

# TABLE OF CONTENTS

<b>Inclusive Instructional Design and UDL Around the World</b> .....	1
<i>Susie Gronseth, University of Houston, United States; Elizabeth Dalton, University of Rhode Island, United States; Radhike Khanna, Om Creations Trust and Shraddha Charitable Trust, India; Boris Alvarez, Irma Iglesias &amp; Paola Vergara, Fellow Group, Chile; Jeanne Carey Ingle &amp; Heather Pacheco-Guffrey, Bridgewater State University, United States; Debra Bauder &amp; Katherine Cooper, University of Louisville, United States; Cindy Anderson, Roosevelt University, United States; Kevin Anderson, University of Michigan, United States; Vivian Intatano, Raja Soliman Science &amp; Technology High School, Philippines; Peggy Semingson &amp; Kathryn Pole, University of Texas-Arlington, United States; Kerry Armstrong, Brenda Boreham &amp; Terri Mack, Strong Nations, Canada; Lisa Harris, Winthrop University, United States; Dave Edyburn, University of Central Florida, United States; Janet Arndt, Gordon College, United States; Britt Tatman Ferguson, National University, United States; Nili Luo, Southwestern College, United States; Lindsay Yearta, Winthrop University, United States</i>	
<b>MOOC as a way to raise inclusion awareness in society: Portuguese case study</b> .....	6
<i>Manuela Francisco, Luís Filipe, Rita Cadima, Célia Sousa, Catarina Mangas, Graça Seco, Sandra Alves, Renato Coelho &amp; Joana Sousa, Polytechnic Institute of Leiria, Portugal</i>	
<b>Practicing and prospective teachers' pedagogical reasoning about using technology in their educational practice: Part 1</b> .....	13
<i>Joke Voogt, University of Amsterdam/ Windesheim University of Applied Sciences, Netherlands; Michael Phillips, Monash University, Australia; Ottavia Trevisan &amp; Marina de Rossi, University of Padova, Italy; Anneke Smits, Henk La Roi &amp; Roland Bruijn, Windesheim University of Applied Sciences, Netherlands; Judi Harris &amp; Mark Hofer, William &amp; Mary School of Education, United States; Petra Fisser, Netherlands Institute for Curriculum Development, Netherlands</i>	
<b>UDL for Inclusive Science Education</b> .....	17
<i>Heather Pacheco-Guffrey &amp; Jeanne Ingle, Bridgewater State University, United States</i>	
<b>The Effectiveness of On-line Practicum Courses in Medical Education</b> .....	20
<i>Asmaa Radwan, Indiana University of Pennsylvania, United States</i>	
<b>Near peer video-based observations: Using student teaching videos to train aspiring school</b> .....	24
<i>W. Sean Kearney &amp; James Jurica, Texas A&amp;M University San Antonio, United States</i>	
<b>Trends in Rural Area School Librarian Candidates' Technology Acceptance and Adoption</b> .....	29
<i>Haihong Hu, University of Central Arkansas, United States</i>	

<b>"It was just doing what you know about and move on, you know, just to survive". A beginning elementary teacher's story of using technology in the classroom during her first two years. ....</b>	<b>35</b>
<i>Ya-Huei Lu, East Carolina University, United States</i>	
<b>A program for success: A reflective structure to enrich preschool children's mathematical reasoning .....</b>	<b>40</b>
<i>Kelley Buchheister, University of Nebraska-Lincoln, United States</i>	
<b>The Effects of Gender and Literacy in the Development of Computational Thinking Skills in 6th Grade Students .....</b>	<b>49</b>
<i>Gerald Ardito, Pace University, United States; Betul Czerkawski, University of Arizona South, United States</i>	
<b>Bricklayer: Mathematics through Art and Coding .....</b>	<b>52</b>
<i>Michelle Friend, Paula Jakopovic, Betty Love &amp; Victor Winter, University of Nebraska at Omaha, United States</i>	
<b>Changing the Game: Teaching Elementary Mathematics Through Coding .....</b>	<b>55</b>
<i>Paula Jakopovic, Michelle Friend, Betty Love &amp; Victor Winter, University of Nebraska at Omaha, United States</i>	
<b>Using TPACK to Teach #FutureTeachers in an Undergraduate Integrating Technology with Teaching Course .....</b>	<b>61</b>
<i>Julia Parra, New Mexico State University, United States</i>	
<b>Teaching through the eyes of a robot Using Robotic Telepresence to Facilitate Early Field Experiences for Pre-Service Teachers .....</b>	<b>65</b>
<i>Shawn Daley, Michigan State University, United States; Stephanie Murphy, Concordia University, United States</i>	
<b>TOPRACE Model: A Practice of Online Instruction .....</b>	<b>71</b>
<i>John Ronghua Ouyang, University of North Florida, United States</i>	
<b>Exploring messaging in STEM YouTube Videos .....</b>	<b>76</b>
<i>Laurie O. Campbell, Tara Gibson, Jason Pollack &amp; Stacy Watkins, University of Central Florida, United States</i>	
<b>Social Media Closing the Distance in Online Education .....</b>	<b>81</b>
<i>Lee Heller, Nova Southeastern University, United States</i>	
<b>Justin's Path to Learning Fractions Through Coding .....</b>	<b>92</b>
<i>Lorraine Jacques, Louisiana Tech University, United States</i>	

<b>#SocialMediaEd: Perspectives on Teaching about and with Social Media in Higher Education</b> .....	97
<i>Christine Greenhow, Michigan State University, United States; Benjamin Gleason, Iowa State University, United States; Daniel Krutka, University of North Texas, United States; Tonia Dousay, University of Idaho, United States; Jeff Carpenter, Elon University, United States</i>	
<b>Rocket Roundup</b> .....	101
<i>Scott McKay, Mark Geary, Jim Maloney, Jennifer Nash &amp; Jacob Geary, Dakota State University, United States</i>	
<b>What Story Does Your Online Presence Tell? Helping Teacher Candidates Understand the Impact of Their Digital Footprint</b> .....	108
<i>Ricky Mullins, Eastern Kentucky University, United States; David Hicks, Virginia Tech, United States; Todd Ogle, Virginia Tech, United States</i>	
<b>Dr. Skateboard's Action Science and the Masters of Physics</b> .....	112
<i>William Robertson, Teacher Education Department, College of Education, the University of Texas at El Paso, United States</i>	
<b>Preservice teachers' decisions on the use of ICTs to teach science during teaching practice</b> .....	120
<i>Thuthukile Jita, University of the Free State, South Africa</i>	
<b>Education Students' Definitions of Creativity in Education: Developing Common Ground to Embrace Shifting Educational Contexts</b> .....	128
<i>Mia Kim Williams &amp; Letha Mellman, University of Northern Colorado, United States</i>	
<b>Recording the World: The Potential of Using Wearable Technologies to Teach Social Studies</b> .....	134
<i>Ricky Mullins, Eastern Kentucky University, United States; Cassidy Hall, University of Idaho, United States; Judith Painter, Salem City Public Schools, Virginia, United States; Melinda Davis, University of Idaho, United States; Jaap Vos, University of Idaho at Boise, United States</i>	
<b>Understanding Adolescent Writing on Social Media: A Literature Review</b> .....	138
<i>Sarah Galvin &amp; Christine Greenhow, Michigan State University, United States</i>	
<b>Gamified Mars Learning Lab</b> .....	147
<i>Mark Geary &amp; Jacob Geary, Dakota State University, United States</i>	
<b>Faculty and students' perspective towards Active Learning Classroom</b> .....	151
<i>Ali Rezaei, California State University, United States; Francine Vasilomanolakis, CSULB, United States</i>	

<b>Digital Literacy and Perceptions of Truth: Confusion and Confirmation Bias</b> .....	157
<i>Kevin Krahenbuhl, Middle Tennessee State University, United States</i>	
<b>Preservice Science Teacher Preparation Using Virtual Reality</b> .....	162
<i>Richard Lamb &amp; Elisabeth Etopio, University at Buffalo, United States</i>	
<b>Online Tutoring: Exploring Pre-Service Teachers to Serve Rural/Native Area Students</b> .....	168
<i>Hsing-Wen Hu, Grant Sasse &amp; Katie Walker, University of Alaska Anchorage, United States</i>	
<b>Stop, Collaborate, and Listen: Facilitating Community, Connection, and Communication in the Online Classroom</b> .....	173
<i>Susie Gronseth &amp; Jingyuan Fu, University of Houston, United States</i>	
<b>Faculty Resistance to Technology Integration</b> .....	175
<i>Ileana Torres &amp; Jessica Evans, TCSPP, United States; Michael Schneider, TSCPP, United States</i>	
<b>Teaching How to Visualize the Invisible: Using Virtual Reality to Expose the Microscopic World of Chemistry</b> .....	178
<i>Mia Kim Williams &amp; Dalal Alrmuny, University of Northern Colorado, United States</i>	
<b>Technology-facilitated Formative Assessment</b> .....	182
<i>Natalie Johnson-Leslie, Arkansas State University, United States; Lan Li, Bowling Green State University, United States; Valentina Grion, University of Padova, Italy; Lara Kassab, San Jose State University, United States</i>	
<b>Reciprocal Teaching and Padlet: Writing about Reading with Slovakian Students Learning English</b> .....	189
<i>Victoria Seeger, Northwest Missouri State University, United States; Sara Worsfold, Currently working at a school in Cambodia., United States</i>	
<b>Articulating and Applying Content using Student-Identified Video Clips</b> .....	191
<i>Paula Christensen, Northwestern State University of Louisiana, United States</i>	
<b>Makerspace Professional Development: A Self-determination Theory Analysis</b> .....	197
<i>Michael L Schad &amp; Monty Jones, Virginia Commonwealth University, United States</i>	
<b>Technology Binds or Blinds? - Social Networks through a Pedagogical Lens</b> .....	205
<i>Tami Seifert, Kibbutzim College of Education, Technology, and Art, Israel</i>	

<b>The Effectiveness of a Game about Learning Disabilities .....</b>	<b>211</b>
<i>Carol Redfield, St. Mary's University, United States; Crystal Redfield, John Jay Science and Engineering Academy, United States</i>	
<b>Practice and policy in K-12 online learning in New Zealand: What lessons are transferrable? .....</b>	<b>238</b>
<i>Keryn Pratt, University of Otago, New Zealand; Sandra Williamson-Leadley, University of Canterbury, New Zealand</i>	
<b>Boosting Communication: Using Point of View (POV) Video for Students with Disabilities as a Powerful Communication Piece with Parents .....</b>	<b>241</b>
<i>Cassidy Hall, University of Idaho Doceo Center, United States; Ricky Mullins, Eastern Kentucky University, United States; Aleksandra Hollingshead, University of Idaho, United States; Tonia Dousay, University of Idaho Doceo Center, United States</i>	
<b>Using UDL-related methods in education, teacher training, and job-development for young women with developmental disabilities in India .....</b>	<b>245</b>
<i>Susie Gronseth, University of Houston, United States; Elizabeth Dalton, Rhode island, United States; Boris Alvarez, Irma Iglesias &amp; Paola Vergara, Fellow Group, Chile; Jeanne Carey Ingle &amp; Heather Pacheco-Guffrey, Bridgewater State University, United States; Debra Bauder &amp; Katherine Cooper, University of Louisville, United States; Cindy Anderson, Roosevelt University, United States; Kevin Anderson, University of Michigan, United States; Vivian Intatano, Raja Soliman Science &amp; Technology High School, Philippines; Peggy Semingson &amp; Kathryn Pole, University of Texas-Arlington, United States; Kerry Armstrong, Brenda Boreham &amp; Terri Mack, Strong Nations, Canada; Lisa Harris, Winthrop University, United States; Dave Edyburn, University of Central Florida, United States; Janet Arndt, Gordon College, United States; Britt Tatman Ferguson, National University, United States; Nili Luo, Southwestern College, United States; Lindsay Yearta, Winthrop University, United States</i>	
<b>Language Teachers' Content-Specific Technology Integration Reflection through the Video-Embedded Reflective Inquiry Model .....</b>	<b>250</b>
<i>Ai-Chu Elisha Ding, Ball State University, United States</i>	
<b>Building a Framework for Project Based Personalized Learning .....</b>	<b>255</b>
<i>Brandie Shatto &amp; Randy Hansen, University of Maryland University College, United States</i>	
<b>Building Digital Learning Culture into Pre-service Teacher Education .....</b>	<b>261</b>
<i>Ismail Guven, Ankara University Faculty of Educational Sciences, Turkey; Yasemin Gulbahar, Ankara University, Turkey</i>	
<b>Using Digital Tools to Increase Authenticity and Access in Performance-Based Assessment and Project-Based Learning .....</b>	<b>270</b>
<i>Kristina Doubet &amp; Eric Carbaugh, James Madison University, United States</i>	
<b>Measuring K-12 Computational Thinking Concepts, Practices and Perspectives: An Examination of Current CT Assessments .....</b>	<b>275</b>
<i>Catherine Adams, Maria Cutumisu &amp; Chang Lu, University of Alberta, Canada</i>	

