iCERi 2021

14TH INTERNATIONAL CONFERENCE OF EDUCATION, RESEARCH AND INNOVATION

CONFERENCE PROCEEDINGS

8-9 NOVEMBER 2021
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ICERI2021 Proceedings
14th International Conference of Education, Research and Innovation
November 8th-9th, 2021
Virtual Conference

Edited by
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Agustín López Martínez, *University of Barcelona, Spain*
Ignacio Candel Torres, *Capgemini, Spain*

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Preface

ICERI2021 Conference Proceedings contain selected and revised papers from the 14th International Conference of Education, Research and Innovation.

ICERI Conference is an annual meeting point for lecturers, researchers, technologists and professionals from the educational sector. Since the year 2008, ICERI had always been annually held as an in-person conference, but due to the COVID-19 outbreak, this edition was held on-line.

ICERI2021 was held on the 8th and 9th of November 2021 at international level, welcoming 1242 delegates from universities and educational institutions from more than 70 different countries.

The main objective of ICERI2021 was to offer a platform where experts could present and share their experiences and innovations in Education and Educational Research.

The scope of ICERI2021 included the following topics: COVID19 Distance Learning, Education Practice Trends in Primary and Secondary education, Best practices in Higher education and Post-graduate Education, Teacher Training and Support, Curriculum Design, Pedagogical Innovations, Flipped Learning, Collaborative and Problem-based Learning, Creativity and Design Thinking, Inclusive Learning, Cultural Diversity and Special Education, Career Development and Training, Experiences in Educational Research, Research Management, International Projects, Evaluation and Assessment, University/Industry Experiences, e-Learning, m-learning, Massive Open Online Courses (MOOC), Social and Digital Media, Educational/Serious Games and Software, Digital Libraries and Repositories, e-Portfolios.

ICERI2021 also provided many different networking activities where participants could interact with other delegates for future cooperation.

In addition to the Technical Program, ICERI2021 program also offered different plenary sessions delivered by keynote speakers in the field of education (videos available at IATED Talks, https://iated.org/talks/).

The ICERI2021 International Program Committee consisted of members coming from many different countries. We wish to thank the program committee members who conducted a blind peer review process to guarantee the quality of the contributions. A meticulous job in selecting papers for publication was conducted. The following points were evaluated: information content, general structure, clarity, relevance, originality, relation to the conference topics and disciplines. The language of the publication was exclusively English.

Moreover, ICERI aims to publish conference proceedings that contain original research articles of high-quality meeting the expected ethical standards. All authors publishing in ICERI2021 agreed the IATED copyright transfer. IATED guarantees the high technical and professional quality of the publications and that good practice and ethical standards are maintained. More information about the publication ethics is available at: https://iated.org/publication_ethics

Finally, we wish to thank all members, participants and delegates who were actively involved in this ICERI2021 conference and who made it possible, specially, during these difficult COVID times.

Luis Gómez Chova
Agustín López Martínez
Ignacio Candel Torres

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Organizing Committee

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Keynote Speakers

ICERI2021 Keynote Speakers

Marc Brackett, *Yale University, United States*

Deborah Kimathi, *Dignitas, Kenya*

David White, *University of the Arts London, United Kingdom*

José Antonio Bowen, *Association of American Colleges and Universities, United States*

Jill Sitnick, *Microsoft, United States*

Marc Brackett. Yale University (USA)

Keynote Speech: Permission To Feel: The Power of Emotional Intelligence to Achieve Success in School and Life
Emotions influence learning, decision making, relationships, physical and mental health, creativity, and performance. Our wise use of emotion is especially important to our success. In my presentation, I will (1) describe our recent large-scale studies on the emotional lives of children and adults, including pre and post COVID-19, (2) share our Center's model of emotional intelligence, (3) present our evidence-based approach to social and emotional learning (SEL), RULER, which has been adopted by over 3,000 schools across the globe, including Spain, and (4) provide participants with research-based tools to build emotional intelligence and enhance personal and professional success.

