michael G. Lang, Maricopa Community Colleges
 District Offices

S7.11.3 Improving High School Teachers' Content Knowledge of Energy in Systems Through Research-based Professional Development

Nievita Watts, Arizona State University
 Dale R. Baker, Arizona State University
 Steven Semken, Arizona State University
 Michael G. Lang, Maricopa Community Colleges
 District Offices

S7.11.4 The Effect of Implementing the CISIP Model on Students' Scientific Explanations

Tapati Sen, Arizona State University
 Nievita Bueno Watts, Arizona State University
 Gita Perkins, Arizona State University
 Dale R. Baker, Arizona State University
 Michael G. Lang, Maricopa Community Colleges
 District Offices
 Rachelle Beard, Arizona State University
 Sibel Uysal, Florida State University
 Elizabeth B. Lewis, University of Nebraska-Lincoln

S7.11.5 Modeling Teacher Professional Development and Classroom Implementation of Instructional Strategies For Building Scientific Classroom Discourse Communities

Elizabeth B. Lewis, University of Nebraska
 Dale R. Baker, Arizona State University
 Brandon Holding, Arizona State University
 Michael G. Lang, Maricopa Community Colleges
 District Offices

Strand 9: Reflective Practice

S7.12 Related Paper Set: Pedagogical Content Knowledge for Teaching the Nature of Science 2:15pm – 3:45pm, Conference Room 409

S7.12.1 Developing PCK for NOS through Self-Study

Deborah L. Hanuscin, University of Missouri

S7.12.2 Developing PCK for NOS: Making Instruction Explicit

Deepika Menon, University of Missouri
 Stephen B. Witzig, University of Missouri
 Tina M. Roberts, University of Missouri

S7.12.3 Anticipating Student Questions: A Self-Study Approach to Develop PCK for teaching Theory and Law

Emily M. Walter, University of Missouri
 Andrew West, University of Missouri

S7.12.4 Developing PCK for NOS: A Self-Study of the Use of Concept Mapping to Assess NOS

Dominique Merle-Johnson, University of Missouri
 Nattida Promyod, University of Iowa
 Ya-Wen Cheng, University of Missouri

S7.12.5 Developing PCK for NOS: Strategies for Probing Students' Ideas about Subjectivity in Science

Jennifer Lacy, University of Missouri
 Deborah L. Hanuscin, University of Missouri

Strand 10: Curriculum, Evaluation, and Assessment

S7.13 SC-Paper Set: Assessing Teachers' Knowledge, Beliefs and Practices

2:15pm – 3:45pm, Conference Room 410

Presenter:

Joe Engemann, Brock University

S7.13.1 Statewide Assessment Data in Pre-service and In-service Teacher Preparation

Joe Zawicki, State University College at Buffalo
 Laura Dustin, Honeoye Central School District
 David Henry, State University College at Buffalo
 Timothy Johnson, Western New York Regional Information Center (WNYRIC)

S7.13.2 Assessing Teacher Science Content Knowledge: Measurement Sensitivity to a Physics Course Intervention

Thomas R. Tretter, University of Louisville

S7.13.3 Investigating the Influence of Teachers' Orientations toward Curriculum Materials on Enactment

Meredith Houle, San Diego State University
Michelle Nolasco, San Diego State University
Katherine L. McNeill, Boston College

S7.13.4 Investigating Teacher Impact on Student Inquiry Science Learning Using a Hierarchical Linear Model

Ou Lydia Liu, Educational Testing Service
Hee-Sun Lee, Tufts University
Marcia Linn, UC Berkeley

S7.13.5 Exploring Patterns in Student Reports of Classroom Instruction

Gavin Fulmer, National Science Foundation
Ling L. Liang, La Salle University

Strand 11: Cultural, Social, and Gender Issues**S7.14 SC-Paper Set: Dialogues, Discourses, And Children: Cogenerating Science in the Everyday World**

2:15pm – 3:45pm, Conference Room 411

Presider:

Gale Seiler, McGill University

S7.14.1 “Dressing Rooms”, “Jelly Donuts”, and “Straws”: An Exploration into How Urban, Kindergarten Girls Integrate Scientific and Everyday Discourse

Cassie F. Quigley, Indiana University
Gayle A. Buck, Indiana University

S7.14.2 Young People's (Grade 4/5) Aspirations and Interest in Science

Louise Archer, King's College London
Jennifer DeWitt, King's College London
Justin Dillon, King's College London
Jonathan F. Osborne, Stanford University
Billy Wong, King's College London

S7.14.3 Children's Learning about Water through Discourse-in-Interaction

Charles Max, University of Luxembourg
Christina A. Siry, University of Luxembourg
Gudrun Ziegler, University of Luxembourg

S7.14.4 Connecting Urban Students to Science: The Importance of Building Social Capital and Enacting Reality Pedagogy

Sheila I. Borges, Teachers College, Columbia University
Alissa Berg, Teachers College, Columbia University
Tanzina Taher, Teachers College, Columbia University
Christopher Emdin, Teachers College, Columbia University

Strand 12: Educational Technology**S7.15. SC-Paper Set: Examining Classroom Contexts and On-Line Learning Environments**

2:15pm – 3:45pm, Conference Room 412

Presider:

Gary Hoban, University of Wollongong

S7.15.1 Technology Mediated Teacher Student Interactions and Classroom Discourse

Sibel Uysal-Bahbah, Florida State University
Colleen Megowan-Romanowicz, Arizona State University
David A. Birchfield, Arizona State University
Mina C. Johnson-Glenberg, Arizona State University

S7.15.2 Project PEER: Supporting Teachers and Students in a Virtual Community of Learners

Rodelyn P. Stoeber, St. Boniface College
Brian Lewthwaite, University of Manitoba

S7.15.3 The Development and Structure of Student Communities in the Secondary Blended Learning Science Classroom

Jonathan B. Crymes, The University of Georgia

S7.15.4 Examining Argument Structures Developed by Students Engaging in Online Discussion on Inquiry Investigations

Aeran Choi, Kent State University
Brian Hand, University of Iowa
Lori Norton-Meier, University of Louisville

Strand 12: Educational Technology**S7.16 Administrative Symposium: Investigating Virtual Learning Environments in STEM Education**

2:15pm – 3:45pm, Conference Room 501

Discussant:

Yasmin Kafi, University of Pennsylvania

Presenters:

Robb Lindgren, Stanford University
Melissa Gresalfi, Indiana University
Chris Dede, Harvard University
Keisha Varma, University of Minnesota

Strand 13: History, Philosophy, and Sociology of Science

S7.17 SC-Paper Set: Frameworks and Factors Associated with Science Epistemologies

2:15pm – 3:45pm, Conference Room 413

President:

Mansoor Niaz

S7.17.1 A Study of Student Beliefs about the Epistemology of Science and their Relationship with Students Personal Epistemologies

Jonathan F. Osborne, Stanford University

Christodolou Andri, King's College London

Howell-Richardson Christina, King's College London

Katherine Richardson, University of London

Shirley Simon, University of London

S7.17.2 Nature of Science in Science Education: Toward a Coherent Framework for Synergistic Research and Development

Fouad Abd-El-Khalick

S7.17.3 The Unique Nature of Biology, the Changing Nature of Biological Research and Questions Raised for Biology Education

Matthew J. Kloser, Stanford University

S7.17.4 Effect of Student Level Variables on Elementary Students' Nature of Science Views

Esme Hacieminoglu, Selcuk University

Hamide Ertepinar, Middle East Technical University

Ozgul Yilmaz-Tuzun, Middle East Technical University

Strand 15: Policy

S7.18 Administrative Symposium: STEM Education Engagement and Advocacy: An Examination at Different Organizational Levels

2:15pm – 3:45pm, Conference Room 415

Discussants:

Charlene M. Czerniak, The University of Toledo

Kadir Demir, Georgia State University

Camille Sutton-Brown, Georgia State University

Carla C. Johnson, University of Cincinnati

Norman G. Lederman, Illinois Institute of Technology

Judith S. Lederman, Illinois Institute of Technology

Mary Cummane, Perspectives/IIT Mathematics and Science Academy

Chad D. Ellett, CDE Research Associates, Inc.

Lisa Martin-Hansen, Georgia State University

Lacey Strickler, the University of Toledo

Concurrent Session #8

4:00pm – 5:30pm

Strand 1: Science Learning, Understanding and Conceptual Change

S8.1 SC-Paper Set: Scientific and Technological Understanding

4:00pm – 5:30pm, Conference Room 401

President:

Samson M. Nashon, University of British Columbia

S8.1.1 The Role of Metaconceptual Awareness in the Change and the Durability of Conceptual Understandings

Mesut Sackes, The Ohio State University

Kathy Cabe Trundle, The Ohio State University

S8.1.2 Recognizing and Applying the Explanatory Power of Pivotal Scientific Theories in the Science Classroom

Kevin D. Cunningham, University of Wisconsin - Madison

S8.1.3 Children's Learning about Materials Science through Engineering-Design-Based Instruction

Kristen B. Wendell, Tufts University

Hee-Sun Lee, Tufts University Department of Education

S8.1.4 Research on Undergraduate Students' Understanding of Nanoscience and the Development of a Nanoscience Concept Inventory

Alan K. Szeto, Purdue University

George M. Bodner, Purdue University

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S8.2 Symposium: Perspectives on Authenticity in Secondary Science Education

4:00pm – 5:30pm, Salon D

Discussant:

Richard A. Duschl, Penn State University

Presenters:

Anat Yarden, Weizmann Institute of Science, Rehovot, Israel

Maria-Pilar Jimenez-Alexandre, University of Santiago de Compostela, Spain

Clark A. Chinn, Rutgers University

Michiel van Eijck, Eindhoven University of Technology, The Netherlands

Hadas Gelbart, Weizmann Institute of Science, Israel

Luis Fernández-López, University of Santiago de Compostela, Spain

Beatriz Bravo, University of Santiago de Compostela, Spain

Ravit Duncan, Rutgers

William J. Pluta, Rutgers

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S8.3 SC-Paper Set: Contexts and Factors Influencing Students' Science Attitudes and Interests

4:00pm – 5:30pm, Conference Room 402

Presenter:

Sung-Tao Lee, Naval Academy, Taiwan

S8.3.1 Post-16 Participation in Physics: A Survey to Explore the Factors that Influence It

Fani Stylianidou, University of London

Tamjid Mujtaba, University of London

Michael Reiss, University of London

Bijan Riaz-Farzad, University of London

S8.3.2 Learning With Black-Box-Experiments

Gunnar Friege, Leibniz University, Germany

S8.3.3 An Investigation of Children's Interested and not Interested Science Topics in Textbooks

Fu-Pei Hsieh, Kuang-Hua Primary School, Kaohsiung, Taiwan

Sung-Tao Lee, Naval Academy

S8.3.4 Contextualization across Curricular Interpretations: A Case-Study of a Project-Based Learning Environment

Kathryn F. Drago, University of Michigan

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S8.4 SC-Paper Set: Hearing From the Teachers: Their Thoughts on Inquiry Teaching

4:00pm – 5:30pm, Conference Room 403

Presenter:

Karen Levitt, Duquesne University

S8.4.1 Examining the Beliefs and Practices of Two Effective Primary Science Teachers

Angela C. Fitzgerald, Edith Cowan University, Perth, Australia

S8.4.2 Teachers' Voices on Integrating Metacognition into Science Education

Nir Orion, Weizmann Institute of Science

Adi Ben-david, Weizmann Institute of Science

S8.4.3 Exploring Primary Teachers' Conceptions of Science Teaching: Implementing Inquiry Science Lessons

Uzma Khan, Syracuse University

Sharon Dotger, Syracuse University

Vicki McQuitty, Davis College

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S8.5 Related Paper Set: Teaching in Whole Class Discussion Mode: Teaching Strategies, Interactive Simulations, and Science Learning

4:00pm – 5:30pm, Conference Room 404

Presenter:

Michael Gleason, Georgia College and State University

S8.5.1 Case Study of Teaching Strategies Used Before, During and After a Simulation to Scaffold the Development of a Visualizable Microscopic

Norman Price, University of Massachusetts-Amherst

Abi Leibovitch, University of Massachusetts-Amherst

S8.5.2 Supporting Students' Construction of Mental Models for Electric Circuits: An Investigation of Teacher Moves Used in Whole Class Discussions

E. Grant Williams, School District 18, Fredericton,

New Brunswick, Canada

S8.5.3 Small Group vS Whole Class Use of Interactive Computer Simulations: Comparative Case Studies of Matched High School Physics Classes

A. Lynn Stephens, University of Massachusetts-Amherst

John J. Clement, University of Massachusetts-Amherst

Ileana Vasu, University of Massachusetts-Amherst

S8.5.4 Computer Simulations to Teach Kinematics in Large and Small Group Settings: Achievement, Gender and Attitudes

Ileana Vasu, University of Massachusetts-Amherst

Renee C. Sweeney, Westfield High School, Massachusetts

Strand 5: College Science Teaching and Learning (Grades 13-20)

S8.6 SC-Paper Set: Inquiry-based Laboratory Experiences for Undergraduates

4:00pm – 5:30pm, Conference Room 405

Presenter:

Michael Gleason, Georgia College and State University

S8.6.1 A Cross-Case Study on Implementing Inquiry-Based Laboratories at the University Level

Stephen B. Witzig, University of Missouri

Ningfeng Zhao, East Tennessee State University

Sandra K. Abell, University of Missouri

Frank J. Schmidt, University of Missouri

S8.6.2 Use of Self-Explanations in Chemistry Laboratory Reports: Supporting Student Procedural Understanding and Transitioning Laboratory Curricula

Andrea G. Van Duzor, Chicago State University

S8.6.3 Argument Driven Inquiry: An Instructional Model for Use in Undergraduate Chemistry Labs

Joi P. Walker, Tallahassee Community College

Jonathon Grooms, Florida State University

Brittany Anderson, Florida State University

Carol O. Zimmerman, Tallahassee Community College

Victor Sampson, Florida State University

Strand 6: Science Learning in Informal Contexts

S8.7 Symposium: Intersections of Science Education Research and Practice and Issues of Access, Equity, and Culture

4:00pm – 5:30pm, Conference Room 406

Discussants:

Sandra T. Martell, University of Wisconsin-Milwaukee

Leslie R. Herrenkohl, University of Washington

Doris Ash, University of California Santa Cruz

John H. Falk, Oregon State University

Jean Creighton, UWM Planetarium

Thao Mai, University of California Santa Cruz

Elizabeth R. Drame, University of Wisconsin-Milwaukee

Dale McCreedy, The Franklin Institute

Strand 7: Pre-service Science Teacher Education

S8.8 Related Paper Set: Transforming Science Teacher Education in Two Contexts (HBI and PWI): The Project Nexus Study (Years 1 – 4)

4:00pm – 5:30pm, Conference Room 407

Discussant:

Sharon J. Lynch, National Science Foundation/

George Washington University

Presenter:

Mark D. Guy, University of North Dakota

S8.8.1 The Beliefs and Reported Science Teaching Practices of Newly Graduated Elementary and Middle School Education Majors

J. Randy McGinnis, University of Maryland

Gili Marbach-Ad, University of Maryland

Scott J. Dantley, Coppin State University

Rebecca Pease, University of Maryland

Amy H. Dai, University of Maryland

S8.8.2 Promoting Science for All by Way of Student Interest in Transformative Undergraduate Science Non-majors Courses in Historically Black Institution and Primarily White Institution

Gili Marbach-Ad, University of Maryland

J. Randy McGinnis, University of Maryland

Scott J. Dantley, Coppin State University

Spencer Benson, University of Maryland

Amy H. Dai, University of Maryland

Rebecca Pease, University of Maryland

S8.8.3 An Investigation of the Influence of an Informal Science Education Afterschool Internship in a Formal Science Education Teacher Preparation Program

Phyllis Katz, University of Maryland

Emily Hestness, University of Maryland

Kelly Riedinger, University of Maryland

J. Randy McGinnis, University of Maryland

Amy H. Dai, University of Maryland

Rebecca Pease, University of Maryland

S8.8.4 Transforming Elementary Science Teacher Education by Bridging Formal and Informal Science Education in an Innovative Science Methods Course

Kelly Riedinger, University of Maryland

Gili Marbach-Ad, University of Maryland

J. Randy McGinnis, University of Maryland

Emily Hestness, University of Maryland

Rebecca Pease, University of Maryland

Phyllis Katz, University of Maryland

Strand 8: In-service Science Teacher Education

S8.9 SC-Paper Set: Urban Science and Reform

4:00pm – 5:30pm, Conference Room 408

Presenter:

Irene U. Osisioma, California State University

S8.9.1 An Earth Science Professional Development for Urban Teachers

Younkyeong Nam, University of Minnesota

John Oughton, University of Minnesota

S8.9.2 Challenges and Solutions of a Collaborative Science Professional Development in Urban Centers

Irene U. Osisioma, California State University Dominguez Hills

Hedy Moscovici, California State University Dominguez Hills

S8.9.3 Under The Fog of Science Education Reform: A Spotlight on Administrators

Rachel Ruggirello, Washington University

Sonya N. Martin, Drexel University

S8.9.4 Teaching Science in the City: Bridging Formal and Informal Science Learning Contexts with Preservice and Inservice Teachers

Maria S Rivera Maulucci, Barnard College, Columbia University
Jennie S Brotman, Barnard College, Columbia University

Strand 8: In-service Science Teacher Education S8.10 Symposium: Understanding the Complex Nature of Professional Development Characteristics that Impact Large-Scale Science and Technology Projects

4:00pm – 5:30pm, Salon C

Discussants:

Susan A Yoon, University of Pennsylvania
Lei Liu, University of Pennsylvania
Sao-Ee Goh, University of Pennsylvania
Betty Chandy, University of Pennsylvania
Jorge Santiago-Aviles, University of Pennsylvania
James McGonigle, University of Pennsylvania
Kira Baker-Doyle, Penn State
Michael Schrlau, Temple University
Robert Johnson, Temple University
Dorothea Lasky, University of Pennsylvania

Strand 10: Curriculum, Evaluation, and Assessment S8.11 SC-Paper Set: Implementation of Reform-Based Science Curriculum and Assessment

4:00pm – 5:30pm, Conference Room 410

Presider:

Gavin Fulmer, National Science Foundation

S8.11.1 Outdoor Learning Experiences Embedded in a Curricular Unit about The Local Environment: The Students' Perspective

Molly L. Yunker, University of Michigan

S8.11.2 Comparing Student Achievement across Time in Contexts Using a Coherent Inquiry Curriculum Versus Those Using Traditional Curricula

Joseph S Krajcik, University of Michigan
LeeAnn M. Sutherland, University of Michigan
Sean Smith, Horizon Research, Inc.
Brian J. Reiser, Northwestern University
David Fortus, Department of Science Teaching Weizmann Institute of Science

S8.11.3 Addressing Challenges of Construct Validity through the Design of a Scalable Cognitively-Based Science Performance Assessment Task

Audrey S Whitaker, Columbia University
Ann Rivet, Columbia University

S8.11.4 Student Involvement in Assessment -- A Vehicle for Disciplinary Learning

Janet E. Coffey, University of Maryland, College Park
Sandra Honda

Strand 11: Cultural, Social, and Gender Issues

S8.12 SC-Paper Set: Sense of Place and Social Justice in Science Education

4:00pm – 5:30pm, Conference Room 411

Presider:

Robert M. Danielowich, Adelphi University

S8.12.1 Science Education, Radical Social Justice, and Scientific Heteroglossia: An Ethnographic Examination of the Street Medic Movement

Matthew Weinstein, University of Washington-Tacoma

S8.12.2 How Sense of Place Matters: Lessons Learned from the Implementation of an Interdisciplinary Place-Based Curriculum

Tara B. O'Neill, University of Hawaii - Manoa
Angela Calabrese Barton, Michigan State University
Verneda Johnson, Issac Newton Middle School for Math and Science

S8.12.3 "Our Elders are our Scientists": Western Scientific and Aboriginal Use of Language in oral Presentations

Robert E. Bechtel

S8.12.4 Exposing the Impact of Opp(regre)ssive Policies on Teacher Development and on Student Learning

Alberto J. Rodriguez, San Diego State University

Strand 11: Cultural, Social, and Gender Issues

S8.13 Related Paper Set: Place-based Science across Countries and Cultures: In Search of a Model of Universal Design for Learning in Science

4:00pm – 5:30pm, Conference Room 409

Discussant:

Masakata Ogawa, Tokyo University of Science

S8.13.1 Design Elements and Learning Outcomes of Two Place-Based Education Programs Situated in the Southwest United States

Steven Semken, ASU
Deborah Williams, ASU
Janet Ross, Four Corners School of Outdoor Education, Monticello, UT

S8.13.2 Raising Navajo Students' Engagement and Achievement with PQRSST Lesson Planning and Ss of Lesson Delivery

Nancy Kastning, Shonto Preparatory School, AZ

S8.13.3 Exploring Culturally Responsive Curriculum for a High-School Science Class in Hawai'i

Lorinda Forster, Kamehameha School

S8.13.4 Place-based Science Learning as Universal Design: Increasing Access to Science Learning through Study of Shared Places

Pauline Chinn, University of Hawaii,

Chiung-Fen Yen, Providence University, Taiwan

Li-Hua Ho, Providence University, Taichung, Taiwan

Huei Lee, National Dong Hwa University,

Hualien, Taiwan

Rojjana Sutrabutra, University of Hawaii

Pornthip Oatthivech, University of Hawaii

Margarita Cholymay, University of Hawaii

Strand 12: Educational Technology

S8.14 SC-Paper Set: Simulations, Design, & Gaming to Support Science Learning and Assessment 4:00pm – 5:30pm, Conference Room 412

President:

Timothy D. Zimmerman, Rutgers

S8.14.1 Programming a Simulation to Support 8th Grade Students' Model-based Learning about Natural Selection

Lin Xiang, University of California, Davis

Cynthia Passmore, University of California, Davis

S8.14.2 Teaching Animals to Fourth Graders with Lego Engineering-Design

Ismail Marulcu, Boston College

Michael Barnett, Boston College

S8.14.3 Using Simulations to Assess Complex Science Learning in Middle School Classrooms

Barbara C. Buckley, WestEd

Edys Quellmalz, WestEd

Matt Silberglitt, WestEd

S8.14.4 Does The 3D Serious Game Physics Geeks Facilitate Learning In Conceptual Physics Students?

Phillip M. Stewart, Teachers College, Columbia University

Ann Rivet, Teachers College, Columbia University

Strand 13: History, Philosophy, and Sociology of Science

S8.15 SC-Paper Set: Teachers' Knowledge and Practices Related to Nature of Science

4:00pm – 5:30pm, Conference Room 413

President:

Nancy Ruggeri

S8.15.1 The Effect of a Content-Embedded Explicit-Reflective Instructional Approach on Inservice Teachers' Views and Practices Related to Nature of Science

Nader Wahbeh, A.M.Qattan Foundation

Fouad Abd-El-Khalick, University of Illinois at

Urbana-Champaign

S8.15.2 Chinese Science Teacher Educators' Views about the Values of Teaching Nature of Science

ZhiHong Wan, The University of Hong Kong

Siu Ling Wong, The University of Hong Kong

S8.15.3 Year Three, a Replication: Linking Teachers' Understandings of Nature of Science and Scientific Inquiry with Instructional Ability

Norman G. Lederman, Illinois Institute of Technology

Judith S. Lederman, Illinois Institute of Technology

Kevin J. White, Illinois Institute of Technology

S8.15.4 Teaching Nature of Science in a Third Grade Classroom: An Assessment of Strategies and Student Knowledge

Valarie L. Akerson, Indiana University

Khemawadee Pongsanon, Indiana University

Vanashri Nargund, Indiana University

Strand 14: Environmental Education

S8.16 Related Paper Set: International Perspectives on Preparing Environmentally Literate Teachers 4:00pm – 5:30pm, Conference Room 414

S8.16.1 An Evaluation of the Implementation of Environmental Education in Two Teacher Training Colleges

Jelle Boeve-de Pauw, University of Antwerp

Peter Van Petegem, University of Antwerp

S8.16.2 Preservation and Utilization: An International Study of Pre- And In-Service Teachers' Environmental Attitudes and Values

Franz Bogner, University of Bayreuth

Britta Oerke, University of Zurich

Michael Wiseman, University of Bayreuth

S8.16.3 Student Teachers' Conceptions of Environment and Its Relevance to their Area of Teaching: Are these Influenced by Studies? Implications for Teacher Training Programs

Daphne Goldman, Beit Berl Academic College
Bela Yavetz, Kibbutzim College of Education
Sara Pe'er, Oranim College of Education

S8.16.4 Preservice Teachers' Mental Models of the Environment and Implications for Teaching about the Environment

Blanche Desjean-Perrotta, University of Texas at San Antonio
Christine Moseley, University of Texas at San Antonio

S8.16.5 Ecological Understandings of Teachers in the US: What is Needed to Better Prepare Our Next Generation of Teachers?

Bruce Johnson, University of Arizona
Constantinos Manoli, University of Arizona
Dennis Rosemartin, University of Arizona
Deborah Barca, University of Arizona

Strand 15: Policy

S8.17 SC-Paper Set: Policy Studies Informed by Analyses of Large Data Bases: From International Studies to State Level Studies

4:00pm – 5:30pm, Conference Room 415

President:

Roxanne Hughes, FSU

S8.17.1 Scientific Literacy, PISA, and Socioscientific Discourse: Assessment for Progressive Aims of Science Education

Troy D. Sadler, University of Florida
Dana L. Zeidler, University of South Florida

S8.17.2 A National Survey of Middle and High School Science Teachers' Responses to Standardized Testing: Is Science Being Devalued in Schools?