<b>Girls Who Code: The Importance of Contributing to Their Future .....</b>	<b>286</b>
<i>Lisa Baylor, Walsh University, United States</i>	
<b>Design and Development of a Graduate Online Course to Prepare Teachers and School Librarians to Lead Computational Thinking in K-12 Contexts .....</b>	<b>290</b>
<i>Kimberly Huett, University of West Georgia, United States; Bruce Neubauer, Albany State University, United States</i>	
<b>Computational Thinking in Action: Paving the Way for Pre-service Teachers .....</b>	<b>296</b>
<i>Nadia Jaramillo, Tyanez Jones &amp; Brittany Sweers, Iowa State University, United States</i>	
<b>Infusing Computing Through Professional Development: Shifts in Content Area Teachers' Understandings of Computational Thinking Integration .....</b>	<b>302</b>
<i>Robin Jocius, Jennifer Albert &amp; Ashley Andrews, The Citadel, United States; Veronica Catete &amp; Yihuan Dong, North Carolina State University, United States; Deepti Joshi &amp; Richard Robinson, The Citadel, United States; Tiffany Barnes &amp; Nicholas Lytle, North Carolina State University, United States</i>	
<b>Children's Perceptions of Participation in Programming Workshop with Their Parents .....</b>	<b>306</b>
<i>Yukiko Maruyama, Tokai University, Japan</i>	
<b>Examining the difficulties of computational concepts and practices undergraduates encounter in an online learning environment .....</b>	<b>310</b>
<i>Hyunchang Moon &amp; Jongpil Cheon, Texas Tech University, United States; SunGwan Han, Gyeong-in National University of Education, Korea (South)</i>	
<b>Characteristics and Challenges of Japanese Computer Science Education in Elementary Level .....</b>	<b>316</b>
<i>Michiyo Oda &amp; Tatsuya Horita, Tohoku University, Japan</i>	
<b>Applications of Computational Thinking to Solve Graph Problems .....</b>	<b>324</b>
<i>Gerard Rambally, University of North Texas at Dallas, United States</i>	
<b>Infusing Computational Thinking Instruction into Elementary Mathematics and Science: Patterns of Teacher Implementation .....</b>	<b>330</b>
<i>Kathryn Rich &amp; Aman Yadav, Michigan State University, United States</i>	
<b>A Model for Integrating Computational Thinking into an Undergraduate Preservice Teacher Education Course .....</b>	<b>335</b>
<i>Kristina Tank &amp; Dennis Culver, Iowa State University, United States</i>	

<b>Discourse Practice of Computational Thinking</b> .....	341
<i>Sasha Wang &amp; Yu-hui Ching, Boise State University, United States; Steve Swanson, Boise State University, United States; Youngkyun Baek, Dazhi Yang &amp; Bhaskar Chittoori, Boise State University, United States</i>	
<b>Integrating computational thinking in elementary classrooms: Introducing a toolkit to support teachers.</b> .....	347
<i>Aman Yadav, Rachel Larimore, Kathryn Rich &amp; Christina Schwarz, Michigan State University, United States</i>	
<b>Computational Pedagogical Strategies to Help Learners Retain STEM Content Knowledge</b> .....	351
<i>Osman Yasar, Peter Veronesi, Jose Maliekal &amp; Leigh Little, State University of New York College at Brockport, United States; John Tillotson, Syracuse University, United States</i>	
<b>Examining the Effects of Digital Fabrication in Middle School: Comparing Gifted and Non-Gifted Students</b> .....	361
<i>Vince Moore, Breckenridge ISD, United States; Tandra Tyler-Wood, University of North Texas, United States</i>	
<b>Blogs as an Effective Social Media Tool in Education</b> .....	367
<i>Emad Abu-Shanab, Qatar University, Qatar; Nawzat Alsmadi, Yarmouk University, Jordan</i>	
<b>Using Online Education to Improve Traditional Classroom Instruction: A Blended Learning Approach</b> .....	374
<i>Catherine Bacos &amp; Karen Grove, University of Nevada, Las Vegas, United States</i>	
<b>Piloting a QM-Inspired Quality Assurance Process for All Online Course Offerings at a Mid-sized University</b> .....	380
<i>Savilla Banister, Rachel Vannatta &amp; Cindy Ross, Bowling Green State University, United States</i>	
<b>Bringing Open Pedagogy to Practice in a Blended Graduate Course: Affordances and Challenges</b> .....	386
<i>Evrin Baran &amp; Dana AlZoubi, Iowa State University, United States</i>	
<b>Accommodating in the Online Course Environment for Students who are Deaf/Hard of Hearing</b> .....	391
<i>Terence Cavanaugh &amp; Suzanne Ehrlich, University of North Florida, United States</i>	
<b>Nudging, Not Shoving: Five effective strategies for motivation and success for online learners</b> .....	398
<i>Terence Cavanaugh &amp; Nicholas Eastham, University of North Florida, United States</i>	

<b>Student-Generated Discussion Activity: A Lever for Building a Community of Learners in an Asynchronous Online Learning</b> .....	405
<i>Beomkyu Choi, Grand Valley State University, United States</i>	
<b>How Do e-Learning Students Perceive Online Synchronous Instruction: A Scaling Tool</b> .....	410
<i>Christina Churchill, University of North Texas, United States</i>	
<b>Best Practices for Teacher Educators to Address Digital Security Issues in Synchronous Sessions and Webinars</b> .....	416
<i>Elizabeth Dalton, URI; Dalton Ed Services International, United States; Susie Gronseth, University of Houston, United States</i>	
<b>How can we design online courses that are effective for student learning? (Roundtable)</b> .....	420
<i>Antoinette Marie Davis, Colorado State University-Global Campus, United States</i>	
<b>Blurring Lines: Using Telepresence for Instructional Equity</b> .....	431
<i>Veronica Ent, Saint Vincent College, United States</i>	
<b>Big space, small groups: Lessons learned on the development of a small-group learning classroom to meet the needs of both large- and small-enrollment courses</b> .....	436
<i>Christopher Faulkner, Robert Rege &amp; Dorothy Sendelbach, UT Southwestern Medical Center, United States</i>	
<b>Think You Know What Learners Want in an Online Class? Think Again.</b> .....	448
<i>Jennifer Graham, Northern Maine Community College, United States; Lynne Manion, Eastern Maine Community College, United States</i>	
<b>A mixed methods research proposal to examine the influence of external factors and expectations on the success of first time online learners.</b> .....	454
<i>Alexis Guethler, Towson University, United States</i>	
<b>Tools for Seamless Teaching in Online and Hybrid Contexts</b> .....	460
<i>Amanda Hurlbut &amp; Karen Dunlap, Texas Woman's University, United States</i>	
<b>Exploring Asynchronous Online Learner Experiences and Perceptions</b> .....	466
<i>Alicia Johnson, Kenneth Potter &amp; Emily Bishop, Virginia Polytechnic Institute and State University, United States</i>	
<b>Maintaining a Competitive Edge: How Trends Drive Innovations for Online Education in Higher Education</b> .....	473
<i>Hong Lin, University of Oklahoma, United States</i>	



<b>Engagement for Retention: Enhancing the Online Graduate Student Learner Experience Through the Development of a Virtual Community</b> .....	478
<i>Sharonda Lipscomb, University of North Texas   University of Arkansas at Little Rock, United States</i>	
<b>Online Assessment of Instructional Videos: Using Web Conference and a Content Analysis Tool</b> .....	484
<i>Leping Liu, Li-Ting Chen, Wenzhen Li, Kathryn Hanselman, &amp; Cong Zou, University of Nevada, Reno, United States</i>	
<b>Self-efficacy and Motivation in Online Graduate Students</b> .....	492
<i>Sari London, Grand Canyon University, United States; Ajay Das, SUNY Empire State College, United States</i>	
<b>Rating effectiveness of instructional delivery: A faculty audit tool used at an online university.</b> .....	493
<i>Pamela McCoy, Marilee Hall &amp; Debra Chittur, Independence University, United States</i>	
<b>A Fact File of Flexible Learning in Night Programs in Japan</b> .....	498
<i>Terumi Miyazoe, Tokyo University of Science, Japan</i>	
<b>Supporting Instructors in Redesigning Online Instruction Toward Student-Centered, Problem Based Learning</b> .....	504
<i>Margaret Niess, Oregon State University, United States</i>	
<b>A micro-learning based model to enhance student teachers' motivation and engagement in blended learning</b> .....	509
<i>Stavros Nikou, University of Strathclyde, School of Education, Faculty of Humanities &amp; Social Sciences, United Kingdom</i>	
<b>Virtual Mentoring- Creating a National Network of College and Career Ready Leaders</b> .....	515
<i>Matthew Ohlson, University of North Florida, United States</i>	
<b>MOOCs for language learning. Reality and prospects.</b> .....	540
<i>Panagiotis Panagiotidis, Aristotle University of Thessaloniki, Greece</i>	
<b>Pedagogical usability in the design of a learning module on virtual reality</b> .....	547
<i>Minh Pham, University of Missouri, Columbia, United States; Xinhao Xu, Jhon Bueno &amp; Hao He, University of Missouri, United States</i>	
<b>The Impact of Music Genre Preferences on Immediate Recall and Long-Term Memory in e-Learning Modules</b> .....	552
<i>Mark Piwinsky, Indiana University of Pennsylvania, United States; Lacey Fulton, Clarion University, United States; Sarah Everett, Emily Ortiz &amp; Donald Winzer, Indiana University of Pennsylvania, United States</i>	

<b>Online Graduate Advising: It's Much More Than 'What class comes next?'</b> .....	557
<i>Kristi Preisman, College of Saint Mary, United States</i>	
<b>Best teaching patterns in multi-participant online courses</b> .....	562
<i>Tami Seifert, Miki Kritz &amp; Orna Feliks, Kibbutzim College of Education, Israel</i>	
<b>Integration of a Lesson Plan Webinar Series and Curated Digital Resources on Lesson Planning for Novice Educators</b> .....	566
<i>Peggy Semingson, University of Texas at Arlington, United States; Dana Owens, The University of Texas at Arlington, United States; Kathryn Pole, University of Texas at Arlington, United States</i>	
<b>Integrating Course Improvement Strategies for Online Learners</b> .....	571
<i>Carrol Warren &amp; Michelle Bartlett, North Carolina State University, United States</i>	
<b>Recruitment Hacks: Designing Recruitment Strategies for Graduate Distance Programs</b> .....	574
<i>Carrol Warren, North Carolina State University, United States</i>	
<b>Online Pre-Service Teachers' Self-Regulated Learning: Do Authentic Teaching Cases and Mastery Approach Goals Play a Role?</b> .....	576
<i>Patricia Willems, Alyssa Gonzalez-DeHass, Jillian Powers &amp; Ann Musgrove, Florida Atlantic University, United States</i>	
<b>Online Spaces as Sources of Informal Learning for Teachers</b> .....	583
<i>Kimberly Zelonis, Lock Haven University, United States</i>	
<b>Future Teacher Educators in Critical Evaluation of Educational Technology through Collaborative Digital Storytelling Projects</b> .....	595
<i>Imelda Bangun, Zhengjie Li &amp; Patrick Mannion, University of South Florida, Indonesia</i>	
<b>Assessing the instructional video through the lens of educational learning theories</b> .....	601
<i>Christina Churchill, University of North Texas, United States</i>	
<b>Exploring student engagement with digital storytelling content using factor analysis</b> .....	607
<i>Medha Dalal, Arizona State University, United States; Leanna Archambault, Arizona State University, United States; Annie Hale, Arizona State University, United States</i>	
<b>Increasing Learner Engagement through Course Journey Storytelling</b> .....	612
<i>Susan Elwood &amp; Joseph Ramirez, Texas A&amp;M University Corpus Christi, United States</i>	

<b>Digital Storytelling: The Story is the Course</b> .....	616
<i>Larry Ferguson, Norfolk State University, United States; Deidre Henriques &amp; Monika McGhee, Norfolk State University, United States</i>	
<b>High Impact Practices in Digital Media Communication Undergraduate Capstone Experiences: Navigating Digital Story Telling and Client Expectations</b> .....	619
<i>Mark Piwinsky, Indiana University of Pennsylvania, United States; Lacey Fulton, Clarion University, United States; Sarah Everett, Emily Ortiz &amp; Donald Winzer, Indiana University of Pennsylvania, United States</i>	
<b>Digital Story Telling: Teaching Techniques and Strategies for Multiple Educational Levels</b> .....	625
<i>Aubrey Statti &amp; Kelly Torres, The Chicago School of Professional Psychology, United States</i>	
<b>Development of an iPad App “Kumata” for K-9 students to make a simple picture-movie in a short time</b> .....	629
<i>Hitoshi Susono, Eri Ono, Maki Hagino, Maho Yamanaka &amp; Ayami Nishida, Mie University, Japan; Hirokazu Seko, Mie University, Shudo Elementary School, Japan</i>	
<b>Re-using video records of practice in teacher professional development to engage in and develop mathematics teaching practice</b> .....	634
<i>Kara Suzuka, University of Hawai'i at M#noa, United States; Rebecca Frank &amp; Elizabeth Yakel, University of Michigan, United States</i>	
<b>Visualization in Teacher Education: Storytelling with Data</b> .....	639
<i>Melda Yildiz, New York Institute of Technology, United States; Maria Cieslak &amp; Georgia Holmes, Walden University, United States</i>	
<b>Culturally Responsive and Equity-Focused Computer Science Professional Development</b> .....	648
<i>Diane Coddling, Chrystalla Mouza, Lori Pollock &amp; Scott Sheridan, University of Delaware, United States</i>	
<b>Techno-womanism: Foundations for Social Justice in and through the Technosphere</b> .....	657
<i>Shamika Goddard, Techchaplaincy.com, United States; Xeturah Woodley, New Mexico State University, United States</i>	
<b>Reconceptualizing Digital Citizenship Curricula: Designing a Critical and Justice-Oriented Digital Citizenship Course</b> .....	665
<i>Marie Heath &amp; David Marcovitz, Loyola University Maryland, United States</i>	
<b>Politics, Social Media, and Mobile Technology: Ensuring Ethics and Equity</b> .....	673
<i>Stephanie Huffman, Erin Shaw &amp; Stacey Loyless, University of Central Arkansas, United States</i>	

