

**Contents**

2 Editorial

**Articles**

4 Efficacy of the Technological/Engineering Design Approach: Imposed Cognitive Demands Within Design-Based Biotechnology Instruction  
*John G. Wells*

21 Positioning Technology and Engineering Education as a Key Force in STEM Education  
*Greg Strimel & Michael E. Grubbs*

37 Problem Decomposition and Recomposition in Engineering Design: a Comparison of Design Behavior Between Professional Engineers, Engineering Seniors, and Engineering Freshmen  
*Ting Song, Kurt Becker, John Gero, Scott DeBerard, Oenardi Lawanto, & Edward Reeve*

57 Identifying Indicators Related to Constructs for Engineering Design Outcome  
*Cheryl A. Wilhelmsen & Raymond A. Dixon*

78 Characterizing Design Cognition of High School Students: Initial Analyses Comparing those With and Without Pre-Engineering Experiences  
*John Wells, Matthew Lammi, John Gero, Michael E. Grubbs, Marie Paretti, & Christopher Williams*

**Miscellany**

92 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