Mehmet Aydeniz, The University of Tennessee, Knoxville
Sherry A. Southerland, Florida State University

S8.17.3 Comparison of the Implemented Physics Curriculum and Achievement on of Eighth Grade Students in the United States: A Secondary Analysis of TIMSS 2007

John Murdock

S8.17.4 Predicting Science Achievement and Science Teacher Retention in Texas High Schools with School- and Teacher-Level Variables

Carol L. Stuessy, Texas A&M University
Stephanie L. Knight, Pennsylvania State University
Dane Bozeman, Texas A&M University
Toni A. Ivey, Oklahoma State University
Tori Hollas, Texas A&M University
Dawoon Yoo, Texas A&M University
Caroline Vasquez, Texas A&M University
Sara Spikes, Texas A&M University
Ra'sheedah Richardson, Texas A&M University

Evening/Social Events

IJSME Editorial Board Meeting

5:45pm – 6:45pm, Conference Room 501

By Invitation Only

Membership and Elections Committee Sponsored Session New Researcher and Junior Faculty Early Career Discussion

This session is particularly designed for the early career, junior faculty who need support during the first years of their academic career. The focus will be a panel discussion with experienced faculty who can guide junior faculty through important issues that pertain to the tenure process and other issues. Discussion topics include, but are not limited to: publications, research in the new position, collaboration with different colleges within the university setting, teaching loads, the tenure and promotion process, etc. We invite all junior faculty interested in this topic to join us.

5:45pm – 6:45pm, Salon C

Discussants:

Laura Henriques, California State University, Long Beach
Julie A. Luft, Arizona State University, Tempe

Presenters:

Reinders Duit, IPN Kiel, Germany
Micheal Beeth, University of Wisconsin - Oshkosh
Eileen R.C. Parsons, University of North Carolina - Chapel Hill
Sibel Erduran, Bristol University
Okhee Lee, University of Miami
April Luehmann

Equity Dinner

7:00pm – 9:00pm, Off Site

Routledge/Taylor & Francis Reception Invitation only.

7:30pm – 10:00pm, Independence Ballroom

Wednesday, March 24, 2010

Strand Meetings

7:00am – 8:15am

Strand 1: Science Learning, Understanding and Conceptual Change
Meeting—7:00am – 8:15am, Conference Room 401

Strand 2: Science Learning: Contexts, Characteristics and Interactions
Meeting—7:00am – 8:15am, Conference Room 402

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies
Meeting—7:00am – 8:15am, Conference Room 403

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies
Meeting—7:00am – 8:15am, Conference Room 404

Strand 5: College Science Teaching and Learning (Grades 13-20)
Meeting—7:00am – 8:15am, Conference Room 405

Strand 6: Science Learning in Informal Contexts
Meeting—7:00am – 8:15am, Conference Room 406

Strand 7: Pre-service Science Teacher Education
Meeting—7:00am – 8:15am, Conference Room 407

Strand 8: In-service Science Teacher Education
Meeting—7:00am – 8:15am, Conference Room 408

Strand 9: Reflective Practice
Meeting—7:00am – 8:15am, Conference Room 409

Strand 10: Curriculum, Evaluation, and Assessment
Meeting—7:00am – 8:15am, Conference Room 410

Strand 11: Cultural, Social, and Gender Issues
Meeting—7:00am – 8:15am, Conference Room 411

Strand 12: Educational Technology
Meeting—7:00am – 8:15am, Conference Room 412

Strand 13: History, Philosophy, and Sociology of Science
Meeting—7:00am – 8:15am, Conference Room 413

Strand 14: Environmental Education
Meeting—7:00am – 8:15am, Conference Room 414

Strand 15: Policy
Meeting—7:00am – 8:15am, Conference Room 415

Concurrent Session #9

8:30am – 10:00am

Presidential Invited Session

S9.1 Symposium: Assessing Youths' Interest in Science: Understanding Motivation and Identity
8:30am – 10:00am, Conference Room 501

Richard A. Duschl, Penn State University
Jonathan F. Osborne, Stanford University
Leonie Rennie, Curtin University of Technology
Robert H. Tai, University of Virginia
Toni Rogat, Rutgers
Janice Earle, National Science Foundation

Strand 1: Science Learning, Understanding and Conceptual Change
S9.2 Related Paper Set: Utilizing Writing-to-Learn and Multi-Modal Writing Tasks in Science Classrooms
8:30am – 10:00am, Conference Room 401

S9.2.1 Exploring the Impact of Embedding Multiple Modes of Representing Science Information in Varied Classroom Settings

Mark A. McDermott, Wartburg College
Brian Hand, University of Iowa
Andy R. Cavagnetto, Binghamton University-SUNY

S9.2.2 The Impact of Restricted and Student Choice Embedded Multimodal Representations in a Writing to Learn Approach to the Teaching of Pressure, Bouncy and Heat-Temperature Units

Murat Gunel, Ataturk University, Turkey
Cuneyt Ulu, Marmara University, Turkey

S9.2.3 The Impact of the Science Writing Heuristic Approach on Students' Use and Embedding of Multi-Modal Representations in Summary Writing Tasks

Jeonghee Nam, Pusan National University, Korea
Hyesook Cho, Pusan National University, Korea
Aeran Choi, Kent State University
Brian Hand, University of Iowa

S9.2.4 The Impact of Writing for Older Aged Peers

Ying-Chih Chen, University of Iowa

Brian Hand, University of Iowa

Leah McDowell, Seneca valley School District, Pittsburgh, PA

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S9.3 SC-Paper Set: Integrating Technology and Science in Learning

8:30am – 10:00am, Conference Room 402

Presenter:

Lei Liu, University of Pennsylvania

S.9.3.1 Building Energy Transformation Conceptions through Design-Based Instruction

Clara S Cahill, University of Michigan

Yael Bamberger, University of Michigan

Harold B. Short, University of Michigan

James A. Hagerty, University of Michigan

Joseph S Krajcik, University of Michigan

S9.3.2 Enhancing Students' Classroom Interaction through the use of Personal Digital Assistants (PDAs)

Edgar D. Corpuz, The University of Texas-Pan American

Ma Aileen A. Corpuz, University of Texas-Pan American

Mark Cunningham, University of Texas-Pan American

Rolando Rosalez, University of Texas-Pan American

Liang Zeng, University of Texas-Pan American

S9.3.3 The Youth Engagement with Science and Technology Survey: Informing Practice and Measuring Outcomes

Glenda M. McCarty, University of Missouri, St. Louis

Jennifer M. Hope, University of Missouri, St. Louis

Joseph L. Polman, University of Missouri, St. Louis

S9.3.4 Integrating Science, Literacy, Technology and Universal Design for Learning to Enhance Middle School Students' Inquiry-Based Science Learning

LeeAnn M. Sutherland, University of Michigan

Namsou Shin, University of Michigan

Kasey L. McCall, University of Michigan

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S9.4 SC-Paper Set: Exploring Sociocultural Factors Influencing Science Learning

8:30am – 10:00am, Salon D

Presenter:

Erica N. Blatt, University of New Hampshire

S9.4.1 An Ethnographic Study of Sociocultural Factors Affecting Learning in a High School Environmental Science Course

Erica N. Blatt, University of New Hampshire

S9.4.2 Transforming the Culture of Undergraduate Organic Chemistry through Performance Enhanced Interactive Learning

Karen E. Phillips, Hunter College of the City

University of New York

S9.4.3 Exploring the Associations between Social Motivational Factors and Science Achievement among 9th Graders

Fang-Ying Yang, National Taiwan Normal University

Ju-Shi Tseng, National Taiwan Normal University

Shu-Ching Fu, National Taiwan Normal University

S9.4.4 Connecting a Student-Directed Participant Structure to the Acquisition of Collaborative Skills

Dennis W. Smithenry, Elmhurst College

Joan A. Gallagher-Bolos, Glenbrook North High School

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S9.5 SC-Paper Set: Writing in Science

8:30am – 10:00am, Conference Room 403

Presenter:

David Cline, Saginaw Valley State University

S9.5.1 Elementary Teachers' Beliefs about How Scientists Use Writing

Nicole J. Glen, Bridgewater State College

S9.5.2 Exploring Primary Teachers' Conceptions and Implementation of Science Notebook Writing

Vicki McQuitty, Davis College

Sharon Dotger, Syracuse University

Uzma Khan, Syracuse University

S9.5.3. Reasoning about Invisible Forces: The Use of Graphics and Written Text to Reveal Elementary Student Sense Making

John C. Bedward, North Carolina State University

James Minogue, North Carolina State University

Eric N. Wiebe, North Carolina State University

Lauren P. Madden, North Carolina State University

Michael Carter, North Carolina State University

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S9.6 Administrative Symposium: Collaborative Study: Improved Pedagogy

8:30am – 10:00am, Conference Room 404

Presenters:

Helen Meyer, University of Cincinnati
 Krista Woods, University of Cincinnati
 Danielle Dani, Ohio University
 Amy Jameson, Dater High School Cincinnati Public Schools
 Maureen Andreadis, School for Creative and Performing Arts Cincinnati Public Schools
 Megan Urbaitis, Norwood High School
 Andrea Burrows, University of Cincinnati
 Anna Hutchinson, Aiken High School Cincinnati Public Schools
 Kathie Maynard, University of Cincinnati
 Michelle Marlow, University of Cincinnati

Strand 5: College Science Teaching and Learning (Grades 13-20)

S9.7 SC-Paper Set: Preparation of Pre-Service Elementary Science Teachers

8:30am – 10:00am, Conference Room 405

Presenter:

Supaporn Porntrai, Ubon Ratchathani University, Thailand

S9.7.1 Preservice Elementary Teachers: Disciplinary Engagement, Knowledge Growth, and Motivation

Anita Roychoudhury, Purdue University
 Diana C. Rice, Florida State University

S9.7.2 Embedding Scientific Arguments in a Pre-Service Elementary Science Methods Course to Develop NOS

Sharon P. Schleigh, East Carolina University
 Katie Nock, East Carolina University
 Tammy Lee, East Carolina University

S9.7.3 Reform in Entry-Level Undergraduate Science Coursework: Impacts on Pre- and In-Service K-6 Teachers in a National Sample

Dennis W. Sunal, University of Alabama
 Cynthia S Sunal, University of Alabama
 Cheryl L. Mason, San Diego State University
 Dean Zollman, Kansas State University
 Corrine Lardy, San Diego State University
 Erika Steele, University of Alabama
 Mjogan Matloob-Haghanikar, Kansas State University
 Donna Turner, University of Alabama
 Sytil Murphy, Kansas State University

Strand 5: College Science Teaching and Learning (Grades 13-20)

S9.8 Symposium: Mentoring Doctoral Researchers: Stories from the NARST Summer Research Institute

8:30pm – 10:00pm, Conference Room 411

Presenters:

Sandra K Abell, University of Missouri, USA
 Deborah Smith, Pennsylvania State University
 Felicia M. Moore-Mensah, Teachers College-Columbia University
 Patricia M. Friedrichsen, University of Missouri
 Valarie L. Akerson, Indiana University
 Allan Feldman, University of South Florida
 Danusa Munford, Federal University of Minas Gerais, Brazil
 Carla Zembal-Saul, Pennsylvania State University

Strand 6: Science Learning in Informal Contexts

S9.9 Symposium: OST Science: It's Not What You Think! Variations across Learning Goals and Outcomes and the Implications for Research Methods and Tools

8:30am – 10:00am, Conference Room 406

Presenters:

Bronwyn Bevan, Exploratorium
 Susan A Yoon, University of Pennsylvania
 Irene Lee, Santa Fe Institute
 Kim Sadler, Middle Tennessee State University
 Susan Brown, New Mexico State University

Strand 7: Pre-service Science Teacher Education

S9.10 Symposium: Improving Science Teacher Preparation by Studying How Knowledge & Identity Affect Teaching Practices

8:30am – 10:00am, Conference Room 407

Discussants:

Gail Richmond, Michigan State University
 Joyce M. Parker, Michigan State University
 Hosun Kang, Michigan State University
 Takumi Sato, Michigan State University
 Amelia W. Gotwals, Michigan State University
 Amy Lark, Michigan State University
 HsingChi von Bergmann, University of Calgary
 Charles W. Anderson, Michigan State University

Strand 8: In-service Science Teacher Education

S9.11 SC-Paper Set: PCK, PD and Evidence

8:30am – 10:00am, Conference Room 408

Presenter:

Yue Li, Miami University

S9.11.1 Improving Students' Science Achievement through Long-Term Teacher Professional Development

Yue Li, Miami University
Kathryn Scantlebury, University of Delaware
Jane B. Kahle, Miami University
Constance Blasie, University of Pennsylvania
Sarah B. Woodruff, Miami University

S9.11.2 Exploring Process of Constructing Pedagogical Content Knowledge (PCK) in Science Teaching

Kongju Mun, Ewha Womans University
Sung-Won Kim, Ewha Womans University

S9.11.3 How to Change Science Teachers' Practice? An Evidence-based Approach in a Continuous Professional Development (CPD) Program

Liora Bialer, Kibbutzim College of Education, Israel
Bat-Sheva Eylon, The Weizmann Institute of Science, Israel
Zahava Scherz, The Weizmann Institute of Science, Rehovot, Israel

S9.11.4 Enhancing Elementary Teachers' Content and Pedagogical Knowledge through Sustained Professional Development

Sarah B. Woodruff, Miami University
Terry L. McCollum, Miami University
Yue Li, Miami University
Nazan U. Bautista, Miami University

Strand 8: In-service Science Teacher Education

S9.12 SC-Paper Set: Professional Development for the Science Teacher

8:30am – 10:00am, Salon C

Presider:

Yael Furman Shaharabani, Technion - Israel Institute of Technology; The Weizmann Institute of Science

S9.12.1 Enhancing Continuing Professional Development: Contribution from Pre-Service Teachers

Karen M. Kerr, St. Marys University College Belfast
Colette Murphy, Queens University Belfast
Jim Beggs, St. Marys University College Belfast

S9.12.2 Professional Development as a Change in Teachers' Conceptions of Teaching and Learning Science: A Retrospective

Yael Furman Shaharabani, Technion - Israel Institute of Technology; The Weizmann Institute of Science
Tali Tal, Technion - Israel Institute of Technology

S9.12.3 Exploring the Teacher Professional Growth Continuum - Implications for Professional Development

Mary E. Hobbs, The University of Texas at Austin
Amy L. Moreland, The University of Texas at Austin

S9.12.4 A Longitudinal Evaluation Study of a University Model for Science Teacher Professional Development through Clustered Randomized Design

Dana V. Diaconu, Rice University
Wallace Dominey, Rice University
Milijana Suskavcevic, Rice University

Strand 10: Curriculum, Evaluation, and Assessment

S9.13 Related Paper Set: Assessing Pedagogical Content Knowledge

8:30am – 10:00am, Conference Room 410

S9.13.1 Assessing Components of Pedagogical Content Knowledge through Observational Methods

William R. Veal, College of Charleston

S9.13.2 Understanding and Assessing Primary Science Student Teachers' Pedagogical Content Knowledge

Pernilla Nilsson, Halmstad University
John Loughran, Monash University

S9.13.3 Pedagogical Content Knowledge of Inquiry: An Instrument to Assess It and Its Application to High School In-Service Science Teachers

Andoni Garritz, Universidad Nacional Autónoma de México
Diana V. Labastida-Pina, Universidad Nacional Autónoma de México
Silvia Espinosa-Bueno, Universidad Nacional Autónoma de México
Kira Padilla, Universidad Nacional Autónoma de México

S9.13.4 Assessment and Evaluation of Pedagogical Content Knowledge

Jan H. van Driel, ICLON-Leiden University
James G. MaKinster, Hobart and William Smith Colleges

Strand 12: Educational Technology

S9.14 Symposium: Electrons, Photons & Neurons: Harnessing Virtual Worlds to Redesign Science Assessment

8:30am – 10:00am, Conference Room 412

Presenters:

Diane Jass Ketelhut, Temple University
Douglas B. Clark, Vanderbilt University
Brian C. Nelson, Arizona State University
Catherine C. Schifter, Temple University
Cynthia M. D'Angelo, Arizona State University
Tera Kane, Temple University
Muhsin Menekse, Arizona State University
Angela Shelton, Temple University
Kent Slack, Arizona State University
Mark Snyder, Temple University

Strand 13: History, Philosophy, and Sociology of Science

S9.15 SC-Paper Set: Curricula and Nature of Science

8:30am – 10:00am, Conference Room 413

Presider:

Fouad Abd-El-Khalick, University of Illinois

S9.15.1 Analysis of Nature of Science Coverage in Egyptian and Lebanese Middle School Science Textbooks

Zoubeida R. Dagher, University of Delaware

Saouma BouJaoude, American University of Beirut

Sahar Alameh, The American University of Beirut

S9.15.2 How Secondary Science Textbooks Present Scientific Methodology

Ian C. Binns, Louisiana State University

Randy L. Bell, University of Virginia

Wednesday, March 24, 2010

S9.15.3 Degrees of Concordance between Scientific Representations of Evolutionary Theory and Contemporaneous High School Biology Textbooks through the 20th Century

Patrick J. Halbig, University of Illinois at

Urbana-Champaign

Fouad Abd-El-Khalick, University of Illinois at

Urbana-Champaign

S9.15.4 Let's Do It Together! A Collaborative Project of Researchers and Practitioners on Implementing History and Philosophy in Science Teaching

Dietmar Hoettecke, University of Kaiserslautern / Germany

Falk Riess, University of Oldenburg / Germany

Andreas Henke, University of Bremen / Germany

Strand 14: Environmental Education

S9.16 Symposium: How to Change University Faculty Members' Attitudes and Behavior in the Context of Education for Sustainable Development

8:30am – 10:00am, Conference Room 414

Presenters:

Ahmad M. Qablan, The Hashemite University

Suleiman Al-Qaderi, Al al-Bayt University

Jamal H. Abu Al Ruz, The Hashemite University

Samer Khasawneh, The Hashemite University

Strand 15: Policy

S9.17 Symposium: Connecting Research to Policy and Practice: NARST and Its Affiliates

8:30am – 10:00am, Conference Room 415

Discussant:

Julie A. Luft, Arizona State University

Presenters:

Francis Erberle, National Science Teachers Association

Justin Dillon, King's College London

Jon Pedersen, University of Nebraska

Jodi Peterson, National Science Teachers Association

Jo Ellen Roseman, American Association for the

Advancement of Science

Break

10:00am – 10:30am, Salons E and F

Concurrent Session #10 10:30am – 12:00pm

International Committee Sponsored Session

S10.1 Administrative Symposium: Challenges and Opportunities between Research and Practice --- From International Perspectives

10:30am – 12:00pm, Conference Room 501

Discussant:

Justin Dillon, King's College London

Presenters:

Mei-Hung Chiu, National Taiwan Normal University

Ling L. Liang, La Salle University

Xian Chen, Nanjing Normal University, China

Uri Zoller, Haifa University - Israel

Claudia von Aufschnaiter

Miancheng Guo, Illinois Institute of Technology

Norman G. Lederman, Illinois Institute of Technology

Vanashri Nargund, Indiana University

Meredith A. Park Rogers, Indiana University

Strand 1: Science Learning, Understanding and Conceptual Change

S10.2 Related Paper Set: Evaluating Proposed Learning Progressions: What Can We Learn From Cross-Sectional Data and Longitudinal Studies?

10:30am – 12:00pm, Conference Room 401

Discussant:

Marianne Wiser, Clark University

S10.2.1 Using a Comparative, Longitudinal Study with Upper Elementary School Students to Test Some Assumptions of a Learning Progression for Matter

Carol L. Smith, University of Massachusetts at Boston

Marianne Wiser, Clark University

David Carraher, TERC

S10.2.2 A Longitudinal Validation Study of a Learning Progression in Genetics

Nicole Shea, Rutgers University

Ravit Duncan, Rutgers University

S10.2.3 Progress toward the Development of an Empirically Tested Learning Progressions For the Nature of Matter

Shawn Y. Stevens, University of Michigan

Namsu Shin, University of Michigan

Joseph S. Krajcik, University of Michigan

S10.2.4 Using Rasch Modelling on a Large Cross-Sectional Data-Set to Test for a Learning Progression in Chemistry Suggested by a Previous, Small-Scale, Three Year Longitudinal Study

Philip Johnson, Durham University

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S10.3 Related Paper Set: Classroom Interactions Supporting the Development of Modeling Practices In Elementary and Middle School Classrooms

10:30am – 12:00pm, Salon D

Discussants:

Brian J. Reiser, Northwestern University

Elizabeth A. Davis, University of Michigan

S10.3.1 Examining 4th Grade Students' Changing Scientific Modeling Practices: Influence of Time and Content

M. E. Gonzalez, University of Illinois at Urbana-Champaign

Barbara Hug, University of Illinois at Urbana-Champaign

S10.3.2 Supporting 5th Grade Elementary Students' Development of Modeling Practice over Time with Multiple Modeling Experiences in Different Subject Matter Contexts

Lisa Kenyon, Wright State University

Michelle Cotterman, Wright State University

S10.3.3 The Affordances and Challenges of Scientific Modeling in a 5th Grade Unit on Evaporation and Condensation

Hayat Hokayem, Michigan State University

Jing Chen, Michigan State University

Hamin Baek, Michigan State University

Li Zhan, Michigan State University

Christina Schwarz, Michigan State University

S10.3.4 Middle School Students and Teachers Making Sense of Modeling Practices in Their Classroom

Andres Acher, Northwestern University

Brian J. Reiser, Northwestern University

Elizabeth A. Davis, University of Michigan

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S10.4 SC-Paper Set: Contexts and Factors Influencing Students' Conceptual Development and Achievement

10:30am – 12:00pm, Conference Room 402

President:

Anat Yarden, Weizmann Institute of Science

S10.4.1 Quality of Instruction in Biology

Stefanie Wuesten, University Duisburg-Essen

Stephan Schmelzing, University Duisburg-Essen

Martin Linsner, University Duisburg-Essen

Angela Sandmann, University Duisburg-Essen

Birgit Neuhaus, University München

S10.4.2 Conceptual Metaphors and hidden Analogies in Physics Language: Textbook Analysis and its Relevance for Physics Teacher Education

Lutz Kasper, University of Education Freiburg (Germany)

S10.4.3 High School Science Teachers Supporting Literacy: A Role for Explicit Comprehension Instruction?

Phillip Herman, University of Pittsburgh

Kristen Perkins, Northwestern University

Martha Hansen, Evanston Township High School

Louis M. Gomez, University of Pittsburgh

Kimberley Gomez, University of Pittsburgh

S10.4.4 Depth and Breadth: Bridging the Gap between Scientific Inquiry and High-Stakes Testing with Diverse Junior High School Students

Emily J.S Kang, Adelphi University

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S10.5 Symposium: The Invisible College for Inquiry Science Study (ICISS): Integrating Teaching and Research in a Professional Community

10:30am – 12:00pm, Conference Room 404

Presenters:

Scott McDonald, The Pennsylvania State University

Brett Criswell, Keenesaw State University

Scott Delone, The Pennsylvania State University

Cecilia Tang, The Pennsylvania State University

Strand 5: College Science Teaching and Learning (Grades 13-20)

S10.6 SC-Paper Set: Discourse and Argumentation in Undergraduate Biology

10:30am – 12:00pm, Conference Room 405

Presenter:

Jennifer Cromley, Temple University

S10.6.1 The Nature of Undergraduate Students' Questions during Inquiry and the Roles of the Teacher in Fostering Question Asking

Iris Alkaher, Virginia Tech

Erin Dolan, Virginia Tech

S10.6.2 “Not Simply What’s the Science, but How Does It Affect People, and Why Is That Important?” Effects of an Interdisciplinary Human Biology Program Focused on Socioscientific Reasoning

Jennifer L. Eastwood, Indiana University

Kristin L. Cook, Indiana University

Robert D. Sherwood, Indiana University

Whitney M. Schlegel,

S10.6.3 The Nature of Discourse Throughout 5E Lessons in a Large Enrollment College Biology Course

Aaron J. Sickel, University of Missouri

Binaben H. Vanmali, University of Missouri

Stephen B. Witzig, University of Missouri

Sandra K. Abell, University of Missouri

S10.6.4 Experience with Primary Literature by Undergraduate Life Science Students: A Lesson in Scientific Argumentation

Miriam A. Ossevoort, University of Groningen, the Netherlands

Edwin B. van Iacum, University of Groningen, the Netherlands

Martin J. Goedhart, University of Groningen, the Netherlands

Strand 6: Science Learning in Informal Contexts

S10.7 Symposium: Teacher’s Experience in Informal STEM Settings: What Lessons Can We Learn?

10:30am – 12:00pm, Conference Room 406

Presenters:

Vera S Michalchik, SRI International

Bob Coulter, Litzinger Road Ecology Center

Tina Cartwright, West Virginia State University

Kelly Pirog, University of Massachusetts Amherst

Allan Feldman, University of South Florida

Strand 7: Pre-service Science Teacher Education

S10.8 Symposium: Exploring the Utility of Discipline-Specific Pedagogy Courses in Science Teacher Recruitment and Preparation

10:30am – 12:00pm, Conference Room 407

Presenters:

Erin M Furtak, University of Colorado at Boulder

Noah Finkelstein, University of Colorado at Boulder

Jill Marshall, University of Texas at Austin

Michael Klymkowsky, University of Colorado at Boulder

David E. Kanter, Temple University

Angelo Collins, Knowles Science Teaching Foundation

Strand 7: Pre-service Science Teacher Education

S10.9 SC-Paper Set: Pre-Service Teachers’ Development of More Sophisticated Knowledge and Practices

10:30am – 12:00pm, Conference Room 409

Presenter:

Charles W. Anderson, Michigan State University

S10.9.1 Critical and Contextual Discourses: Explaining the Development of Ambitious Practices Across “Learning-to-Teach” Contexts

Jessica Thompson, University of Washington

Mark Windschitl, University of Washington

Melissa Braaten, University of Washington

S10.9.2 Secondary Science Teacher Candidates’ Learning of Formative Assessment: How do they respond to students and why?