<b>Crowdfunding Education with DonorsChoose.org: All Things Equal?</b> .....	680
<i>Matthew Koehler &amp; Michael Lachney, Michigan State University, United States</i>	
<b>Designing towards empathy using VR/iVR: Applying best practices to enhance student experience.</b> .....	688
<i>Rebecca M. Reese, Colorado School of Mines, United States</i>	
<b>Fostering School Security During Teacher Preparation</b> .....	695
<i>Daniel A. Tillman, Josefina V. Tinajero, Carleton H. Brown, William H. Robertson &amp; Song A. An, The University of Texas at El Paso, United States</i>	
<b>Tracking Identity Exploration Trajectories in Game-Based Learning</b> .....	700
<i>Amanda Barany, Hamideh Talafian, Mark Petrovich Jr., Mamta Shah &amp; Aroutis Foster, Drexel University School of Education, United States</i>	
<b>Using an Escape Room to Support the Learning of Science Content</b> .....	710
<i>Kerry Bartlett &amp; Janice Anderson, University of North Carolina at Chapel Hill, United States</i>	
<b>The Struggle is Real: Identifying Barriers to Successful Implementation of Serious Games in the Middle School Classroom</b> .....	716
<i>Donald L. Becker, Monica Trevathan &amp; Jana Willis, University of Houston- Clear Lake, United States</i>	
<b>Teaching and Learning Physics using 3D Virtual Learning Environment: A Case Study of Combined Virtual Reality and Virtual Laboratory in Secondary School</b> .....	721
<i>Diana Bogusevschi, Dublin City University, Ireland; Cristina Muntean, National College of Ireland, Ireland; Gabriel-Miro Muntean, Dublin City University, Ireland</i>	
<b>Effects of user operation on the sense of reality in virtual reality with room-scaling</b> .....	729
<i>Haarin Choi, Heoncheol Yun, Museok Jeong &amp; Min Cho, Chonnam National University, Korea (South)</i>	
<b>SimSchool: SPARCIing New Grounds in Research on Simulated Classrooms</b> .....	733
<i>David Collum, Missouri Baptist University, United States; Rhonda Christensen, University of North Texas, United States; Tim Delicath, Missouri Baptist University, United States; Vickie Johnston, Florida Gulf Coast University, United States</i>	
<b>Virtual Reality and Video Games as Literary Tools in K-16</b> .....	740
<i>Miles Harvey, University of New Mexico, United States</i>	
<b>Fostering Empathy through a Virtual World-based Game</b> .....	742
<i>Scot Headley, George Fox University, United States</i>	

<b>Virtual Worlds as Game Spaces</b> .....	745
<i>Scot Headley, George Fox University, United States</i>	
<b>A Review of Theories for Developing Student Experiences through Pre-Instructional Activities with Digital Game-Based Learning</b> .....	749
<i>Heather Holbrook, Gwinnett County Public Schools, United States</i>	
<b>Math or Magic? Creating a Serious Games through Design-Based Research</b> .....	753
<i>Rasmus Pechuel, Ingenious Knowledge, Germany; Marc Beutner, University of Paderborn, Germany</i>	
<b>When Learning Tools Need to Handle More than Right and Wrong – Addressing the Challenges of Creating a Serious Game in the Field of Nursing Education</b> .....	761
<i>Miriam Peters, Philosophisch-Theologische Hochschule Vallendar, Germany; Rasmus Pechuel, Ingenious Knowledge, Germany; Manfred Huelsken-Giesler, Philosophisch-Theologische Hochschule Vallendar, Germany; Nadin Dütthorn &amp; Bernward Hoffmann, FH Münster, Germany</i>	
<b>The effect on the scenario level on the eye-fixation time on the virtual problem student avatar in virtual classroom simulation</b> .....	770
<i>Jeeheon Ryu, Kukhyeon Kim &amp; Chaeyeon Kim, Chonnam National University, Korea (South)</i>	
<b>Video Games as a Literacy Tool: A Comparison of Players’ and Nonplayers’ Grades, Reading Test Scores, and Self-Perceived Digital Reading Ability</b> .....	777
<i>Soonhwa Seok, Korea University, Korea (South); Boaventura DaCosta, Solers Research Group, United States</i>	
<b>Facilitating Online Learning Success through Scaffolding, Mentoring, E-portfolios, and Personal Reflection.</b> .....	782
<i>Patricia Ainsa, University of Texas, El Paso, United States</i>	
<b>Image Use in Higher Education Online Classrooms: A Survey of California Community College Online Instructors</b> .....	787
<i>Jason Bader, Mt San Jacinto College, United States</i>	
<b>Not Your Mother's Professional Development: A Flexible Approach to Faculty PD</b> .....	793
<i>Diana Brandon, Charleston Southern University, United States</i>	

<b>What do Teacher Educators think of Teacher Education Technology Competencies?</b> .....	796
<i>Jeffrey Carpenter, Elon University, United States; Joshua Rosenberg, University of Tennessee, United States; Tonia Dousay, University of Idaho, United States; Enilda Romero-Hall, University of Tampa, United States; Torrey Trust, University of Massachusetts Amherst, United States; Aaron Kessler, Massachusetts Institute of Technology, United States; Michael Phillips, Monash University, Australia; Scott Morrison, Elon University, United States; Christian Fischer, University of California Irvine, United States; Daniel Krutka, University of North Texas, United States</i>	
<b>Faculty Development: An Online à la carte Menu for Increased Engagement</b> .....	802
<i>Chelsea Chandler &amp; Melissa Gleckler, University of Toledo, United States</i>	
<b>Professional Development Activities to Support Technology Integration Practices</b> .....	810
<i>Yeng Chang, University of Minnesota - Twin Cities, United States</i>	
<b>Preparing Educators to Mitigate Microaggressions Faced by Students of LGBT Families Via Online Professional Development.</b> .....	814
<i>Lisa Craig, Liberty University, United States</i>	
<b>Instructional Design Practices in Teacher Education Programs</b> .....	820
<i>Betul Czerkawski, The University of Arizona, United States; Gerald Ardito, Pace University, United States</i>	
<b>TPEs, TPAs, TPACK, and TETCs: Working together to integrate technology into a methods course</b> .....	825
<i>Lara Ervin-Kassab, San Jose State University, United States</i>	
<b>Let's Get Digital: Developing an Online Professional Development Platform for Faculty and Staff Nationwide</b> .....	829
<i>Sara Fletcher, Amanda Gunter &amp; Justine Mitchell, Physician Assistant Education Association, United States</i>	
<b>Standards-based Teacher Education Course Design</b> .....	833
<i>Kathryn Hanselman, Cong Zou &amp; Leping Liu, University of Nevada, Reno, United States</i>	
<b>Technology Teaching Assistantship Program: Preparing All Teacher Educators to Support Teacher Candidates' Integration of Technology</b> .....	839
<i>Li-Wei Peng, Governors State University, United States</i>	
<b>How can we improve and develop our team teaching in higher education? An invitation to create and join an international network of practitioners.</b> .....	846
<i>Nigel Quirke-Bolt &amp; Molly Daly, Mary Immaculate College (<a href="http://www.mic.ul.ie/">http://www.mic.ul.ie/</a>), Ireland</i>	

<b>Balancing Technology and Pedagogy: Design Elements for Professional Development</b> .....	851
<i>Jennifer Redd, San Jose State University, United States</i>	
<b>Using Diffusion of Innovations Theory to Optimally Plan Professional Development on Game-Based Learning</b> .....	855
<i>Joseph Runciman, Towson University, United States</i>	
<b>Considering Online Communities of Practice as Effective Tools for Pre-Service School Librarian Professional Development</b> .....	862
<i>Mellissa Sanchez, University of North Texas, United States</i>	
<b>Meeting the Teacher Educator Technology Competencies through Online Professional Development for Teacher Education Faculty</b> .....	866
<i>David A. Slykhuis, University of Northern Colorado, United States; Teresa S. Foulger, Arizona State University, United States; Kevin J. Graziano, Nevada State College, United States; Denise A. Schmidt-Crawford, Iowa State University, United States; Mark Hofer, College of William and Mary, United States; John K. Lee, North Carolina State University, United States</i>	
<b>Breaking down the barrier with the Future Classroom Lab: supporting teacher candidates and education professionals with relevant technological tools for the 21st century classroom.</b> .....	871
<i>Ludovic A. Sourdot &amp; Chad. E Smith, Texas Woman's University, United States</i>	
<b>Preparing New Faculty to Teach in a Changing Higher Education Environment: An Exploratory Convergent Mixed Methods Research</b> .....	875
<i>Luis Francisco Vargas-Madriz &amp; Norma Nocente, University of Alberta, Canada</i>	
<b>Leveraging Social Experiments to increase student engagement</b> .....	881
<i>Robin Yap, George Brown College, Canada</i>	
<b>Using Wikis to Scaffold Collaborative Knowledge Building for Pre-service Teachers</b> .....	885
<i>Yuhe Yi, Jing Leng &amp; Xiaoqing Gu, Department of Educational Information Technology, East China Normal University, China</i>	
<b>Developing and Managing a Cohort-Based Doctoral Program in Educational Technology Leadership</b> .....	895
<i>Laura Zieger, Dennissa Brown, Hayet Bensetti-Benbader &amp; Carol Munn, New Jersey City University, United States</i>	

<b>What kind of factor defines students' tolerance for diversity? - An analysis based of International Civic and Citizenship Education Study -</b> .....	899
<i>Shoko Funaki &amp; Satoru Fujitani, Mejiro University, Japan; Motoko Fujitani, Joetsu University of Education, Japan</i>	
<b>Examining the Relationships Between Youths' Online Activities and Different Types of Online Dangers</b> .....	904
<i>Soonhwa Seok, Korea University, Korea (South); Boaventura DaCosta, Solers Research Group, United States</i>	
<b>Online Collaborative Learning in a Global World</b> .....	910
<i>Miri Shonfeld, Kibbutzim College and MOFET, Israel; David Gibson, Curtin University, Australia; Levy Dalit &amp; Tami Seifert, Kibbutzim College of Education, Israel; Elaine Hoter, Talpiot College, Israel; Paul Resta, The University of Texas, United States</i>	
<b>Cross-cutting Themes from the Second International Handbook of Information Technology in Education: Implications for Information Technology in Teacher Education</b> .....	918
<i>Joke Voogt, University of Amsterdam, Netherlands; Gerald Knezek &amp; Rhonda Christensen, University of North Texas, United States; Kwok-Wing Lai, University of Otago, New Zealand</i>	
<b>Schools in Transition: How Teacher Preparation Programs Prepare K-12 Teachers to Teach Online</b> .....	921
<i>Sarah Bryans-Bongey &amp; Kevin J. Graziano, Nevada State College, United States</i>	
<b>Unpacking Network and Discourse of Educators in Professional Learning Communities</b> .....	926
<i>Jemma Kwon &amp; Kristen DeBruler, Michigan Virtual Learning Research Institute, Michigan Virtual, United States</i>	
<b>Illuminating Student Online Work and Research: Learning Analytics to Support the Development of Pre-Service Teacher Digital Pedagogy</b> .....	937
<i>Kathleen Post, East Stroudsburg University, United States</i>	
<b>Developing and Designing a New Innovative Approach for Teachers' Professional Development in the UAE: Wamda Case Study</b> .....	942
<i>Athra Sultan Alawani, Ministry of Education, United Arab Emirates; Abtar Drashan Singh, Hamdan Bin Mohammed Smart University, United Arab Emirates; Mohamed Ally, Athabasca University, Canada</i>	
<b>UX and Instructional Design Guidelines for M-Learning</b> .....	949
<i>Anne-Marie Armstrong, Retired faculty, United States; Marija Franetovic, Lawrence Technical University, United States</i>	
<b>Usability and Usage of a Citizen Science App by Teachers and Students</b> .....	954
<i>Richard Bex, University of Florida, United States; Lisa Lundgren, North Carolina State University, United States; Kent Crippen, University of Florida, United States</i>	



<b>A System for Analyzing and Evaluating Computer-Assisted Second-Language Pronunciation-Teaching Websites and Mobile Apps</b> .....	963
<i>Lynn Henrichsen, Linguistics Department, Brigham Young University, United States</i>	
<b>Developing a Unique Educational Experience for Children Museum using a Mobile Application</b> .....	969
<i>Sevinj Iskandarova, Samy El-Tawab, Oris Griffin &amp; Fariss Mousa, James Madison University, United States</i>	
<b>Sustaining Mobile Learning in Autism Classroom Environments</b> .....	975
<i>Pankaj Khazanchi, Liberty University/ Cobb county School District, United States; Rashmi Khazanchi, Mitchell County School System, United States</i>	
<b>From Virtual to Real: An Expanded Systematic Review of Augmented Reality Learning</b> .....	980
<i>Mark Petrovich Jr., Mamta Shah &amp; Aroutis Foster, Drexel University, School of Education, GLIDE Lab, United States</i>	
<b>Inspiration by way of Pinterest: Tracking educators' use of social media to locate and share classroom resources</b> .....	990
<i>Leanna Archambault &amp; Annie Hale, Arizona State University, United States; Catharyn Shelton, California State University, Stanislaus, United States; Susie Puga, Arizona State University, United States</i>	
<b>I Want My Money and I Want It Now! Automate Documenting Academic Activity for Federal Aid Using a Learning Management System</b> .....	995
<i>Sue Bauer &amp; Susan Hicks, University of Central Florida, United States</i>	
<b>Using Innovative Technologies to Increase Middle School Students' Interest in Space Science</b> .....	1002
<i>Rhonda Christensen &amp; Gerald Knezek, University of North Texas, United States; Troy Cline &amp; Carolyn Ng, NASA Goddard Space Flight Center, United States</i>	
<b>Technology Infused Learning with Digital Natives Promotes Principles for Good Practice</b> .....	1008
<i>Wendy Ford, Nina Sarkar &amp; Christina Manzo, Queensborough Community College - City University of New York, United States</i>	
<b>The Book: A Productivity Tool for the Modern Classroom</b> .....	1015
<i>Ingrid Fossbraaten, California State University, Long Beach, United States</i>	
<b>Visualization of Social and Cognitive Presences for Collaborative Learning Facilitation</b> .....	1020
<i>Yoshiko Goda, Kumamoto University, Japan; Masanori Yamada, Kyushu University, Japan</i>	