Biography: Marc Brackett, Ph.D., author of "Permission To Feel", is founding director of the Yale Center for Emotional Intelligence and a professor in the Child Study Center, Yale School of Medicine at Yale University. His grant-funded research focuses on the role of emotions in learning, decision making, creativity, relationship quality, wellbeing, performance, and organizational climate; the measurement of emotional intelligence; and the influence of emotional intelligence training on key life outcomes. Marc has published over 150 scholarly articles, received numerous awards, and is featured regularly in popular media outlets such as the New York Times, Good Morning America, CBS This Morning, and The Today Show. He also is on the board of directors for the Collaborative for Academic, Social, and Emotional Learning (CASEL). Marc is the lead developer of RULER, a systemic, evidence-based approach to social and emotional learning (SEL) that has been adopted by over 3,000 public, charter, and independent pre-school through high schools across the United States and in other countries, including Australia, China, England, Italy, Mexico, and Spain. Research shows that RULER boosts academic performance, decreases bullying, enriches classroom climates, reduces teacher stress and burnout, and enhances teacher instructional practices. Marc speaks to tens of thousands of people each year and has been the keynote speaker at different events including the White House, U.S. Departments of Education, Justice, and Defense, the Surgeon General's office, the New York Times, Microsoft, Google, Facebook, and Twitter, as well as dozens of education conferences.

Deborah Kimathi. Dignitas (Kenya)

Keynote Speech: Equipping and Supporting Resilient School Leaders
Leadership capability is the biggest determinant of agility, responsiveness and the sustenance of well-being and learning in education crises, such as that resulting from the COVID-19 pandemic. Dignitas worked with school leaders in marginalised communities to design and deliver six months of targeted training and coaching, including peer learning and support communities to ensure the continuance of learning and well-being during national school closures. 98% of school leaders reported having gained new competencies, and new practices in supporting distance learning, monitoring child wellbeing, and parental engagement. Impact

results also demonstrated reduced anxiety for parents and learners during school closures, while both parents and learners increased time allocated to learning at home, and measures demonstrated stemmed literacy and numeracy learning losses. In an effort to build back better, a similar approach was taken to School Reopening, with a co-creation process identifying new mindsets, competencies and strategies to get children back to school, and to get learning and well-being back on track. This design also took into consideration particular vulnerabilities and inequalities, given that Dignitas' work is designed to impact marginalised communities. In addition to equipping leaders with important capabilities for complex crises, an innovative approach to school leader development allows education systems to embrace emerging practice for long term change, equity and quality.

Biography: Deborah, Executive Director of Dignitas, has led its strategic growth since late 2017, leveraging insight and skills honed as a senior development professional, with 19 years' experience in the fields of education and child protection in East Africa. As well as overseeing significant organizational growth, Deborah has rallied a global conversation on the role of School Leaders as agents of change, particularly for underserved communities. Dignitas was honored to win a WISE Award in 2020, and was listed in the HundrED Global Collection 2020 and 2021. Deborah is also the Country Lead of RELI Africa (Kenya), a member driven organisation bringing together 70 education actors from across East Africa, all focused on improving learning outcomes for children furthest behind. Deborah is also Founder and Trustee of Raising Futures Kenya, an award winning training program for out-of school youth, based in Nairobi.

David White. University of the Arts London (UK)

Keynote Speech: Presence and Placemaking: building community and belonging in online teaching
The pandemic has radically disrupted our sense of place and belonging. While many of us were already spending significant amounts of time working and living online, losing access to physical buildings cut us adrift from our fundamental notions of what it means to be part of something. We are now variously attempting to reimagine our institutions as digital in character, not face-to-face with digital 'support'. However, we still feel a loss of 'place'. In this talk I will outline ways of designing education which focus on presence and placemaking as central principles. Using the Digital Visitors and Residents mapping process we will explore our own forms of engagement online, where we feel we belong and where we simply pass through. Reflecting on our V&R maps, we will explore how we can actively design-back-in the co-presence and belonging we all long for in the digital environment.

Biography: David White is the Head of Digital Education at the University of the Arts London, President of the Association for Learning Technology and a Principal Fellow of the Higher Education Academy. He is best known for the Digital Visitors and Residents idea which provides a framework to explore modes of online engagement. David is a keen advocate for Open Educational Practices and a well-known thinker in online education.

José Antonio Bowen. Association of American Colleges and Universities (USA)

Keynote speech: Teaching Change with a New 3Rs
Learning something new –particularly something that might change your mind– is more difficult than teachers think. A new 3Rs of Relationships, Resilience and Reflection can help us lead better discussions and reach more students. Without sacrificing content, we can design courses to increase effort and motivation, provide more and better feedback, help students learn on their own and be better able to integrate new information now and after they graduate. The case for a liberal (or liberating) education has never been stronger, but it needs to be redesigned to take into account how human thinking, behaviors, bias, and change really work. Recent and wide-ranging research from biology, economics, psychology, education, and neuroscience on the difficulty of change can guide us to redesign an education of transformation and change.

