Journal of Information Technology Education: Research

An Official Publication of the Informing Science Institute
InformingScience.org

JITEResearch.org

Volume 20, 2021

Editor-in-Chief: Christopher Cheong, RMIT University (Australia)
Associate Editors-in-Chief:
Jo Coldwell-Neilson, Deakin University (Australia)
Tian Luo, Old Dominion University (USA)
Kathryn MacCallum, University of Canterbury (New Zealand)
Anthony Scime, State University of New York College at Brockport (USA)
Managing Editor: Eli B. Cohen, Informing Science Institute (USA)
Publisher: Elizabeth C. Boyd, Informing Science Institute (USA)

Editors:

Man Fung (Kelvin) LO, Hong Kong Polytechnic University (Hong Kong) Senior Editor
Peter Blakey, Retired Academic (New Zealand)
France Cheong, RMIT University (Australia)
Kay Fielden, Unitec (New Zealand)
Athanassios Jimoyiannis, University of Peloponnese (Greece)
Lalitha Jonnavithula, The Open Polytechnic of New Zealand (New Zealand)
Zlatko Kovacic, The Open Polytechnic of New Zealand (New Zealand)
Krassie Petrova, Auckland University of Technology (New Zealand)
Donna Jean Satterlee, University of Maryland Eastern Shore (USA)
Benson Soong, Islington College / London Metropolitan University (Nepal / UK)
Lorraine Staehr, La Trobe University (Australia)
Janice Whatley, Manchester Metropolitan University, (UK)
Keith Willoughby, University of Saskatchewan (Canada)

Associate Editors:

Tharrenos Bratitsis, University of Western Macedonia (Greece)
Justin Filippou, The University of Melbourne (Australia)
Fariza Khalid, Universiti Kebangsaan Malaysia (Malaysia)
Dennis Kira, Concordia University (Canada)
Felix O Quayson, Texas A&M University System (USA)

The mission of the *Journal of Information Technology Education: **Research*** is to:

- improve IT education around the world by publishing high quality articles on best practices and other topics of use in improving IT education,
- expose the reader to a variety of epistemologies and types of articles, including primary, action, and secondary research,
- provide those who submit manuscripts for publication with useful, timely feedback by making the review process constructive,
- be for the reader the most authoritative journal on IT education, and
- acknowledge and embrace the diversity of teaching and learning models in use around the world.

JITE is listed in Applied Math and Science Education Repository (AMSER), Cabell's Directory of Publishing Opportunities in Educational Curriculum & Methods, Cabell's Directory of Publishing Opportunities in Educational Technology & Library Science, Cabell's Directory of Publishing Opportunities in Management, EBSCO, ERIC, Index of Information System Journals, InSPEC, Intute, Ulrichs.

JITE is an academically peer-reviewed open-access journal. All submissions are blind refereed by three or more peers. JITE articles are published online on the web site **http://JiteResearch.org**

(CC BY-NC 4.0) The articles in this journal are licensed under a Creative Commons Attribution-NonCommercial 4.0 International License. When you copy and redistribute this paper in full or in part, you need to provide proper attribution to it to ensure that others can later locate this work (and to ensure that others do not accuse you of plagiarism). You may (and we encourage you to) adapt, remix, transform, and build upon the material for any non-commercial purposes. This license does not permit you to use this material for commercial purposes.

ISSN: online 1539-3585; print 1547-9714

Published by the Informing Science Institute
131 Brookhill Ct., Santa Rosa, California USA
phone: +1-707-537-2211
http://informingscience.org

JITE: Research
Volume 20, 2021 - Table of Contents

Effectiveness of Using Thinking Maps Through the Edmodo Network to Develop Achievement and Mathematical Connections Skills Among Middle School Students
Mansour Saleh Alabdulaziz, Ali Abdullah Alhammadi 1-34

Lifelong Learning: Principles for Designing University Education
Stefan Cronholm 35-60

Applying Social Media to Scaffold University Students' Inquiry Group Project Work – Theoretical and Practical Implications
Winsy Wan Yee Lai, Chao Yang, Samuel Kai Wah Chu 61-85

Technologies for Learning Writing in L1 and L2 for the 21st Century: Effects on Writing Metacognition, Self-Efficacy and Argumentative Structuring
Rosario Arroyo González, Eric Fernández-Lancho, Javier de la Hoz-Ruiz 87-116

Determining the Factors That Affect the Use of Virtual Classrooms: A Modification of the UTAUT Model
Sultan Hammad Alshammari 117-135

A Comprehensive Rubric for Evaluating EduVR
Alex Fegely, Todd Cherner 137-171

The Effect of Designing and Segmenting Instructional Video
Penny Thompson, Ying Xiu, Jessica D. Tsotsoros, Michelle A. Robertson 173-200

Active Learning in the Context of the Teaching/Learning of Computer Programming: A Systematic Review
João Henrique Berssanette, Antonio Carlos de Francisco 201-220

A Learning Fuzzy Cognitive Map (LFCM) Approach to Predict Student Performance
Taha Mansouri, Ahad ZareRavasan, Amir Ashrafi 221-243

Examining the Use of Robots as Teacher Assistants in UAE Classrooms: Teacher and Student Perspectives
Mariam Alhashmi, Omar Mubin, Rama Baroud 245-261

The Challenges of Online Teaching in COVID-19 Pandemic: A Case Study of Public Universities in Karachi, Pakistan
Huma Akram, Sarfraz Aslam, Atif Saleem, Khalida Parveen 263-282

Effect of Combining Gamification and a Scavenger Hunt on Pre-Service Teachers' Perceptions and Achievement
Deema Abdulmohsen Alajaji, Abeer Aidh Alshwiah 283-308

Students' Experiences of 2D and 360° Videos With or Without a Low-Cost VR Headset: An Experimental Study in Higher Education
Ari Alamäki, Amir Dirin, Jyrki Suomala, Cheul Rhee 309-329

TaBAT: Design and Experimentation of a Learning Analysis Dashboard for Teachers and Learners
Yassine Safsouf, Khalifa Mansouri, Franck Poirier 331-350

Online Learning Management in the Era of COVID-19 Pandemic at Junior High Schools in Indonesia
Hadriana, Mahdum, Isjoni, Dedi Futra, Indra Primahardani 351-383

Student Participation in Computing Studies to Understand Engagement and Grade Outcome
Jason Wells, Aaron Spence, Sophie McKenzie 385-403

Lights, Camera, Activity! A Systematic Review of Research on Learner-Generated Videos
Bridgette Shade Epps, Tian Luo, Pauline S. Muljana 405-427

Senior High School Students' Readiness and Motivation to Learn English Using Synchronous Video Conferences
Clementin Kortisarom Prijambodo, Anita Lie 429-457

Examining Gender Differences in Student Learning During the COVID-19 Pandemic: A Model from the Switching Costs and Quality-Related Perspectives
Mandy Yan Dang, Yulei Gavin Zhang 459-477

Teacher-Student Interaction in Distance Learning in Emergency Situations
Hava Sason, Avichai Kellerman 479-501

Using Google Docs to Enhance Students' Collaborative Translation and Engagement
Amira Desouky Ali 503-528

Integrating Information Technology in Precollege Education in Kuwait: Teachers' Perspectives on a Botched Initiative
Zainab M. AlQenaei, Omar Khalil, Abrar Y. Aldekheel 529-558