<b>Towards an Adaptive Learning Analytics Framework .....</b>	<b>1025</b>
<i>Yasemin Gulbahar &amp; Denizler Yildirim, Ankara University, Turkey</i>	
<b>Data Insight: Helping Districts Use the Right Data for Improving Student Outcomes .....</b>	<b>1033</b>
<i>Rich Huebner &amp; Pamela Moore, Houghton Mifflin Harcourt, United States</i>	
<b>Introducing Educational Psychophysiology .....</b>	<b>1034</b>
<i>Richard Ingram, James Madison University, United States</i>	
<b>Student Perceptions of Virtual Reality Technology for Computer Aided Design: A study to inform curriculum and add to the body of knowledge in an emerging field of technology in the learning environment. ....</b>	<b>1045</b>
<i>Donna Matteson, State University of New York at Oswego, United States</i>	
<b>Analytics of Reading Patterns Based on Eye Movements in an e-Learning System .....</b>	<b>1054</b>
<i>Tsubasa Minematsu, Kaori Tamura, Atsushi Shimada, Shin'ichi Konomi &amp; Rin-ichiro Taniguchi, Kyushu university, Japan</i>	
<b>How the Use of iPad and Smartphones Creates Social Isolation .....</b>	<b>1060</b>
<i>Niaz Makhdum Muhammad, Advancing Social Emotional Learning, United States; Mitch Schneider, The Chicago School of Professional Psychology, United States; Allison Hill &amp; Douglas M. Yau, Advancing Social Emotional Learning, United States</i>	
<b>The Negative Impacts of EdTech: EQ Perspectives .....</b>	<b>1066</b>
<i>Niaz Makhdum Muhammad, Advancing Social Emotional Learning, United States; Mitch Schneider, The Chicago School of Professional Psychology, United States; Allison Hill &amp; Douglas M. Yau, Advancing Social Emotional Learning, United States</i>	
<b>Implementation of an E-Health Observation System Employing Student Self-Checks .....</b>	<b>1072</b>
<i>Masahiro Nagai, Tokyo Metropolitan University, Japan; Noriyuki Matsunami, Faculty of Education, Teikyo University, Japan; Hironori Kobayashi, Murasyo Elementary school, Japan; Yoshiya Morimoto, NDI Solutions, Japan; Masashi Yamada, Wiz Corporation, Japan</i>	
<b>Learning Support System for Providing Page-wise Recommendation in e-Textbooks .....</b>	<b>1078</b>
<i>Keita Nakayama, Masanori Yamada, Atsushi Shimada, Tsubasa Minematsu &amp; Rin-ichiro Taniguchi, Kyushu University, Japan</i>	

<b>A Pilot Study of the Relationship Between Automatic Analytic Scoring and Speech Accuracy: Implications from Log Data on Speech-Training Courseware .....</b>	<b>1086</b>
<i>Yuichi Ono, Takeshi Kato, Shoma Aota &amp; Naoki Takebayashi, University of Tsukuba, Japan; Yuki Toyono, CHieru Co., Ltd., Japan</i>	
<b>The Integrated Knowledge Map for Surveying Students' Learning .....</b>	<b>1092</b>
<i>Akira Onoue, Masanori Yamada, Atsushi Shimada &amp; Rin-ichiro Taniguchi, Kyushu University, Japan</i>	
<b>Engaging Students through a Podcast Assignment in Canvas LMS .....</b>	<b>1101</b>
<i>Taeyeol Park, Georgetown University Medical Center, United States</i>	
<b>Controlled use of multimedia items and other objects in computer-based second language assessment .....</b>	<b>1104</b>
<i>Cristina Perez-Guillot, Universitat Politècnica de Valencia Spain, Spain</i>	
<b>Teachers Paying Teachers? A Guide for Teacher Educators Seeking to Understand Online Teacherpreneurship .....</b>	<b>1109</b>
<i>Catharyn Shelton, California State University, Stanislaus, United States; Leanna Archambault, Arizona State University, United States</i>	
<b>Professional Development for Computer Science Education: Design and Outcomes from a Case Study Teacher .....</b>	<b>1115</b>
<i>Scott Sheridan, Chrystalla Mouza &amp; Lori Pollock, University of Delaware, United States</i>	
<b>A Smart Speaker Application to Assist Japanese Onomatopoeia Learning: A Prototype .....</b>	<b>1124</b>
<i>Takahiro Tagawa &amp; Meng Jin, Kyushu University, Japan; Hitoshi Inoue, College of Healthcare Management, Japan</i>	
<b>Recommending Highlights on Students' E-Textbooks .....</b>	<b>1128</b>
<i>Yuta Taniguchi, Atsushi Shimada, Masanori Yamada &amp; Shin'ichi Konomi, Kyushu University, Japan</i>	
<b>Teach Financial Education with an App .....</b>	<b>1135</b>
<i>Tyonia Wright, Department of Learning Technologies, University of North Texas, United States</i>	
<b>Designing Learning Journals to Enhance Online Discussions among in-Service Teachers in a Graduate Course .....</b>	<b>1137</b>
<i>Qijie Cai, Minnesota State University, Mankato, United States</i>	
<b>Suggested Methods of Effect Size Estimation for Research in Information Technology and Teacher Education .....</b>	<b>1143</b>
<i>Li-Ting Chen &amp; Leping Liu, University of Nevada, Reno, United States</i>	

<b>A Study of The Commercialization, Use, Adoption of EdTech In Public K-12 School</b> .....	1153
<i>Downayne Davis, New Jersey City University, United States</i>	
<b>Bridging the Gap between Computational Thinking and the Integration of ICT into Classroom Teaching and Learning: A Barrier to be Addressed</b> .....	1160
<i>Takahisa Furuta, University of Gunma, Japan; Gerald Knezek, University of North Texas, United States; Rhonda Christensen, Institute for the Integration of Technology into Teaching and Learning, UNT, United States</i>	
<b>Integrating digital media into schools: A Research to Practitioner Approach within Regional School Networks</b> .....	1163
<i>Lisa Gageik, University of Duisburg-Essen, Learning Lab, Germany, Germany</i>	
<b>Study on “Familiarity” When Reading Using an Electronic Medium</b> .....	1168
<i>Kazuki Hosaka, Kamisu Municipal Kamisu First Junior High School, Japan; Takashi Usuzaka, Faculty of education, Ibaraki University, Japan</i>	
<b>A Preliminary Analysis of the Teacher Educator Technology Competency Survey</b> .....	1174
<i>Gerald August Knezek, University of North Texas, United States; Rhonda Christensen, Univeristy of North Texas, United States</i>	
<b>The use of Personal Construct Theory to Research the Benefits and Constraints of Technologies from the Participants’ Perspectives</b> .....	1181
<i>Terri L. Kurz &amp; Robert Kleinsasser, Arizona State University, United States; Ivana Batarelo Koki#, Faculty of Humanities and Social Sciences, University of Split, Croatia</i>	
<b>Female Computer Sciences Learners’ Pathways to STEM Major Choices in Four-Year Universities</b> .....	1185
<i>Ahlam Lee, Xavier University, United States</i>	
<b>eGroup mentoring – an evolving operational model in new ecosystems of tertiary learning</b> .....	1196
<i>Irja Leppisaari, Centria University of Applied Sciences, Finland</i>	
<b>From Paper to Digital: Undergraduate Students’ Perceptions with Open Educational Resources</b> .....	1207
<i>Hong Lin, University of Oklahoma, United States</i>	
<b>Uptake and integration of ICTs for pedagogy in private high schools in Cape Town</b> .....	1216
<i>Peter Madoda &amp; Agnes Chigona, Cape Peninsula University of Technology, South Africa</i>	

<b>Investigating the Effect of a Surprise Created by a Discrepant Event on Preservice Teachers' Learning and Perceptions</b> .....	1225
<i>Kathleen Myers, David Smith, Mohamed Ibrahim &amp; Rebecca Callaway, Arkansas Tech University, United States</i>	
<b>Technology and Teacher Data Literacy: A Study of PreK-12 Educators' Data Literacy Skills</b> .....	1233
<i>Esther Ntuli, Idaho State University, United States; Lydia Kyei-Blankson, Illinois State University, United States</i>	
<b>Integrated Behavior Model as a Framework for Teacher Technology Integration</b> .....	1239
<i>Ogechukwu Ozo-Onyali, Towson University, United States</i>	
<b>Conceptualizing the T in STEM: A Systematic Review</b> .....	1245
<i>Ramya Sivaraj, University of Minnesota, United States; Joshua Ellis, Florida International University, United States; Gillian Roehrig, University of Minnesota, United States</i>	
<b>Scientists Make a Difference: The Results of a STEM Intervention with Elementary Students</b> .....	1255
<i>Daniella Smith, Tandra Tyler-Wood &amp; Stacie Milburn, University of North Texas, United States</i>	
<b>Connecting Classroom Observation Data to Student Achievement Using Observer XT©: Promoting Authentic STEAM Research</b> .....	1260
<i>Carla J Thompson, Ernest Bourget &amp; Byron Havard, University of West Florida, United States</i>	
<b>Teachers and Design: A Literature Review</b> .....	1265
<i>Melissa Warr &amp; Punya Mishra, Arizona State University, United States</i>	
<b>The Vision of Technology in PK-12 Schools through the Lens of the School Administrator</b> .....	1273
<i>Sheila F. Baker, Antonio Corrales &amp; Jana M. Willis, University of Houston-Clear Lake, United States</i>	
<b>Development and validation of a holistic IT-institutional alignment model for higher education institutional performance</b> .....	1279
<i>Jean Claude Byungura, University of Rwanda / Stockholm University, Sweden, Rwanda; Henrik Hansson, Stockholm University, DSV, Sweden</i>	
<b>Gamification playtest of Zombie Ed Tech Apocalypse – For Educational Technology Leaders</b> .....	1291
<i>Lynn Hummel, Bloomsburg University, United States</i>	

<b>An Analysis of the Readiness and Confidence of High School Administrators to Provide Instructional Leadership in Digital School Environments</b> .....	1293
<i>Andrew Shepherd, The University of Central Florida, United States</i>	
<b>Generation Z: Are they as tech-focused as we think?</b> .....	1299
<i>Charles Bruce &amp; Adam Manley, Western Michigan University, United States</i>	
<b>EAL teachers' professional learning about digital literacies: a socio-material perspective</b> .....	1302
<i>Edwin Creely &amp; Ekaterina Tour, Monash University, Australia</i>	
<b>Developing Open Data Spreadsheet Applications for Undergraduate Mass Sections</b> .....	1310
<i>Emese Felvegi &amp; Robert McCarn, University of Houston, United States</i>	
<b>Professional Learning Communities: Meeting the Technology Integration Gap Through Professional Development</b> .....	1316
<i>Jennifer Howze-Owens, Sonimar Villegas &amp; Michelle Paulus, The Chicago School of Professional Psychology, United States</i>	
<b>STEM College-Bound: Relationship of Familial Factors</b> .....	1318
<i>Michelle Peters, Ahmed Abukmail &amp; Jana Willis, University of Houston - Clear Lake, United States</i>	
<b>Student Self-Efficacy in Learning English in a Wearable Virtual Reality Environment</b> .....	1324
<i>Yu-Li Chen &amp; Chun-Chia Hsu, Lunghwa University of Science and Technology, Taiwan</i>	
<b>Design and Development of A Sitting Position Monitoring Tool Based on Wearable Devices</b> .....	1328
<i>Min Mao, Li Ji, Weizhen Xu &amp; Yujiong Liang, East China Normal University, China</i>	
<b>Design and Development of a Wearable Classroom Attention Measurement Tool Based on Sitting Posture</b> .....	1334
<i>Qin Zhang &amp; Min Mao, East China Normal University, China</i>	
<b>Flipping the Lecture: Students Demonstrate Learning with the Panopto Video Capture System</b> .....	1340
<i>Stephen Arnold, University of Arizona, United States</i>	
<b>Research-Based Instructional Design: It's Harder Than You Think!</b> .....	1346
<i>Brooke Blanks, Radford University IMPACT Lab, United States; Anthony Dove &amp; Matthew Dunleavy, Radford University, United States</i>	