Hosun Kang, Michigan State University

Amelia W. Gotwals, Michigan State University

Charles W. Anderson, Michigan State University

S10.9.3 The Development of Pedagogical Content Knowledge during Teacher Education

Andreas Borowski, University Duisburg-Essen
Hans E. Fischer, University Duisburg

S10.9.4 Examining Shifts in Preservice Teachers' Practice-Oriented Goals as Indicators of Learning to Teach Toward Science Reform Initiatives

Robert M. Danielowich, Adelphi University

Strand 8: In-service Science Teacher Education

S10.10 SC-Paper Set: Mentoring and Science Teacher Retention

10:30am – 12:00pm, Salon C

Presider:

Yushaneen Wilson, Penn Science Teacher Institute

S10.10.1 A Case Study of Urban Secondary Science Teacher Career Satisfaction and Retention in an Alternative Certification Program

Christina Gonzalez, Lehman College
Angela Kelly, Lehman College

S10.10.2 Educative Mentoring: Reframing the Potential for Mentoring in Science Education

Leslie U. Bradbury, Appalachian State University

S10.10.3 Teacher Thinking Associated with Science-Specific Mentor Preparation

Michael Dias, Kennesaw State University
Thomas R. Koballa, University of Georgia
Julie M. Kittleson, University of Georgia
Leslie U. Bradbury, Appalachian State University

S10.10.4 Early Leavers and Vertical Advancers: Sociocultural Factors Influencing Teacher Attrition from a Graduate Program for Middle and High School Science Teachers

Yushaneen Wilson, University of Pennsylvania
Sonya N. Martin, Drexel University
Rachel Ruggirello, Washington University, St. Louis, MO

Strand 8: In-service Science Teacher Education

S10.11 SC-Paper Set: Efficacy and Reform

10:30am – 12:00pm, Conference Room 408

Presider:

Molly Holden, Texas Christian University

S10.11.1 Science Educators Today: Results from the National Science Teachers Association's First Ever State of Science Education Survey

Sissy S Wong, Arizona State University
Irasema B. Ortega, Arizona State University
Julie A. Luft, Arizona State University
Francis Eberle, National Science Teachers Association

S10.11.2 Content, Self-Efficacy, and the Nature of Science Gains from Immersive Science Courses for K-8 Teachers

Margaret D. Nolan, School of Education, Boston University
Peter Garik, Boston University
Charles Winrich, Boston University
Donald DeRosa, Boston University
Andrew Duffy, Boston University
Russell Faux, Davis Square Research Associates
Bennett Goldberg, Boston University
Manher Jariwala, Boston University
Bristol Konoian, English High School, Boston Public Schools
Glenn Stevens, Boston University

S10.11.3 Collaborative Professional Development and Curriculum Enactment: Teacher Reflection to Inform Classroom Discussions in Project-Based Science

Nonye M. Alozie, University of Michigan

S10.11.4 Assessing Efficacy through an Outdoor Professional Development Experience for In-service Science Teachers

Molly Holden, Texas Christian University
Judith Groulx, Texas Christian University
Mark A. Bloom, Texas Christian University
Molly H. Weinburgh, Texas Christian University

Strand 10: Curriculum, Evaluation, and Assessment

S10.12 Related Paper Set: Toward a Framework for Studying Research-Based Science Curricula

10:30am – 12:00pm, Conference Room 410

S10.12.1 A Framework for Studying Research-Based Science Curricula: Theoretical Foundations

Janet Carlson, BSCS
Joseph Taylor, BSCS

S10.12.2 Curriculum Field Test Studies - Example One: Focus on Implementation Fidelity

Joseph Taylor, BSCS
Janet Carlson, BSCS

S10.12.3 Curriculum Field Test Studies - Example Two: Focus on Achievement Gaps

Susan Kowalski, BSCS
Joseph Taylor, BSCS

S10.12.4 Curriculum Efficacy Studies - Example One: Comparisons to Commonplace Curriculum and Teaching

Christopher Wilson, BSCS

Joseph Taylor, BSCS

Susan Kowalski, BSCS

Janet Carlson, BSCS

Strand 11: Cultural, Social, and Gender Issues S10.13 Related Paper Set: Laughing Together, Learning Together: The Role of Laughter in Science Education

10:30am – 12:00pm, Conference Room 411

S10.13.1 Creating and Maintaining Emotional Climates to Afford Success in Science Education

Kenneth G. Tobin, City University of New York, Graduate Center

Llena Reynaldo, City University of New York

Devin Sepulveda, City University of New York

Selenia Abad, City University of New York

S10.13.2 Laughter, Perseverance, and Kinship among Minority Students in a Physics Classroom

Konstantinos Alexakos, School of Education, Brooklyn College, CUNY

Victor H. Rodriguez, Brooklyn College, CUNY

Jayson J. Jones, Brooklyn College, CUNY

S10.13.3 The Role of Laughter in Science Teacher Education Courses

Christina A. Siry, University of Luxembourg

S10.13.4 Examining the Role of Laughter as Structures for Developing Reflexivities towards Teaching and Learning

Preeti Gupta, New York Hall of Science

Jennifer H. Correa, New York Hall of Science

Strand 12: Educational Technology

S10.14 Symposium: Research on Teaching and Learning Science with Geospatial Technologies

10:30am – 12:00pm, Conference Room 412

Presenters:

James G. MaKinster, Hobart and William Smith Colleges

Cathlyn D. Stylinski, University of Maryland

Carla McAuliffe, TERC

Michael Barnett, Boston College

Nancy M. Trautmann, Cornell Lab of Ornithology

Alec M. Bodzin, Lehigh University

Louise Yarnall, SRI International

Shey Conover, Island Institute

Strand 13: History, Philosophy, and Sociology of Science

S10.15 Symposium: NOS between Subject-Specific and Subject-Comprehensive Science Education Approaches

10:30am – 12:00pm, Conference Room 413

Discussant:

Fouad Abd-El-Khalick, University of Illinois at Urbana-Champaign

Presenters:

Nicola Mittelsten Scheid, Queens University, Canada

Renee Schwartz, Western Michigan University

Kerstin Kremer, Institut für Biologiedidaktik Karl

Juergen Mayer, Justus-Liebig-Universität Gießen

Pinar Cetin, Middle East Technical University

Sibel Erduran, University of Bristol

Ebru Kaya, Middle East Technical University

Strand 14: Environmental Education

S10.16 SC-Paper Set: Fostering Collective Responsibility in Environmental Education

10:30am – 12:00pm, Conference Room 414

President:

Scott Townsend, Eastern Kentucky University

S10.16.1 A Sociocultural Model for Motivation of Indigenous Students to Learn Science

Eleanor D. Abrams, University of New Hampshire

Michael J. Middleton, Morrill Hall University of New Hampshire

Chiung-Fen Yen, Providence University Taichung, Taiwan

Juliann Benson, Morrill Hall University of New Hampshire

Judy Tang, Morrill Hall University of New Hampshire

S10.16.2 Environmentalism in the Science Classroom: Complex Issues, Complex Understandings?

Michael L. Tan, University of Toronto

Erminia G. Pedretti, University of Toronto

S10.16.3 How Different Populations of College Students Write and Learn About Ecology

Meena M. Balgopal, Colorado State University

Alison M. Wallace, Minnesota State University Moorhead

Steve Dahlberg, White Earth Tribal Community College

S10.16.4 Incorporating the Ocean into Diverse Contexts: A Collective Case Study

Meghan E. Marrero, U.S. Satellite Laboratory, Inc.

Strand 15: Policy

S10.17 Symposium: The Role of Public Policy in K-12 Science Education

10:30am – 12:00pm, Conference Room 415

Presenters:

George E. DeBoer, AAAS Project 2061
 Janice Earle, National Science Foundation
 Dennis W. Cheek, Ewing Marion Kauffman Foundation
 Jodi Peterson, National Science Teachers Association
 Sarah B. Woodruff, Ohio's Evaluation & Assessment Center for Mathematics and Science Education
 Noah R. Feinstein, University of Wisconsin-Madison
 Linda De Lucchi, University of California at Berkeley
 Sharon J. Lynch, National Science Foundation
 Rodger W. Bybee, BSCS
 Jonathan F. Osborne, Stanford University

Lunch on Your Own

12:00pm – 1:00pm

Concurrent Session #11

1:15pm – 2:45pm

International Committee Sponsored Session

S11.1 Administrative Symposium: ESERA at NARST: Research into Practice: Practice Informing Research: European Dimensions

1:15pm – 2:45pm, Salon D

Discussant:

Kenneth G. Tobin, City University of New York

Presenters:

Justin Dillon, King's College London
 Avi Hofstein, The Weizmann Institute of Science, Israel
 Rachel Mamlok-Naaman, The Weizmann Institute of Science, Israel
 Mira Kipnis, University of York, UK
 Anna Jobér, Malmö University, Sweden
 Robin Millar, University of York, UK
 Clas Olander, University of Gothenburg, Sweden
 Ake Ingerman, University of Gothenburg, Sweden

Strand 1: Science Learning, Understanding and Conceptual Change

S11.2 Related Paper Set: Learning Progression for Carbon Cycling in Socio-ecological Systems

1:15pm – 2:45pm, Conference Room 401

President:

Charles W. Anderson, Michigan State University

Discussant:

Joseph S Krajcik, University of Michigan

S11.2.1 Promoting Students' Causal Reasoning about Carbon Cycling Processes

Hui Jin, Michigan State University

Charles W. Anderson, Michigan State University

S11.2.2 Students' Learning Trajectories of Carbon Cycling in US and China

Li Zhan, Michigan State University

Hui Jin, Michigan State University

Jing Chen, Michigan State University

Charles W. Anderson, Michigan State University

S11.2.3 Assessing K-12 Students' Learning Progression of Carbon Cycling With Items in Different Formats

Jing Chen, Michigan State University

Charles W. Anderson, Michigan State University

Choi Jinnie, University of California, Berkeley

Yong-sang Lee, University of California, Berkeley

Karen L. Draney, University of California, Berkeley

S11.2.4 Secondary Students' Arguments about Carbon-transforming Processes Before and After Instruction

Kennedy M. Onyancha, Michigan State University

Charles W. Anderson, Michigan State University

S11.2.5 College Student Understanding of Carbon Transformation and Cycling Processes

Jonathon W. Schramm, Michigan State University

Wilke Brooke, Michigan State University

Hartley Laurel, University of Colorado, Denver

Charles W. Anderson, Michigan State University

Strand 1: Science Learning, Understanding and Conceptual Change

S11.3 Related Paper Set: Narrative and Textual Analysis

1:15pm – 2:45pm, Conference Room 413

President:

Lawrence B. Flick, Oregon State University

S11.3.1 Exploring Narrative Scaffolding in the use of Multimedia Simulations for the Teaching and Learning of Chemistry

Catherine E. Milne, NYU

Jan Plass, NYU

Bruce Homer, CUNY Graduate Center

Trace Jordan, NYU

Ruth Schwartz, NYU

Yan Wang, American Institutes for Research

Yoo Chang, NYU

Florrie Ng, CUNY Graduate Center & NYU

Elizabeth Hayward, NYU

S11.3.2 Perceived vS Actual Knowledge of Students in Chemical Education

Shirly Avargil, Technion- Israel Institute of Technology

Orit Herscovitz, Technion- Technion - Israel Institute of Technology
and Ort Braude Academic College of Engineering, Israel

Yehudit Judy Dori, Technion- Israel Institute of
Technology and Massachusetts Institute of Technology

S11.3.3 A Study of Students' Reading Strategies in Different Science Argumentative Text

Sung-Tao Lee, Naval Academy, Taiwan

Fu-Pei Hsieh, Kuang-Hua Primary School, Taiwan

Yen-Wen Lin, An-Chao Primary School, Kaohsiung, Taiwan

Pei-Jun Chen, Chung-Sang Primary School, Kaohsiung, Taiwan

S11.3.4 Sharing Knowledge Using Text-Based Structured Dialogue Environment In Understanding And Promoting The Conceptual Change Of Science Teachers' Thinking Of The Nature Of Science

Nasser Mansour, University of Exeter

Rupert Wegerif, University of Exeter

Nigel Skinner, University of Exeter

Keith Postlethwaite, University of Exeter

Azza A. Hashem, University of Exeter

Mriga Williams, University of Exeter

Lindsay Hetherington, University of Exeter

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S11.4 Related Paper Set: Children's Development of Science Expertise across Everyday Settings: Documenting Learning Pathways Amidst Cultural Diversity

1:15pm – 2:45pm, Conference Room 402

S11.4.1 The Development of Everyday Expertise: A Framework for Understanding the Social Foundations of Youth Science Learning Across Pursuits and Contexts

Philip Bell, University of Washington

Leah A. Bricker, Loyola University Chicago

Suzanne Reeve, University of Washington

Heather T. Zimmerman, Pennsylvania State University

S11.4.3 Playing With Narrative: Developing Expertise in Story-Telling as Connected to Biology and Personal Interests

Heather T. Zimmerman, Pennsylvania State University

Suzanne Reeve, University of Washington

S11.4.4 "God Mode Is His Video Game Name": Expertise Development in Technology Domains

Leah A. Bricker, Loyola University Chicago

Philip Bell, University of Washington

S11.4.5 Developing Expertise In "Doing School": Tracing One Family's Pathway towards Academic Success

Suzanne Reeve, University of Washington

Heather T. Zimmerman, Pennsylvania State University

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies

S11.5 Symposium: Teacher Knowledge(s) and Teacher Change: Reflections on Conceptualizations that Inform Research and Teacher Education Practices

1:15pm – 2:45pm, Conference Room 404

Discussant:

Fouad Abd-El-Khalick, University of Illinois at Urbana-Champaign

Presenters:

Sara Salloum, Long Island University – Brooklyn

Saouma BouJaoude, American University of Beirut, Lebanon

Sherry A. Southerland, Florida State University

Julie Gess-Newsome, Northern Arizona University

Jan H. van Driel, Leiden University, The Netherlands

Strand 5: College Science Teaching and Learning (Grades 13-20)

S11.6 SC-Paper Set: Understanding and Visualization in the Life Sciences

1:15pm – 2:45pm, Conference Room 405

Presenter:

Stephen B. Witzig, University of Missouri, Columbia

S11.6.1 Exploring the Link between Mental Rotation and College Student Learning with Phylogenetic Tree

Kristy L. Halverson, University of Southern Mississippi

S11.6.2 Undergraduate Students' Conceptions of Learning Biology and Their Approaches to Learning Biology

Guo-Li Chiou, National Taiwan University of Science and Technology

Jyh-Chong Liang, National Taiwan University

Chin-Chung Tsai, National Taiwan University of Science and Technology

S11.6.3 Decoding of Visual Narratives used in University Biology

Phyllis Griffard, Weill Cornell Medical College in Qatar

S11.6.4 Pharmacy Students' Analysis of Medical Advertisements: A Method to Improve Instructional Practice based on Research on Learning

Paula A. Witt-Enderby, Duquesne University

Eva E. Toth, West Virginia University

Jordan Espenshade, Duquesne University

Strand 5: College Science Teaching and Learning (Grades 13-20)

S11.7 Related Paper Set: Teaching Into Research-Research into Teaching: Examining the Ties That Bind 1:15pm – 2:45pm, Conference Room 414

S11.7.1 Factors That Facilitate Inquiry-Based Teaching

Cindy Stieglmeyer, University of South Carolina

Michelle Maher, University of South Carolina

David Feldon, University of Virginia

Briana Timmerman, University of South Carolina

S11.7.2 Crossing the Threshold Concept: A Transformative View of Research Skill Development

Briana Timmerman, University of South Carolina

Michelle Maher, University of South Carolina

Denise Strickland, University of South Carolina

David Feldon, University of Virginia

S11.7.3 Exploring the Goal Commitment of Teachers and Researchers in Science, Technology, Engineering, Math, and Education

Melissa Hurst, University of South Carolina

S11.7.4 An Exploratory Study of Factors Influencing the Development of STEM Graduate Students' Teaching Skills

Joanna Gilmore, University of South Carolina

Melissa Hurst, University of South Carolina

Strand 6: Science Learning in Informal Contexts

S11.8 Symposium: Using Informal Learning Environments to Support Future Science Teachers 1:15pm – 2:45pm, Conference Room 406

Discussant:

Jennifer DeWitt, King's College London

Presenters:

James Kisiel, California State University, Long Beach

Melissa Mercer-Tachick, Albion College

Janette Griffin, University of Technology, Sydney

Shawn Rowe, Oregon State University

Jennifer DeWitt, King's College London

Strand 7: Pre-service Science Teacher Education

S11.9 Symposium: From University Students to Teachers of Science: Researching Preservice K-8 Teachers' Development of Pedagogical Context Knowledge within a Reform-Based Curriculum 1:15pm – 2:45pm, Conference Room 407

Presenters:

Steve Fifield, University of Delaware

John Madsen, University of Delaware

Danielle Ford, University of Delaware

Linda Grusenmeyer, University of Delaware

Ratna Nandakumar, University of Delaware

Eric Pizzini, University of Delaware

Xiaoyu Qian, University of Delaware

Strand 7: Pre-service Science Teacher Education

S11.10 SC-Paper Set: Impact of Lab Work and Inquiry Experiences in Pre-Service Teacher Education 1:15pm – 2:45pm, Conference Room 409

President:

Thomas R. Koballa, University of Georgia

S11.10.1 Level of Inquiry as Motivator in an Inquiry Methods Course

Mizrap Bulunuz, Uludag University

Olga S Jarrett, Georgia State University

Lisa Martin-Hansen, Georgia State University

S11.10.2 The Impact of an Inquiry-Based Science Education Program for Pre-Service Elementary Teachers

Susan A. Everett, University of Michigan-Dearborn

Charlotte A. Otto, University of Michigan-Dearborn

Richard H. Moyer, University of Michigan-Dearborn

Paul W. Zitzewitz, University of Michigan-Dearborn

S11.10.3 Research into Practice - Practice Informing Research: A Case from the Physical Science Laboratory for Elementary Teachers

Milijana Suskavcevic, Rice University
Eric Hagedorn, University of Texas at El Paso

S11.10.4 Understanding the Nature of Pre-Service Science Teachers' Argumentation during Laboratory Work.

Yasemin Özdem, Gaziosmanpasa University
Hamide Ertepinar, Middle East Technical University
Çakyrodlu Jale, Middle East Technical University

Strand 8: In-service Science Teacher Education

S11.11 SC-Paper Set: Science Education and the Elementary Context

1:15pm – 2:45pm, Conference Room 408

Presider:

Richard F. Gunstone, Monash University

S11.11.1 The Development, Implementation and Evaluation of an Intensive System-Wide Professional Learning Program for Elementary Science Teachers

Deborah J. Corrigan, Monash University
Richard F. Gunstone, Monash University
Rebecca Cooper, Monash University

S11.11.2 Advancing Science and Engineering in Elementary Schools: Fostering Teachers' Knowledge and Scientific Inquiry

Augusto Z. Macalalag Jr., Stevens Institute of Technology
Karen Guo, Teachers College, Columbia University
Susan Lowes, Teachers College, Columbia University
Mercedes McKay, Stevens Institute of Technology
Elisabeth McGrath, Stevens Institute of Technology

S11.11.3 Developing a Hybrid Online/On Site Community of Practice to Support K-8 Teachers' Improvement in Inquiry and Nature of Science Conceptions

Jeffery S Townsend, Eastern Kentucky University
Valarie L. Akerson, Indiana University
Ingrid S Weiland, Indiana University

S11.11.4 Conceptions of Sound: A Lesson Model to Promote Accommodation in Elementary Teachers

Barbara A. Austin, Northern Arizona University

Strand 8: In-service Science Teacher Education

S11.12 SC-Paper Set: Technology, Distance Learning and Science Education

1:15pm – 2:45pm, Salon C

Presider:

Margaret R. Blanchard, North Carolina State University

S11.12.1 Virtual Professional Learning Communities: Video-Conferencing as a Tool to Facilitate Teacher Learning

Tom J. McConnell, Ball State University
Joyce M. Parker, Michigan State University
Jan Eberhardt, Michigan State University
Matthew J. Koehler, Michigan State University
Mary A. Lundeberg, Michigan State University

S11.12.2 Investigating the Role of Pedagogical Discontentment in Teachers' Changes in Practice: An Exploration of 23 Rural Science and Mathematics Teachers Following Technology-Infused Teacher Professional Development

Margaret R. Blanchard, North Carolina State University
Jason W. Osborne, North Carolina State University
Jennifer Sharp, North Carolina State University

S11.12.3 Effecting Change in the Teaching of Temperature and Heat through Distance Learning

Rebecca M. Krall, University of Kentucky
Amber M. Sullivan, University of Kentucky
Ashlie M. Beals, University of Kentucky
Joseph P. Straley, University of Kentucky
Sally A. Shafer, University of Kentucky
Jeffrey L. Osborn, University of Kentucky

S11.12.4 Inquiry Practices and Identities of Beginning Secondary Science Teachers in Online and Offline Contexts

EunJin Bang, Iowa State University
Julie A. Luft, Arizona State University

Strand 10: Curriculum, Evaluation, and Assessment

S11.13 Related Paper Set: Teaching and Learning Engineering

1:15pm – 2:45pm, Conference Room 410

Discussant:

Dale R. Baker, Arizona State University

S11.13.1 A Place for Engineering in Science Education

Dale R. Baker, Arizona State University
Senay Purzer, Purdue University
Mehmet Aydeniz, University of Tennessee

S11.13.2 Survey of the Nature of Engineering: Views of First-year Science and Engineering Students

George M. Bodner, Purdue University
Faik Karatas, Purdue University

S11.13.3 Middle School Students Perceptions of Engineering

Tirupalavanam G. Ganesh, Arizona State University

S11.13.4 Elementary Students' Learning Progressions and Prior Knowledge on Engineering Design Process

Ming-Chien Hsu, Purdue University
Monica Cardella, Purdue University
Senay Purzer, Purdue University

S11.13.5 Stages of Teachers' Concerns on Integrating Engineering into Elementary Classrooms

JeongMin Lee, Purdue University
Johannes Strobel, Purdue University

Strand 10: Curriculum, Evaluation, and Assessment

S11.14 SC-Paper Set: Developing and Assessing Higher-Order Thinking and Nature of Science

1:15pm – 2:45pm, Conference Room 412

President:

Susan A. Kirch, New York University

S11.14.1 Designing for Argument: Developing a Rich Learning Environment for the Teaching of Scientific Argumentation

Harold B. Short, University of Michigan
Morten Lundsgaard, University of Illinois at Urbana-Champaign

S11.14.2 Assessing Evaluative Thinking Capability of High-School Science Students in the Multicultural Israeli Context

Tami Nahum, University of Haifa-Oranim, Israel
Ibtisam Azaiza, University of Haifa-Oranim, Israel
Naji Kortam, University of Haifa-Oranim, Israel
David Ben-Chaim, University of Haifa-Oranim, Israel
Uri Zoller, University of Haifa-Israel

S11.14.3 A Competence Test in the Field of Nature of Science and Nature of Scientific Inquiry

Irene Neuman, University Duisburg-Essen
Gary M. Holliday, Illinois Institute of Technology, Chicago
Hans E. Fischer, University Duisburg-Essen
Alexander Kauertz, University Duisburg-Essen
Judith S. Lederman, Illinois Institute of Technology, Chicago
Norman G. Lederman, Illinois Institute of Technology, Chicago

S11.14.4 Looking Forward: Teaching the Nature of Science of Today and Tomorrow

Y. Debbie Liu, Harvard
Tina A. Grotzer, Harvard

Strand 11: Cultural, Social, and Gender Issues

S11.15 Symposium: Theoretical and Methodological Coherence in Conceptualizing Identity in Science Education **1:15pm – 2:45pm, Conference Room 411**

Discussants:

Gale Seiler, McGill University
Anjali Abraham, McGill University
Allison Gonsalves, McGill University
Phoebe Jackson, McGill University
Janine Metallic, McGill University
Stephen Peters, McGill University
Lilian Pozzer-Ardenghi, McGill University

Strand 15: Policy

S11.16 Symposium: A Pathway to College Readiness: Science College Board Standards for College Success **1:15pm – 2:45pm, Conference Room 415**

Christopher C Lazzaro, The College Board
Danielle Luisier, The College Board
Cynthia Hamen Farrar, The College Board
Melanie M. Cooper, Clemson University
Robert W. Ridky, National Education Coordinator U.S. Geological Survey
George E. DeBoer, AAAS Project 2061
Nancy B. Songer, University of Michigan

Concurrent Session #12 **3:00pm – 4:30pm**

Strand 1: Science Learning, Understanding and Conceptual Change

S12.1 SC-Paper Set: Technological Innovations to Support Learning

3:00pm – 4:30pm, Conference Room 413

President:

Paul Preczewski, Syracuse University

S12.1.1 Comparing Students' Performance and Reasoning with Physical and Virtual Manipulatives to Learn about Pulleys

Jacquelyn J. Chini, Kansas State University
Amy Rouinfar, Florida State University
Adrian Carmichael, Kansas State University
Sadhana Puntambekar, University of Wisconsin - Madison
N. Sanjay Rebello, Kansas State University

S12.1.2 Computer-Supported Collaborative Scientific Conceptual Change: Learning Sciences in CSCL Learning Environments

Lei Liu, University of Pennsylvania
Cindy E. Hmelo-Silver, Rutgers University

S12.1.3 Qualitative Analysis of the Effects of Sequence of Physical and Virtual Activities on Student Conceptual Understanding in Mechanics

Adrian Carmichael, Kansas State University
Jacquelyn J. Chini, Kansas State University
Sadhana Puntambekar, University of Wisconsin-Madison
N. Sanjay Rebello, Kansas State University

S12.1.4 Connecting Tacit Understanding from Video Games to Formalized Vector Concepts

Cynthia M. D'Angelo, Arizona State University
Douglas B. Clark
Brian C. Nelson, Arizona State University
Kent Slack, Arizona State University
Muhsin Menekse, Arizona State University

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S12.2 Symposium: Incorporating Social Foundations of Learning into Design: Cases and Design Principles from Two Efforts to Re-design Existing Curriculum Kits

3:00pm – 4:30pm, Salon D

Presenters:

Carrie T. Tzou, University of Washington Bothell
Philip Bell, University of Washington
John Bransford, University of Washington
Nancy Vye, University of Washington
Giovanna Scalone, University of Washington
Kari Shutt, University of Washington
Katie Van Horne, University of Washington
Amy Winstanley, Bellevue School District, WA
Tiffany Lee, University of Washington

Strand 2: Science Learning: Contexts, Characteristics and Interactions

S12.3 Related Paper Set: Argumentation in Different Science Classrooms Learning Environment Based on Reserach Experience from Four Countries

3:00pm – 4:30pm, Conference Room 402

Presider:

Avi Hofstein

Discussant:

Joseph Kracjik

S12.3.1 Stimulating Peer Argumentation in the School Science Laboratory – Exploring the Effect of Laboratory Task Formats

Per Kind, Durham University, England
Janine Wilson, Durham University, England
Avi Hofstein, The Weizmann Institute of Science, Israel
Venessa Kind, Durham University, England

S12.3.2 Argumentation in the Chemistry Laboratory: Inquiry and Confirmatory Experiments

