Contents

Section I
Special Issue
Selected papers from the 2019 International STEM in Education Symposium: Innovative Vision for STEM Education and Teaching

Guest Editor
Feng-Kuang Chiang – Shanghai Normal University, Shanghai, China

Ahmad Ibrahim 1429 Editorial
Feng-Kuang Chiang 1430–1432 Guest Editorial A Review of the 2019 International STEM in Education Symposium: Innovative vision for STEM Education and Teaching
Qiu Yan Yang, Liang Yu and Xinyu Zhou 1433–1447 Investigation of College Students' Behavioral Learning Engagement in Online Courses
Hang Hu, Xinxin Li, Yang Yang, Yifei Su and Shuang Du 1448–1460 The Relationship Between STEAM Instruction, Design Thinking and Deeper Learning
Ligiaos Nong, Lanlan Zhang and Geping Liu 1461–1471 English as Second Language Curriculum from the Perspective of STEM in Chinese Engineering Undergraduates
Hong-Liang Ma, Xiao-Hong Wang, Ming Zhao, Lin Wang, Mei-Ru Wang and Xu-Jia Li 1472–1479 Impact of Robotic Instruction with a Novel Inquiry Framework on Primary Schools Students
Li Li, Chun-Hao Chang and Feng-Kuang Chiang 1480–1491 Investigating How Children Learn and Perceive Engineering Design Knowledge Through Automotive Design Practices

Section II

Victor Flores 1492–1504 Improving Students' Learning Skills for Developing a Software Project using Active Learning Techniques: Service-learning and Agile Software Development
Gianpiero Cabodi, Paolo Camurati, Paolo Pasini, Denis Patti and Danilo Vendraminetti 1505–1528 Schema-Based Instruction with Enumerative Combinatorics and Recursion to Develop Computer Engineering Students' Problem-Solving Skills
Angela Minichielo and Emily Hanks 1529–1548 Becoming Engineers in the Middle Years: Narrative Writing as Identity Work in an Undergraduate Engineering Science Course
Idalis Villanueva, Marialuisa Di Stefano, Laura Gelles, Kate Youmans and Anne Hunt 1549–1569 Development and Assessment of a Vignette Survey Instrument to Identify Responses due to Hidden Curriculum among Engineering Students and Faculty
Qixia Hu, Lingxia Gao, Lei Jiang, Zhen Wang and Yunli Gao 1570–1584 Factors Influencing Employability of Civil Engineering Graduates in China
Elif Ozturk, Bugrahan Yalvac, Michael D. Johnson and Xiaobo Peng 1585–1594 Investigating the Relationships Among Engineering Practitioners and Undergraduate Students' Adaptive Expertise Characteristics and Experiences
Juan Alejandro Melian-Melian and Jorge Martin-Gutierrez 1595–1604 Influence of Motivation on Learning Approaches of Students Using Learning Objects in Graphics Engineering
Michael Woodrow, Andrew L Gillen, Roxanne Woodrow and Jose Torero 1605–1614 Investigating Varied Pedagogical Approaches for Problem-Based Learning in a Fire Safety Engineering Course
Kaela M. Martin and Jonathan M. Gallimore 1615–1624 Comparing Student Performance in Flipped and Non-Flipped Space Mechanics Classrooms
Abigail Clark, Renee Desing, Casandra Wallwey, Rachel Louis Kajfez, Jean Mohammadi-Aragh and Soundouss Sassi

1625–1639 Tracking First-Year Engineering Students’ Identity Metrics

Jeremi London, Christina Lam, Jessica Borders, Logan Perry, Steven Ayer and Wei Wu

1640–1651 Experts’ and Novices’ Perspectives on the Priority of Affective Dimensions in Civil Engineering: A Mixed Methods Study

Martin Jaeger and Desmond Adair

1652–1666 Impact of Computer-Based Feedback Style on Learning Effectiveness in Simulation-Supported Courses

Renee M. Clark, Samuel Dickerson, Mostafa Bedewy, Kevin P. Chen, Ahmed Dallal, Andres Gomez, Jingtong Hu, Robert Kerestes and Louis Luangkesorn

1667–1680 Social-Driven Propagation of Active Learning and Associated Scholarship Activity in Engineering: A Case Study

Shun Takai and Joe Bittorf

1681–1690 A Study of Team Characteristics that Correlate with Team Performance in a Capstone Design Course

Igor M. Verner, Dan Cuperman, Sergei Gamer and Alex Polishuk

1691–1707 Exploring Affordances of Robot Manipulators in an Introductory Engineering Course

Aytac Ugur Yerden and Nihat Akkus

1708–1721 Virtual Reality Remote Access Laboratory for Teaching Programmable Logic Controller Topics

Yegin Genc, Gonca Altuger-Genc and Akin Tatoglu


1736 Guide for Authors