<b>Establishing Content Validity and Interrater Reliability for Assessments and Instruments</b> .....	1348
<i>Erik Braun &amp; Gerra Perkins, Northwestern State University of Louisiana, United States</i>	
<b>Constructing a Measurement Model of L2 Complexity in Automated Essay Scoring for Japanese EFL Learners' Writing: Toward a Qualitative and Analytic Evaluation</b> .....	1351
<i>Takeshi Kato, University of Tsukuba, Japan; Yuichi Ono, University of Tsukuba, Japan</i>	
<b>ISTE's Higher Education Recognition Program</b> .....	1357
<i>Sarah McPherson, New York Institute of Technology, United States; Carolyn Sykora, International Society for Technology in Education - ISTE, United States</i>	
<b>How to Assess Learning with Brain in Mind?</b> .....	1362
<i>Ilknur Oded, California State University Monterey Bay, United States; Yaniv Oded, Indiana University, United States</i>	
<b>Providing Initial Teacher Education Students with Flexible Assessment</b> .....	1367
<i>Mitchell Parkes &amp; Peter Fletcher, University of New England, Australia</i>	
<b>Beliefs in Practice: Assessment and Grading Philosophies Among Secondary Education Pre-service Teachers</b> .....	1375
<i>Jay Percell, Illinois State University, United States</i>	
<b>Theoretical Foundations to Design Learner-Generated Digital Media (LGDM) Assessment Rubrics</b> .....	1380
<i>Jorge Reyna, University of Technology Sydney, Australia</i>	
<b>Wants and Haves: Student Perceptions of Practicum Experiences in a Teacher Preparation Program</b> .....	1390
<i>Laura Sujo-Montes, Devon Swanson, Jordan Foster, Chih-Hsiung Tu, Shadow Armfield &amp; Michael Blocher, Northern Arizona University, United States</i>	
<b>Exploration Nature of Technological Creativity</b> .....	1395
<i>shao-I Chiu, DAYEH University, Graduate of Professional Developmental in Education, Taiwan; Hsiu-Yuan Hu, Department of Food Technology and Marketing Management, Taipei University of Maritime Technology, Taiwan; Tung-Yen Chen, Graduate Student, PH. D. Program in Management, Da-Yeh University, Taiwan</i>	
<b>Failing to succeed: The value of failure in creativity</b> .....	1403
<i>Edwin Creely &amp; Michael Henderson, Monash University, Australia; Danah Henriksen, Arizona State University, United States</i>	

<b>Providing Context for Technology Integration: Teacher Candidates Engage in Real-World Data Collection</b> .....	1412
<i>Jordan Foster, Devon Swanson, J. Michael Blocher, Shadow Armfield, Laura Blocher &amp; Laura Sujo-Montes, Northern Arizona University, United States</i>	
<b>Ways to create class assignments that can boost community participation</b> .....	1417
<i>George Kontos, Western Kentucky University, United States</i>	
<b>Looking Beyond the Face Value of the Technology: Preparing 21st Century Pre-Service Teachers to Engage in Creative, Playful, and Innovative Learning</b> .....	1421
<i>Tera Lawson &amp; Nadia Jaramillo Cherrez, Iowa State University, United States</i>	
<b>An Asset-Based Approach to Integrating Formal and Informal Education During Teacher Preparation</b> .....	1427
<i>Daniel A. Tillman, William H. Robertson &amp; Song A. An, The University of Texas at El Paso, United States</i>	
<b>A Preliminary Investigation into Creativity Fostering Behaviors of Maker Teachers in Shanghai</b> .....	1432
<i>Wei Wang &amp; Junhao Shan, East China Normal University, China</i>	
<b>Assessing Creativity in Learning Environments: Developing an Attitudinal Scale</b> .....	1438
<i>Jennifer Weible, Central Michigan University, United States; Tonia Dousay, University of Idaho, United States</i>	
<b>Building Pre-Service Teachers' Capacity to Nurture Young Innovators</b> .....	1443
<i>Stephanie Budhai, Neumann University, United States</i>	
<b>A Study of Teachers Who Implement Instructional Technology in Primary Grades</b> .....	1447
<i>Stacy Joseph, University of North Texas, United States</i>	
<b>They Think What? An Investigation of Preschoolers' Digital Technology and Media Skills and Teacher Candidates' Beliefs</b> .....	1453
<i>Daniel Mourlam, Gabrielle Strouse &amp; Lisa Newland, University of South Dakota, United States</i>	
<b>Showcasing Children's STEM talent: A STEM Night Situation</b> .....	1462
<i>Temitope Olokunde, Albertha Lawson, Susannah Craig &amp; Victor Mbarika, Southern University and A &amp; M College, United States</i>	



<b>Breaking Down University Walls: An On-line Mentoring Program for Pre-Service Teacher Candidates</b> .....	1468
<i>Donna Sanderson, West Chester University, United States</i>	
<b>Relearning of the Teachers: Effect of Training in Universal Design for Learning on Teacher's Knowledge and Skills and Learners' Achievement</b> .....	1471
<i>Khurana Aashna, ASER Centre, Pratham Education Foundation, India, India; Panshikar Apoorva, SNDT Women's University, India</i>	
<b>Assessment of the Influence of the Lecturer's Teaching Strategies on Undergraduate Students' Learning Outcomes in the Use of English in Ondo State University of Science and Technology, Okitipupa, Nigeria</b> .....	1482
<i>Beatrice Adeyemi, Ondo State University of Science and Technology, Okitipupa, Nigeria, Nigeria</i>	
<b>Use of digital tools by high school teachers teaching writing participating in an intervention program to reduce the "discipline block"</b> .....	1489
<i>Orit Avidov-Ungar, Achva Academic College &amp; Open University, Israel; Aliza Amir, Achva Academic College, Israel</i>	
<b>Telling True Stories: Adventures in Multimedia Nonfiction Narrative</b> .....	1494
<i>Fawn Canady, The University of Nevada, Las Vegas, United States; Troy Hicks, Central Michigan University, United States</i>	
<b>Goodreads.com: Using a Social Media Site as an English Teacher-Education Performance Assessment</b> .....	1503
<i>Kristina Doubet, James Madison University, United States</i>	
<b>Low-Stakes Writing using Digital Tools: Fostering Confidence and Fluency in Adolescent Writing Instruction</b> .....	1508
<i>Kristina Doubet, James Madison University, United States; Gena Southall, Longwood University, United States</i>	
<b>Integrating Instructional Technology into the K-12 ESL Classroom</b> .....	1514
<i>Liliana Julio, Universidad Simon Bolivar, Colombia; Erik Kormos, Colegio Karl C. Parrish, United States</i>	
<b>Autolingualism in the Digital Age: The Emergence of Cyber Lingua Franca and Its Impact on Language Education</b> .....	1520
<i>Fusa Katada, Faculty of Science and Engineering, Waseda University, Japan</i>	
<b>Effective technology integration in teacher education</b> .....	1529
<i>Henk La Roi &amp; Roland Bruijn, Windesheim University of Applied Sciences, Netherlands</i>	
<b>The Friendliest English Curriculum Design for All</b> .....	1530
<i>Terumi Miyazoe, Tokyo University of Science, Japan</i>	

<b>Applying existing technologies to support elementary school teachers in teaching English in remote towns in Japan .....</b>	<b>1536</b>
<i>Eri Ono, Hitoshi Susono, Maki Hagino, Kazuyoshi Enomoto, Emiko Onishi, Norihiko Matsuba &amp; Yuya Hasegawa, Mie University, Japan</i>	
<b>Integrating Learning by Design into a Flipped Civil Engineering Design Course .....</b>	<b>1540</b>
<i>Secil Akinci-Ceylan, Evrim Baran &amp; Halil Ceylan, Iowa State University, United States</i>	
<b>Design and Development of a Modular Maker Education Course for Diverse Education Students .....</b>	<b>1546</b>
<i>Jonathan Cohen, Cassandra Gaul, Julia Huprich &amp; Leigh Martin, Georgia State University, United States</i>	
<b>Beyond Boundaries: Pre-Service Teachers' Experiences of Transdisciplinary Education via STEAM Making Projects .....</b>	<b>1556</b>
<i>Zoe Falls, University of Nebraska - Lincoln, United States</i>	
<b>Beyond Content: What Else Did Pre-service Teachers Learn in a Making Course in a Teacher Education Program .....</b>	<b>1563</b>
<i>Yi Jin, Kennesaw State University, United States</i>	
<b>Scaffolding Pedagogical Change: Professional Development to Support Elementary Teachers in Implementing Mobile Maker Kits .....</b>	<b>1569</b>
<i>Robin Jocius, Ashley Andrews &amp; Jennifer Albert, The Citadel, United States</i>	
<b>Are Students Learning from the E-videos? Flipped Classroom Teaching for a Very Large Cohort Engineering Module: An Evaluation report .....</b>	<b>1578</b>
<i>Sudha Kannurao, Ho Peng Ching &amp; Lie Siung Tjen, Temasek Polytechnic, Singapore</i>	
<b>Designing a Blended Makerspace Course for Preservice Teachers in an Undergraduate Technology Minor Program .....</b>	<b>1584</b>
<i>Ozlem Karakaya, Iowa State University, United States</i>	
<b>Preparing Preservice Teachers for “Learning by Making” in Makerspace Communities .....</b>	<b>1594</b>
<i>Ozlem Karakaya, Jiaqi Yu, Asimoula Valai &amp; Amy Updegraff, Iowa State University, United States</i>	
<b>5th/6th Graders and Preservice Teachers Explore Engineering and Coding in a Combined After-School Technology Club/Educational Technology Course .....</b>	<b>1600</b>
<i>Jennifer Kidd, Old Dominion University, United States; Sam Sacks, Old Dominion University, United States; Krishna Kaipa &amp; Kelly Rippard, Old Dominion University, United States</i>	

<b>New Technologies and How to Use Them: 3D and Makerspaces Demystified</b> .....	1606
<i>Lesia Lennex &amp; Justin Elswick, Morehead State University, United States</i>	
<b>Near-Peer Facilitated Making for Underserved Populations: Lessons Learned through Program Evaluation</b> .....	1613
<i>James Marshall, San Diego State University, United States; Edward Price &amp; Charles De Leone, California State University San Marcos, United States</i>	
<b>Informing Recommended Makerspace Outcomes through Linguistic Analytics</b> .....	1624
<i>Kevin Oliver &amp; Jennifer Houchins, NC State University, United States; Robert Moore, Old Dominion University, United States</i>	
<b>The Attitudes and Approaches of Rural Area Students About Robotics in a Diverse Border-Town Community</b> .....	1630
<i>Mehmet Ali Ozer &amp; David Rutledge, New Mexico State University, United States</i>	
<b>Change in Role Identity of an Environmental Science Educator Who Desires to Facilitate Learning by Making</b> .....	1635
<i>Mamta Shah, Mark Petrovich, Aroutis Foster &amp; Raja Schaar, Drexel University, United States; Danielle Chen, University of Pennsylvania, United States</i>	
<b>Preparing Bilingual Teachers to Integrate the Engineering Design Process into Upper-Elementary and Middle School Classrooms</b> .....	1646
<i>Ross C. Teller, Daniel A. Tillman, William H. Robertson, Josefina V. Tinajero &amp; Song A. An, The University of Texas at El Paso, United States</i>	
<b>Preparing Students for the 21st Century</b> .....	1653
<i>Yachi Wanyan, Texas Southern University, United States; Youmei Liu, University of Houston, United States</i>	
<b>Making Inspired by Nature: Engaging Preservice Elementary Teachers and Children in Maker-centered Learning and Biomimicry</b> .....	1660
<i>Douglas Williams, Aimee Barber &amp; Peter Sheppard, University of Louisiana, United States</i>	
<b>So What Happens When the Funding Runs Out? Professional Development for Sustainable Geospatial Technology Integration Initiatives</b> .....	1666
<i>Thomas Hammond &amp; Al Bodzin, Lehigh University, United States</i>	

<b>Implications from a Scale Up of Geospatial Technology Professional Development Program for Secondary Teachers .....</b>	<b>1673</b>
<i>Lori Rubino-Hare &amp; Nena Bloom, Northern Arizona University Center for Science Teaching and Learning, United States; Brooke Whitworth, The University of Mississippi, United States</i>	
<b>Developing Global Competencies Among Youth: Maps Math Media Project .....</b>	<b>1679</b>
<i>Melda Yildiz, New York Institute of Technology, United States</i>	
<b>Globally Connected Mobile Learning: E-Debiyyat (E-Literature) Project .....</b>	<b>1689</b>
<i>Melda Yildiz, New York Institute of Technology, United States</i>	
<b>Technology Binds or Blinds? Different Countries Similar Issues: Part 1 .....</b>	<b>1699</b>
<i>Melda Yildiz, New York Institute of Technology, United States; Tami Seifert, Kibbutzim College of Education, Technology, and Art, Israel; Miri Shonfeld, Kibbutzim College of Education, Israel; Amy Eguchi, Bloomfield College, United States; Sagini Keengwe, University of North Dakota, United States; George Kontos, Western Kentucky University, United States; Adhithya Krishna, New York Institute of Technology, United States</i>	
<b>Print or Electronic Text: Student Preferences and Comprehension .....</b>	<b>1705</b>
<i>Abriel Garrick, College of Education, University of Houston, United States</i>	
<b>The Integration of Media-Related Studies and Competencies into US and German Initial Teacher Education. A Cross-National Analysis of Contemporary Practices and Trends. ....</b>	<b>1709</b>
<i>Jennifer Tiede &amp; Silke Grafe, University of Würzburg, Germany</i>	
<b>Teachers' and Students' Factors as Correlates of Learning Outcomes in Civic Education among Senior Secondary School Students in Osun State, Nigeria .....</b>	<b>1718</b>
<i>Babatunde Adeyemi, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria, Nigeria</i>	
<b>Using Video Creation Assignments to Help Pre-Service Teachers Understand Pedagogy 2.0 .....</b>	<b>1725</b>
<i>Lorraine Beaudin &amp; Olesha Ratther, University of Lethbridge, Canada</i>	
<b>Language Acquisition With Augmented and Virtual Reality .....</b>	<b>1730</b>
<i>Hayet Bensetti-Benbader &amp; Dennissa Brown, New Jersey City University, United States</i>	
<b>A Practical Guide to Integrating the use of Digital Badges within K-12 Classroom Environments .....</b>	<b>1735</b>
<i>Erin Besser, University of South Carolina Aiken, United States</i>	