Dvora Katchevich, The Weizmann Institute of Science, Israel
Rachel Mamlok-Naaman, The Weizmann Institute of Science, Israel
Avi Hofstein, The Weizmann Institute of Science, Israel

S12.3.3 Assessing Understanding of Argument: Investigating High School Students' Arguments and Implications for Classroom Practice

Ebru Kaya, Middle East Technical University, Turkey
Sibel Erduran, University of Bristol, United Kingdom
Pinar Cetin, Middle east Technical University, Turkey

S12.3.4 Model-Based School Scientific Argumentation with Prospective Science Teachers

Agustin Aduriz-Bravo, University of Buenos Aires, Argentina

S12.3.5 Fostering Constructive Criticism in a High School Biology Classroom: Understanding the Social Dynamics of Argumentation

Ellice Forman, University of Pittsburgh

Strand 3: Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies

S12.4 Symposium: Teacher Knowledge and Science Teaching—Effects on Students' Learning in Elementary and Secondary School Science

3:00pm – 4:30pm, Conference Room 403

Thilo Kleickmann, Max-Planck-Institute for Human Development Lentzeallee, Germany
Alexander Kauertz, University of Education, Germany
Anne Ewerhardy, University of Muenster
Katharina Fricke, University of Duisburg-Germany
Kim Lange, University of Muenster, Germany
Annika Ohle, University of Duisburg-Essen Department of Physics Schützenbahn 70 D-45127 Essen Germany
Kathleen Roth, BSCS
Hans E. Fischer, University of Duisburg-Germany
Kornelia Möller, University of Muenster Seminar, Germany

Strand 4: Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies
S12.5 Symposium: Peer-Enhanced Classrooms: A Field Trial Experiment Leading to a Successful Model for the Urban Classroom

3:00pm – 4:30pm, Conference Room 404

Pamela Mills, Hunter College
 William Sweeney, Hunter College
 Jeanne Weiler, Hunter College
 Leslie Keiler, York College
 Linda Gerena, York College
 James A. Zimmerman, Montclair State University

Strand 5: College Science Teaching and Learning (Grades 13-20)

S12.6 SC-Paper Set: Learning and Understanding in Undergraduate Geology

3:00pm – 4:30pm, Conference Room 405

Presenter:

Jodi Devonshire, University of Missouri – St. Louis

S12.6.1 Through Their Eyes: Tracking the Gaze of Students in a Geology Field Course

Adam V. Maltese, Indiana University
 Eric M. Riggs, Purdue University

S12.6.2 Developing a Field Trip to a Science Museum for a College-Level Geology Course

Molly E. Phipps, Science Museum of Minnesota
 Kent Kirkby, University of Minnesota
 Connie Tzengis, University of Minnesota

Strand 5: College Science Teaching and Learning (Grades 13-20)

S12.7 Symposium: Science Faculty with Education Specialties

3:00pm – 4:30pm, Conference Room 414

Presenters:

Michael T. Stevens, California State University, Stanislaus
 Seth D. Bush, California Polytechnic State University, San Luis Obispo
 Nancy J. Pelaez, Purdue University
 James A. Rudd, California State University, Los Angeles
 Kimberly D. Tanner, San Francisco State University
 Kathy S Williams, San Diego State University

Strand 7: Pre-service Science Teacher Education
S12.8 Symposium: Science Teacher Recruitment and the Robert Noyce Teacher Scholarship Program: Promising Strategies and Possible Connections
3:00pm – 4:30pm, Conference Room 407

Presenters:

Steven S Fletcher, St. Edward's University
 Julie A. Luft, Arizona State University
 Michael Beeth, University of Wisconsin Oshkosh
 Ann Cavallo, University of Texas at Arlington
 Juanita Jo Matkins, College of William and Mary
 Jacqueline T. McDonnough, Virginia Commonwealth University
 Laura Henriques, California State University - Long Beach
 Lorelei Wood, Arizona State University

Strand 7: Pre-service Science Teacher Education
S12.9 SC-Paper Set: Ethical and Socio-Scientific Instruction and Parental Involvement in Pre-Service Teacher Education

3:00pm – 4:30pm, Conference Room 409

Presenter:

Felicia M. Moore-Mensah, Teachers College

S12.9.1 Turkish Preservice Science Teachers' Perceptions and Adaptation of Socio-scientific Issues into the Science Curriculum

Yilmaz Kara, Karadeniz Technical University
 Mustafa S Topcu, Yuzuncuyil University

S12.9.2 Preservice Science Teachers' (PST) Argumentation Skills: Impact of Socioscientific-Based Instruction

Mustafa S Topcu, Yuzuncu Yil University
 Yilmaz Kara, Karadeniz Technical University

S12.9.3 The Use of Parent Involved Take-Home Science Activities during Student Teaching: Understanding the Challenges of Implementation

Jill Zarazinski, State University of New York College at Brockport

Strand 8: In-service Science Teacher Education
S12.10 SC-Paper Set: Innovative Science Content and Professional Development

3:00pm – 4:30pm, Salon C

Presenter:

Yael Bamberger, University of Michigan

S12.10.1 Correlated Science and Mathematics: A Model for Professional Development of Grades 5-8 Science and Mathematics Teachers

Sandra S West, Texas State

Sandra T. Browning, University of Houston – Clear Lake

S12.10.2 The Role of Teachers' Barriers in Integrating New Ideas into the Curriculum: The Case of Nanscale Science and Technology

Bamberger M. Yael, University of Michigan

Joseph S Krajcik, University of Michigan

S12.10.3 The Impact of Professional Development: Teaching an Enhanced Multimodal Grade 6 Science Unit on Extreme Environments

Christine D. Tippet, University of Victoria

Larry D. Yore, University of Victoria

S12.10.4 Teachers Learn about Biological Energy Transfer at the SUN Project Workshop

Ann Batiza, Milwaukee School of Engineering

Mary Gruhl, Milwaukee School of Engineering

Tim Herman, Milwaukee School of Engineering

Dave Nelson, UW-Madison

Tom Harrington, Bacon Academy

Marisa Roberts, Whitefish Bay High School

Donna LaFlamme, St. Dominic's School

Mary Anne Haasch, Wauwatosa West High School

Jonathan Knopp, IB International

Gina Vogt, Brown Deer High School

Strand 8: In-service Science Teacher Education

S12.11 SC-Paper Set: Nature of Science and Inquiry

3:00pm – 4:30pm, Conference Room 408

Presider:

Kristy Loman Chiodo, University of South Florida

S12.11.1 Teachers Translating Inquiry-Based Curriculum to the Classroom Following Professional Development: A Pilot Study

Daniel K. Capps, Cornell University

Barbara A. Crawford, Cornell University

S12.11.2 Teachers' Pedagogical Use of Inquiry Related Words - Conflating Means and Ends

Jakob Gyllenpalm, Stockholm University

Per-Olof Wickman, Stockholm University

Sven-Olof Holmgren, Stockholm University

S12.11.3 Comparison between Chinese and United States Science Teachers' Views of Nature of Science and Scientific Inquiry

Jingying Wang, Capital Normal University (Beijing, China)

Norman G. Lederman, Illinois Institute of Technology

S12.11.4 Frameworks for an Inquiry-focused, Early-Career, Science Teacher Professional Development Program: Developing a Teaching-Through-Inquiry Learning Progression

Bruce E. Herbert, Texas A&M University

Hye-Jeong Kim, Texas A&M University

Cathleen C. Loving, Texas A&M University

Susan Pedersen, Texas A&M University

Strand 10: Curriculum, Evaluation, and Assessment

S12.12 SC-Paper Set: Assessing Student Conceptual Understanding

3:00pm – 4:30pm, Conference Room 410

Presider:

Joseph Zawicki, Buffalo State College

S12.12.1 Optimizing Force Concept Inventory Data Collection and Analysis through Innovative Data Cleaning, Data Plotting and Utilization of Rasch ZSTD and MNSQ Fit Statistics: Implications for the Collection and Analysis of Science Education Test and Survey Data

William J. Boone, Miami University

Lynn Bryan, Purdue University

Melissa S Yale, Purdue University

Mark P. Haugan, Purdue University

Deborah Bennett, Purdue University

Gregory Applegate, Purdue University

S12.12.2 Evaluation of Students' Thermal Conceptual Understanding in Everyday Contexts

Hye-Eun Chu, Nanyang Technological University

David F. Treagust, Curtin University of Technology

A. L. Chandrasegaran, Curtin University of Technology

Shelley Yeo, Curtin University of Technology

Marjan Zadnik, Curtin University of Technology

S12.12.3 Addressing Misconceptions in Evolution at the High School Level

Kristin Nagy Catz, University of California, Berkeley

Laura J. Lenz, University of California, Berkeley

S12.12.4 Engineering Design and Conceptual Change in Science: Addressing Thermal Energy and Heat Transfer in Eighth Grade

Christine G. Schnittka, University of Kentucky

Randy L. Bell, University of Virginia

Strand 10: Curriculum, Evaluation, and Assessment
S12.13 SC-Paper Set: Developing Technology-based Science Assessment

3:00pm – 4:30pm, Conference Room 412

Presider:

Xiufeng Liu, University at Buffalo

S12.13.1 Human VS Computer Diagnosis of Student Knowledge of Natural Selection: Testing the Efficacy of Lexical Analyses of Open Response Text

Ross H. Nehm, The Ohio State University

Hendrik Haertig, NWU-Essen, Germany

Judith S Ridgway, The Ohio State University

S12.13.2 A Characterization of Rich Formative Assessment Practice in Secondary Science Classrooms Equipped with an Audience Response System

Melissa L. Shirley, University of Louisville

Karen E. Irving, The Ohio State University

S12.13.3 Using Rasch Modeling to Develop a Computer Modeling-based Measurement Instrument on High School Students' Conceptual Understanding of Matter

Silin Wei, East China Normal University

Xiufeng Liu, State University of New York at Buffalo

Gail Zichitella, State University of New York at Buffalo

S12.13.4 Insight into Student Thinking in STEM: Lessons Learned from Lexical Analysis of Student Writing

Mark Urban-Lurain, Michigan State University

Kevin C. Haudek, Michigan State University

Rosa A. Moscarella, Michigan State University

John E. Merrill, Michigan State University

Strand 11: Cultural, Social, and Gender Issues
S12.14 Symposium: Teaching Science for Social Justice: Models and Evidence

3:00pm – 4:30pm, Conference Room 411

Presenters:

Edna Tan, University of North Carolina at Greensboro

Angela Calabrese Barton, Michigan State University

Bhaskar Upadhyay, University of Minnesota

Tara B. O'Neill, University of Hawai'i at Mānoa

Melissa S Cook, University of California, Los Angeles

Vandana Thadani, Loyola Marymount University

Christopher Emdin, Teachers College, Columbia University

S12.15 Symposium: Creating an Electronic Presence for NARST

This session serves as a call for an Ad-Hoc Committee and Members. This new ad hoc committee is charged with exploring and providing the NARST board with recommendations for technology use within the organization that would facilitate communication, collaboration, and research. Technologies exist that would enable NARST members worldwide to communicate throughout the year as well as in different ways during the annual conference. For example, technology could enhance the annual conference experience and share important aspects of the conference via video technology to members worldwide who could not attend the conference. New and existing technologies could be used for creating learning communities, sharing research databases and research instruments, and publication of manuscripts and other materials. This NARST electronic presence committee is just forming and beginning its task of making a recommendation to the board. All interested NARST members are encouraged to attend this brainstorming session.

3:00pm – 4:30pm, Conference Room 501

Presider:

Charlene M. Czerniak, The University of Toledo

NARST Executive Board Meeting #3
5:30pm – 10:30pm, Salon C

In an effort to reduce paper consumption and promote environmental awareness, NARST has decided to exclude Abstracts from this year's paper program. You may find all Abstracts posted in the online program on the NARST website at www.narst.org and on the Conference CD included with the program. If you feel that you need the Abstracts in paper format, please go to the Conference Registration center and request this. We hope that you will be provided with the information you need to have a positive NARST Conference experience while supporting our efforts to protect our environment.

Abstracts

Abad, Selenia | City University of New York | 101

Abd-El-Khalick, Fouad | University of Illinois at Urbana-Champaign | foud@aduiuc.edu | 48, 59, 70, 74, 85, 89, 97, 101, 103

Abell, Sandra | University of Missouri | abells@missouri.edu | 52, 86, 95, 99

Abi-El-Mona, Issam | Higher education | abi-el-mona@rowan.edu | 46, 75

Abraham, Anjali | McGill University | 106

Abrams, Eleanor | Department of Education Morrill Hall University of New Hampshire | eleonor.abrams@unh.edu | 101

Abu Al Ruz, Jamal | The Hashemite University | 97

Acher, Andres | Northwestern University | a-acher@northwestern.edu | 98

Adams, April | Northeastern State University | 65

Adams, Betty | Mallinson Institute for Science Education, Western Michigan University | basmada@aol.com | 62, 72

Adams, Jennifer | Brooklyn College-CUNY | jadams@brooklyn.cuny.edu | 41, 45

Adams, Krista | Arizona State University | 47, 60

Adamson, Karen | University of Miami | kadamson1@umiami.edu | 40

Adibelli, Elif | Middle East Technical University | 53

Aduriz-Bravo, Agustin | University of Buenos Aires, Argentina | adurizbravo@yahoo.com.ar | 107

Agan, Lori | Expeditionary Learning School | 39

Akerson, Valarie | Indiana University | vakerson@indiana.edu | 42, 45, 53, 77, 89, 95, 105

Alant, Busiswive | University of KwaZulu-Natal, South Africa

Albrecht, Nancy | University of Minnesota | 77

Alegria, Adelina | Occidental College | alegria@oxy.edu | 77

Alexakos, Konstantinos | School of Education, Brooklyn College, CUNY | kalexakos@gmail.com | 101

Alkahrer, Iris | Virginia Tech | inal@vt.edu | 99

Allendoerfer, Cheryl | FACET Innovations, LLC | 75

Almarode, John | University of Virginia | jta7z@virginia.edu | 43

Alonzo, Alicia | Michigan State University | 49

Alozie, Nonye | University of Michigan | 70, 100

Al-Qaderi, Suleiman | Al al-Bayt University | 97

Alsop, Steve | Faculty of Education, York University | 79

Alters, Brian | McGill University | 59

Álvarez-Díaz, Hilda | Cinvestav DIF-Unidad Monterrey | hilda_ad12@yahoo.com.mx | 71

Amin, Romil | Lehman College of the City University of New York | 80

Amodeo, Vincent | va149844@albany.edu | 72

Anastasio, David | Lehigh University | 64, 72

Anderson, Brittany | Florida State University |

Anderson, Charles | Michigan State University | 39, 49, 81, 95, 99, 102

Anderson, David | University of British Columbia | 50

Anderson, Janice | University of North Carolina at Chapel Hill | anderi@email.unc.edu | 53, 77

Anderson, Ruth | FACET Innovations, LLC | 75

Andreadis, Maureen | School for Creative and Performing Arts Cincinnati Public Schools | 95

Andri, Christodolou | Kings College London | 73, 85

Annetta, Leonard | North Carolina State University | len_annetta@ncsu.edu | 78

Antonellis, Jessie | University of Arizona | jeantone@email.arizona.edu | 48, 72

Applegate, Brooks | Western Michigan University | 62

Applegate, Gregory | Department of Educational Studies Purdue University | 109

Archambault, Leanna | Arizona State University | 50

Archer, Louise | Kings College London | louise.archer@kcl.ac.uk | 84

Aryal, Bijaya | Lake Superior State University | baryal@lssu.edu | 70

Asghar, Anila | The Johns Hopkins University | anila.asghar@jhu.edu | 59

Ash, Doris | University of California, Santa Cruz | dash5@ucsc.edu | 59, 87

Ashkar, Tamar | Department of Education in Science and Technology, Technion - Israel Institute of Technology | 43

Asuaje, Cesar | Institute of Food and Agricultural Sciences, University of Florida | 73

Atwater, Mary | University of Athens | 35, 45, 65

Aufschnaiter, C. v. | 50, 74, 97

Austin, Barbara | Northern Arizona University Center for Science Teaching and Learning | barbara.austin@naui.edu | 105

Avargil, Shirley | Technion - Israel Institute of Technology | shirlyavargil@gmail.com | 60, 103

Avraamidou, Lucy | University of Nicosia, Cyprus | avraamidou@unic.ac.cy | 70

Aydeniz, Mehmet | University of Tennessee | maydeniz@utk.edu | 90, 105

Aydogdu, Cemil | Hacettepe University, Turkey | 57

Ayyavoo, Gabriel | OISE/University of Toronto | Gabriell.ayyavoo@utoronto.ca | 79

Azaiza, Ibtesam | University of Haifa-Oranim | 106

Azam, Saiqa | University of Calgary | sazam@ucalgary.ca | 74, 82

Back, Hamin | Michigan State University | 98

Baker, Dale | Arizona State University | dale.baker@asu.edu | 83, 105

Baker, Tom | Environmental Systems Research Institute (ESRI) | tbaker@esri.com | 64

Baker-Doyle, Kira | Penn State | 88

Baldwin, Brian | Kean University | bbaldwin@kean.edu | 48

Balgopal, Meena | Colorado State University | Meena.Balgopal@colostate.edu | 49, 76, 101

Ballard, Heidi | School of Education University of California at Davis | 82

Balmer, Douglas | Warwick High School | dbalmer@warwick.sch.uk | 77

Bamberger, Yael | University of Michigan | 94, 108, 109

Banaszak Holl, Mark | Department of Chemistry University of Michigan at Ann Arbor | 57

Bang, Eunjin | Iowa State University | ebang@iastate.edu | 105

Banner, Indira | University of Leeds, UK | 58

Baptista, Mónica | Centro de Investigação em Educação, Ciências da Universidade de Lisboa | mimbaptista@gmail.com | 58

Barak, Miri | Technion - Israel Institute of Technology | mbiriam@technion.ac.il | 43, 53

Baram-Tsabari, Ayelet | Technion - Israel Institute of Technology | ayelet@technion.ac.il | 73, 81

Barbosa, Paulina | Instituto de Biociências, Universidade Federal de Minas Gerais - Brazil | 47

Barnett, Michael | Boston College | 49, 53, 55, 89, 101

Barnett, Mike | Lynch School of Education, Boston College

Barney, Jeffrey | Western Michigan University The Mallinson Institute for Science Education | 73

Barreto, Reizelle | Towson University | rbarreto@towson.edu | 82

Barufaldi, James | University of Texas at Austin | 63

Basir, Mohammad | Research assistant | mohammad-ahmadbasir@uiowa.edu | 62

Bass, Kristin | Rockman et al | kristin@rockman.com | 76

Batiza, Ann | Milwaukee School of Engineering | batiza@msoc.edu | 109

Baudoin Grifard, Phyllis | Weill Cornell Medical College in Qatar | pbge2002@qatar-med.cornell.edu | 104

Bauknight, Erin | Department of Engineering & Science Education, Clemson University | 43

Bautista, Nazan | Miami University | 82, 96

Bayne, Gillian | Lehman College of the City University of New York | gillian.bayne@lehman.cuny.edu | 35, 80

Bazzul, Jesse | Doctoral Student - OISE/UT, University of Toronto | jessebazzul@hotmail.com | 78

Beals, Ashlie | University of Kentucky | 105

Beard, Rachelle | Arizona State University | 83

Beauchamp, Arthur | CRESS Center/University of California | 52

Bechtel, Robert | University of Alberta | rbechtel@ualberta.ca | 81, 88

Bedward, John | North Carolina State University | johnbedward@yahoo.com | 61, 71, 94

Beeman-Cadwallader, Nicole | Indiana University-Bloomington | 53

Beeth, Michael | University of Wisconsin Oshkosh | 90, 108

Beggs, Jim | St. Marys University College Belfast | 96

Beilfuss, Meredith | Butler University | mbeilfuss@butler.edu | 70

Bell, Philip | University of Washington | pbell@u.washington.edu | 73, 103, 107

Bell, Randy | University of Virginia | 53, 97, 109

Bellomo, Katherine | OISE, University of Toronto | 42, 79

Ben-Chaim, David | University of Haifa-Oranim | 106

Bencze, John | OISE, University of Toronto | larrybencze@utoronto.ca | 74, 78, 79

Bencze, Larry | OISE/UT, University of Toronto |

Ben-david, Adi | Weizmann Institute of Science | adi.ben-david@mail.huji.ac.il | 86

Bennett, Deborah | Department of Educational Studies Purdue University | 109

Ben-Nun, Michal | Weizmann Institute of Science, Department of Science Teaching | 40

Benson, Juliann | Department of Education Morrill Hall University of New Hampshire | 101

Benson, Lisa | Department of Engineering and Science Education, Clemson University | lbenson@clemson.edu | 82

Benson, Spencer | University of Maryland | 87

Bent, Margaret | OISE, University of Toronto | 79

Ben-Zvi Assaraf, Orit | Ben Gurion University of the Negev | 55

Berg, Alissa | Teachers College, Columbia University | 84

Berry, Amanda | Monash University | amanda.berry@education.monash.edu.au | 40, 57

Bertels, Nina | Freie Universität Berlin | nina.bertels@web.de | 70

Bethke Wendell, Kristen | Tufts University - Center for Engineering Education and Outreach | 64

Bevan, Bronwyn | Exploratorium | bronwynb@exploratorium.edu | 95

Bevis, Todd | Florida State University | 56, 61

Bialer, Liora | Kibbutzim College of Education, Israel | liora.bialer@weizmann.ac.il | 96

Bianchini, Julie | University of California, Santa Barbara | jbianchi@education.ucsb.edu | 54

Billington, Barb | University of Minnesota | 42

Billman, Penny | University of Illinois College of Medicine | 75

Binns, Ian | Louisiana State University | ianbinns@lsu.edu | 97

Birchfield, David | Arizona State University | 84

Blanchard, Margaret | North Carolina State University | Meg_Blancharde@ncsu.edu | 73, 105

Blasie, Constance | Penn State, University of Pennsylvania | 35, 96

Blatt, Erica | University of New Hampshire | erica.blatt@unh.edu | 94

Blonder, Ron | The Weizmann Institute of Science | 57

Blong, Sharon | 75

Blonstein, Jason | NYU | 74

Bloom, Mark | Texas Christian University | 100

Blustein, David | Lynch School of Education, Boston College | 55

Bodner, George | Purdue University | 61, 85, 105

Bodzin, Alec | Lehigh University | amb4@lehigh.edu | 44, 49, 64, 72, 101

Boeve-de Pauw, Jelle | University of Antwerp | jelle.boevedepauw@ua.ac.be | 89

Bogiages, Christopher | Scholars Academy | cbogiages@gmail.com | 75

Bogner, Franz | University of Bayreuth | franz.bogner@uni-bayreuth.de | 89

Bolte, Claus | Freie Universität Berlin Didaktik der Chemie Takustr. 70

Boone, William | Department of Educational Psychology Miami University | boonewj@muohio.edu | 109, 76

Borda, Emily | Western Washington University | bordae@wwu.edu |

Bordeaux, Amy | George Mason University | 80

Borges, Sheila | Teachers College, Columbia University | sb2110@columbia.edu | 84

Borowski, Andreas | University Duisburg-Essen | andreas.borowski@uni-due.de | 100

Bos, Floris | University of Twente, Enschede, The Netherlands | 77

Boujaoude, Saouma | American University of Beirut | boujaoud@aub.edu.lb | 46, 59, 62, 78, 97, 103

Bournia-Petrou, Ethel | Erie County Community College | 76

Bowe, Anica | University of Minnesota | 63

Bowen, Gervase | Faculty of Education, Mount Saint Vincent University | 74

Bozeman, Dane | Texas A&M University | 90

Braaten, Melissa | University of Washington | 49, 99

Bradbury, Leslie | Appalachian State University | upsonlk@appstate.edu | 75, 100

Brand, Brenda | Virginia Tech | 73

Brandt, Carol | Dept. of Teaching & Learning Virginia Polytechnic Institute and State University | cbbrandt@vt.edu | 48, 53, 82