Biography: José Antonio Bowen has won teaching awards at Stanford and Georgetown, was Dean at Miami and Southern Methodist University and President of Goucher College. Bowen has worked as a musician with Stan Getz, Dave Brubeck, and many others and his symphony was nominated for the Pulitzer Prize in Music (1985). Bowen holds four degrees from Stanford University and has written over 100 scholarly articles and books, including the Cambridge Companion to Conducting (2003), Teaching Naked (2012 and the winner of the Ness Award for Best Book on Higher Education), Teaching Naked Techniques with G. Edward Watson (2017) and Teaching Change: How to Develop Independent Thinkers using Relationships, Resilience and Reflection (Johns Hopkins University Press, 2021). Stanford honored him as a Distinguished Alumni Scholar (2010) and he was awarded the Ernest L. Boyer Award (for significant contributions to American higher education) in 2018. He is now a senior fellow for the American Association of Colleges and Universities.

Jill Sitnick. Microsoft (USA)

Webinar: Microsoft's Blended Learning Approaches for Modern Learning Environments

In this session, Jill Sitnick will review strategies for hybrid, remote and blended learning environments. Educators looking to reimagine what "classrooms" will look like moving forward will be pleased with the technology tools available to make "anywhere" learning engaging and successful.

Biography: Jill Sitnick an Education Industry Executive and manager of the US Training Partner Program for Microsoft US Education. She brings over 25 years of technology educational leadership and focuses on improving educator professional development, building strong training partner programs, and focusing on skilling initiatives to enable learners to gain employment in the digital economy.

Panel Chairs

ICERI2021 Panel Chairs

Mairi Macintyre, *University of Warwick, United Kingdom*

Amber Macintyre, *Tactical Tech, United Kingdom*

Yesim Kunter, *Educational Consultant, United Kingdom*

Kate Mawson, *University of Warwick, United Kingdom*

Monroe France, *New York University, United States*

Jamshed Bharucha, *Sai University, India*

Lisa Coleman, *New York University, United States*

Teboho Moja, *New York University, United States*

Tawana Kupe, *University of Pretoria, South Africa*

Desirée Cranfield, *Swansea University, United Kingdom*

Tom Crick, *Swansea University, United Kingdom*

Sue Evans, *Swansea University, United Kingdom*

David Gurteen, *Gurteen Knowledge, United Kingdom*

Workshop: Playful Policy Development

Mairi Macintyre. University of Warwick (UK)
Mairi Macintyre is an Associate Professor at the University of Warwick with a focus on Design; Product Service and Experience. She is passionate about design and education and have initiated and established a wide range of successful projects. She is experienced at and enjoys bridging existing gaps between research, education and industry. Mairi was lead co-editor of the Springer 2011 book 'Service Design and Delivery' which explores strategies used in the design and management of services across various sectors and boasts contributions from some of the world's thought leaders in this space. The book remains as one of this series' best sellers with over 50,000 downloads. She is skilled at bringing parties together by developing a shared vision of transformation for positive societal impact.

Amber Macintyre. Tactical Tech (UK)
Researcher and trainer working on the topics of technology and human rights at Tactical Tech. She began working at Amnesty International, where she developed strategy on, and trained others in, how to use digital technologies in campaigns. Wanting to take a more critical angle on technology, she took time to reflect on the practices and completed a PhD which examines the ethical and effective use of personal data in NGOs. Alongside her PhD, she was a lecturer in political communication with an interest in playful pedagogy. For the last three years, she has been working as a researcher and trainer at Tactical Tech, critically examining the use of personal data in campaigns, whether conducted by political parties for elections or NGOs and social action groups, and developing resources to encourage better practices.

Yesim Kunter. Educational Consultant (UK)
Recognized play expert and a creative strategist understanding behavior of people to create new experiences and define new opportunities. As a consultant; develops "playful" experiences for Fortune 500 Companies, Universities, Communities by applying 'Play Philosophy' to products, environments, communities, culture creation as well as market research with future scoping; She has facilitated numerous successful 'PlaytoInnovate® Workshops' in training organizations with diverse backgrounds from kids to professionals for leveraging Creative Thinking and held talks at prestigious conferences. Previous to her consultancy she had worked for Toys R Us, Lego and Hasbro as a play futurist.