<b>Reaching Sub-Saharan Africa Learners Innovatively: The Role of Mobile Technologies. A Narrative Review of Literature</b> .....	1741
<i>Newton Buliva, University of North Texas, United States</i>	
<b>Pre-Service Teachers' Intentions towards using Emerging Technologies</b> .....	1746
<i>Laurie O. Campbell, Samantha Heller &amp; Claudia Sutter, University of Central Florida, United States</i>	
<b>Implementing digital literacies: Do pre-service teachers instruct students in the same strategies that they utilize as digital learners?</b> .....	1750
<i>Vicky Cardullo, Auburn University, United States; Nance Wilson, SUNY Cortland 18 Yong Street Cortland NY 13045, United States; Vicky Zygouris-Coe, University of Central Florida Reading Education Program School of Teaching, Learning, and Leadership, United States</i>	
<b>Professional Identities of Preservice Teachers: Planning, Implementing, and Developing Lessons Using Technology</b> .....	1757
<i>Vicky Cardullo, Auburn University, United States</i>	
<b>Facilitating a Robotics Program in an After-school Context: Elementary School Teachers' Perceived Learning</b> .....	1762
<i>Yu-Hui Ching, Sasha Wang, Dazhi Yang, Youngkyun Baek, Steve Swanson &amp; Bhaskar Chittoori, Boise State University, United States</i>	
<b>Pre-service Teachers' Instructional Material Design: An Example of Technology Integrated Design Course</b> .....	1768
<i>Hatice Cilsalar Sagnak, Yozgat Bozok University, Turkey</i>	
<b>Exploring the Lived Experiences and Perceptions of Millennial Nursing Students: Effective Use and Value of Technology on their Educational Achievement</b> .....	1771
<i>Donna Darcy, New York Institute of Technology, United States</i>	
<b>A Case of Course Revision: Cognitive Apprenticeship and Critical Reflection for ICT in Teacher Preparation</b> .....	1779
<i>Rebekah Davis, Kerri Brown Parker &amp; Laura Fogle, NC State University, United States</i>	
<b>Transformation or Resistance? A Case Study of Pre-Service Teachers Engaged in Technology Integration</b> .....	1785
<i>Leticia De Leon, Janet Martinez, Zulmariz Diaz &amp; Michael Whitacre, University of Texas Rio Grande Valley, United States</i>	

<b>Putting the DigCompEdu framework to work in developing countries. Continued</b>	
<b>Professional Development for ICT of teachers in Suriname .....</b>	<b>1793</b>
<i>Koen DePryck, Vrije Universiteit Brussel, IIED &amp; Institute of Knowledge Management, Belgium; Jerry Oldenstam, COVAB and IIED, Suriname; Diana Gaddum-Riedewald, International Institute of Education for Development, Suriname</i>	
<b>Techniques, Processes, and Procedures that Motivate Online Learners .....</b>	<b>1799</b>
<i>Barbara Duchardt, Ron McBride &amp; Paula Furr, Northwestern State University, United States; Steve Horton, Louisiana School for Math, Science, and the Arts, United States</i>	
<b>Pre-Service Teachers' Technological Self-Efficacy - an Irish Perspective .....</b>	<b>1803</b>
<i>Alison Egan, Marino Institute of Education, Ireland; Ann FitzGibbon, Keith Johnston &amp; Elizabeth Oldham, Trinity College Dublin, the University of Dublin, Ireland</i>	
<b>Assessment, Differentiation, &amp; Technology: Meeting Student Needs .....</b>	<b>1813</b>
<i>Jennifer Engle &amp; Kim Livengood, Angelo State University, United States</i>	
<b>Animating the Online Classroom with Technology .....</b>	<b>1818</b>
<i>Galia Fussell &amp; Barbara Green, Purdue University Global, United States</i>	
<b>Using Intelligent Agents as an Outreach Tool on Brightspace LMS .....</b>	<b>1824</b>
<i>Galia Fussell &amp; Barbara Green, Purdue University Global, United States</i>	
<b>Modeling and Exploring HyperDocs as a Method of Instruction .....</b>	<b>1827</b>
<i>Jacqueline Gaffner, Texas Wesleyan University, United States</i>	
<b>Technology Proficiency Self-Evaluation: What are They Reporting? .....</b>	<b>1831</b>
<i>Michelle Giles &amp; Jana Willis, University of Houston-Clear Lake, United States</i>	
<b>Building a Foundation for K-12 Computer Science Teacher Education Using Block-Based Coding .....</b>	<b>1835</b>
<i>Cory Gleasman, University of Georgia, United States; Alex Fegely, Coastal Carolina University, United States</i>	
<b>Detecting Students at Risk: Adventures in AI .....</b>	<b>1841</b>
<i>Owen Hall, Jr., Pepperdine University, United States</i>	
<b>The Design Document as a Strategy for Making Design Thinking Visible: Innovating Practice and Embedding Technology .....</b>	<b>1842</b>
<i>Dawn Hathaway &amp; Priscilla Norton, George Mason University, United States</i>	
<b>Elementary schools teachers' perceptions of integrating digital games in their teaching at different career stages .....</b>	<b>1850</b>
<i>##Merav Hayak#, Open university;, Israel; Orit Avidov Ungar, Achva Academic College, Israel</i>	

<b>The Potential Synergy between Digital Games and Task-based Language Teaching and Learning</b> .....	1857
<i>Nadia Jaramillo Cherrez, Iowa State University, United States</i>	
<b>Comparing BYOD and One-to-One Laptop Programs in Secondary School Classrooms: A Review of the Literature</b> .....	1862
<i>Robin Kay &amp; Derrick Schellenberg, UOIT, Canada</i>	
<b>Supporting Preservice Teachers with Students Response Systems</b> .....	1867
<i>Robin Kay &amp; Diana Petrarca, UOIT, Canada</i>	
<b>Exploring Kahoot! Learning through Gaming in Secondary Science Education</b> .....	1873
<i>Rashmi Khazanchi, Mitchell County School System, United States; Pankaj Khazanchi, Liberty University/ Cobb county School District, United States</i>	
<b>An Exploratory Research on Emerging Technologies in a Transformative Learning Space</b> .....	1880
<i>Younglong Kim, Sarinporn Chaivisit, Asino Tutaleni &amp; Susan Stansberry, Oklahoma State University, United States</i>	
<b>Developing Teaching Practices through the Utilization of Learning Analytics</b> .....	1888
<i>Riina Kleimola, Centria University of Applied Sciences, Finland</i>	
<b>Facilitative Teaching Style: Benefits &amp; Challenges</b> .....	1898
<i>Jennifer Sparks Kontak, The Chicago School of Professional Psychology, United States</i>	
<b>Digital Pharmacists with the Panacea in the New Paradigm: Discursive Formation of a Good Teacher in Digital Era</b> .....	1902
<i>Sejin Lee &amp; Kyungmee Lee, Educational Research, Lancaster University, United Kingdom</i>	
<b>Reconceptualising a good teacher in SMART education: A Foucauldian Critical Discourse Analysis</b> .....	1911
<i>Sejin Lee &amp; Kyungmee Lee, Educational Research, Lancaster University, United Kingdom</i>	
<b>Barrier and Facilitators of Information and Communications Technologies Usage for In-Classroom Teaching</b> .....	1917
<i>Becky Leshem, Orit Avidov-Unger, Adva Margalio &amp; Ety Grobgeld, Achva Academic College, Israel</i>	
<b>Pedagogical Innovation through the Eyes of Teacher Educators</b> .....	1922
<i>Dalit Levy, Kibbutzim College of Education, Israel</i>	

<b>A Path Analysis of Players' Perception of Using Massively Multiplayer Role-Playing Games (MMORPGs) to Learn Second Language (L2) English Vocabulary .....</b>	<b>1931</b>
<i>Juan Li, Clemson University, United States</i>	
<b>Examining the Alignment of Foreign Language Teachers' Technology Use Intention and Actual Usage .....</b>	<b>1938</b>
<i>Haixia Liu &amp; Matthew J. Koehler, Michigan State University, United States; Lina Wang, South China Institute of Software Engineering, China</i>	
<b>Practicing Presence: Simple Self Care for Educators Goes Mobile .....</b>	<b>1944</b>
<i>Lisa Lucas, West Chester University of Pennsylvania, United States; Chelsea LaRose, Downingtown Area School District, United States</i>	
<b>Factors That Impact the Implementation of Virtual Literacy Coaching in the Eastern Caribbean .....</b>	<b>1950</b>
<i>Gregory MacKinnon, Acadia University, Canada; Terry-Ann Marsh-Roberts, Antigua State College, Antigua And Barbuda; Yvonne Jones, T.A. Marryshow Community College, Grenada; Delise Williams, Clarence Fitzroy Bryant College, Saint Kitts And Nevis; Ann Hamilton-Dopwell, St. Vincent &amp; the Grenadines Community College, Saint Vincent And The Grenadines; Colin King, Acadia University, Canada</i>	
<b>Introducing Data Science-Cybersecurity Concepts to High School STEM Teachers during an Intensive Six Week Summer Research Experience .....</b>	<b>1959</b>
<i>Faith Maina, Abdul Serwadda, Susan Mengel, Joseph Wairungu &amp; Nereah Obiero, Texas Tech University, United States</i>	
<b>Three quality attributes - availability, performance and security - of social media services used in higher education .....</b>	<b>1964</b>
<i>Pekka Makkonen, University of Jyväskylä, Finland; Kerstin Siakas, ATEI (Thessaloniki), Greece</i>	
<b>Students' Perceptions and Attitudes toward the use of Flipgrid in the Language Classroom .....</b>	<b>1970</b>
<i>Oraib Mango, California State University, San Bernardino, United States</i>	
<b>Fortnite and the Next Level Discourse: Understanding How Gamers Cultivate Pedagogy in Teacher Education .....</b>	<b>1974</b>
<i>Rick Marlatt, New Mexico State University, United States</i>	
<b>A Comparison Among Trained Facilitators, Face-to-Face, and On-Line Students' on the Presence of Particular Behavioral Attributes Associated with Successful Urban Teaching .....</b>	<b>1975</b>
<i>Sueanne McKinney &amp; Cynthia Tomovic, Old Dominion University, United States</i>	



<b>Technology in Teaching: A Small-Scale Narrative Study of Technology Adoption by Japanese Professors of EFL</b> .....	1981
<i>Ross Miller, Otemon Gakuin University, Japan</i>	
<b>Bring Life to Your Classroom with Robots &amp; Empower Your Students to Engage in Innovative Thinking</b> .....	1987
<i>Carol Munn, Eisenhower School, United States</i>	
<b>Faculty On-boarding: Facilitating Effective and Efficient Virtual Experiences</b> .....	1993
<i>Chelsea Overholt &amp; Kelly Torres, The Chicago School of Professional Psychology, United States</i>	
<b>The Promise and Pitfalls of ePortfolios in a teacher preparation program: Voices of the students</b> .....	1996
<i>Martine Pellerin, Jennifer Branch-Mueller &amp; Robyn Timmons, University of Alberta, Canada</i>	
<b>Interactive White Board Usage for Today and Tomorrow: A Snapshot from a Midwestern K-12 Teacher Preparation Program</b> .....	2005
<i>Jessamay Pesek &amp; Lisa Krall, Bemidji State University, United States</i>	
<b>Self-Efficacy and Gender in Undergraduate Flipped Classroom</b> .....	2012
<i>Arumugam Raman &amp; Raamani Thannimalai, Universiti Utara Malaysia, Malaysia</i>	
<b>Surfing the Open Oceans of Flipped Learning: A Comprehensive Student-Centred Model to Implement Flipped Classrooms</b> .....	2018
<i>Jorge Reyna, University of Technology Sydney, Australia</i>	
<b>Design of An Online STEM Teacher Training Environment: An Authentic Learning Perspective</b> .....	2029
<i>Jiahui Ruan, Bian Wu &amp; Xiaoqing Gu, East China Normal University, China</i>	
<b>A Survey to Investigate Teachers' Perspectives toward Technology Integration in Teaching in Delhi, India</b> .....	2039
<i>Shilpa Sahay &amp; Kara Dawson, University of Florida, United States</i>	
<b>Effect of Different Instructor(s) on CAMPing</b> .....	2045
<i>Emil Salib, Sevinj Iskandarova &amp; Samy El-Tawab, James Madison University, United States</i>	
<b>Steps towards developing a Digital Reading Workshop</b> .....	2054
<i>Astrid Sølvsberg &amp; Marit Rismark, Norwegian University of Science and Technology, NTNU, Norway</i>	