Brandy, Skjold | The Mallinson Institute for Science Education, Western Michigan University | 62, 82
 Bransford, John | University of Washington | 107
 Bravo, Beatriz | University of Santiago de Compostela | 85
 Brennan, Bridget | University of Delaware | bridgetb@udel.edu | 41, 51
 Brew, Eric | Florida International University | 43
 Bricker, Leah | Loyola University Chicago | lbricker@luc.edu | 73, 103
 Britner, Shari | Bradley University | sbritner@bradley.edu | 70
 Brobst, Joseph | University of Delaware | joebro@udel.edu | 76
 Brooke, Wilke | Michigan State University | 102
 Brooks, Lisa | Washington University in St Louis | lbrooks@wustl.edu | 47, 55
 Brothers, Morna | Harold Washington College | 56
 Brotman, Jennie | Barnard College, Columbia University | 88
 Brown, Bryan | Stanford University | brbrown@stanford.edu | 59
 Brown, David | University of Illinois at Urbana-Champaign | debrown@illinois.edu | 80
 Brown, Susan | New Mexico State University | 15
 Bruning, Lucia | Netherlands Institute for Curriculum Development | 58
 Bryan, Lynn | Departments of Curriculum & Instruction and Physics Purdue University | 61, 109
 Brzuszek, Robert | Department of Landscape Architecture, Mississippi State University | 46
 Buck, Gayle | Indiana University-Bloomington | gabuck@indiana.edu | 47, 53, 72, 84
 Buckingham, Brandy | Northwestern University | brandy@northwestern.edu | 62
 Buckley, Barbara | WestEd | bbuckley@wested.org | 76, 89
 Bueno Watts, Nievita | Arizona State University | nbueno@asu.edu | 83
 Bullerjahn, Anne | Owens Community College | 55
 Bullock, Shawn | University of Ontario Institute of Technology | shawn.bullock@uoi.ca | 47
 Bulunuz, Mizrap | Uludag University | mbulunuz@gmail.com | 104
 Burgin, Stephen | University of Florida | sburgin@ufl.edu | 62
 Burrows, Andrea | University of Cincinnati Curriculum | stepgrantcoor@gmail.com | 59, 95
 Burton, Derek | Temple University | 40
 Bush, Seth | California Polytechnic State University, San Luis Obispo | 108
 Bussey, Thomas | University of Nevada Las Vegas | 78
 Butler, Malcolm | University of South Florida-Petersburg | 45, 65
 Butler, Wilbert | Tallahassee Community College | butlerw@tcc.fl.edu | 35, 43
 Butler Kahle, Jane | Miami University | 51, 56, 96
 Buxner, Sanlyn | University of Arizona | buxner@email.arizona.edu | 72
 Buzzelli, Cary | Indiana University | 77
 Bybee, Rodger | Director Emeritus, BSCS | 102
 Cahill, Clara | University of Michigan | claracah@umich.edu | 94
 Cahill, Michele | Urban Education Carnegie Corporation of New York | 44
 Cajigal, Aris Reynold | University of Georgia - Department of Mathematics & Science Education | arcaigal@yahoo.com |
 Cakmakci, Gultekin | Hacettepe University | cakmakci@hacettepe.edu.tr | 57
 Calab, Leticia | College of Education, Universidade Federal de Minas Gerais - Brazil | 47
 Calabrese Barton, Angela | Michigan State University | acb@msu.edu | 35, 44, 65, 88, 110
 Cam, Aylin | Middle East Technical University | aylincam@gmail.com | 50
 Canto, Angela | Florida State University | 80
 Cantrell, Pamela | Brigham Young University | 52
 Cappell, Janine | Justus Liebig University Giessen, Institute for Physics Education | 74
 Capps, Daniel | Cornell University | dk39@cornell.edu | 48, 109
 Cardella, Monica | Purdue University | 106
 Carlone, Heidi | The University of North Carolina at Greensboro | 35
 Carlson, Janet | BSCS | jcarlson@bscs.org | 100, 101
 Carlton Parsons, Eileen | University of North Carolina - Chapel Hill | 45, 90
 Carmichael, Adrian | Department of Physics, Kansas State University | carmichaelam@gmail.com | 41, 106, 107
 Carnes, Nate | University of South Carolina | 35
 Carraher, David | TERC | 98
 Carrejo, David | University of Texas at El Paso | dcarrejo@utep.edu | 63
 Carrier, Sarah | North Carolina State University | sarah_carrier@ncsu.edu | 45, 54
 Carroll, Kristoffer | 78
 Carruth, Laura | Georgia State University | 70
 Carter, Kathy | University of Arizona | 73
 Carter, Lyn | Australian Catholic University | 74, 75
 Carter, Michael | North Carolina State University | 61, 71, 94
 Cartwright, Tina | West Virginia State University | 99
 Carver, Jeffrey | West Virginia University | jeffrey.carver@mail.wvu.edu | 56
 Cass, Cheryl | The Institute for Biological Interfaces of Engineering (IBIOE), Clemson University | 82
 Cathcart, Laura | University of Maryland | cathcart@umd.edu | 80
 Catley, Kefyn | Western Carolina University | 61
 Cavagnetto, Andy | Binghamton University-SUNY | acavagne@binghamton.edu | 93
 Cavallo, Ann | University of Texas at Arlington | 50
 Cellucci, Kimberly | Department of Engineering & Science Education, Clemson University | 43, 108
 Cetin, Pinar | Middle East Technical University | 101, 107
 Cha, Heeyoung | Korea National University of Education | 71
 Chabalengula, Vivien | Southern Illinois University | 40
 Chaivisuthangkura, Parin | Department of Biology, Sinakharniwit University | 70
 Champagne, Audrey | University at Albany | 56
 Chandrasegaran, A. L. | Curtin University of Technology | 109
 Chandy, Betty | University of Pennsylvania | 88
 Chang, Huey-Por | National Changhua University of Education | 75, 77
 Chang, Wen-Yu | National Changhua University of Education | 77
 Chang, Yoo Kyung | NYU | 103
 Chapman, Steven | Institute of Education, University of London | s.Chapman@ioe.ac.uk | 73
 Charles, Michael | Pacific University | 64
 Charusombat, Umarporn | Purdue University | 44
 Cheek, Dennis | Ewing Marion Kauffman Foundation | 102
 Chen, Catherine | 41
 Chen, Jing | Michigan State University | jingchen@msu.edu | 102
 Chen, Jinlin | Queens College | 59
 Chen, Jun-Yi | National Chiayi University | 77
 Chen, Kuan-Chung | Chung-Yuan Christian University | 74
 Chen, Pei-Jun | Chung-Sang Primary School | 103
 Chen, Teresa | Temple University | 57
 Chen, Xian | Nanjing Normal University | 47, 97
 Chen, Ying-Chih | University of Iowa | 94
 Cheng, Britte | SRI International | 80
 Cheng, Maurice | University of Hong Kong | 61
 Cheng, Meng-Tzu | National Chiao Tung University | 78
 Cheng, Wai Kai | North Carolina State University |
 Cheng, Ya-Wen | University of Missouri | 83
 Cheng, Yi-Ting | National Changhua University of Education | tonia0213@gmail.com | 77
 Cheryl, Mason | San Diego State University | 51, 95
 Chiang, Ranyee | New York University | 71
 Chiappetta, Eugene | University of Houston | 76
 Chin, Christine | National Institute of Education, Singapore | christine.chin@nie.edu.sg | 50
 Chini, Jacquelyn | Department of Physics, Kansas State University | jackiehaynicz@gmail.com | 41, 106, 107
 Chinn, Clark | The State University of New Jersey Rutgers University | 85
 Chinn, Pauline | University of Hawaii | 59, 89
 Chiou, Guo-Li | National Taiwan University of Science and Technology | glchiou@mail.ntust.edu.tw | 104
 Chiu *, Mei-Hung | National Taiwan Normal University Graduate Institute of Science Education | mhchiu@ntnu.edu.tw | 54, 61, 79, 97
 Cho, Hyesook | Pusan National University | 93
 Choi, Aeran | Kent State University | achoi1@kent.edu | 72, 84, 93
 Choi, Kyunghee | Ewha Womans University | hlec25@ewha.ac.kr | 59
 Choi, Soyoung | Department of Curriculum and Instruction, Purdue University | choi90@purdue.edu | 44, 79
 Cholymay, Margarita | University of Hawaii | 89
 Christina, Howell-Richardson | Kings College London | 85, 78
 Christodoulou, Andri | King's College, London | andri.christodoulou@kcl.ac.uk | 78, 85
 Chu, Hye-Eun | Nanyang Technological University | hyeun.chu@gmail.com | 109
 Chung, Shiao-Lan | National Taiwan Normal University | 61
 Cihangir, Cihan | Giresun University | cgulin@metu.edu.tr | 79
 Cirucci, Lori | Bethlehem School District | 64, 72
 Clark, Douglas | Vanderbilt University | doug.clark@vanderbilt.edu | 40, 77, 96, 107
 Clark, Jim | Arroyo High School | 39
 Clark, Jonathan | University of Cape Town
 Clark, Ted | Department of Chemistry, The Ohio State University | clark.789@osu.edu | 56
 Clarkson, Philip | Australian Catholic University | Philip.Clarkson@acu.edu.au | 58, 75
 Clary, Renee | Department of Geosciences, Mississippi State University | rclary@geosci.msstate.edu | 46
 Clement, John | University of Massachusetts-Amherst | 86
 Clifford, Matthew | Learning Point Associates | matthew.clifford@learningpt.org | 64
 Clowes, Sarah | University of Michigan | 70
 Cobern, William | The Mallinson Institute for Science Education, Western Michigan University | billcobern@wmich.edu | 62, 72
 Coffey, Janet | University of Maryland, College Park | jcoffey@umd.edu | 88
 Colbern, Bill | Western Michigan University
 Colley, Kabba | Edinformatics, Vermont | 45
 Collins, Angelo | Knowles Science Teaching Foundation | 99
 Cone, Neporcha | neporcha@yahoo.com | 64
 Conlin, Luke | University of Maryland | 39
 Connolly, Kathleen | Tufts University | lee.connolly@tufts.edu | 64
 Connor, Carol | Florida State University | 80
 Conover, Shey | Island Institute | 101
 Cook, Kristin | Indiana University | 69, 72, 99
 Cook, Melissa | UCLA | 110
 Cook, Michelle | Clemson University | mcook@clemson.edu | 44, 72
 Cooper, Beverley | University of Waikato |
 Cooper, Melanie | Clemson University | 106
 Cooper, Rebecca | Centre for Science, Mathematics and Technology Education, Monash University | 105
 Cope, Gregory | Department of Environmental and Molecular Toxicology, North Carolina State University | 73
 Corcoran, Tom | Teachers College Columbia University | 49
 Corpuz, Edgar | Physics and Geology Department The University of Texas | ecorpuz@utpa.edu | 94
 Corpuz, Ma Aileen | Physics and Geology Department The University of Texas | 94
 Corrigan, Deborah | Centre for Science, Mathematics and Technology Education, Monash University | Debbie.Corrigan@Education.monash.edu.au | 105
 Costu, Bayram | Karadeniz Technical University | bayramcostu@gmail.com | 78
 Cotterman, Michelle | Wright State University | 98
 Cottongim, Laura | University of Hawaii | 54
 Coughlin, Christine | New York University | 71

Coulter, Bob | Litzinger Road Ecology Center | 99

Courtney, Courtney | College of Education, University of Washington | 45

Covitt, Beth | University of Montana | 81

Crawford, Barbara | Cornell University | bac45@cornell.edu | 48, 80, 109

Crawley, Frank | East Carolina University | 79

Creighton, Jean | UWM Planetarium | 87

Crippen, Kent | University of Nevada Las Vegas | kcrippen@unlvnevada.edu | 50

Criswell, Brett | Keenesaw State University | 99

Cromley, Jennifer | Temple University | jcromley@temple.edu | 40, 99

Crymes, Jonathan | Gwinnett County Public Schools, The University of Georgia | joncrymes@gmail.com | 84

Cummane, Mary | Perspectives/IIT Mathematics and Science Academy | 85

Cunningham, Christine | Museum of Science, Boston | 42

Cunningham, Kevin | Department of Curriculum & Instruction University of Wisconsin - Madison | kdcunningham@wisc.edu | 85

Cunningham, Mark | Physics and Geology Department The University of Texas | 94

Czerniak, Charlene | The University of Toledo | Charlene.Czerniak@utoledo.edu | 54, 85, 110

Dagher, Zoubeida | University of Delaware | zoubeida@udel.edu | 97

Dahlberg, Steve | White Earth Tribal Community College | 101

Dai, Amy | University of Maryland | 87

Dalaoui, Paraskevi | Primary State Education | 71, 56

D'Angelo, Cynthia | Arizona State University | cynthia.dangelo@asu.edu | 77, 96, 107

Dani, Danielle | Ohio University | 95

Danielowich, Robert | Adelphi University | rdanielowich@adelphi.edu | 88, 100

Dantley, Scott | Coppin State University | 87

Davis, Elizabeth | University of Michigan | 44, 49, 70, 98

Dawson, Vaille | Curtin University | vdawson@curtin.edu.au | 55, 61

De Lucchi, Linda | University of California at Berkeley | 102

DeBoer, George | AAAS Project 2061 | gdeboer@aaas.org | 52, 77, 102, 106

DeChenne, Sue | Oregon State University | 58

Dechsi, Precharn | The Institute for the Promotion of Teaching Science and Technology | 70

DeCoito, Isha | York University | idecoito@oiseutoronto.ca | 58, 47, 74

Dede, Chris | Harvard University | 84

DeHaan, Robert | Emory University | 70

Delgado, Cesar | University of Texas at Austin | Cesar_Delgado@mail.utexas.edu | 44

Delone, Scott | The Pennsylvania State University | 99

Demetrikopoulos, Melissa | Institute for Biomedical Philosophy | 70

Demir, Kadir | Georgia State University | 45, 54, 85

Deniz, Hasan | University of Nevada Las Vegas | hasan.deniz@unlv.edu | 45, 78

DeRosa, Donald | School of Education, Boston University | 100

DeSena, Alphonse | National Science Foundation | 65

Desjean-Perrotta, Blanche | University of Texas at San Antonio | blanche.perrotta@utsa.edu | 90

Deutscher, Rebecca | University of California at Berkeley | rdeutscher@berkeley.edu | 43

DeWitt, Jennifer | Kings College London | 84, 104

Diaconu, Dana | Rice University, Center for Education, School Science and Technology Program | ddiaconu@rice.edu | 96

Dial, Katrina | Florida State University | 72

Dias, Michael | Kennesaw State University | mdias@kennesaw.edu | 100

Diaz, Lisa Bouillion | University of Illinois at Urbana-Champaign | 63

Dierking, Lynn | Sea Grant Professor in Free-Choice Learning Oregon State University | dierking@science.oregonstate.edu | 57, 63

DiGironimo, Nicole | University of Delaware College of Education and Public Policy | digirn@udel.edu | 39

DiGiuseppe, Maurice | University of Ontario Institute of Technology | maunice.digiuseppe@gmail.com | 47, 57, 58

Dillon, Justin | Department of Education & Professional Studies King's College London | justin.dillon@kcl.ac.uk | 84, 97, 102

Dixon, Pat | Florida State University | 57, 82

Dolan, Erin | Virginia Tech | 99

Dolphin, Glenn | Syracuse University | 57

Dominey, Wallace | Rice University, Center for Education, School Science and Technology Program | 96

Donahue Wylie, Caitlin | University of Cambridge | 80

Donnelly, Lisa | Kent State University | ldonnell@kent.edu | 56, 72

Doran, Rodney | State University of New York at Buffalo | 76

Dorgan, Catherine | Florida State University | 50

Dori, Yehudit | Technion, Israel Institute of Technology and Massachusetts Institute of Technology | yjdori@technion.ac.il | 43, 56, 60, 103

Dotger, Sharon | Syracuse University | sdotger@syr.edu | 40, 55, 94, 86

Dowd, Patrick | University of California at Davis | pfdowd@ucdavis.edu | 52, 79

Dowd, Thomas | William Rainy Harper College | 56

Drago, Kathryn | University of Michigan | kdrago@umich.edu | 64, 86

Drame, Elizabeth | University of Wisconsin-Milwaukee | 87

Drane, Denise | Northwestern University | 61

Draney, Karen | University of California, Berkeley | 102

Dreon, Oliver | Millersville University | oliver.dreon@millersville.edu | 47

Dubosarsky, Mia | University of Minnesota's Dept of Curriculum and Instruction | dubo0053@umn.edu | 50

Duebelde, Gabi | Justus Liebig University Giessen, Institute for Biology Education | 74

Duffy, Andrew | Department of Physics, Boston University | 78, 100

Duit, Reinders | IPN Kiel, Germany | 79, 90

Dumas, Denis | Temple University | 40

Duncan, Marlina | University of Massachusetts Amherst | mduncan@educ.umass.edu | 77

Duncan, Ravit | Rutgers University | 49, 85, 98

Dunn, Cindi | Office of Educational Innovation and Evaluation | 57

Durant, John | MIT Museum | 73

Duschl, Richard | Penn State University | rad19@psu.edu | 35, 49, 85, 93

Dustin, Laura | Honeoye Central School District | 83

Earle, Janice | National Science Foundation | jearle@nsf.gov | 35, 49, 93, 102

Eastwood, Jennifer | Indiana University | jvanduse@umail.iu.edu | 77, 99

Eberach, Catherine | Rutgers, The State University of New Jersey | 63

Eberhardt, Jan | Michigan State University | 105

Eberle, Francis | National Science Teachers Association | 49, 100

Edler, Kate | Illinois State University | 56

Eggington, Kalani | The University of Queensland, Australia | keggington@yahoo.com | 82

Egosi, Ayelet | Haifa University | 42

Eisenkraft, Arthur | Center of Science and Mathematics in Context, University of Massachusetts Boston | 78

Ekborg, Margareta | Malmö University, Sweden | 81

Eklund, Jennifer | 70

Ellett, Chad | CDE Research | 85

Elmesky, Rowhea | Washington University-St. Louis | 35, 46

Elster, Doris | University of Vienna | 51

Ermdin, Christopher | Teachers College, Columbia University | 45, 84, 110

Enderle, Patrick | Florida State University | pje407@fsu.edu | 50, 72, 82

Enfield, Mark | Elon University | menfield@elon.edu | 70

Engemann, Joe | Brock University | 47, 75, 76, 83

Engle, Randi | University of California, Berkeley | RAEngle@berkeley.edu | 39

Ennemoser, Marco | Justus Liebig University Giessen, Educational Psychology | 74

Erberle, Francis | National Science Teachers Association | 97

Erduran, Sibel | Bristol University | 90, 101, 107

Ernst, Stacy | Doctoral Candidate, University of Minnesota | 48

Ertepyinar, Hamide | Middle East Technical University | 85, 105

Escru-Sune, Marta | University of Massachusetts Boston | 39

Eslinger, Eric | University of Delaware | 76

Espenshade, Jordan | Duquesne University, Bayer School of Natural and Environmental Sciences | 104

Espinosa-Bueno, Silvia | Universidad Nacional Autónoma de México | 96

Etkina, Eugenia | Rutgers University | 39

Evagorou, Maria | University of Nicosia, Cyprus | 70

Everett, Susan | University of Michigan-Dearborn | everetts@umd.umich.edu | 104

Everhardy, Anne | University of Muenster | 107

Eylon, Bat-Sheva | Weizmann Institute of Science | 55, 96

Fadigan, Kathleen | Pennsylvania State University | kxf24@psu.edu | 63, 73

Falk, Andrew | University of Michigan | ahfalk@umich.edu | 58

Falk, John | Oregon State University | falkj@science.oregonstate.edu | 51, 73, 87

Falkenberg, Karen | Concept Catalysts, Inc. | 70

Farhangi, Sanaz | New York University | 71

Faux, Russell | Davis Square Research Associates | 100

Fay, Derek | Arizona State University | 47

Fechner, Sabine | University of Duisburg-Essen | sabine.fechner@uni-due.de | 62

Feinstein, Noah | University of Wisconsin, Madison | 59, 102

Feldman, Allan | University of South Florida | 70, 75, 81, 95, 99

Feldon, David | University of Virginia | 104

Fernández-López, Luis | University of Santiago de Compostela | 85

Ferrence, Gregory | Illinois State University | 56

Finfield, Steve | University of Delaware | 72, 104

Figg, Candace | Brock University | cfigg@brocku.ca | 82

Finkelstein, Noah | University of Colorado at Boulder | 99

Firestone, Jonah | Arizona State University | 46, 60

Fischer, Hans | University Duisburg-Essen | 50, 58, 100, 106, 107

Fitzgerald, Angela | Edith Cowan University | afitzge1@student.ecu.edu.au | 86

Fitzsimmons, Barbara | Morris College South Carolina | 50

Fleischhauer, Jan | Justus-Liebig-University Gießen, Institute of Physics Education | 50

Fletcher, Steven | St. Edward's University | stevenf@stedwards.edu | 108

Flick, Lawrence | Oregon State University | flickl@science.oregonstate.edu | 58, 102

Fluet, Kimberly | University of Rochester | 42

Folmer, Elvira | Netherlands Institute for Curriculum Development | 58

Folta, Elizabeth | North Carolina State University | 78

Forbes, Cory | Iowa College of Education | cory-forbes@uiowa.edu | 46, 57

Ford, Danielle | School of Education, University of Delaware | dford@udel.edu | 104

Ford, Wendy | Linwood Middle School | 39

Forman, Ellice | University of Pittsburgh | ellice@pitt.edu | 107

Forrester, Jennifer | NC State University | 40

Forster, Lotinda | Kamehameha School | 89

Fortney, Brian | University of Texas at Austin | bfortney@mail.utexas.edu | 77

Fortus, David | Weizmann Institute of Science | david.fortus@weizmann.ac.il | 61, 88

Fowler, Samantha | Clayton State University | samanthafowler@clayton.edu | 43

Francis, Kazemek | St. Cloud State University | 61

Frantz, Kyle | Georgia State University | 70

Frauwirth, Kenneth | University of Maryland | 80

Frazier, Wendy | George Mason University | wfrazier@gmu.edu | 80

Freed, Carolyn | University of Alberta | 45

Freeman, Tonjua | University of Georgia | 65

Freire, Ana | Centro de Investigação em Educação, Ciências da Universidade de Lisboa | 58

Freyermuth, Sharyn | University of Missouri - Columbia | 81

Fricke, Katharina | University of Duisburg-Essen Department of Physics | 107

Friedrichsen, Patricia | University of Missouri Columbia | 63, 56, 95

Friege, Gunnar | Leibniz University Hannover Institut für Mathematics und Physics Education | 86

Fu, Shu-Ching | Department of Earth Sciences, National Taiwan Normal University | 94

Fulmer, Gavin | National Science Foundation | gfulmer@nsgov | 35, 39, 64, 84, 88

Furman Shaharabani, Yael | Israel Institute of Technology | yaelsha@gmail.com | 96

Furtak, Erin | University of Colorado at Boulder | erin.furtak@colorado.edu | 99

Furuya, Koichi | Department of Teacher Education Hokkaido University of Education | furuya@asa.hokkyodai.ac.jp | 76

Fynnewever, Herb | Department of Chemistry and Biochemistry, Calvin College | 46, 73

Gagne, Phillip | Georgia State University | 70

Gallagher-Bolos, Joan | Glenbrook North High School | 94

Gallard, Alejandro | Florida State University | 65

Galosy, Jodie | University of California at Davis, Center for Biophotonics Science and Technology | 42

Ganchorre, Athena | University of Arizona | athenag@u.arizona.edu | 76

Ganesh, Tirupalavanam | Arizona State University | 105

Ganiel, Uri | Weizmann Institute of Science | 55

Garabayo, Luciana | Department of Philosophy, Boston University | 78

Gardner, Grant | North Carolina State University | grant_gardner11@hotmail.com | 40, 48, 55

Garik, Peter | School of Education, Boston University | 78, 100

Garnier, Helen | UCLA | 41

Garritz, Andoni | Universidad Nacional Autónoma de México | andoni@unam.mx | 62, 96

Geaney, Edward | University of California, Santa Cruz | egeaney@ucsc.edu | 76

Geban, Omer | Middle East Technical University | 46

Geelan, David | The University of Queensland | dgeelan@uq.edu.au | 44, 56

Gelbart, Hadas | Weizmann Institute of Science | 85

Geller, Cornelia | University Duisburg-Essen | 50

Gerena, Linda | York College | 108

Gess-Newsome, Julie | Northern Arizona University | 103

Gilbert, John | The University of Reading | 61

Gilmer, Penny | Florida State University, Department of Chemistry and Biochemistry | gilmer@chem.fsu.edu | 46, 76, 77, 78

Gilmore, Joanna | University of South Carolina | jagilmor@mailbox.sc.edu | 108

Givvin, Karen | UCLA | 41

Glasson, George | Virginia Polytechnic Institute and State University | glassong@vt.edu | 53, 73

Gleason, Susan | Middletown High School Delaware | 74

Gleim, Lianne | Florida State University | lgleim@fsu.edu | 81

Glen, Nicole | Bridgewater State College | nglen@bridgew.edu | 94

Gningue, Serigne | Lehman College | 59

Godert, Janice | Worcester Polytechnic Institute | 62

Goedhart, Martin | University of Groningen | 99

Goh, Sao-Ee | University of Pennsylvania | 88

Golan Duncan, Ravit | State University of New Jersey Rutgers University | 100

Goldberg, Bennett | Department of Physics, Boston University | 100

Golden, Barry | Florida State University | bgolden@fsu.edu | 74, 82

Goldman, Daphne | Beit Berl Academic Academic College | dafnag@netvision.net.il | 90

Gomez, Kimberley | University of Pittsburgh | 98

Gomez, Louis | University of Pittsburgh | 98

Gómez-Galindo, Adrianna | Cinvestav Unidad Monterrey | 71

Gonsalves, Allison | McGill University | 106

Gonzalez, Christina | Lehman College | angelakelly@lehman.cuny.edu | 100

Gonzalez, M. | University of Illinois at Urbana-Champaign | megonzalez@illinois.edu | 98

Goode, Chris | Georgia State University | 70

Gorry, Anne | Université de Montréal, Canada | 51

Gotwals, Amelia | Michigan State University | 95, 99

Grady, Julia | Arkansas State University | 65

Granger, Ellen | Florida State University | granger@bio.fsu.edu | 53, 56, 61

Gray, Patricia | University of North Carolina - Greensboro | 45

Gray, Ron | Oregon State University | ron.gray@science.oregonstate.edu | 81

Gray, Salina | Stanford University | 59

Green, Andre | University of South Alabama | green@ousouthal.edu | 73

Green, Katie | Michigan State University, Department of Teacher Education | 42

Green, Shamarion | Wayne State University | 72

Greenwood, Julian | Stranmillis University College Belfast Northern Ireland | 53, 71

Gresfali, Melissa | Indiana University | 84

Grier, Jeanne | California State University Channel Islands | 63

Griffard, Phyllis | 104

Griffin, Janette | University of Technology, Sydney | 104

Grooms, Jonathon | Florida State University | 87

Gross, Nicholas | Department of Physics, Boston University | 78

Grotzer, Tina | Project Zero Harvard Graduate School of Education | 106

Groulx, Judith | Texas Christian University | 100

Groves, Robin | Curtin University of Technology | R.Groves@curtin.edu.au

Grueber, David | Wayne State University | grueberd@msu.edu | 72

Gruhl, Mary | Milwaukee School of Engineering | 109

Grusenmeyer, Linda | University of Delaware | 104

Gulacar, Ozcan | Southern Connecticut State University | gulacar1@southernct.edu | 46

Gunckel, Kristin | University of Arizona | kgunckel@email.arizona.edu | 49, 81

Gunel, Murat | Ataturk University | mgunel@atauni.edu.tr | 46, 93

Gunstone, Richard | Centre for Science, Mathematics and Technology Education, Monash University | 105

Guo, Karen | Teachers College, Columbia University | 105

Guo, Yu-ying | Beijing Normal University | 47

Gupta, Adit | Model Institute of Education & Research | adigupta@yahoo.com | 48

Gupta, Preeti | New York Hall of Science | pgupta@nyscience.org | 73, 74, 101

Guy, Mark | The University of North Dakota | 61, 87

Guzey, S. | University of Minnesota | kendi003@umn.edu | 42, 60

Gyllenpalm, Jakob | Stockholm University - Dept of Mathematics and Science Education | jakob.gyllenpalm@mnd.su.se | 109

Ha, Minsu | Korea National University of Education | hams326@gmail.com | 71

Haasch, Mary Anne | Wauwatosa West High School | 109

Hacieminoglu, Esme | Selcuk University, Department of Elementary Education | haciminoglu@gmail.com | 85

