Electronic Journal of Science Education

ISSN 1087-3430

Published by

Texas Christian University Fort Worth, Texas

Southwestern University Georgetown, Texas

www.ejse.southwestern.edu

Electronic Journal of Science Education

Editor of Regular Issues

Molly Weinburgh, Texas Christian University, United States

Editor of Special Issues

Michael Kamen, Southwestern University, United States

Associate Editors

Karen E. Bledsoe, Western Oregon University, United States Sarah J. Carrier, North Carolina State University, United States William J.F. Hunter, Illinois State University, United States Murat Kahveci, Canakkale Onsekiz Mart University, Turkey Paul Kelter, Northern Illinois University, United States Nina A. Leonhardt, Suffolk County Community College, United States Lisa Martin-Hansen, Georgia State University, United States Laura McCord, Southwestern University, United States Colette Murphy, Queen's University Belfast, United Kingdom Martina Nieswandt, University of Massachusetts, United States Rose Pringle, University of Florida, United States Mike U. Smith, Mercer University School of Medicine, United States Gail Tooker, State University of New York - Cortland, United States Geeta Verma, University of Colorado- Denver, United States Julie Westerlund, Texas State University, United States BaoHui Zhang, Lingnan University, Hong Kong

Editorial Review Board

Emmanuel Edoja Achor, Benue State University, Nigeria
Kenneth Adu-Gyamfi, Mampong Technical College of Education, Ghana
Hilal Aktamış, Adnan Menderes University, Turkey
Sulaiman Al-Balushi, Sultan Qaboos University, Oman
Abdulwali H. Aldahmash, King Saud University, Saudi Arabia
Tamer G. Amin, Lebanese American University, Lebanon
Vincent Amodeo, University of Albany, United States
Sumreen Asim, University of North Texas, United States
Lloyd H. Barrow, University of Missouri, United States
Craig Berg, University of Wisconsin-Milwaukee, United States

Electronic Journal of Science Education

Ian Binns, University of North Carolina- Charlotte, United States

SueAnn Bottoms, Oregon State University, United States

Sherri L. Brown, University of Louisville, United States

Erica Brownstein, Oklahoma State University, United States

Dan Carpenter, Texas Tech University, United States

Marissa Tamar Cohen, St Francis College, United States

Michelle Cook, Clemson University, United States

Casey Creghan, Sam Houston State University, United States

Hasan Deniz, University of Nevada, United States

Michael Dias, Kennesaw State University, United States

Vanessa Dodo Seriki, University of Houston-Clear Lake, United States

Mark Enfield, Elon University, United States

Eva Erdosne Toth, West Virginia University, United States

Allen Espinosa, Philippine Normal University, Philippine

Barry Farris, Columbia University, United States

Kelly Feille, University of North Texas, United States

Katherine Fogelberg, University of North Texas Health Center, United States

Wendy Frazier, George Mason University, United States

Tolga Gok, Dokuz Eylül University, Turkey

Wilson J. Gonzalez-Espada, Morehead State University, United States

Sumi Hagiwara, Montclair State University, United States

Sarah Anne Haines, Towson University, United States

Marie Hammer, Monash University, Australia

Vincente Handa, West Visayas State University, Philippines

Pamela Esprivalo Harrell, University of North Texas, United States

Susan Hawkins, Indiana University, United States

Toni Ivey, Oklahoma State University, United States

Paul C. Jablon, Lesley University, United States

Kenneth P. King, Roosevelt University, United States

Catherine M. Koehler, Southern Connecticut State University, United States

Ravinder Koul, Pennsylvania State University, United States

Barbara G. Ladewski, Educational Innovations Consulting LLC, United States

Zane Laws, Cisco College, United States

Kimberly H. Lott, Utah State University, United States

Stephen Marble, Southwestern University, United States

Catherine Martin-Dunlop, Morgan State University, United States

Madelon McCall, Baylor University, United States

Thomas John McCloughlin, St. Patrick's College, Ireland

Cherie McCollough, Texas A&M University- Corpus Christi, United States

John McCullagh, Stranmillis University College, Belfast

Electronic Journal of Science Education

Scott Miller, Sam Houston State University, United States Suzanne Nesmith, Baylor University, United States Prasart Nuangchalerm, Mahasarakham University, Thailand George E. O'Brien, Florida International University, United States John Pecore, University of West Florida, United States Deniz Peker, Columbus State University, United States Dave Pinkerton, Western Colorado State University, United States Kate Popejoy, University of North Carolina- Charlotte, United States Sharon Price Schleigh, East Carolina University, United States Soleil Roper, Texas Tech University, United States Melody Russell, Auburn University, United States Emine Sahin, Indiana University, United States Yavuz Saka, Zonguldak Karaelmas University, Turkey Dennis Showers, State University of New York - Geneseo, United States Cindi Smith-Walters, Middle Tennessee State University, United States Jose Soto-Sonera, Universidada del Este, Puerto Rico Karthigeyan Subramaniam, University of North Texas, United States Michael Svec, Furman University, United States M. O. Thirunarayanan, Florida International University, United States Julie Thomas, Oklahoma State University, United States Irina Verenikina, University of Wollongong, Australia Bruce Waldrip, Monash University, Australia Anita Welch, North Dakota State University, United States Yalcin Yalaki, Hacettepe University, Turkey

Administrative Assistant

Murielle Wright, Texas Christian University, Texas