<b>A Conceptual Framework for Teaching Technology Integration: Insights from the Literature</b> .....	2058
<i>Liyan Song, Towson University, United States</i>	
<b>Facilitating and Tracing Identity Change in Augmented Virtual Learning Environments</b> .....	2062
<i>Hamideh Talafian, Amanda Barany, Mark Petrovich Jr., Mamta Shah &amp; Aroutis Foster, Drexel University School of Education, United States</i>	
<b>Teacher Education, Experience, Training, and Course Factors in STEM Implementation: A Look at Engineering</b> .....	2070
<i>Monica Trevathan &amp; Jana Willis, University of Houston-Clear Lake, United States</i>	
<b>Teachers' perceptions on what it means to be a teacher in the digital age</b> .....	2076
<i>Dina Tsybulsky &amp; Orit Avidov-Ungar, Achva Academic College, Israel</i>	
<b>Evaluation Experiment of VR Display Media using a Smartphone for Art Appreciation Classes at Japanese Junior High Schools</b> .....	2085
<i>Shoko Usui, Graduate School of Information Sciences, Tohoku University, Japan; Katsumi Sato, Graduate School of Education, Tohoku University, Japan; Tatsuya Horita, Graduate School of Information Sciences, Tohoku University, Japan</i>	
<b>Technology Practices of Teacher Candidates during Field Experiences: What Are They Using and How Prepared Are They?</b> .....	2091
<i>Debbie VanOverbeke, Paulette Stefanick &amp; Michelle Beach, Southwest Minnesota State University, United States</i>	
<b>Effects of an online- and video-based learning environment on pre-service teachers' self-efficacy beliefs, attitudes towards inclusion and knowledge of inclusive education during practical school experiences</b> .....	2099
<i>Kira Elena Weber, Leuphana University Lüneburg, Germany, Germany; Christopher Neil Prilop &amp; Marc Kleinknecht, Leuphana University Lüneburg, Germany</i>	
<b>Using 3D Virtual Reality to Generate Awareness about Women Pop Art Artists</b> .....	2106
<i>Monique Woodard, Drexel University, United States</i>	
<b>Exploring the influences of immersive virtual reality pre-service teacher training simulations on teacher efficacy</b> .....	2112
<i>Heoncheol Yun, Chonnam National University, Korea (South); Sanghoon Park, University of South Florida, United States; Jeeheon Ryu, Chonnam National University, Korea (South)</i>	

<b>Quality of Preservice Teachers’ Academic Feedback: Evidence from Instructional Videos</b> .....	2117
<i>Amani Zaier &amp; Faith Maina, Texas Tech University, United States; Ismahan Arslan-Ari, University of South Carolina, United States</i>	
<b>The Restaurant Game: a NEWTON PROJECT Serious Game for C Programming Courses</b> .....	2121
<i>Dan Zhao, Dublin City University, Ireland; Cristina Muntean, National College of Ireland, Ireland; Gabriel Muntean, Dublin City University, Ireland</i>	
<b>Learning Productive Mathematical Talk Moves Through Mix-Reality Simulation: The case of Pre-service Elementary Teachers in a Hispanic Serving Institution.</b> .....	2129
<i>Jair Aguilar &amp; James Telese, The University of Texas Rio Grande Valley, United States</i>	
<b>Mountains of Absolutely Terrifying Height (MATH) – Creating a Serious Games through Design-Based Research</b> .....	2134
<i>Marc Beutner, University of Paderborn, Germany; Rasmus Pechuel, Ingenious Knowledge, Germany</i>	
<b>Mathematical Mediation: From Raw Experience to Spreadsheets via Data Tables.</b> .....	2141
<i>Michael Connell, University of Houston-Downtown, United States</i>	
<b>Exploring online professional development for enhancing elementary teachers’ mathematical skills and instructional effectiveness</b> .....	2148
<i>Anthony Dove, Brooke Blanks, Matthew Dunleavy &amp; Thomas Bennett, Radford University, United States</i>	
<b>The Depth and Breadth of Learning how to Trade Stocks through Simulated Play</b> .....	2152
<i>Terri L. Kurz, Arizona State University, United States; Ivana Batarelo Koki#, Faculty of Humanities and Social Sciences, University of Split, Croatia; Višnja Novosel, Faculty of Humanities and Social Science, University of Zagreb, Croatia</i>	
<b>Digital Math Games: Importance of Strategy and Perseverance on Elementary Children’s Learning Opportunities</b> .....	2157
<i>Kristy Litster, Patricia Moyer-Packenham, Jill Ashby, Allison Roxburgh &amp; Joseph Kozlowski, Utah State University, Mathematics Education and Leadership, United States</i>	
<b>How the Balance of Gaming and Mathematics Elements Effects Student Learning in Digital Math Games</b> .....	2163
<i>Kristy Litster &amp; Patricia Moyer-Packenham, Utah State University, Mathematics Education and Leadership, United States</i>	

<b>Creating Lesson Designing Map by Using a Concept Mapping Tool .....</b>	<b>2173</b>
<i>Tadashi Misono, Shimane University, Japan; Yuki Watanabe, Tokyo University of Science, Japan</i>	
<b>Preservice Teachers' Content Knowledge and Technological Content Knowledge on Rational Functions .....</b>	<b>2177</b>
<i>Kyunghee Moon, University of West Georgia, United States</i>	
<b>A Research-Based Argument in Favor of Low-Stakes Intermittent Testing in Math Classrooms .....</b>	<b>2182</b>
<i>Caroline Morales, The Chicago School of Professional Psychology; STEAM Academy Lexington, United States; Aubrey Statti, Chicago School of Professional Psychology, United States</i>	
<b>Math Snacks Early Algebra: Successes and Challenges of a Research Design for Computer-Based Games in Mathematics Classrooms .....</b>	<b>2185</b>
<i>Sara Morales, Karen Trujillo, Gaspard Mucundanyi &amp; Ruth Torres Castillo, Math Snacks, New Mexico State University, United States</i>	
<b>How Design Features Promote Children's Awareness of Affordances in Digital Math Games .....</b>	<b>2192</b>
<i>Patricia Moyer-Packenham, M. Jill Ashby, Kristy Litster, Allison Roxburgh &amp; Joseph S. Kozlowski, Utah State University, United States</i>	
<b>Relationships between Mathematical Language, Representation Connections, and Learning Outcomes in Digital Games .....</b>	<b>2201</b>
<i>Patricia Moyer-Packenham, Kristy Litster, Allison L. Roxburgh, Joseph S. Kozlowski &amp; M. Jill Ashby, Utah State University, United States</i>	
<b>An Attempt to Analyze Mathematical Question-solving Processes Using STACK .....</b>	<b>2210</b>
<i>Yasuyuki Nakamura, Nagoya University, Japan; Yuko Ichikawa, National Institute of Technology, Tokyo College, Japan; Yoshinori Miyazaki, Shizuoka University, Japan; Kentaro Yoshitomi, Osaka Prefecture University, Japan; Saburo Higuchi, Ryukoku University, Japan; Takahiro Nakahara, Sangensha, LLC., Japan</i>	
<b>A Mixed Method Analysis of Student Achievement Dilemma: How Do Ethnicity and Socio-Economic Status Affect STEM Academy Students' Achievement Levels in Algebra .....</b>	<b>2214</b>
<i>Mehmet Ali Ozer &amp; David Rutledge, New Mexico State University, United States; Mucahit Ozer, Van Yuzuncu Yil University, Turkey</i>	
<b>Interdisciplinarity of the teaching of proportionality through the production and processing of coffee .....</b>	<b>2219</b>
<i>Mercy Pena-Morales, Maria del Pilar Narvaez &amp; Lizette Polania, Universidad Surcolombiana, Colombia</i>	

<b>Teaching statistics online: Building a course using quality matters and universal design for learning .....</b>	<b>2226</b>
<i>Melanie Shores, The University of Alabama at Birmingham, United States</i>	
<b>Stop-Motion Animation as a Tool for Assessing Preservice Early Childhood and Elementary Teachers' Understanding of Connections among Mathematical Representations and Computational Algorithms .....</b>	<b>2230</b>
<i>Amanda Thomas &amp; Kelley Buchheister, University of Nebraska–Lincoln, United States</i>	
<b>Teachers Attitudes &amp; Behaviors about Computer-Based Games as Learning Tools in Mathematics Classrooms .....</b>	<b>2237</b>
<i>Ruth Torres Castillo, New Mexico State University, United States</i>	
<b>Developing Pre-Service Teachers' Understanding of Conic Sections and Axiomatic Geometry with Dynamic Geometry Software .....</b>	<b>2243</b>
<i>Aaron Trocki, Elon University, United States</i>	
<b>Elementary Preservice Teachers' Perceptions of Modeling as a Tool for Instruction .....</b>	<b>2247</b>
<i>Ginger S. Watson, University of Virginia, United States; Mary C. Enderson, Old Dominion University, United States</i>	
<b>Investigating the development of pre-service teachers' spatial ability in a technology enhanced environment .....</b>	<b>2253</b>
<i>H. Bahadır Yanik, Anadolu University, Turkey; Terri L. Kurz, Arizona State University, United States; Feyza Kurban, Necati Topay Mesleki ve Teknik Anadolu Lisesi, Turkey</i>	
<b>Implementing Socially Relevant Problem-Based Computer Science Curriculum at the Elementary Level: Students' Computer Science Knowledge and Teachers' Implementation Needs .....</b>	<b>2257</b>
<i>Thomas Brush, Anne Ottenbreit-Leftwich, Kyunghin Kwon &amp; Michael Karlin, Indiana University, United States</i>	
<b>The Influence of Science Teachers on High School Students' Science Motivation: An Analysis Using a Nationally Representative Large-Scale Data Set .....</b>	<b>2267</b>
<i>Adem Ekmekci, Rice University, United States; Danya Serrano Corkin, University of Houston-Downtown, United States</i>	
<b>Supporting Pre-service Science Teachers' Beliefs, Self-confidence, and Attitudes Towards Technology Integration .....</b>	<b>2273</b>
<i>Joshua Ellis, Florida International University, United States; Angelica Pazurek, University of Minnesota, United States</i>	

<b>Examining the Role of Mentor Teacher Support in a Professional Learning Experience for Preservice Teachers on Integrating Computational Thinking into Elementary Science Education .....</b>	<b>2281</b>
<i>Diane Jass Ketelhut, University of Maryland, United States; Emily Hestness, University of Maryland, College Park, United States; Lautaro Cabrera, Hannoori Jeong, Jandelyn Plane &amp; J. Randy McGinnis, University of Maryland, United States</i>	
<b>Developing a Masters of Science Cybersecurity Engineering Curriculum for Information Technology .....</b>	<b>2286</b>
<i>Michael Jonas, University of New Hampshire at Manchester, United States</i>	
<b>Communities and Clusters: User Interactions in an Online Discussion Forum for Computer Science Education .....</b>	<b>2291</b>
<i>Sukanya Kannan Moudgalya &amp; K. Bret Staudt Willet, Michigan State University, United States</i>	
<b>Flipped vs. Traditional Classrooms in High School Chemistry: A Case for Emphasizing Quality of Implementation .....</b>	<b>2299</b>
<i>Robin Kay &amp; Kelsey Dermott, UOIT, Canada</i>	
<b>An Examination of Teachers' Perspectives about STEM Integration .....</b>	<b>2306</b>
<i>Judy Lambert, University of Toledo, United States; Alan Gong, Keene State College, United States; Michelle Arbogast, University of Toledo, United States</i>	
<b>Crash Helmet Design, Prototyping, and Testing: An Egg-Citing PBL for High School Physics Courses .....</b>	<b>2314</b>
<i>Camille McCue &amp; Alexis Hilts, Adelson Educational Campus, United States</i>	
<b>Teaching Tip: Flipping the Class to Engage Students in Learning Programming Algorithms .....</b>	<b>2320</b>
<i>Cristina Muntean, National College of Ireland, Ireland</i>	
<b>Exploring the Role of Graduate Teaching Assistants in an Immersive VR Laboratory Experience .....</b>	<b>2326</b>
<i>Corey Payne, Shalaunda Reeves, Kent Crippen &amp; Brian Harfe, University of Florida, United States</i>	
<b>Profiling Undergraduate Research Experiences in Teacher Education .....</b>	<b>2330</b>
<i>Keagan Smith, University of Idaho, United States; Madeline Burgin, Molly Sergent, Rachel Swanson &amp; Jennifer L. Weible, Central Michigan University, United States; Tonia A. Dousay, University of Idaho, United States</i>	

<b>Elementary Informal Engineering Experiences and Participation in Later STEM Experiences</b> .....	2335
<i>Kimberly Brooke Spotts &amp; Katherine Dabney, Virginia Commonwealth University, United States; Gerhard Sonnert, Harvard Science Education Department, United States; Philip Sadler, Harvard University, United States</i>	
<b>Elementary Informal STEM and Participation in Later STEM Experiences</b> .....	2340
<i>Kimberly Brooke Spotts, Virginia Commonwealth University, United States; Katherine Dabney, Department of Teaching and Learning, Virginia Commonwealth University, United States; Gerhard Sonnert &amp; Philip Sadler, Science Education Department, Harvard-Smithsonian Center for Astrophysics, United States</i>	
<b>Unwrapping the Magic of Sketchnotes: How Drawing Improves Comprehension and Retention During Science Learning with Fifth Graders</b> .....	2345
<i>Sylvia Sykula, University of Houston, United States</i>	
<b>Influence of Teachers' Utilization of Different Modes of Assessment on Junior Secondary School Students' Achievement in Social Studies in Osun State Nigeria.</b> .....	2351
<i>Babatunde Adeyemi, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria, Nigeria</i>	
<b>Bridging STEM and the Civic Mission of Social Studies: Integrating Spatial Reasoning &amp; Computational Thinking Into Decision-Focused Secondary Social Studies Instruction</b> .....	2359
<i>Thomas Hammond &amp; Julia Oltman, Lehigh University, United States</i>	
<b>Teaching of Middle Grades and Young Adult Social Studies With Emerging Technologies in Urban Schools</b> .....	2364
<i>Erik Kormos, Colegio Karl C. Parrish, United States</i>	
<b>Investigating the Learning Impact of Game-based Learning when Teaching Science to Children with Special Learning Needs</b> .....	2371
<i>Nour El Mawas, National College of Ireland, Ireland; Marilena Bratu, Universitatea din Bucure#ti, Romania; Dorothea Caraman, Siveco Romania, Romania; Cristina Hava Muntean, National College of Ireland, Ireland</i>	
<b>Possibility of Digital Storytelling as Career Education for the 'Half' Coming of Age</b> .....	2376
<i>Kumi Takeichi, Tokaigakuen University Faculty of Humanities, Japan</i>	
<b>Secondary Special Education Teachers' Digital Literacy: Identifying Professional Development Needs Within a Curriculum</b> .....	2378
<i>Michael Humphrey, Boise State University, United States; Patrick Lowenthal, Boise State Univeristy, United States; Quincy Conley, Pearson, United States; Alison Lowenthal, Vocational Rehabilitation, Idaho, United States</i>	

