



iCERi 2023

**16TH INTERNATIONAL CONFERENCE OF
EDUCATION,
RESEARCH AND
INNOVATION**



CONFERENCE PROCEEDINGS

13-15 NOVEMBER 2023
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Seville, Spain

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Preface

The ICERI2023 Conference Proceedings contain the papers presented at the 16th annual International Conference of Education, Research and Innovation, which took place in Seville from the 13th to 15th of November 2023.

ICERI is an annual event whose aim is to provide a platform for lecturers and to share valuable research and information about education, pedagogical technologies, and educational innovations. This year, participants from over 80 countries took part in networking activities, plenary sessions, parallel thematic sessions and workshops. Keynote speeches were delivered by global educational experts. You can see their talks at IATED Talks (iated.org/talks/).

ICERI2023's focus included the following topics: Pedagogical Methods and Innovations, Technology in Teaching and Learning, Inclusive Learning, Special Education, Emerging Technologies in Education, International Cooperation, Teacher Training and Educational Management, Curriculum Design, Accreditation and Quality in Education, University-Industry Cooperation and Open Educational Resources.

The ICERI2023 International Program Committee is composed of lecturers and researchers from all around the world. A blind peer review process was followed to guarantee the quality of the final publication. During this process, the following points were evaluated: the content, relevance to the field, general structure, clarity of contents, originality, relation to the conference topics and disciplines.

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Lastly, we wish to extend our most sincere thanks and best wishes to all members and delegates who have contributed to the ICERI2023 Proceedings.

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ICERI2023 Keynote Speakers

Cristobal Cobo – Senior Education Specialist (Chile)



Keynote speech:

Unlocking the Potential: How Can Higher Education Lead the Way in a Changing World?

In the post-pandemic world, higher education institutions have a new, crucial role to play in addressing the global "poly-crisis," which includes climate change, demographic transformations, and the automation and datification of education, among other challenges. These challenges raise important questions about the future of higher education. During this presentation, we will explore a series of institutional and interpersonal capacities that need to be developed and consolidated in the context of higher education. These capacities include:

- a) Addressing sustainability and climate change literacies as cross-cutting and multidisciplinary capacities embedded in the institutional agenda and future professional development.
- b) Reinventing andragogy and hybrid learning for lifelong learners, creating opportunities for individuals of any age or background in a world of increased mobility and expanding life expectancy.
- c) Addressing the datification of education and cognitive automation by developing "algorithmic awareness" to navigate a world increasingly filled with smart technologies, which brings both opportunities and challenges.

Thriving in future-proof higher education institutions will be the result of proactively responding to the global poly-crisis and facing major disruptions. Universities are more crucial than ever, and reflecting on these challenges will be instrumental in shaping their future.

Biography:

Cristobal Cobo (PhD) is a Senior Education Specialist (Technology). He served as the founding Director of the Center for Research - Ceibal Foundation in Uruguay from 2014 to 2019. He is also an associated researcher at the Oxford Internet Institute, University of Oxford, from 2009 to 2019. Cobo works at the intersection of the future of learning, a culture of innovation, and human-centered technologies. Cristobal has been distinguished by the British Council of Economic and Social Research (ESRC) and is an associate research fellow at the Centre on Skills, Knowledge, and Organizational Performance, University of Oxford. He was a professor and director of Communication and New Technologies at the Latin American Faculty of Social Sciences, Mexico.

He has served as an external evaluator for the Inter-American Development Bank, the National Science Foundation, and MIT Press (US), the International Labour Organization (UN), and the International Development Research Centre (Canada). He holds a PhD in Communication Sciences from Universitat Autònoma de Barcelona, awarded "cum laude". His latest book, edited with Axel Rivas, is "The New Digital Education Policy Landscape: From Education Systems to Platforms" (Routledge, 2023). Previously, he wrote "I accept the terms and conditions: Uses and abuses of digital technologies" (in Spanish, Portuguese, and English) published by Santillana in 2019, "Innovación Pendiente" (Penguin Random House, 2016), and "Invisible Learning" with John Moravec (Universitat de Barcelona, 2011). He has been a speaker in more than 30 countries, including 4 TEDx events.

Currently, Cristóbal Cobo is a Senior Fellow for The Inter-American Dialogue. He has been featured in CNN, Deutsche Welle, El País, Le Monde Diplomatique, the Wall Street Journal, and the World Economic Forum.

Pooja K. Agarwal – Berklee College of Music in Boston, Massachusetts (USA)**Keynote speech:**

Teaching might be an art, but learning is a science!

Dr. Pooja K. Agarwal shares practical teaching strategies—based on 100 years of research—that dramatically improve student learning. Equipped with scientific knowledge and evidence-based tools, turn your teaching into POWERFUL teaching and unleash the science of learning in your classroom.

Biography:

Pooja K. Agarwal, Ph.D., is a cognitive scientist, conducting research on how students learn since 2005. She is the author of the book *Powerful Teaching: Unleash the Science of Learning* and an Assistant Professor of Psychology at the Berklee College of Music in Boston, teaching psychological science to exceptional undergraduate musicians. Dr. Agarwal is also the Founder of RetrievalPractice.org, a source of research-based teaching strategies for more than 15,000 teachers around the world.