Workshop: A Write Space

Mairi Macintyre. University of Warwick (UK)
Mairi Macintyre is an Associate Professor at the University of Warwick with a focus on Design; Product Service and Experience. She is passionate about design and education and have initiated and established a wide range of successful projects. She is experienced at and enjoys bridging existing gaps between research, education and industry. Mairi was lead co-editor of the Springer 2011 book 'Service Design and Delivery' which explores strategies used in the design and management of services across various sectors and boasts contributions from some of the world's thought leaders in this space. The book remains as one of this series' best sellers with over 50,000 downloads. She is skilled at bringing parties together by developing a shared vision of transformation for positive societal impact.

Kate Mawson. University of Warwick (UK)
Kate is an Associate Professor at the University of Warwick. Kate has significant teaching experience across a range of institutions. During her career Kate has been continually involved in teacher education, with reflection and learning technology forming a large part of Kate's early work for which she gained a PGA in Technology Enhanced Learning with Distinction. Kate is a Senior Fellow of the Higher Education Academy and has won the prestigious WATE Warwick Award for Teaching Excellence.

Panel discussion: Future of Global Higher Education: Disruption, Innovation, Strategic Partnerships, & Transformation

Monroe France. New York University (USA)
Monroe France serves as NYU's senior associate vice president for global engagement and inclusive leadership. In this role, he is responsible for enhancing inclusion, diversity, belonging, and equity opportunities and resources for NYU community members—including students, researchers, faculty, staff, and administrators—throughout the University's global network. Prior to this position, Monroe was the associate vice president for student affairs and diversity initiatives at NYU. He has more than two decades of global experience as an educator, strategist, consultant, trainer, and presenter in the areas of inclusive and innovative leadership, transformation, and human rights. He is an adjunct professor at the NYU Silver School of Social Work and the NYU Steinhardt School of Culture, Education, and Communication's Higher Education and Student Affairs program. Monroe is honored to have received a number of awards for his work, including NYU's 2012 Distinguished Administrator of the Year Award; the Student Affairs Administrators' (NASPA) Diversity Achievement Award; and the 2018 The Ohio State

University's Maude A. Stewart Award for exceptional leadership, service, and innovation in higher education and student affairs.

Jamshed Bharucha. SAI University (India)
Dr. Jamshed Bharucha is the Founding Vice Chancellor of Sai University in Chennai, India and the President Emeritus of The Cooper Union in New York. Dr. Bharucha has held multiple leadership posts, including Provost & Senior Vice President of Tufts University and Dean of the Faculty of Arts & Sciences at Dartmouth College. He was a Fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford University and was named a Pride of America Honoree by the Carnegie Corporation of New York. He received the Distinguished Achievement Award from the Alumnae & Alumni of Vassar College, where he served as a Trustee.

Lisa Coleman. New York University (USA)
Dr. Lisa Coleman is New York University's inaugural senior vice president for global inclusion and strategic innovation and a faculty member in the NYU Leonard Stern School of Business. Previously, Dr. Coleman served as Harvard University's first special assistant to the president focusing on global DEI and where she and her team also developed some of the first initiatives focused on the intersections of technology and disability. Dr. Coleman is the recipient of numerous awards, recognitions, and honors, and sits on various national and international boards, including but not limited to, the USTA, UNCF-NY Leadership Board, the Educational New Zealand Advisory Board, GlobalEcoSystem in the UK, and Human Capital Institute (HCI) Boards. Dr. Coleman also advises and consults with C-Suite and higher education leaders globally.

Teboho Moja. New York University (USA)
Professor Teboho Moja is a Clinical Professor of Higher Education at New York University, an Extraordinary Professor at the University of the Western Cape - South Africa, and a Visiting Research Fellow at the Centre for the Advancement of Scholarship at the University of Pretoria, South Africa. She previously served as an Executive Director and Commissioner of the National Commission on Higher Education in South Africa (1995), appointed by President Mandela. She has published extensively on higher education policy, presented numerous keynote addresses at international conferences on higher education issues.