<b>Special Educators Confidence in Managing Challenging Behaviors of Students with Disabilities</b> .....	2384
<i>Donavan Moore, Lisa Simpson, Andrea Goholler &amp; Peg Hughes, San Jose State University, United States</i>	
<b>Students with Learning Disabilities, Pair Programming And Situational Motivation</b> .....	2390
<i>Shana Pribesh, Wu He, Silvana Watson, Debra Major, Li Xu &amp; Ling Li, Old Dominion University, United States; Xin Tian, Kennesaw State University, United States; Anjee Gorkhali &amp; Yuming He, Old Dominion University, United States</i>	
<b>Including Students with Special Needs Into an Inclusion Science Classroom: Are Students Acquiring Skills for Future STEM Jobs?</b> .....	2400
<i>Tandra Tyler-Wood, University of North Texas, United States; Japari Ganama, University of North Texas, Denton Texas, United States</i>	
<b>Technology and Special Populations</b> .....	2408
<i>Tyonia Wright, Department of Learning Technologies, University of North Texas, United States</i>	
<b>Reflective Teaching to Enhance Technology Integration</b> .....	2411
<i>J. Michael Blocher, Tina Chaseley, Shadow Armfield, Laura Blocher &amp; Laura Sujo-Montes, Northern Arizona University, United States</i>	
<b>Teachers' TPACK Evolvement in A Technology-Mediated Elementary Science Innovation: A Translation Perspective</b> .....	2417
<i>Yin Hong Cheah, The University of Texas at Austin, United States; Ching Sing Chai, The Chinese University of Hong Kong, Hong Kong; Yancy Toh, National Institute of Education, Nanyang Technological University, Singapore</i>	
<b>A case study of a STEM teacher's development of TPACK in a teacher preparation program</b> .....	2423
<i>Mary C. Enderson, Old Dominion University, United States; Ginger S. Watson, University of Virginia, United States</i>	
<b>Predicting Teacher Candidates' Future Use of Technology: Developing a Survey using the Theory of Planned Behavior</b> .....	2431
<i>Teresa Foulger, Ray Buss, Man Su, Jodie Donner &amp; Keith Wetzel, Arizona State University, United States</i>	
<b>Visionary Guidelines, Challenges, and Solutions for Adopting a Technology Infusion Approach: Suggestions from Leaders in the Field</b> .....	2438
<i>Teresa Foulger, Arizona State University, United States; Jon Clausen, Ball State University, United States</i>	
<b>Topics and Sequences in Experienced Teachers' Instructional Planning: Addressing a ~30-year Literature Gap</b> .....	2443
<i>Mark Hofer &amp; Judi Harris, William &amp; Mary School of Education, United States</i>	



<b>What do published abstracts reveal about the TPACK research community? Let us tell you!</b> .....	2459
<i>Aaron Kessler, Massachusetts Institute of Technology, United States; Michael Phillips, Monash University, Australia</i>	
<b>Makerspaces for Developing TPACK: A Self-Directed Creative Exploration for Learning Mathematics</b> .....	2463
<i>Anjali Khirwadkar &amp; Candace Figg, Brock University, Canada</i>	
<b>Multimedia Case-based Learning Sports Injury Assessment Educational Tool: Using TPACK principles to enhance athletic therapy education</b> .....	2469
<i>Colin King &amp; Gregory MacKinnon, Acadia University, Canada</i>	
<b>Deepening Natural Curiosity: The Future of PBL Design</b> .....	2475
<i>Dayna Laur &amp; Timothy Kubik, Project ARC, LLC, United States</i>	
<b>Understanding Teacher Candidate TPACK while Participating in a STEM Professional Development School Partnership Program</b> .....	2479
<i>Daniel Mourlam, University of South Dakota, United States</i>	
<b>Tracking T-dimensional TPACK in Elementary Preservice and Clinical Teachers</b> .....	2489
<i>Robin Nelson, University of Texas at San Antonio, United States</i>	
<b>Experiences, Discourse and Critical Reflections Reveal an Innovative Online Instructional Combination</b> .....	2499
<i>Margaret Niess, Oregon State University, United States</i>	
<b>A construct map for TPACK: developing an empirically derived description of increasing TPACK proficiency</b> .....	2508
<i>Ralph Saubern, Monash University, Australia; Daniel Urbach, Australian Council for Educational Research, Australia; Matthew Koehler, Michigan State University, United States; Michael Phillips, Monash University, Australia</i>	
<b>Introducing SW-TPACK</b> .....	2517
<i>Norma Schropshire, University of St. Thomas, School of Social Work, United States</i>	
<b>A Rasch Analysis of a TPACK Assessment Instrument and Online K-12 Teachers in the United States</b> .....	2524
<i>Joshua Singer, Lincoln County School District, United States; Berhane Teclehaimanot, University of Toledo, United States</i>	

<b>We Aren't There Yet: A Progression of Literature on TPACK Measures to Assess Technology Integration</b> .....	2534
<i>Man Su &amp; Teresa Foulger, Arizona State University, United States</i>	
<b>Professional Development for Middle Leader Teachers: ICT Integration in Schools in Japan</b> .....	2543
<i>Kosuke Terashima, Osaka Kyoiku University, Japan</i>	
<b>The Hypocrisy of Democracy and Internet Filtering in American Education</b> .....	2548
<i>Linda Flannelly, Lindenhurst Public Schools, United States</i>	
<b>Rural Elementary Teachers' Access to and Use of Technology Resources in STEM Classrooms</b> .....	2549
<i>Amanda Thomas &amp; Zoe Falls, University of Nebraska–Lincoln, United States</i>	
<b>Beyond TPACK: Expanding Technology and Teacher Education to Systems and Culture</b> .....	2558
<i>Melissa Warr, Punya Mishra &amp; Ben Scragg, Arizona State University, United States</i>	
<b>CyberSecurity and Technology: How Do They Fit into a Science Classroom?</b> .....	2561
<i>Andrea Burrows &amp; Mike Borowczak, University of Wyoming, United States</i>	
<b>Analyzing a Biology lesson plan for TPACK alignment</b> .....	2563
<i>Yudi Zhu, Farjahan Shawon &amp; Tonia A. Dousay, University of Idaho, United States; Jennifer L. Weible, Central Michigan University, United States</i>	
<b>The UDL/SAMR Model: Online Courses in Higher Education</b> .....	2570
<i>Debra Bauder, University of Louisville, United States; Katherine Cooper, Jefferson County Public Schools, United States; Thomas Simmons, University of Louisville, United States</i>	
<b>Listening to Students: What They Can Tell Us about Universal Design for Learning</b> .....	2575
<i>Nancy Chapko, Gateway Technical College, United States</i>	
<b>Inclusive Instructional Design Efforts Around the World</b> .....	2579
<i>Elizabeth Dalton, Dalton Education Services International, United States; Susie Gronseth, University of Houston, United States; Cindy Anderson, Roosevelt University, United States; Kevin Anderson, Michigan State University, United States; Aashna Khurana, ASER Centre, Research Unit, Pratham Education Foundation, India</i>	

<b>UDL and the University: Understanding the Utility and Affordances of Universal Design for Learning in Postsecondary Contexts</b> .....	2582
<i>Kathryn R. Green, Michigan State University, United States</i>	
<b>The UDL and TIM as Frameworks for Understanding First Year Teachers' Technology Integration Proficiency</b> .....	2591
<i>Lisa Harris &amp; Lindsay Yearta, Winthrop University, United States</i>	
<b>Science for All: Making science instruction equitable and accessible for English Learners</b> .....	2596
<i>Jeanne Ingle &amp; Heather Pacheco-Guffrey, Bridgewater State University, United States</i>	
<b>Research about Universal Design for Learning: Moving Beyond What We Think We Know</b> .....	2601
<i>Cynthia Okolo, Ian Clemente &amp; Shawn Daley, Michigan State University, United States</i>	
<b>The Mother Tongue Type Teaching Method of Telecom Technical Course</b> .....	2608
<i>Dequan Yang, Li Ji &amp; Min Mao, East China Normal University, China</i>	
<b>Understanding the Attitudes of Students with Special Needs toward Virtual Assistive Technology</b> .....	2614
<i>Xin Bai, York College, City Univ. of New York, United States</i>	
<b>Integrating a Virtual Road Rally and Interactive Crossword Puzzles to Bolster Online Conference Attendance</b> .....	2619
<i>Erik Bean &amp; David Proudfoot, University of Phoenix, United States</i>	
<b>Augmented Reality: Changing the Reality of Your Classroom</b> .....	2623
<i>Katherine Cooper, Greater Louisville Education Cooperative, University of Louisville, United States; Debra Bauder &amp; Thomas Simmons, University of Louisville, United States</i>	
<b>The Effectiveness of a Digital Textbook as a Supporting Tool on Japanese Dyslexic EFL Learners</b> .....	2626
<i>Akari Hirano &amp; Yuichi Ono, University of Tsukuba, Japan</i>	
<b>Teacher Attitudes Towards the LMS, Canvas</b> .....	2632
<i>Stacy Joseph, University of North Texas and Forney ISD, United States</i>	

<b>Teacher Technology Decisions for Inclusive Classrooms in Technology and Engineering Concepts Education</b> .....	2638
<i>Gilbert Kalonde, Montana State University, United States; Rabab Mousa, Imam Abdulrahman Bin Faisal University - College of Science and Humanities, Saudi Arabia</i>	
<b>Animation generation method for facilitating observation of the flow of game and players' motion in karate</b> .....	2655
<i>Kazumoto Tanaka, Kindai university, Japan</i>	
<b>What Should Special Education Preservice Teachers Know about Assistive and Instructional Technology? Voices from the Field and Implications for Teacher Preparation</b> .....	2659
<i>Xiuwen Wu, National Louis University, United States</i>	
<b>Twitter as a Topic Analysis Tool for Autism Spectrum Disorder: A Text Mining Approach</b> .....	2669
<i>Okan Arslan &amp; Fethi Inan, Texas Tech University, United States</i>	
<b>Social Media Platforms to Support Teacher Educators</b> .....	2674
<i>Terrie Bethea-Hampton, Campbell University, United States; Ashley Johnson-Holder, Fayetteville State University, United States</i>	
<b>Exploring Continuity and Change in Educators' Professional Learning Networks</b> .....	2680
<i>Jeffrey Carpenter, Elon University, United States; Daniel Krutka, University of North Texas, United States; Torrey Trust, University of Massachusetts Amherst, United States</i>	
<b>Exploring How and Why Educators Use Instagram</b> .....	2686
<i>Jeffrey Carpenter, Scott Morrison, Madeline Craft &amp; Michalene Lee, Elon University, United States</i>	
<b>Obstacles, Travails, and Barriers, Oh My! Educators' Perspectives on Challenges in Professional Social Media Use</b> .....	2692
<i>Jeffrey Carpenter, Elon University, United States; Stephen Harvey, Ohio University, United States</i>	
<b>Spam, Spam, Spam, Spam: Methodological Considerations and Challenges for Studying Educators' Twitter Use</b> .....	2702
<i>Jeffrey Carpenter, Elon University, United States; Matthew Koehler &amp; K. Bret Staudt Willet, Michigan State University, United States; Spencer P. Greenhalgh, University of Kentucky, United States</i>	
<b>Tools, Processes, Participation: Social Media for Learning, Teaching, and Social Change</b> .....	2712
<i>Benjamin Gleason, Iowa State University, United States; Marie Heath, Loyola University of Maryland, United States</i>	

<b>Connecting Pre-Service Teachers with Professional Networks: Semester Long Use of Twitter in Teacher Education .....</b>	<b>2718</b>
<i>Nandita Gurjar, University of Northern Iowa, United States</i>	
<b>Embedding Social Media to Enhance Social Presence: Perceived Learning and Cognitive Engagement in an Online Graduate Course .....</b>	<b>2730</b>
<i>Nandita Gurjar, University of Northern Iowa, United States</i>	
<b>#teacheridentity: Using Twitter to Capture Reflective Modes of Pre-Service Teachers .....</b>	<b>2740</b>
<i>Shannon Prince, Michigan State University, United States</i>	
<b>Like Me! Follow Me! A Grounded Theory of Adolescents' Public Posts on Instagram .....</b>	<b>2772</b>
<i>Thitirat Sriplo &amp; Michael Thomas, University of Illinois at Chicago, United States</i>	
<b>#Edchat is Bigger, But Better Only for Some: Revisiting How and Why Educators Use Twitter .....</b>	<b>2778</b>
<i>K. Bret Staudt Willet, Michigan State University, United States</i>	
<b>Educators on the Front Page of the Internet: Education-Related Subreddits as Learning Spaces .....</b>	<b>2787</b>
<i>K. Bret Staudt Willet, Michigan State University, United States; Jeffrey Carpenter, Elon University, United States</i>	
<b>Current Research and Evaluation in Inclusive Learning Around the World: Early Childhood Classrooms in China .....</b>	<b>2796</b>
<i>Janet Arndt, Gordon College, United States; Nili Luo, Southwest College, United States</i>	
<b>Creating UDL Learning and Teaching Strategies to Address the Under Representation of Present-Day Indigenous Perspectives .....</b>	<b>2800</b>
<i>Kerry Armstrong, Brenda Boreham &amp; Terri Mack, Strong Nations, Canada</i>	