Contents

Editorial

3 Research, Service, and Reflection

Articles

4 Don’t Ask Me Why: Preschool Teachers’ Knowledge in Technology as a Determinant of Leadership Behavior
Anna Öqvist & Per Högström

20 Effectiveness of Small-Group Learning Pedagogies in Engineering and Technology Education: A Meta-Analysis
Sema A. Kalaian, Rafa M. Kasim, & Julia K. Nims

36 A Comparative Analysis of Holographic, 3D-Printed, and Computer-Generated Models: Implications for Engineering Technology Students’ Spatial Visualization Ability
Petros J. Katsioloudis & Mildred V. Jones

54 Using Teaching Portfolios to Revise Curriculum and Explore Instructional Practices of Technology and Engineering Education Teachers
Michal Lomask, David Crismond, & Michael Hacker

73 Evaluating the Effectiveness of Integrative STEM Education: Teacher and Administrator Professional Development
William Havice, Pamela Havice, Chelsea Waugaman, & Kristin Walker
91  Effectiveness of Drafting Models for Engineering Technology Students and Impacts on Spatial Visualization Ability: An Analysis and Consideration of Critical Variables  
   Petros J. Katsioloudis & Jill E. Stefaniak

From the Field

107  Graphic Design and Instructional Methods: An Action Research Study  
   David E. Gorski

Miscellany

114  Scope of the JTE  
    Editorial Review Process  
    Manuscript Submission Guidelines  
    Subscription Information  
    JTE Co-sponsors and Membership Information  
    JTE Editorial Review Board  
    Electronic Access to the JTE