Haertig, Hendrik | University Duisburg-Essen Schuetzenbahn | hendrik.haertig@uni-due.de | 58, 110

Hagay, Galit | Department of Education in Technology and Science, Technion | 81

Hagedorn, Eric | University of Texas at El Paso, Physics Department | 105

Hagerty, James | University of Michigan | hajs@umich.edu | 70, 94

Hagevik, Rita | The University of Tennessee | 49

Hagiwara, Sumi | Montclair State University | 35, 59

Halbig, Patrick | University of Illinois at Urbana-Champaign | phalbig@illinois.edu | 97

Halfon, Saul | Virginia Polytechnic Institute & State University | 73

Halverson, Kristy | University of Southern Mississippi | Kristy.Halverson@usm.edu | 81, 103

Hamen Farrar, Cynthia | The College Board New York | 49, 106

Hammer, David | University of Maryland | 39

Hamza, Karim | Stockholm University, Department of Mathematics and Science Education | karim.hamza@mnd.su.se | 80

Hand, Brian | University of Iowa | 47, 62, 72, 84, 93, 94

Hansen, Martha | Evanston Township High School | 98

Hanuscin, Deborah | University of Missouri | hanuscind@missouri.edu | 83

Hao, Shiqi | Michigan Department of Education | 64

Harris, Christopher | SRI International | 62, 73, 80

Harris, Yvonne | William Rainey Harper College | 56

Harsh, Joseph | Indiana University | jharsh@indiana.edu | 56

Hartmann, Stefan | University Giessen Karl-Geckner | 55

Hashem, Azza | Graduate School of Education, University of Exeter | 58, 103

Hasson, Eilat | Weizmann Institute of Science, Dept of Science Teaching | eilat.hasson@weizmann.ac.il | 40

Haudek, Kevin | Michigan State University | 110

Haugan, Mark | Department of Physics Purdue University | 109

Haugwitz, Marion | University of Duisburg-Essen | marion.haugwitz@uni-due.de | 62

Haun-Frank, Julie | University of North Carolina at Greensboro | jhaunfr@uncg.edu | 77

Hayward, Elizabeth | NYU | 103

Hazari, Zahra | Clemson University | zahra@clemson.edu | 43, 64

Helaakoski, Jussi | University of Jyväskylä | 50

Helding, Brandon | Arizona State University | 83

Henderson, Bryan | Stanford University | 59

Henderson, Charles | Western Michigan University | 73

Henke, Andreas | University of Bremen / Germany | 97

Henriques, Laura | California State University, Long Beach | 90, 108

Henry, David | State University College at Buffalo | 83

Herbert, Bruce | Texas A&M University | herbert@geot.tamu.edu | 109

Herman, Phillip | University of Pittsburgh | pherman@pitt.edu | 98

Herman, Tim | Milwaukee School of Engineering | 109

Hernandez, Cecilia | Kansas State University - Office of Diversity and Dual Career | 57

Herrenkohl, Leslie | University of Washington | 87

Herring, Mary | Temple University | 40

Herrmann-Abell, Cari | AAAS Project 2061 | cabell@aaas.org | 52, 77

Herscovitz, Orit | Technion - Israel Institute of Technology and Ort Braude Academic College of Engineering, Israel | 60, 103

Hester, Melanie | Florida State University | 81

Hestness, Emily | University of Maryland | 87

Hetherington, Lindsay | Graduate School of Education, University of Exeter | 103

Higgins, Thomas | Harold Washington College | 56

Hill, Geannine | Pacific Graduate School of Clinical Psychology | 57

Hilton, Annette | University of Queensland | a.hilton@uq.edu.au | 51

Hjelseth, Sarah | North Dakota State University | sarah.vollmer@ndsu.edu | 72

Hmelo-Silver, Cindy | Rutgers University | 39, 107

Ho, Li-Hua | Providence University, Taichung, Taiwan | 89

Hobbs, Mary | The University of Texas at Austin | maryhobbs@mail.utexas.edu | 63, 96

Hodges, Georgia | University of Georgia | georgia.hodges@gmail.com | 59, 79

Hoettecke, Dietmar | University of Kaiserslautern / Germany | postmaster@dietmar-hoettecke.de | 97

Hoffman, Emily | Urban Ecology Institute | 55

Hofstein, Avi | The Weizmann Institute of Science, Israel | 102, 107

Hokayem, Hayat | Michigan State University | alhokayem@msu.edu | 98

Holden, Molly | Texas Christian University | m.holden@tcu.edu | 100

Hollas, Tori | Texas A&M University | 90

Holliday, Gary | Dept of Mathematics and Science Education Illinois Institute of Technology | ghollida@iit.edu | 46, 106

Holmes, Shawn | North Carolina State University | 76

Holmgren, Sven-Olof | Stockholm University - Department of Physics | 109

Homer, Bruce | CUNY Graduate Center | 103

Honda, Sandra | 88

Hong, Jeong-Min | Boseoung High School | 41
 Hong, Miyoung | Korea Institute for Curriculum and Evaluation | myhong@kice.re.kr | 64, 74
 Hong, Seok Jun | Dankook University | 72
 Hong, Suck-June | Dankook University | 76
 Hope, Jennifer | University of Missouri, St. Louis | 94
 Hori, Tetsuo | University Yamanashi, Japan | 76
 Horowitz, Jane | PennSTL, University of Pennsylvania | 35
 Houle, Meredith | San Diego State University | mhoule@mail.sdsu.edu | 46, 50, 84
 House, Roger | William Rainy Harper College | 56
 Howell-Richardson, Christina | King's College, London | 78, 85
 Hoy, Sarida | Georgia State University | shoy1@student.gsu.edu | 59
 Hsieh, Chien-Kuo | National Changhua University of Education | 75
 Hsieh, Fu-Pei | Kuang-Hua Primary School | sfpsfp@msa.hinet.net | 86, 103
 Hsu, Ming-Chien | Purdue University | 106
 Hsu, Ting-Fang | Indiana University | thsu@indiana.edu | 52
 Huang, Kuo-Yao | National Pingtung University of Education | 71
 Hug, Barbara | University of Illinois Urbana-Champaign | bhug@illinois.edu | 74, 98
 Hughes, Roxanne | Florida State University | rmh05c@fsu.edu | 57, 82, 90
 Hung, Jeng-Fun | National Kaohsiung Normal University | 75
 Hunter, William | Illinois State University | 40, 56
 Hur, Sun Joo | University of Alberta | 45
 Hurst, Melissa | University of South Carolina | mhurst@mailbox.scedu | 104
 Hutchins, Kristen | Howard Payne University | khutchins@hpu.tx.edu | 62, 63
 Hutchinson, Anna | Aiken High School Cincinnati Public Schools | 95
 Hutner, Todd | The University of Texas at Austin | thutner@mail.utexas.edu | 65
 Huziak-Clark, Tracy | Bowling Green State University | thuziak@bgsu.edu | 55
 Hvidsten, Connie | University of California, Davis | chvidsten@ucdavis.edu | 52
 Hyun, Bo-Ram | Incheon Science High School | 41
 Ideland, Malin | Malmö University | 81
 Imbriglio, Amanda | Concordia University | 64
 Impey, Chris | University of Arizona | 72
 Ingerman, Åke | University of Gothenburg, Sweden | 102
 Irving, Karen | Ohio State University College of Education and Human Ecology | 110
 Ito, Emi | University of Minnesota | 79
 Ivey, Toni | Oklahoma State University | 90
 Jaber, Lama | American University of Beirut | lama_jaber01@hotmail.com | 46
 Jackson, Phoebe | McGill University | 106
 Jagger, Susan | OISE, University of Toronto | 63
 Jaipal, Kamini | Brock University | 82
 Jaksha, Amanda | University of Arizona | ajaksha@email.arizona.edu | 62
 Jale, Çakıroğlu | Middle East Technical University | 105
 James, Sylvia | National Science Foundation | 65
 Jameson, Amy | Dater High School Cincinnati Public Schools | 95
 Jang, Syh-Jong | Chung-Yuan Christian University | jang@cyu.edu.tw | 63, 74
 Jariwala, Manher | Department of Physics, Boston University | 78, 100
 Jarrard, Amber | University of Georgia | 82
 Jarrett, Olga | Georgia State University | 104
 Jarvin, Linda | Tufts University - Center for the Enhancement of Learning and Teaching (CEL.T) | 64
 Jennifer, Correa | New York Hall of Science | 74, 101
 Jetty, Lauren | Syracuse University | 57
 Jiménez-Aleixandre, María Pilar | University of Santiago de Compostela | 62, 85
 Jin, Hui | Michigan State University | jinhui@msu.edu | 49, 102
 Jinnie, Choi | University of California, Berkeley | 102
 Jobér, Anna | Malmö University, Sweden | 102
 Johnson, Bruce | University of Arizona | brucej@email.arizona.edu | 39, 90
 Johnson, Carla | University of Cincinnati | 54, 85
 Johnson, Phillip | Durham University | P.M.Johnson@durham.ac.uk | 98
 Johnson, Robert | Temple University | 88
 Johnson, Timothy | Western New York Regional Information Center (WNYRIC) | 83
 Johnson, Verneda | Issac Newton Middle School for Math and Science | 88
 Johnson-Glenberg, Mina | Department of Psychology, Arizona State University | 84
 Johnston, Carol | Mount Saint Marys College Los Angeles | cjohnston@msmcla.edu | 63
 Jonassen, David | Department of Educational Psychology and Learning Technologies, University of Missouri | 80
 Jones, Jayson | School of Education, Brooklyn College, CUNY | 101
 Jones, M. Gail | NC State University | Gail_Jones@ncsu.edu | 40, 48, 55, 77
 Jordan, Rebecca | State University of New Jersey | 39, 82
 Jordan, Trace | NYU | 103
 Kafi, Yasmin | University of Pennsylvania | 84
 Kahle, Jane | Miami University | 51, 56, 96
 Kahn, Jason | Center for Science and Math Teaching Tufts University | jason.kahn@tufts.edu | 69
 Kane, Justine | University of Illinois at Chicago | 80
 Kane, Tera | Temple University | 96
 Kang, Emily | Adelphi University | emilykang2@gmail.com | 99
 Kang, Hosun | Michigan State University | kanghosu@msu.edu | 60, 95, 99
 Kang, Nam-Hwa | Oregon State University | kangn@science.oregonstate.edu | 64, 65, 74, 81
 Kanouté, Fasal | Université de Montréal | 51
 Kanter, David | Temple University | dkanter@temple.edu | 57, 99
 Kao, Huey-Lien | National Pingtung University of Education | 71
 Kapon, Shulamit | University of California, Berkeley | shulamit.kapon@gmail.com | 55
 Kara, Yilmaz | Karadeniz Technical University | yilmazkaakara@yahoo.com | 58
 Karatas, Faik | Purdue University | 105
 Kasper, Lutz | University of Education Freiburg - Department of Physics | lkasper@physik.uni-frankfurt.de | 98
 Kastning, Nancy | Shonto Preparatory School, AZ | chinn@hawaii.edu | 89
 Katchevich, Dvora | Department of Science Teaching, The Weizmann Institute of Science | dvora.katchevich@weizmann.ac.il | 107
 Katz, Phyllis | University of Maryland | pkatz15@gmail.com | 41, 87
 Kauertz, Alexander | University Duisburg-Essen | 58, 106, 107
 Kaur, Satprit | College of Education, University of Washington | 45
 Kaya, Ebru | Middle East Technical University | ekaya@metu.edu.tr | 101, 107
 Kaya, Sibel | Florida State University | 80
 Keiler, Leslie | York College | 108
 Keller, Melanie | University Duisburg-Essen | 50
 Kelly, Angela | Lehman College | amk66@columbia.edu | 59, 100
 Kempler Rogat, Toni | Rutgers, The State University of New Jersey | 93
 Kendall, Sean | Student | kendal32@students.rowan.edu | 46
 Kennedy, Declan | University College Cork
 Kenyon, Lisa | Wright State University | lisa.kenyon@wright.edu | 98
 Kern, Cynthia | University of Nevada Las Vegas | 50, 78
 Kerr, Karen | St. Marys University College Belfast | k.kerr@qub.ac.uk | 96
 Kerski, Joseph | Environmental Systems Research Institute (ESRI) | 64
 Ketelhut, Diane | Temple University | djketel@temple.edu | 43, 57, 96
 Key, Shirley | University of Memphis | 45
 Khan, Uzma | Syracuse University | umkhan@syr.edu | 40, 86, 94
 Khasawneh, Samer | The Hashemite University | 97
 Khishfe, Rola | American University of Beirut | rkhisf@lu.edu | 78
 Kim, Byoung | Roosevelt University | bkim@roosevelt.edu | 71, 72
 Kim, Chan-Jong | Seoul National University | 53
 Kim, Hye-Jeong | Texas A&M University | 109
 Kim, Sung-Won | Ewha Womans University | 59, 76, 96
 Kind, Per | Department of Education Durham University | p.m.kind@durham.ac.uk | 107
 Kind, Venessa | Department of Education, Durham University | 107
 King, Heather | King's College London | 63
 King, Lance | king@bio.fsu.edu | 65
 Kingir, Sevgi | Selcuk University, Faculty of Education | kingirsevgi@gmail.com | 46
 Kirch, Susan | New York University | susan.kirch@nyu.edu | 71, 106
 Kirchhoff, Allison | University of Minnesota | reese098@umn.edu | 63
 Kirkby, Kent | University of Minnesota | 108
 Kisiel, James | California State University, Long Beach | jkisiel@csulb.edu | 73, 104
 Kittleson, Julie | University of Georgia | jkittl@uga.edu | 63, 82, 100
 Kitts, B | Department of Geological Sciences Northern Illinois University | 75
 Kleickmann, Thilo | Max-Planck-Institute for Human Development | kleickmann@mpib-berlin.mpg.de | 107
 Klesath, Marta | North Carolina State University | 78
 Kloser, Matthew | Stanford University | mkloser@stanford.edu | 85
 Klymkowsky, Michael | University of Colorado at Boulder | 99
 Knaggs, Christine | University of Toledo | christine.knaggs@utoledo.edu | 80
 Knight, Stephanie | Pennsylvania State University | 90
 Knopp, Jonathan | IB International | 109
 Ko, Eun Kyung | National-Louis University | eun.ko@nl.edu | 71
 Koballa, Thomas | University of Georgia | tkoballa@uga.edu | 75, 100, 104
 Koehler, Matthew | Michigan State University | 105
 Kolvoord, Bob | James Madison University | kolvoord@jmu.edu | 64
 Konoian, Bristol | English High School, Boston Public Schools | 100
 Koponen, Ismo | Department of Physics, University of Helsinki | ismo.koponen@helsinki.fi | 54
 Korpan, Connie | Grande Prairie Regional College | ckorpan@gpr.ab.ca | 57
 Kortam, Naji | University of Haifa-Oranim | 106
 Kouba, Vicky | University at Albany | 56
 Koul, Rekha | SMEC, Curtin University of Technology | R.Koul@curtin.edu.au | 48, 56, 79
 Kowalski, Susan | BSCS | skowalski@bscs.org | 100, 101
 Krajcik, Joseph | University of Michigan School of Education | Krajcik@umich.edu | 35, 44, 49, 57, 59, 63, 64, 88, 94, 98, 102, 109
 Krall, Rebecca | University of Kentucky | rebecca.krall@coec.uky.edu | 105
 Kramer, Laird | Department of Physics, Florida International University | 43, 54
 Kremer, Kerstin | Institut für Biologiedidaktik | 101
 Kuiper, Wilma | Netherlands Institute for Curriculum Development / University of Utrecht | wkuiper@sklon | 58
 Kuldell, Natalie | Massachusetts Institute of Technology | 56
 Kulo, Violet | Lehigh University | violet.kulo@lehigh.edu | 64, 72
 Kumar, Rashmi | University of Pennsylvania | 54
 Kwak, Kyunghwa | Pusan National University | 72
 Kyle, Jr., William | University of Missouri-St. Louis | bill_kyle@umsu.edu | 54
 Labastida-Pina, Diana | Universidad Nacional Autónoma de México | 96
 Lachaine, Audrey | Université de Montréal | 51
 Lachapelle, Cathy | Museum of Science, Boston | clachapelle@mos.org | 42
 Lacy, Jennifer | University of Missouri | jelf4c@mizzou.edu | 83
 LaFlamme, Donna | St. Dominic's School | 109
 Lambert, Julie | Florida Atlantic University | jlambert@fau.edu | 54
 Landin, J | North Carolina State University | jmlandin@ncsu.edu | 46

Lang, Michael | District National Center for Teacher Education, Maricopa Community Colleges District | 83

Lange, Kim | University of Muenster Seminar für Didaktik des Sachunterrichts Leonardo | 107

Lanier, Kimberly | Florida State University | ksl9403@garnet.acns.fsu.edu | 65

Lankford, Deanna | Science Education University of Missouri Columbia | dmld80@mizzou.edu | 56

Lardy, Corinne | San Diego State University | corinne_lardy@yahoo.com | 51, 65, 95

Lark, Amy | Department of Teacher Education, Michigan State University | 95

Lasky, Dorothea | University of Pennsylvania | 88

Laugsch, Rudiger | University of Cape Town |

Laurel, Hartley | University of Colorado, Denver | 102

Lavonen, Jari | University of Helsinki | 64, 74

Lawrenz, Frances | University of Minnesota | 63

Lazzaro, Christopher | Science Education Research & Development The College Board | clazzaro@collegeboard.org | 106

Leard, Cyndy | FutureVision, Inc. | 54

Lebak, Kimberly | The Richard Stockton College of New Jersey | Kimberly.Lebak@stockton.edu | 42

Lederman, Judith | Illinois Institute of Technology | ledermanj@iit.edu | 50, 53, 85, 89, 106

Lederman, Norman | Illinois Institute of Technology | ledermann@iit.edu | 46, 48, 50, 53, 71, 85, 89, 97, 106, 109

Lee, Hee-Sun | Tufts University Department of Education | 84, 85

Lee, Hwei | National Dong Hwa University | 89

Lee, Hyunju | University of Massachusetts | hyunju@educumass.edu | 59, 70

Lee, Irene | Santa Fe Institute | 95

Lee, JeongMin | Purdue University | 106

Lee, Michele | University of Missouri | mlcc@post.harvard.edu | 46, 60

Lee, Min-Hsien | National Taiwan University of Science and Technology | lee.minhsien@gmail.com | 42

Lee, Ohkee | University of Miami | 35, 90

Lee, Sharon | Rhode Island Department of Education | 50

Lee, Sung-Tao | Department of Applied Science, Naval Academy | sungtao@mail.cna.edu.tw | 86, 103

Lee, Tammy | East Carolina University | 95

Lee, Tiffany | University of Washington | 107

Lee, Yew-Jin | National Institute of Education, Singapore | yewjin.lee@nie.edu.sg | 41, 71

Lee, Yong-sang | University of California, Berkeley | 102

Lee, Young | University of Houston | regina0930@yahoo.com | 76

Lee, Yun-Mi | Jeonnam High School | 41

Lehr, Jane | California Polytechnic State University | jlehr@calpoly.edu | 43, 73

Lehrer, Richard | Peabody College Vanderbilt University | 40, 49

Lei, Yu | University of Alberta | 45

Leibovitch, Abi | University of Massachusetts-Amherst | 86

Lemmens, Meike | 41

Lenz, Laura | University of California, Berkeley | lalenz@berkeley.edu | 109

LePrevost, Catherine | North Carolina State University | celeprev@ncsu.edu | 73

Lester, James | North Carolina State University | 77

Levine, Suzanne | University at Albany | suzannemlevine@gmail.com | 56

Levy Nahum, Tami | Science and Science Education, University of Haifa-Oranim | ntami@weizmann.ac.il | 106

Lewenstein, Bruce | Cornell University | 73

Lewis, Elizabeth | College of Education and Human Sciences, University of Nebraska-Lincoln | drbethlewis@gmail.com | 83

Lewthwaite, Brian | University of Manitoba | 52, 58, 84

Li, Min | College of Education, University of Washington | 45

Li, Yue | Miami University | liy@muohio.edu | 56, 95, 96

Liang, Jyh-Chong | National Taiwan University of Science and Technology | 104

Liang, Ling | La Salle University | 42, 84, 97

Lie, Ho Lin | Po Kock Secondary School, Hong Kong

Light, Greg | Northwestern University | 61

Lim, Miyou | Georgia State University | mlim@gsu.edu | 44, 71

Lin, Hsiu-Fen | Taipei Municipal University of Education | 52

Lin, Jing-Wen | jwlin@tmue.edu.tw | 52

Lin, Ming-Liang | National Kaohsiung Normal University | tyhsaliang@gmail.com | 75

Lin, Sheau-Wen | National Pingtung University of Education | linshewen@mail.npu.edu.tw | 71

Lin, Yen-Wen | An-Chao Primary School, Taiwan | 103

Lindahl, Britt | Kristianstad University, Sweden | britt.lindahl@hkr.se | 81

Lindgren, Joan | Florida Atlantic University | 54

Lindgren, Robb | robbblind@stanford.edu | 84

Link-Perez, Melanie | Department of Botany, Miami University | 82

Linn, Marcia | UC Berkeley | 84

Linsner, Martin | University Duisburg-Essen | 98

Liu, En-shan | Beijing Normal University | 47

Liu, Lei | University of Pennsylvania | lilei@gsccupenn.edu | 61, 88, 94, 107

Liu, Ou Lydia | Educational Testing Service, Princeton | lliu@ets.org | 84

Liu, Xiufeng | State University of New York at Buffalo | xliu5@buffalo.edu | 47, 62, 110

Liu, Y. Debbie | Harvard Graduate School of Education | yul826@mail.harvard.edu | 106

Lockett, Mathew | Western Washington University | 41

Lohmeier, Jill | University of Massachusetts Lowell | 72

Longnecker, Nancy | University of Western Australia | 42

Lopez, Enrique | Stanford University | 57

Lotter, Christine | University of South Carolina | lotter@mailbox.sc.edu | 47, 75

Loughran, John | Monash University | 40, 96

Louisell, Robert | St. Ambrose University | louisellrobert@sau.edu | 61, 80

Loving, Cathleen | Department of Teaching, Learning & Culture, Texas A&M University | 62, 109

Lowes, Susan | Teachers College, Columbia University | 105

Luciw-Dubas, Ulana | National Board of Medical Examiners | 40

Ludvico, Lisa | Duquesne University, Bayer School of Natural Sciences | 43

Luehmann, April | 90

Luft, Julie | Arizona State University | julie.luft@asu.edu | 47, 49, 60, 90, 97, 100, 105, 108

Luisier, Danielle | Standards & Curriculum Alignment Services Research & Development The College Board | 106

Lundeberg, Mary | Michigan State University | 105

Lundsgaard, Morten | University of Illinois at Urbana-Champaign | 106

Lustick, David | University of Massachusetts Lowell | David.Lustick@uml.edu | 73

Lynch, Sharon | National Science Foundation | slynch@nsf.gov | 35, 44, 49, 87, 102

Lynn, Marcia | University of California, Berkeley | 61

Lyons, Daniel | University of Wyoming | 51

Macalagal Jr., Augusto | Stevens Institute of Technology | augusto.magalagal@stevens.edu | 105

Macdonald, Maritza | The American Museum of Natural History | 41

MacDonald, Teresa | University of Kansas Natural History Museum | tmacd@ku.edu | 46

Madden, Lauren | North Carolina State University | LOMadden@gmail.com | 61, 71, 94

Madsen, John | Department of Geological Sciences, University of Delaware | 51, 104

Maeng, Jennifer | University of Virginia | jlc7d@virginia.edu | 53

Maeng, Seung-Ho | Seoul National University | seunghom@gmail.com | 53

Magi, Eric | Spokane School District | 75

Mahaffy, Peter | The Kings University College | 44

Maher, Michelle | University of South Carolina | 104

Mai, Thao | University of California Santa Cruz | 87

MaKinster, James | Hobart and William Smith Colleges | makinster@hws.edu | 58, 64, 76, 96, 107

Malmberg, Claes | Malmö University, Sweden | 81

Maltese, Adam | Indiana University | amaltese@indiana.edu | 56, 108

Mamluk-Naaman, Rachel | The Weizmann Institute of Science, Israel | 102, 107

Mangiante, Elaine | University of Rhode Island | 50

Mann, Jamie | University of Florida | jmann@ufl.edu | 62, 75

Manokore, Viola | Michigan State University | manokor1@msu.edu | 42

Manoli, Constantinos | University of Arizona | 90

Mansour, Nasser | University of Exeter | n.mansour@ex.ac.uk | 58, 103

Mansour, Souraya | Royal Roads University | 79

Manz, Eve | Peabody College, Vanderbilt University | 40

Marbach-Ad, Gili | University of Maryland | gilim@umd.edu | 56, 80, 87

Marlow, Michelle | University of Cincinnati | 95

Marrero, Meghan | U.S. Satellite Laboratory, Inc. | mmarrero@us-satellite.net | 75, 101

Marshall, Jeff | Clemson University | marsha9@clemson.edu | 62, 76

Marshall, Jill | University of Texas at Austin | 99

Martell, Sandra | University of Wisconsin-Milwaukee | smartell@uwm.edu | 46, 87

Martin, Anita | University of Illinois | abmartin@jllinois.edu | 47, 74

Martin, Brian | The Kings University College | 44

Martin, Sonya | Drexel University | Sonya.Martin@Drexel.Edu | 35, 87, 100

Martinez-Garza, Mario | Vanderbilt University | 77

Martin-Hansen, Lisa | Georgia State University | lmartinhansen@gsu.edu | 46, 85, 104

Marulcu, Ismail | Boston College | marulcu@bc.edu | 89

Mason, Cheryl | San Diego State University | 51, 95

Matcycik, Frances | Department of Physics, Pennsylvania State University | fran_matcycik@yahoo.com | 54, 80

Matkins, Juanita Jo | College of William and Mary | 108

Matloob-Haghanikar, Mjogan | Kansas State University | 95

Matz, Rebecca | Department of Chemistry University of Michigan at Ann Arbor | rslahit@umich.edu | 57