Dr. Agarwal's research has been published in leading peer-reviewed academic journals; featured in *The New York Times*, NPR, *Scientific American*, and *Education Week*; recognized by the National Science Foundation; and highlighted in numerous books, podcasts, and videos.

Dr. Agarwal received her Ph.D. from Washington University in St. Louis. Her love of learning formed at the outset of her career as a 4th and 5th grade teacher in St. Louis, Missouri.

Website: retrievalpractice.org

Twitter: @RetrieveLearn

Conference Tracks & Sessions

The ICERI2023 conference program is available online at <https://iated.org/iceri2023>

ORAL SESSIONS MONDAY

Immersive Experiences
Internships and Work-integrated Learning
Curriculum Design Experiences
Access (and Barriers) to Education
Hybrid & Blended Learning
Workplace & Vocational Training
Student Engagement and Motivation
Multilingualism and Language Learning
Architecture and Design Education (1)
Research on Virtual & Augmented Reality in Education
Virtual & Augmented Reality in Vocational and Workplace Learning
Pedagogical Innovation and Research
Educating Individuals with Intellectual Disabilities
Personalized Learning Environments
Continuous & Life-Long Learning
Student Support
Language Learning Experiences
Architecture and Design Education (2)
Virtual & Augmented Reality Educational Best Practices
University-Industry Cooperation
Educational Leadership and Management
Inclusion of Learners with Disabilities
Learning Analytics
Life-Long Learning
Student Health and Wellbeing
Education for Sustainability
New Technologies in Architecture & Design Education
Virtual & Augmented Reality in Health Sciences Education
Game-Based Learning
Professional Development of Teachers (1)
Inclusive Education
MOOCs & Open Educational Resources
Lifelong Learning, Work-integrated Learning, and Higher Education in a Digital Era
Students and Teachers Wellbeing
English as a Foreign Language
Arts & Humanities Education

POSTER SESSIONS MONDAY

Pedagogical Innovations and Trends in Education
Emerging Technologies in Education

ORAL SESSIONS TUESDAY

AI in Education (1)
Assessment and Evaluation Strategies (1)
Quality in Education
Diversity and Equity in Education
Mobile and Multimedia Learning Experiences
Gamification
Service Learning

Robotics Education
 Computational Thinking & Coding Skills
 Generative AI Experiences in Education (1)
 Assessment and Evaluation Strategies (2)
 Professional Development of Teachers (2)
 Inclusion of Refugees and at-Risk Students
 Online Learning Experiences (1)
 Developing Soft Skills
 Project and Problem Based Learning
 Emerging Technologies in Engineering Education
 Programming in Higher Education
 AI in Education (2)
 e-Assessment
 Pre-service Teachers
 International Cooperation
 Digital Literacy
 Creativity & Design Thinking
 Active Learning in Engineering Education
 Mathematics Education
 Computer Science Education
 Generative AI Experiences in Education (2)
 Mentoring & Tutoring
 ICT Skills among Teachers
 Lessons learned from the COVID-19 pandemic
 Innovative Tools for Learning
 Pedagogical Innovations
 Active & Experiential Learning
 Teaching Mathematics
 Active Learning in STEM
 AI in Education (3)
 Student Selection and Admission
 Professional Development of Teachers (3)
 University and Society
 Online Learning Experiences (2)
 Exchange and Mobility Programmes
 Early Childhood Education
 Flipped Learning
 Teaching STEM

POSTER SESSIONS TUESDAY

Experiences in Education
 New Challenges in Education and Research

VIRTUAL SESSIONS

DIGITAL TRANSFORMATION OF EDUCATION

Data Science & AI in Education
 Learning Analytics & Educational Data Mining
 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
 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
Social Media in Education
Technology Enhanced Learning

TEACHER TRAINING & ED. MANAGEMENT

ICT & Digital Skills
Pre-service Teachers
Professional Development of Teachers
Educational Management

ACTIVE & STUDENT-CENTERED LEARNING

Gamification & Game-based Learning
Problem & Project-Based Learning
Flipped Learning
Collaborative & Team-based Learning
Active & Experiential Learning
Pedagogical Innovations

QUALITY & IMPACT OF EDUCATION

Quality in Education
Experiences and Challenges in Curriculum Design
Sustainability & Environmental Awareness
University-Industry Collaboration
Social Impact of Education
Education and Research

EDUCATIONAL STAGES & LIFE-LONG LEARNING

From Pre-school to Secondary Education
Transition to the Job Market
Developing Entrepreneurship in Education
Life-Long & Workplace Learning

MULTICULTURALITY & INCLUSION

Multicultural Education
Diversity Issues
Special Educational Needs
Inclusive Education

ASSESSMENT, MENTORING & STUDENT SUPPORT

Assessment & Evaluation
Mentoring & Tutoring
Developing Soft and Transversal Skills
Student Support & Motivation
Student Wellbeing

STEM EDUCATION

Mathematics & Statistics
Engineering Education
Computer Science Education
STEM Experiences

LANGUAGE LEARNING AND TEACHING

Foreign Languages
New Technologies in Language Learning
Language Learning & Translation Studies

DISCIPLINE-ORIENTED SESSIONS

Architecture & Interior Design
Health Sciences Education
Business and Marketing Education