Tawana Kupe. University of Pretoria (South Africa)
Professor Tawana Kupe is the Vice-Chancellor and Principal of the University of Pretoria and the Africa Co-Chair of the Australia Africa Universities Network (AAUN). Prior to this appointment, Professor Kupe served as the Vice-Principal of the University of the Witwatersrand, as well as the Deputy Vice-Chancellor for Advancement, Human Resources and Transformation, and as Deputy Vice Chancellor for Finance and Operations. Dr Kupe has also served in multiple leadership positions at Wits university, including Executive Dean of the Wits Faculty of Humanities for six years, head of the Wits School of Literature and Language Studies, as well as head of the Media Studies Department.

Discussion session: A Knowledge Café – sharing online teaching experiences during COVID-19

Desirée Cranfield. Swansea University (UK)
Desireé Cranfield is appointed as a senior lecturer within Swansea University, Business department. Desireé has more than 17 years' of Higher Education experience, in South Africa and Wales, UK, and more than 7 years of management experience, having undertaken diverse roles with recent positions including Deputy Programme Director for the Business Management Programme (UG), Programme Director, Graduate School Manager, Project Manager and Business Analyst. Desireé is a graduate of Southampton University, UK, where she completed her PhD in Knowledge Management, and is currently a senior fellow of the higher education academy (SFHEA). Desireé has also completed a master's in data communication systems (Brunel, UK), and a BSc Hon in Information Systems (UNISA).

Tom Crick. Swansea University (UK)
Tom Crick MBE is Professor of Digital Education & Policy at Swansea University (UK). He has been heavily involved in education and digital policy in Wales and the UK over the past ten years, especially national curriculum and qualifications reform. Tom chaired the Welsh Government's review of the ICT curriculum in 2013 and has recently led the development of the new "Science & Technology" area in the new Curriculum for Wales, published in January 2020.

Sue Evans. Swansea University (UK)
Sue Evans is a Senior Lecturer and Programme Director in Swansea University, Accounting and Finance department. Sue has a professional background in management accounting and over 35 years of teaching experience in FE, HE and the private sector via her training company. Her experience also includes running small businesses.

David Gurteen. Gurteen Knowledge (UK)
David Gurteen has been working in the Knowledge Management field for the last 25 years as a speaker, writer, consultant, coach, and conversational host. He is best known as the creator of the Gurteen Knowledge Café, where he hosts small group conversations on engaging topics both face-to-face and online.

Conference Tracks & Sessions

The ICERI2021 conference program is available online at https://iated.org/iceri2021

DIGITAL TRANSFORMATION OF EDUCATION

Data Science & AI in Education
Learning Analytics
Digital Technologies and Resources for Learning under Lockdown
Digital Transformation
21st Century Skills
Educational Programming & Robotics

DIGITAL & DISTANCE LEARNING

Distance Education in COVID-19 Times
MOOCs & Open Educational Resources
Blended & Mobile Learning
e-Learning Experiences
Learning Management Systems & Virtual Learning Environments
Post-Pandemic Scenarios in Education

INNOVATIVE EDUCATIONAL TECHNOLOGIES

AI, Chatbots & Robots
Virtual & Augmented Reality
Technology Enhanced Learning

MULTICULTURALITY & INCLUSION

Inclusive Education
Special Educational Needs
Multicultural Education
Diversity Issues

ACTIVE & STUDENT-CENTERED LEARNING

Gamification & Game-based Learning
Active & Experiential Learning
Problem & Project-Based Learning
Pedagogical Innovations
Soft Skills Development

ASSESSMENT, MENTORING & STUDENT SUPPORT

Assessment & Evaluation
Rethinking Assessment in COVID-19 Times
Mentoring & Tutoring
Student Engagement & Wellbeing in COVID-19 Times
Student Support & Motivation

EDUCATIONAL STAGES & LIFE-LONG LEARNING

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Higher Education & Labour Market Transition
Vocational Training
Non-formal Learning
Developing Entrepreneurship in Education
Life-long & Workplace Learning

QUALITY & IMPACT OF EDUCATION

Quality in Education
Curriculum Design Experiences
Sustainability & Environmental Awareness
Social Impact of Education
University-Industry Collaboration
Educational Trends & Globalisation

TEACHER TRAINING & ED. MANAGEMENT

ICT & Digital Skills
Teacher Training and Support
Professional Development of Teachers
Educational Management

STEM EDUCATION

Mathematics & Statistics
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Computer Science

LANGUAGE LEARNING AND TEACHING

Foreign Languages
Language Learning & Translation Studies
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DISCIPLINE-ORIENTED SESSIONS

Architecture & Interior Design
Health Sciences Education
Business and Marketing Education
Legal Education