Mawn, Mary | SUNY Empire State College | mary.mawn@esc.edu | 70

Max, Charles | University of Luxembourg | charles.max@unilu.lu | 84

Mayer, Juergen | University Giessen Karl-Glückner | 55, 74, 101

Maynard, Kathie | University of Cincinnati | 95

McAuliffe, Carla | TERC | 101

McCall, Kasey | University of Michigan | kasey1@umich.edu | 77, 94

McCallie, Ellen | Carnegie Museum of Natural History | 732

McCarty, Glenda | University of Missouri, St. Louis | glendamccarty@gmail.com | 94

McClure, Bruce | University of Missouri - Columbia | 81

McCollum, Terry | Discovery Center, Miami University | 96

McConnell, Tom | Ball State University | timconnell@bsu.edu | 82, 105

McCreedy, Dale | Franklin Institute Science Museum | 51, 87

McCullagh, John | Stranmillis University College | J.McCullagh@stran.ac.uk | 53, 71

McDermott, Mark | Wartburg College | mark.mcdermott@wartburg.edu | 93

McDonald, Scott | The Pennsylvania State University | smcdonald@psu.edu | 49, 99, 47

McDonough, Jacqueline | Virginia Commonwealth University | 45, 108

McDonough, Andrea | Australian Catholic University | 75

McDowell, Leah | Seneca Valley School District, PA | 94

McGinnis, J. Randy | University of Maryland | jmcginnis@umd.edu | 87

McGonigle, James | University of Pennsylvania | 88

McGrath, Elisabeth | Stevens Institute of Technology | 105

McInerney, Joseph | Westat | Joseph.McInerney@westat.com | 59, 79

McKay, Mercedes | Stevens Institute of Technology | 105

McKean, Carrie | Mallinson Institute for Science Education Western Michigan University | 82

McKeown, Kara | New York University | 71

McNeill, Katherine | Boston College | kmcneill@bc.edu | 50, 55, 84

McQuitty, Vicki | Davis College | vmcquitty@msn.com | 40, 86, 94

Medders, Emily | Mathematics Education, Southern Wesleyan University | 82

Medintz, Todd | 78

Megowan-Romanowicz, Colleen | College of Teacher Education and Leadership, Arizona State University | 84

Meijerink, Roland | Herbert Vissers College, Nieuw Vennep | rolandme@gmail.com | 46

Meisner, Robin | MIT Museum | 73

Mejia, William | Southern Illinois University | 40

Melville, Wayne | Lakehead University |

Mendelsohn, Todd | Temple University | 40

Mendoza, Carmen (Karin) | University of Cincinnati | karinuc@yahoo.com | 53

Menekse, Muhsin | Arizona State University | 77, 96, 107

Menon, Deepika | dm2qc@mizzou.edu | 83

Mensah, Felicia | Teachers College, Columbia University | moorefe@tc.columbia.edu | 35, 42, 59, 95, 108

Mercer-Tachick, Melissa | Albion College | 104

Merle-Johnson, Dominique | University of Missouri | dmk99@mizzou.edu | 83

Merrill, John | Michigan State University | 110

Merritt, Joi | University of Michigan | joid@umich.edu | 54, 64

Metallic, Janine | McGill University | 106

Meyer, Helen | University of Cincinnati | helen.meyer@uc.edu | 95

Meyer, Xenia | Cornell University | xenia.meyer@cornell.edu | 39, 48, 80

Messiah, Jessica | Ph.D Student, Teachers College, Columbia University | jmm2221@columbia.edu | 45

Michalchik, Vera | SRI International | vera.michalchik@sri.com | 99

Middleton, Michael | Department of Education, University of New Hampshire | 101

Mikeska, Jamie | Michigan State University, Department of Teacher Education | 42

Millar, Robin | University of York | 53, 102

Miller, Brent | 61

Miller, Christopher | University of Illinois at Chicago | cdmiller@uic.edu | 54

Miller, Michelle | University of Alberta | 45

Mills, Pamela | Department of Chemistry, Hunter College | pmills@hunter.cuny.edu | 108

Milne, Catherine | NYU | cem4@nyu.edu | 71, 74, 103

Milner, Andrea | Adrian College | amilner@adrian.edu | 54, 62

Minogue, James | North Carolina State University | 61, 71, 77, 94

Minstrell, Jim | FACET Innovations, LLC | JimMinstrell@FACETInnovations.com | 74, 75

Mira Kipnis, Avi Hofstein, Rachel Mamluk-Naaman, | The Weizmann Institute of Science | 102

Mittelsten Scheid, Nicola | PhD Queens University Faculty of Education | nicola.mittelsten.scheid@uni-oldenburg.de | 74, 101

Moeller, Andrea | Institute of Biological Education University Giessen Karl-Glöckner-Strasse | Andrea.Moeller@didaktik.bio.uni-giessen.de | 55

Mohan, Lindsey | Michigan State University | 49

Molina, Francis | AAAS - Project 2061 | fmolina@aaas.org | 77

Möller, Kornelia | University of Muenster Seminar für Didaktik des Sachunterrichts Leonardo | 107

Molyneux, Kristen | National High Magnetic Field Laboratory | molyneux@wis.edu | 57

Monhardt, Rebecca | Loras College Education Department | rebecca.monhardt@loras.edu | 71

Monsaas, Judy | University System of Georgia, Board of Regents | 46

Montes, Luis | Escuela Técnica de Pesca, Venezuela | 78

Montplaisir, Lisa | North Dakota State University | 72

Moore Mensah, Felicia | Teachers College, Columbia University | moorefe@exchange.tc.columbia.edu | 35, 59, 95, 108

Morag, Orly | 78

Morales, Amanda | Kansas State University-College of Education | 57

Morales, Consuelo | University of Michigan | 70

Morales, Marlene | Florida State University | drmarlenemorales@gmail.com | 76, 77

Moreland, Amy | The University of Texas at Austin | 96

Morgan, Andra | Monroe County Community School Corporation | 47

Morozov, Andrew | College of Education, University of Washington | 45

Morrow, Becky | Duquesne University, Bayer School of Natural Sciences | 43

Moscarella, Rosa | Michigan State University | 110

Moscovici, Hedy | California State University Dominguez Hills | 87

Moseley, Christine | University of Texas at San Antonio | 90

Mott, Bradford | North Carolina State University | 77

Moyer, Richard | University of Michigan-Dearborn | 104

Mueller, Michael | University of Georgia - Department of Mathematics & Science Education

Mujtaba, Tamjid | Institute of Education, University of London | 86

Mukherjee, Michelle | The University of Queensland, Australia | m.mukherjee@uq.edu.au | 44, 51

Mumba, Frackson | Southern Illinois University Carbondale | frackson@siu.edu | 40, 63, 74

Mun, Jiyeong | Ewha Womans University | ksjyl@ewhain.net | 76

Mun, Kongju | Ewha Womans University | munkongju@ewhain.net | 76

Munford, Danusa | Universidade Federal de Minas Gerais | danusa@ufmg.br | 47, 95

Murdock, John | jnmurdock@umbc.edu | 90

Murphy, Colette | Queens University Belfast | c.murphy@qub.ac.uk | 49, 96

Murphy, Sytil | Kansas State University | 95

Mushlin, Sarah | Rockman et al | 76

Mutamabuki, Jacinta | Western Michigan University The Mallinson Institute for Science Education | 73

Muteji, Jomo | Sankore Institute | 35

Nadelson, Louis | Boise State University | 55

Nagy Catz, Kristin | University of California, Berkeley | 109

Nam, Jeonghee | Pusan National University | jeongheenam@hotmail.com | 72, 95

Nam, Younkyeong | University of Minnesota | namxx120@umn.edu | 54, 79, 87

Nandagopal, Kiruthiga | Stanford University | 57

Nandakumar, Ratna | School of Education, University of Delaware | 104

Nargund, Vanashri | Indiana University | vnargund@uimail.iu.edu | 89, 97

Nashon, Samson | University of British Columbia | samson.nashon@ubc.ca | 50, 85

Nchessie, Andrews | Chancellor College, Malawi

Ndoye, Abdou | University of North Carolina Wilmington | 54

Needham, Cynthia | ICAN Productions | 73

Nehm, Ross | College of Education and Human Ecology, The Ohio State University | nehm.1@osu.edu | 110

Nelson, Brian | Arizona State University | 77, 96, 107

Nelson, Dave | UW-Madison | 109

Neuhauss, Birgit | University München | 56, 98

Neumann, Knut | Leibniz Institute for Science Education | neumann@ipn.uni-kiel.de | 50, 58

Newton, Len | The University of Nottingham, UK | len.newton@nottingham.ac.uk | 52

Ng, Florrie | CUNY Graduate Center & NYU | 103

Nguyen, Dong-Hai | Department of Physics, Kansas State University | 55

Niaz, Mansoor | Universidad de Oriente | 85

Nietfeld, John | North Carolina State University | 78

Nilsson, Pernilla | Halmstad University | Pernilla.Nilsson@hh.se | 77

Niyogi, Dev | Purdue University | 44, 96

Nock, Katie | East Carolina University | 95

Nolan, Deb | School of Education, Boston University | 78

Nolan, Margaret | School of Education, Boston University | noland@mersd.org | 100

Nolasco, Michelle | San Diego State University | 84

Nordine, Jeffrey | Trinity University | jnordine@trinity.edu | 75

Norman, Obed | Morgan State University | 45

Norris, Stephen | University of Alberta | 45

Norton-Meier, Lori | University of Louisville | 62, 84

Novick, Laura | Vanderbilt University | Laura.Novick@vanderbilt.edu | 61

Nyström, Eva | Umeå University, Sweden | 81

Oatthivech, Pornthip | University of Hawaii | 89

Oerke, Britta | University of Zurich | 89

Offerdahl, Erika | North Dakota State University | 56, 72

Ogawa, Masakata | Tokyo University of Science | chinn@hawaii.edu | 88

Ohle, Annika | University of Duisburg-Essen Department of Physics | 107

Olander, Clas | University of Gothenburg, Sweden | 102

Olgan, Refika | Middle East Technical University | rolgan@metu.edu.tr | 80

Olitsky, Stacy | Math and Science Partnership of Greater Philadelphia | olitsky@mssp.org | 51

Oliver, Ruby | University of Chile | rolivares@c5.cl | 43

Oliveira, Alandeom | State University of New York at Albany | aoliveira@albany.edu | 45, 80

Oliver, J. Steve | University of Georgia | 42, 59

Oliver, Mary | University of Western Australia | 42

Oliver, Tammy | Texas Christian University | 48

Olson, Cora | Virginia Polytechnic Institute & State University | 73

Olzewski, Jennifer | University Duisburg-Essen | 50

O'Neill, Tara | University of Hawaii - Manoa | tonell@hawaii.edu | 40, 63, 88, 110

Onyancha, Kennedy | Michigan State University | onyancha@msu.edu | 102

Orion, Nir | Weizmann Institute of Science | 86

Orland-Barak, Lily | Haifa University | 42

Ormond, Carlos | Simon Fraser University | cormond@sfu.ca | 79

Orszulak, Brandon | Museum of Science, Boston | 42

Ortega, Ira | Arizona State University |

Ortega, Irasema | Arizona State University | 46, 60, 100

Osborn, Jeffrey | University of Kentucky | 105

Osborne, Jason | North Carolina State University | 105

Osborne, Jonathan | School of Education, Stanford University | osbornej@stanford.edu | 50, 78, 84, 85, 93, 102

Osisoma, Irene | California State University Dominguez Hills | iosisioma@csudh.edu | 87

Ossevoort, Miriam | University of Groningen, the Netherlands | m.a.ossevoort@rug.nl | 99

Ottander, Christina | Umeå University, Sweden | 81

Ottevanger, Wout | Netherlands Institute for Curriculum Development | 58

Otto, Charlotte | University of Michigan-Dearborn | 104

Otulaja, Femi | The City University of New York | 54

Oughton, John | University of Minnesota | 87

Oversby, John | Reading University |

Özdem, Yasemin | Gaziosmanpaşa University | yasemin.ozdem@hotmail.com | 105

Pack, Dawn | Destin Elementary School | 78

Padilla, Kira | Universidad Nacional Autónoma de México | 96

Palouci, Shannon | 78

Paolucci, Judith | Yarmouth Public Schools Yarmouth, Maine | 50

Park, Eun Jung | Northwestern University | eun-park@northwestern.edu | 61

Park, Hyunju | Chosun University | hjpark@chosun.ac.kr | 41

Park, Ki-Rak | Jeonnam Girl's High School | 41

Park, Soohye | University of Illinois | 47

Park, Yoon Bong | Chungnam National University | 41

Park Rogers, Meredith | Indiana University, Bloomington | 42, 62, 97

Parker, Joyce | Michigan State University | 95, 105

Parsons, Eileen | University of North Carolina at Chapel Hill | rparsons@email.unc.edu | 45, 90

Passmore, Cynthia | School of Education, University of California, Davis | cpassmore@ucdavis.edu | 40, 52, 60, 89

Patel, Maya | Cornell University | mnp14@cornell.edu | 48

Pearson, Robert | Eddyville Schools, Oregon | 53

Pease, Rebecca | University of Maryland | 87

Peck, Deborah | Science Education University of New Brunswick | peck@nbnet.nb.ca | 73

Pecore, John | Wake Forest University | 70, 71

Pedersen, Jon | University of Nebraska | 97

Pedersen, Susan | Texas A&M University | 109

Pedretti, Erminia | OISE, University of Toronto | epedretti@oise.utoronto.ca | 42, 79, 101

Pedretti, Pedretti | OISE/University of Toronto |

Pe'er, Sara | Oranim College of Education | 90

Peffer, Tamara | Lehigh University | tp2015@lehigh.edu | 64, 72

Pegg, Jerine | University of Alberta | jerine@ualberta.ca | 63

Pehkonen, Maija | Department of Physics, University of Helsinki, FINLAND | 54

Pelaez, Nancy | Purdue University | 109

Peleg, Ran | Department of Education in Technology and Science | 73

Peltz, Harvey | River East-Transcona School Division | 58

Peno, Kathleen | University of Rhode Island | 50

Penuel, William | SRI International | 80

Perkins, Gita | Arizona State University | gita.perkins@smcmail.maricopa.edu | 83

Perkins, Kristen | Northwestern University | 98

Persson, Stephanie | Illinois State University | 56

Pesman, HAKI | Firat University | 77

Pestel, Beverly | Indiana State University | 72

Petecovic, Heather | Western Michigan University | heather.petecovic@wmich.edu | 73

Peters, John | College of Charleston, Department of Biology | petersj@cofc.edu | 72

Peters, Stephen | McGill University | 106

Peterson, Jodi | National Science Teachers Association | 971, 002

Peterson, Shelley | OISE/University of Toronto | 74

Petersson, Maria | Dalarna University, Sweden | map@du.se | 73

Phillips, Cindy | Port St. Joe Elementary School | 78

Phillips, Karen | Hunter College of the City University of New York | kphil@hunter.cuny.edu | 94

Phillips, Linda | University of Alberta | 45

Phillips, Rachel | University of Washington | rachelsp@u.washington.edu | 80

Phillipson-Mower, Teddy | 49

Phipps, Molly | Science Museum of Minnesota | mhipps@smm.org | 108

Piersol, Laura | 79

Pilot, Albert | University Utrecht, Utrecht, The Netherlands | 77

Pirog, Kelly | University of Massachusetts Amherst | 99

Pitts, Wesley | Lehman College | 45, 75

Pizzini, Eric | Delaware Education Research and Development Center, University of Delaware | 104

Plass, Jan | NYU | 103

Plummer, Julia | Arcadia University | plummerj@arcadia.edu | 39

Pluta, William | Rutgers University | 85

Polman, Joseph | University of Missouri, St. Louis | 94

Pomeroy, Deborah | Arcadia University | pomeroy@arcadia.edu | 51

Pongsanon, Khemawadee | Indiana University | 42, 89

Postlethwaite, Keith | Graduate School of Education, University of Exeter | 103

Potvin, Geoff | Clemson University | gpotvin@clemson.edu | 43

Pozzer-Ardenghi, Lilian | McGill University | lilian.ardenghi@mail.mcgill.ca | 55, 106

Prain, Vaughan | La Trobe University | 44

Preusch, Peggy | Towson University | ppreusch@umd.edu | 44, 73

Price, Aaron | Tufts University American Association of Variable Star Observers | aaron.price@tufts.edu | 51

Price, Norman | University of Massachusetts-Amherst | nprice@educumass.edu | 86

Prival, Joan | National Science Foundation

Promyod, Nattida | University of Missouri | 83

Puntambekar, Sadhana | Department of Educational Psychology, University of Wisconsin-Madison | 41, 106, 107

Purcell, Steve | James Madison University | 64

Purzer, Senay | Purdue University | 40, 105, 106

Puvirajah, Anton | Georgia State University | 41

Qablan, Ahmad | The Hashemite University | ahmadqablan@hotmail.com | 97

Qian, Xiaoyu | University of Delaware | 104

Quellmalz, Edys | WestEd | 79, 89

Quigley, Cassie | Indiana University | cqigs@indiana.edu | 53, 84

Rahm, Irene | Université de Montréal | irene.rahm@umontreal.ca | 51

Rajaravivarma, Rathika | New York City College of Technology | 59

Rebar, Bryan | rebarb@onid.orst.edu | 46

Rebello, Carina | University of Missouri - Columbia | cp5xc@mail.missouri.edu | 81

Rebello, N. Sanjay | Department of Physics, Kansas State University | 41, 55, 80, 106, 107

Redman, Elizabeth | University of California, Los Angeles | elizabeth.redman@gmail.com | 78

Reeve, Richard | Queen's University | 71

Reeve, Suzanne | University of Washington | sreeve@u.washington.edu | 103

Rehn, Agneta | Malmö University, Sweden | 81

Reinhartz, Judy | Science Education Department of Teacher Education, University of Texas | 63

Reiser, Brian | Northwestern University | 40, 62, 88, 98

Reisman, Molly | Rockman et al | 76

Reiss, Michael | Institute of Education, University of London | 86

Rennie, Leoni | Curtin University of Technology | 42, 51, 93

Reves, John | California State University, Northridge | jreves@csun.edu | 62

Reyes-C, Flor | Universidad Nacional Autónoma de México | florreyes@gmail.com | 62

Reynaldo, Llena | City University of New York, Graduate Center | 101

Riazi-Farazad, Bijan | Institute of Education, University of London | 86

Riccio, Jessica | Teachers College, Columbia University | 75

Rice, Diana | Florida State University | drice@fsu.edu | 80, 95

Richardson, Katherine | Institute of Education | 78, 85

Richardson, Ra'sheedah | Texas A&M University | 90

Richmond, Gail | Department of Teacher Education, Michigan State University | gailr@msu.edu | 42, 95

Ridgway, Judith | Center for Life Sciences Education, The Ohio State University | 110

Ridky, Robert | National Education Coordinator U.S. Geological Survey | 106

Riedinger, Kelly | University of Maryland | krieding@umd.edu | 87

Riemeier, Tanja | Leibniz University Hannover, Institute of Science Education, Germany | riemeier@biomedistik.uni-hannover.de | 50

Riess, Falk | University of Oldenburg / Germany | 97

Riggs, Eric | Purdue University | 108

Ritchie, Stephen | Queensland University of Technology | 81

Rivera Maulucci, Maria | Barnard College, Columbia University | mrivemam@barnard.edu | 59, 74, 88

Rivet, Ann | Teachers College, Columbia University | 45, 79, 88, 89

Roberts, Elisabeth | The University of Arizona | enr@u.arizona.edu | 39

Roberts, Marisa | Whitefish Bay High School | 109

Roberts, Tina | University of Missouri | robertsti@missouri.edu | 58, 83

Robertson, Laura | North Carolina State University | lrobert@ncsu.edu | 55

Robinson, Steve | USDOE | 44

Rodriguez, Alberto | San Diego State University | arodrigu@mail.sdsu.edu | 88

Rodriguez, Victor | School of Education, Brooklyn College, CUNY | 101

Roehrig, Gillian | University of Minnesota | 42

Rogers, Chris | Tufts University - Department of Mechanical Engineering | 64

Rogge, Christian | Justus-Liebig-University Gießen, Institute of Physics Education | 50

Romance, Nancy | Florida Atlantic University | 54, 79

Romine, William | University of Missouri | romine.william@gmail.com | 47, 58

Rompapong, Patcharee | Science Education Center, Sinakhaniwirod University | patcharee_swu@hotmail.com | 70

Rop, Charles | The University of Toledo | Crop@utoledo.edu | 53

Rosalez, Rolando | Physics and Geology Department The University of Texas | 94

Rosberg, Maria | Kristianstad University, Sweden | 81

Roseman, Jo Ellen | AAAS Project 2061 | 49, 52, 97

Rosemartin, Dennis | University of Arizona | 90

Rosenfeld, Sherman | The Weizmann Institute of Science | ntsher@weizmann.ac.il | 53, 61

Ross, Janet | Four Corners School of Outdoor Education, UT | 88

Roth, Kathleen | BSCS | kroth@bscs.org | 41, 107

Rothman, Edward | Center for Statistical Consultation and Research University of Michigan | 57

Rouinfar, Amy | Florida State University | 41, 106

Rowe, Shawn | Oregon State University | 57, 104

Roychoudhury, Anita | Purdue University | aroychou@purdue.edu | 95

Rozelle, Jeffrey | Syracuse University, Departments of Science Teaching and Teaching & Leadership | jrozelle@syrc.edu | 42

Rudd, James | California State University, Los Angeles | 108

Rudolph, John | University of Wisconsin-Madison | 59

Ruggen, Nancy | University of Wisconsin-Madison | 59, 89

Ruggirello, Rachel | Science Outreach, Washington University | Rachel.Ruggirello@gmail.com | 35, 75, 87, 100

Ruiz-Primo, Maria Araceli | University of Colorado Denver | maria.ruiz-primo@ucdenver.edu | 45

Rushton, Greg | Kennesaw State University | 47, 75

Russell, Melody | Auburn University | 35, 65

Russo, Marc | North Carolina State University | 77

Ryder, Jim | University of Leeds, UK | j.ryder@education.leeds.ac.uk | 58

Ryu, Suna | UCLA | 69

Saad, Rayana | American University of Beirut, Beirut, Lebanon | 62

Sackes, Mesut | The Ohio State University | msackes@gmail.com | 85

Sadler, Kim | Middle Tennessee State University | 95

Sadler, Philip | Harvard Smithsonian Center for Astrophysics | 43

Sadler, Troy | University of Florida | tsadler@cocuf.edu | 62, 75, 90

Sahagian, Dork | Lehigh University | 64, 72

Saka, Yavuz | Florida State University | yys3536@fsu.edu | 56, 61, 74, 82

Salloun, Sara | Long Island University - Brooklyn | 73

Sampson, Victor | Florida State University | vsampson@fsu.edu | 50, 75, 72, 81, 87

Sanchez, Jaime | University of Chile | 43

Sanchez, Jose | Florida State University | 82

Sandmann, Angela | University of Duisburg-Essen Biology Education | 56, 62, 69, 98

Sandoval, William | University of California, Los Angeles | 40, 50, 69, 78

Santau, Alexandra | Duquesne University | 40

Santiago-Aviles, Jorge | University of Pennsylvania | 88

Sato, Mistilina | University of Minnesota | msato@umn.edu | 48

Sato, Takumi | Department of Teacher Education, Michigan State University | 95

Savage, Lorraine | Temple University | lorraine.savage@temple.edu | 57

Sawtelle, Vashti | Department of Physics, Florida International University | davisvas@gmail.com | 43

Saxman, Laura | The Center for Advanced Study in Education at The CUNY Graduate Center | lsaxman@gc.cuny.edu | 73

Scalone, Giovanna | University of Washington | 107

Scantlebury, Kathryn | University of Delaware | kscantle@udel.edu | 51, 74, 96

Scharberg, Maureen | San Jose State University | 57

Schauble, Leona | Peabody College, Vanderbilt University | leona.schauble@vanderbilt.edu | 40

Scherz, Zahava | The Weizmann Institute of Science | 96

Schifter, Catherine | Temple University | 96

Schlegel, Whitney | 99

Schleigh, Sharon | East Carolina University | schleighs@ecu.edu | 95

Schmelzing, Stephan | University Duisburg-Essen Department for Research on Biological Education | Stephan.Schmelzing@uni-due.de | 56, 98

Schmidt, Casey | Linwood Middle School | 39

Schmidt, Frank | University of Missouri | 86

Schmidt, Jennifer | Northern Illinois University | jasmichd@niu.edu | 64

Schmiemann, Philipp | University of Duisburg-Essen Biology Education | philipp.schmiemann@uni-due.de | 69

Schneider, Dana | Duquesne University School of Education | 43

Schneider, Rebecca | University of Toledo | 80

Schnittka, Christine | University of Kentucky | christine.schnittka@uky.edu | 109

Schramm, Jonathon | Michigan State University Great Lakes Bio-energy Research Center | schram25@msu.edu | 102

Schrlau, Michael | Temple University | 88

Schroder, Barbara | The Center for Advanced Study in Education at The CUNY Graduate Center | 73

Schussler, Elisabeth | Department of Ecology and Evolutionary Biology, University of Tennessee | eschussl@utk.edu | 82

Schuster, David | Western Michigan University | david.schuster@wmich.edu | 55, 62, 72

Schuster, Glen | U.S. Satellite Laboratory, Inc | 75

Schwartz, Renee | Western Michigan University | r.schwartz@wmich.edu | 53, 82, 101

Schwartz, Ruth | NYU | 103

Schwarz, Christina | Michigan State University | 40, 98

Schweingruber, Heidi | National Academy of Science |

Scott, Anne | Australian Catholic University | 75

Seiler, Gale | McGill University | gale.seiler@mcgill.ca | 40, 55, 84, 106

Semken, Steven | School of Earth and Space Exploration, Arizona State University | 83, 88

Sen, Tapati | Arizona State University | tsen1@asu.edu | 83

Sengupta, Pratim | Peabody College, Vanderbilt University | 40

Sepulveda, Devin | City University of New York, Graduate Center | 101

Settlage, John | University of Connecticut | john.settlage@uconn.edu | 49, 59

Seung, Eulsun | Indiana State University | esseung@gmail.com | 72

Sevian, Hannah | University of Massachusetts Boston | hannah.sevian@umb.edu | 39, 64

