## **Journal of STEM Education: Innovations and Research**

Volume 16 • Issue 4 October-December 2015

+	Editorial Review Board	2
	International Editorial Advisory Board	3
	Editorial	4
	Thank You	5
	FEATURES	
	Scaffolding in Introductory Engineering Courses Peggy C. Boylan–Ashraf Steven A. Freeman Mack C. Shelley	6
(	Gender Differences in Conceptualizations of STEM Career Interest: Complementary Perspectives from Data Mining, Multivariate Data Analysis and Multidimensional Scaling Gerald Knezek Rhonda Christensen Tandra Tyler-Wood David Gibson	13
	<b>Examining the Relationship of Scientific Reasoning with Physics Problem Solving</b> Carol Fabby and Kathleen Koenig	20
	Redesigned High Schools for Transformed STEM Learning: Performance Assessment Pilot Outcome Jeremy V. Ernst and Elizabeth Glennie	27
	Increasing STEM Enrollment Using Targeted Scholarships and an Interdisciplinary Seminar for First- and Second-Year College Students Jon K. Piper and Dwight Krehbiel	36
	Implementation of a Modular Hands-on Learning Pedagogy: Student Attitudes in a Fluid Mechanics and Heat Transfer Course J.K. Burgher D. Finkel O.O. Adesope B.J. Van Wie	44
	Discovering the Needs Assessment of Qualified STEM Teachers for the High-Need Schools	55
	in South Texas Jeong Yang Young Lee Sung Park Monica Wong- Ratcliff Reza Ahangar Marie-Anne Mundy	
	Teaching Steel Connections Using an Interactive Virtual Steel Sculpture Saeed Moaveni and Karen C. Chou	61
	Instructions for Authors	69
	Contribution Form	70



The Journal of STEM Education: Innovations and Research (ISSN 1557-5284) is published by The Institute for STEM Education and Research, P.O. Box 4001, Auburn, AL 36831. www.jstem.org The Institute for STEM Education and Research is a non-profit entity. Periodicals postage rate paid at Auburn, AL and additional mailing offices.

CONTRIBUTIONS are greatly appreciated and are tax-exempt.

PERMISSION FOR USE: The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works or for resale. Specific written permission must be obtained from the publisher for such copying.



Copyright @ 2012 by The Institute for STEM Education and Research. It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. The copyright covers the exclusive rights to reproduce and distribute the article, including reports, photographic reproductions, microfilm or any other reproduction of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, photocopying, recording or otherwise, without permission in writing from the copyright holder.