Shade, Courtney | Vanderbilt University | 61

Shafer, Sally | University of Kentucky | 105

Shanahan, Marie-Claire | University of Alberta | mshanahan@ualberta.ca | 78, 81

Shanahan, Therese | Center for Educational Partnerships, University of California | tshanaha@uci.edu | 45, 55

Shankar, Subash | Hunter College | 59

Sharkawy, Azza | Queen's University | sharkawa@queensu.ca | 71

Sharon, Dotger | Syracuse University | 40, 55, 86, 94

Sharp, Jennifer | North Carolina State University | 105

Shavelson, Richard | Stanford University | 57

Shaw, Jerome | University of California, Santa Cruz | jmlshaw@ucsc.edu | 43, 76

Shea, Lauren | Department of Education, University of California | 45

Shea, Nicole | Rutgers University | nicolasha@yahoo.com | 98

Sheehan, Cheryl | University at Albany | 56

Sheikh, Kamran | 64

Shelton, Angela | Temple University | 96

Shen, Ji | College of Education, University of Georgia | jshen@uga.edu | 69

Shepardson, Daniel | Purdue University | dshep@purdue.edu | 44, 79

Sheron, Mark | Lynch School of Education, Boston College | marksa@bc.edu | 49, 55

Sherwood, Robert | Indiana University | 99

Shih, Kun-Yi | National Changhua University of Education | latticewine@gmail.com | 75

Shim, Minsuk | University of Rhode Island | 50

Shin, Namsoo | University of Michigan | 77, 94, 98

Shirk, Jennifer | Cornell Lab of Ornithology Ithaca, NY | 82

Shirley, Melissa | University of Louisville | melissa.shirley@louisville.edu | 110

Short, Harold | University of Michigan | hbshort@umich.edu | 94, 106

Shroyer, Margaret | Kansas State University- College of Education | gshroyer@ksu.edu | 57

Shumaker, Jeffrey, Penny | North Carolina State University | penny_shumaker@ncsu.edu | 77

Shutt, Kari | University of Washington | 107

Shwartz, Yael | Weizmann Institute of Science | 61

Sickel, Aaron | University of Missouri | ajsrhc@mail.missouri.edu | 46, 99

Siegel, Marcelle | University of Missouri - Columbia | 58, 81

Sikma, Lynn | University of Illinois Urbana-Champaign | sikma1@illinois.edu | 75

Silbergliitt, Matt | WestEd | msilber@wested.org | 76, 89

Silva, Cecilia | Texas Christian University | 48

Silva Pimentel, Diane | Lynch School of Education, Boston College | silvadi@bc.edu | 55

Simon, Shirley | Institute of Education London | s.simon@ioe.ac.uk | 47, 52, 78, 85

Sing, Khang-Miant | National Institute of Education | khangmiant.sing@nie.edu.sg | 48

Singer, Jonathan | University of Maryland, Baltimore County | 47

Singh, Mamta | Texas State University | 54

Sinnes, Astrid | Norwegian University of Life Sciences | 54

Siry, Christina | City University of New York | chrissy@gmail.com | 35, 84

Skinner, Nigel | Graduate School of Education, University of Exeter | 103

Skjold, Brandy | Mallinson Institute for Science Education Western Michigan University | brandy.pleasants@wmich.edu | 62, 82

Slack, Kent | Arizona State University | 77, 96, 107

Slater, Stephanie | University of Wyoming | sslaterwyo@gmail.com | 51, 58

Slater, Timothy | University of Wyoming | tmslaterwyo@gmail.com | 51, 58

Slaton, Adriane | Michigan State University | slatonad@msu.edu | 48

Smetana, Lara | Southern Connecticut State University | Smetana.L1@southernct.edu | 71

Smet, Ann | Department of Cell Biology and Molecular Genetics University of Maryland | 80

Smith, Carol | University of Massachusetts at Boston | Carol.Smith@umb.edu | 98

Smith, Deborah | Pennsylvania State University | 80, 95

Smith, Kathy | Monash University | kathy_s6@bigpond.net.au | 40

Smith, Leigh | Brigham Young University | leigh_smith@byu.edu | 52

Smith, M | Northern Illinois University | mcsmith@niu.edu | 75

Smith, Mike | Department of Internal Medicine Mercer University School of Medicine | smith_mu@mercer.edu | 43

Smith, Sean | Horizon Research, Inc. | ssmith62@horizon-research.com | 81, 88

Smithenry, Dennis | Elmhurst College | smithenryd@elmhurst.edu | 94

Snyder, Mark | Temple University | 96

Snyder, Michele | Clinton Community College | michele.snyder@clinton.edu | 81

Snyder-Hogan, Lindsey | Temple University | 40

Son, Yeon-A | Dankook University | 72, 76

Sondergeld, Toni | Bowling Green State University | 54, 56

Song, Youngjin | University of Northern Colorado | youngjin.song@unco.edu | 42

Songer, Nancy | University of Michigan | 106

Sonnert, Gerhard | Science Education Department Harvard Smithsonian Center for Astrophysics | 43

Soong, Benson | University of Cambridge | 48

Sorensen, Pete | The University of Nottingham | 52

Southerland, Sherry | Florida State University | ssoutherland@fsu.edu | 43, 49, 53, 55, 56, 61, 65, 74, 76, 77, 90, 103

Spiering, Erin | OISE, University of Toronto | 79

Spikes, Sara | Texas A&M University | 90

Spires, Hiller | North Carolina State University | 77

Spraker, Ralph | South University | rafespraker@gmail.com | 75

Stains, Marilynne | University of Massachusetts Boston | marilynne.stains@umb.edu | 39, 64

Steele, Erika | University of Alabama | 95

Stefani, Christina | Lykion Anavriton | stefanih@otenet.gr | 73

Stein, Alexandra | Museum of Science, Boston | 42

Stevens, A. Lynn | University of Massachusetts-Amherst | lstevens@educ.umass.edu | 86

Stevens, Carla | Temple University | 40

Sterling, Donna | George Mason University | dsterlin@gmu.edu | 65, 80

Stetsenko, Anna | CUNY Graduate Center | 71

Stevens, Glenn | Department of Mathematics, Boston University | 100

Stevens, Michael | California State University, Stanislaus | mstevens@biology.csustan.edu | 108

Stevens, Shawn | University of Michigan | sstevens@umich.edu | 98

Stewart, Phillip | Teachers College, Columbia University | pstewart@gmail.com | 89

Stieff, Mike | Department of Curriculum and Instruction University of Maryland | 80

Stieglmeyer, Cindy | University of South Carolina | cindystieg@gmail.com | 104

Stiensmeier-Pelster, Joachim | Justus Liebig University Giessen | 74

Stoeber, Rodelyn | St. Boniface College | 84

Storm, Julia | North Carolina State University | 73

Straesser, Rudolf | Justus Liebig University Giessen | 74

Straley, Joseph | University of Kentucky | 105

Strickland, Denise | University of South Carolina | 104

Strobel, Johannes | Purdue University | 106

Stuessy, Carol | Texas A&M University | c-stuessy@tamu.edu | 47, 59, 90

Stull, Judith | Temple University | 57

Stylianiadou, Fani | Institute of Education, University of London | FStylianiadou@ioe.ac.uk | 86

Stylinski, Cathlyn | University of Maryland Center for Environmental Science | 63, 101

Su, Ming-Jun | Shu-Te University | 75

Sullenger, Karen | University of New Brunswick | 73

Sullivan, Amber | University of Kentucky | 105

Sumfleth, Elke | University of Duisburg-Essen |

Sunal, Cynthia | University of Alabama | 95

Sunal, Dennis | University of Alabama | dwsunal@bama.ua.edu | 95

Suskavecic, Milijana | Rice University, Center for Education | milijana@rice.edu | 96, 105

Suter, Larry | National Science Foundation | 65

Sutherland, LeeAnn | University of Michigan | lsutherland@umich.edu | 58, 64, 77, 88, 94

Sutrabutra, Rojjana | University of Hawaii | 89

Sutton-Brown, Camille | Georgia State University | 85

Svoboda, Julia | University of California, Davis | jmsvoboda@ucdavis.edu | 40

Swanson, Jon | Florida State University | 72

swarat, su | Northwestern University | 61

Sweeney, Brian | AAAS - Project 2061 | 77

Sweeney, Renee | Westfield High School | 86

Sweeney, William | Department of Chemistry, Hunter College | 108

Szeto, Alan | Purdue University Calumet | alan.szeto@calumet.purdue.edu | 85

Szu, Evan | Stanford University | eszu@stanford.edu | 57

Szyjka, Sebastian | Central Michigan University | szyjks@cmich.edu | 63, 74

Taher, Tanzina | Teachers College, Columbia University | 84

Tai, Robert | University of Virginia | 43, 56, 93

Tal, Tali | rtal@technion.ac.il | 78

Talanquer, Vicente | University of Arizona | vicente@u.arizona.edu | 41

Tallman, Karen | University of Massachusetts Amherst | ktallman@comcast.net | 75

Tambunchong, Chinda | Srinakharinwirot University | 70

Tan, Edna | University of North Carolina at Greensboro | tane@msu.edu | 110

Tan, Michael | Ontario Institute for Studies in Education, University of Toronto | m1ket4n@gmail.com | 101

Tang, Cecilia | The Pennsylvania State University | 99

Tang, Judy | Department of Education Morrill Hall University of New Hampshire | 101

Tanner, Kimberly | San Francisco State University | 108

Tarabek, Paul | College of Applied Economical Studies, Czech Republic | didaktis@t-zones.sk | 69

Taylor, Amy | University of North Carolina Wilmington | taylorat@uncw.edu | 40

Taylor, Joseph | BSCS | jtaylor@bscs.org | 100, 101

Taylor, Melanie | Horizon Research, Inc. | 81

Teachout, David | University of North Carolina - Greensboro | 45

Teed, Susan | 79

Teo, Tang Wee | University of Illinois (Urbana-Champaign) | tteo2@illinois.edu | 58, 74

Terlouw, Cees | Saxion University of Applied Sciences | cterlouw@saxion.nl | 77

Thadani, Vandana | Loyola Marymount University | 110

Thomas, Jeffrey | Central Connecticut State University | thomasjed@ccsu.edu | 79

Thompson, Jessica | University of Washington | jthomps@u.washington.edu | 99

Tillotson, John | Syracuse University | 57

Timmerman, Briana | University of South Carolina | briana.timmerman@gmail.com | 104

Tinsley, Ron | The Richard Stockton College of New Jersey | 42

Tippett, Christine | University of Victoria, Department of Curriculum & Instruction | ctippett@uvic.ca | 109

Tippins, Deborah | UGA | 59

Tobin, Kenneth | City University of New York, Graduate Center | ktobin@gc.cuny.edu | 101, 102

Tom, Harrington | Bacon Academy | 109

Tomas, Louisa | School of Education, James Cook University | louisatomas@jcu.edu.au | 81

Tomasek, Terry | Dept. of Teacher Education Elon University | 82

Topcu, Mustafa | Yuzuncuyl University | msamitopcu@gmail.com | 76, 108

Toth, Eva | West Virginia University, School of Education and Human Resources | etoth6117@gmail.com | 43, 104

Townsend, Jeffery | Eastern Kentucky University | scott.townsend@eku.edu | 101, 105

Tran, Lynn | Lawrence Hall of Science, University of California at Berkeley | 63

Tran, Natalie | California State University - Bakersfield | ntran6@csu.edu | 62

Trauth-Nare, Amy | School of Education Indiana University | amtrauth@indiana.edu | 42, 47, 72

Trautmann, Nancy | Cornell University | nm2@cornell.edu | 58, 64, 76, 101

Treagust, David | Curtin University of Technology | 109

Tretter, Thomas | University of Louisville | tom.tretter@louisville.edu | 83

Tripto, Jaklin | Ben Gurion University of the Negev | 55

Trumbull, Deborah | Cornell University | dj2@cornell.edu | 42, 48

Trundle, Kathy | The Ohio State University | 82

Tsai, Chin-Chung | National Taiwan University of Science and Technology | 42, 104

Tsai, I-Ju | Department of Earth Sciences, National Taiwan Normal University | 73

Tsaparlis, Georgios | University of Ioannina, Department of Chemistry | gtsper@cc.uoi.gr | 56, 71, 73

Tseng, Ju-Shi | Department of Earth Sciences, National Taiwan Normal University | 94

Tsurusaki, Blakely | Washington State University | tsurusaki@wsu.edu | 35, 53

Tuncay, Busra | Giresun University | btusra@metu.edu.tr

Turner, Donna | University of Alabama | 95

Tzengis, Connie | University of Minnesota | 108

Tzou, Carrie | University of Washington Bothell | tzouct@u.washington.edu | 55, 107

Ucko, David | National Science Foundation | ducko@nsf.gov | 65

Udeani, Uchenna | University of Lagos, Nigeria | 54

Ulu, Cuneyt | Marmara University, Turkey | 93

Undreiu, Adriana | University of Virginia's College at Wise | 55, 62, 72

Upadhyay, Bhaskar | University of Minnesota | 77, 110

Urbaitis, Megan | Norwood High School | 95

Urban-Lurain, Mark | Michigan State University | urban@msu.edu | 110

Uysal, Sibel | Florida State University

Uysal-Bahbah, Sibel | Florida State University | sibeluysal@gmail.com | 82, 83, 84

Van der Rijst, Roeland | ICLON - Leiden University Graduate School of Teaching | rrijst@iclon.leidenuniv.nl | 63

van der Veen, Jan | University of Twente | 46

van Driel, Jan | ICLON-Leiden University Graduate School of Teaching | driel@iclon.leidenuniv.nl | 57, 63, 96, 103

Van Duzor, Andrea | Chicago State University | agay@csu.edu | 87

van Eijck, Michiel | Eindhoven University of Technology | 48, 52, 85

Van Horne, Katie | University of Washington | 107

van Lacum, Edwin | University of Groningen, the Netherlands | 99

Van Meter, Peggy | Pennsylvania State University | 61

Van Petegem, Peter | University of Antwerp | 89

van Staaden, Moria | Bowling Green State University | 55

Vanmali, Binaben | University of Missouri | 99

Varelas, Maria | University of Illinois at Chicago | mvarelas@uic.edu | 80

Varma, Keisha | 84

Varnum, Susan | Temple University | 57

Vasquez, Caroline | Texas A&M University | 90

Vasu, Ileana | University of Massachusetts-Amherst | ivasu@educ.umass.edu | 86

Vazquez, Itzel | Université de Montréal | 51

Veal, William | College of Charleston | vealw@cofc.edu | 45, 96

Venville, Grady | University of Western Australia | gradv.venville@uwa.edu.au | 42, 55

Verma, Geeta | Georgia State University | 41, 59

Vick, Matthew | University of Wisconsin-Whitewater | vickm@uwv.edu | 76, 79

Viiri, Jouni | University of Jyväskylä | 50

Vitale, Michael | East Carolina University | vitalm@ecu.edu | 54, 79

Vogt, Gina | Brown Deer High School | 109

Volkman, Mark | University of Missouri | 47

von Aufschnaiter, Claudia | Justus Liebig University Giessen | cvauf@cvauf.de | 50, 74, 97

von Bergmann, HsingChi | University of Calgary | hsiangchi@gmail.com | 82, 95

Vye, Nancy | University of Washington | 107

Waddington, David | Concordia University | dwadding@education.concordia.ca | 64

Wahbeh, Nader | A.M.Qattan Foundation | nwahbeh@gmail.com | 89

Waight, Noemi | University at Buffalo | nwaight@buffalo.edu | 48, 81

Waldrup, Bruce | Monash University | Bruce.Waldrup@education.monash.edu.au | 44

Walker, Joi | Tallahassee Community College | walkerj@tcc.fl.edu | 50, 72, 87

Wallace, Alison | Minnesota State University Moorhead | 101

Wallace, Carolyn | Auburn University | csw0013@auburn.edu | 74

Walls, Leon | University of Vermont | lwalls@uvm.edu | 70

Walsh, Glenda | Stranmillis University College Belfast Northern Ireland | 71

Walter, Emily | University of Missouri | emily.walter@mail.mizzou.edu | 83

Wan, Zhi Hong | The University of Hong Kong | zhwanhku@gmail.com | 89

Wandersee, James | Louisiana State University | 46

Wang, Jing-Ru | National Pingtung University of Education | 71

Wang, Jingying | Capital Normal University | wangjingying8018@126.com | 109

Wang, Kuo-Hua | National Changhua University of Education | 75

Wang, Lei | Beijing Normal University | 47

Wang, Tzu-Hua | National HsinChu University of Education | thwang@mail.nhcu.edu.tw | 53

Wang, Yan | American Institutes for Research | 103

Wang, Zu-hao | East China Normal University | 47, 75

Watson, Bill | The George Washington University | watsonb@si.edu | 46

Watson, George | University of Delaware | 51

Webb, Horace | Georgia State University | apuvirajah@gsu.edu | 41

Wegerif, Rupert | Graduate School of Education, University of Exeter | 103

Wei, Silin | East China Normal University | silinwei@163.com | 110

Weiland, Ingrid | Indiana University | iweiland@indiana.edu | 42, 105

Weiler, Jeanne | Hunter College | 108

Weinburgh, Molly | Texas Christian University | m.weinburgh@tcu.edu | 48, 100

Weinstein, Matthew | University of Washington-Tacoma | mattheww@u.washington.edu | 88

Weizman, Ayelet | Haifa University | ayelet.weizman@weizmann.ac.il | 42

Wellik, Jerome

Wendel, Paul | pwendel@mansfield.edu | 73

Wendell, Kristen | Tufts University Center for Engineering Education & Outreach | kristen.bethke@tufts.edu | 64, 85

Wenger, Matthew | University of Arizona | mwenger@email.arizona.edu | 73

Wertheim, Jill | AAAS/Project 2061 | jwerthei@aaas.org | 52

West, Andrew | University of Missouri | 47

Wheaton, Mele | Graduate Student, UC Santa Cruz | mwheaton@ucsc.edu |

Wheeldon, Ruth | Institute of Education, London | r.wheeldon@ioe.ac.uk | 52

Whitaker, Audrey Rabi | Columbia University | arw2131@columbia.edu | 88

White, Kevin | Illinois Institute of Technology | whitkev@iit.edu | 45, 89

White, Peta | University of Regina | white2lp@uregina.ca

Whitford, Melinda | State University of New York at Buffalo | 62

Wichaidit, Sitichai | Science Education Center, Srinakharinwirot University | sitichai_swu@hotmail.com | 70

Wickman, Per-Olof | Stockholm University, Department of Mathematics and Science Education | 80, 109

Wiebe, Eric | North Carolina State University | 40, 45, 61, 71, 94

Wiebe, Rick | St. James-Assiniboia School Division | rwiebe@sjisd.net | 52, 58

Wilensky, Uri | Northwestern University | 40

Wiles, Jason | Syracuse University | 59

Willard, Ted | AAAS Project 2061 | twillard@aaas.org | 52

Williams, Brian | Georgia State University | 70

Williams, Deborah | ASU | 88

Williams, E. Grant | School District 18 | Grant.Williams@gnb.ca | 86

Williams, Kathy | San Diego State University | 108

Williams, Kiesha | Florida State University | 71

Williams, Mriga | University of Exeter | 103

Williams, Robert | University of Texas at Austin | rivers40@yahoo.com | 63

Willis, Beatrice

Wills, Theodore | Temple University | 40

Wilson, Christopher | BSCS | cwilson@bscs.org | 101

Wilson, Janine | Durham University | 107

Wilson, Rachel | The University of Georgia | rewilson@uga.edu | 63, 82

Wilson, Suzanne | Michigan State University | 42

Wilson, Yushaneen | Penn Science Teacher Institute, University of Pennsylvania | wilsony@sas.upenn.edu | 35, 100

Wilson-Miles, Erin | Southern Illinois University | 40

Winberg, Mikael | Umeå University, Sweden | 81

Windschitt, Mark | University of Washington | 99

Winrich, Charles | School of Education, Boston University | cwinrich@bu.edu | 78, 100

Winstanley, Amy | Bellevue School District, Bellevue, WA | 107

Wise, Debra | Underground Railway Theater | 73

Wise, Kevin | Southern Illinois University Carbondale | 63, 74

Wiseman, Michael | University of Bayreuth | 89

Wiser, Marianne | Clark University | 98

Witt-Enderby, Paula | Duquesne University, School of Pharmacy | wittp@duq.edu | 104

Witzig, Stephen | University of Missouri | sbwitzig@mizzou.edu | 61, 83, 86, 99, 103

Wolgast, Anett | Justus Liebig University Giessen, Educational Psychology | 74

Wong, Alice | The University of Hong Kong | 53

Wong, Billy | Kings College London | 84

Wong, Jacqueline | UCLA | writejackie@gmail.com | 69

Wong, Sissy | Arizona State University | sissy.wongkavas@asu.edu | 47, 61, 100

Wong, Siu Ling | The University of Hong Kong | 89
 Wongyounoi, Somsan | Sinakharinwirot University | 70
 Wood, Lorelei | Arizona State University | 108
 Woodruff, Sarah | Miami University | woodrusb@muohio.edu | 69, 96, 102
 Woods, Krista | Raymond Walters College University of Cincinnati | 95
 Wright, Ann | Canisius College | 76
 Wright, Christopher | Tufts University - Center for Engineering Education and Outreach | 64
 Wrigley, Anne | California Nanosystems Institute | awrigley@education.ucsb.edu | 78
 Wu, Ying-Tien | National Taichung University | ytwu@mail.ntcu.edu.tw | 71
 Wu, Yu-Lun | Taipei Municipal University of Education | 52
 Wuesten, Stefanie | University Duisburg-Essen | stefanie.wuesten@uni-due.de | 56, 98
 Xiang, Huang | Cinvestav Metodología de la Ciencia | 71
 Xiang, Lin | School of Education University of California | lixiang@ucdavis.edu | 52, 89
 Yacoubian, Hagop | University of Alberta | hagopyacoubian@ualberta.ca | 45
 Yael, Bamberger | School of Education, University of Michigan | yaelbamb@umich.edu | 108, 109
 Yale, Melissa | Department of Educational Studies Purdue University | 109
 Yang, Fang-Ying | National Taiwan Normal University | fangyang@ntnu.edu.tw | 73, 94
 Yang, Li-Ling | Roger Williams University | 70
 Yarden, Anat | Weizmann Institute of Science | anat.yarden@weizmann.ac.il | 40, 55, 85, 98
 Yarnall, Louise | SRI International | 101
 Yavetz, Bela | Kibbutzim College of Education | 90
 Yen, Chiung-Fen | Providence University, Taichung, Taiwan | 89, 101
 Yeo, Jennifer | National Institute of Education, Nanyang Technological University | jennifer.yeo@nie.edu.sg | 41, 71
 Yeo, Shelley | Curtin University of Technology | 109
 Yerdelen-Damar, Sevdal | Yuzuncu Yil University | yerdelen@metu.edu.tr | 77
 Yilmaz -Tuzun, Ozgul | Middle East Technical University | 53, 85, 79
 Yin, Yue | School of Education, University of Illinois | 45
 Yoo, Dawoon | Texas A&M University | 90
 Yoon, Susan | University of Pennsylvania | yoonsa@gse.upenn.edu | 88, 95
 Yore, Larry | Department of Curriculum and Instruction, University of Victoria | lyore@uvic.ca | 63
 Young, Betty | University of Rhode Island | byoung@uri.edu | 50, 109
 Young, Monica | Syracuse University | moyoung@syr.edu | 57
 Young, Timothy | The University of North Dakota | tim.young@und.edu | 61
 Yunker, Molly | University of Michigan | yunker@umich.edu | 88
 Zadnik, Marjan | Curtin University of Technology | 109
 Zandvliet, David | Simon Fraser University | dbz@sfu.ca | 79
 Zarazinski, Jill | State University of New York College at Brockport | jzarazin@brockport.edu | 108
 Zawicki, Joseph | State University College at Buffalo | zawickijl@buffalostate.edu | 76, 83, 109
 Zeidler, Dana | Department of Secondary Education, University of South Florida | 90
 Zeineddin, Ava | Wayne State University | avaz@wayne.edu | 69, 70
 Zembal-Saul, Carla | Penn State University | czem@psu.edu | 49, 82, 95
 Zeng, Liang | Physics and Geology Department The University of Texas | 94
 Zhan, Li | Michigan State University | zhanli@msu.edu | 98, 102
 Zhang, Lily | Museum of Science, Boston | 42
 Zhang, Xiaodong | Westat | xiaodongzhang@westat.com | 59, 79
 Zhang, Zhihui | University of California, Berkeley | 61
 Zhao, Ningfeng | East Tennessee State University | 86
 Zichitella, Gail | State University of New York at Buffalo | 76, 110
 Ziegler, Gudrun | University of Luxembourg | 84
 Zilker, Irene | University Duisburg-Essen | irene.zilker@uni-due.de |
 Zimmerman, Carol | Tallahassee Community College | 87
 Zimmerman, Heather | Pennsylvania State University | haz2@psu.edu | 63, 103
 Zimmerman, James | Montclair State University | 108
 Zimmerman, Timothy | Rutgers University | timothy.zimmerman@gse.rutgers.edu | 41, 89
 Zitzewitz, Paul | University of Michigan-Dearborn | 104
 Zoller, Uri | Science & Science Education, Haifa University | 97, 106
 Zollman, Dean | Kansas State University | 95



The World of Science Education

Series Editors:

Kenneth Tobin, City University of New York, USA
Wolff-Michael Roth, University of Victoria, Canada

Each Volume in the 7 Volume series

The World of Science Education

reviews research in a key region of the world.

These Regions include:

North America, South and Latin America, Asia, Australasia,
Europe, Africa and The Arab States

Out now:

Vol. 1 North America ISBN PB 978-90-8790-745-7 HB 978-90-8790-746-4

Vol. 2 Australasia ISBN PB 978-90-8790-927-7 HB 978-90-8790-928-4

Vol. 3 Arab States ISBN PB 978-94-6091-045-6 HB 978-94-6091-046-3

Vol. 4 Asia ISBN PB 978-94-6091-072-2 HB 978-94-6091-073-9

For more information and publishing opportunities contact

Michel Lokhorst

michel.lokhorst@sensepublishers.com



SENSEPUBLISHERS

www.sensepublishers.com



2010 NARST ANNUAL INTERNATIONAL CONFERENCE MARCH 21 - 24, 2010
PHILADELPHIA MARRIOTT DOWNTOWN PHILADELPHIA, PA