THE 31st INTERNATIONAL CONFERENCE ON COMPUTERS IN EDUCATION

ICCE 2023

December 4-8 Matsue, Shimane, JAPAN

CONFERENCE PROCEEDINGS

VOLUME I

ORGANIZED BY

The Asia-Pacific Society for Computers in Education (APSCE)

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31st International Conference on Computers in Education Conference Proceedings
Volume I

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Ju-Ling SHIH, Akihiro KASHIHARA, Weiqin CHEN, Hiroaki OGATA

Publisher:

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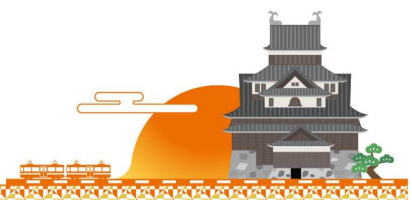
Date of publication: December, 2023

ISBN: 978-626-968-901-9



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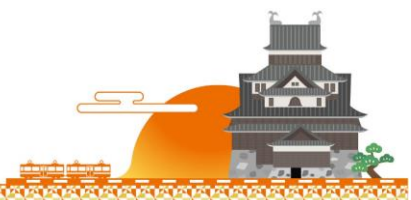


MESSAGE FROM THE CONFERENCE CHAIR

Weiqin CHEN
Conference Chair
Oslo Metropolitan University and University of Bergen, Norway

On behalf of the organizing committee, I would like to welcome all participants of the 31st International Conference on Computers in Education (ICCE) 2023, the flagship conference series of the Asia-Pacific Society for Computers in Education (APSCE). After the virtual conferences in 2020 and 2021 and the hybrid conference in 2022, we have come back to in-person conference this year.

ICCE is no stranger to Japan. After having successfully hosted ICCE 1999, 2007 and 2014, Japan is once again the host for ICCE, this time in Matsue, the "City of Water". Matsue, with magnificent castle, beautiful gardens, and breath-taking sunset over Lake Shinji, will undoubtedly give participants a unique experience. The conference theme of ICCE 2023, “Designing new technologies for education in a big social change world” signifies the role of technological innovation and adoption in transforming education and addressing societal challenges.

Four outstanding keynote speakers will share their insights across varying areas in the field of computers in education. **Curtis J. Bonk** from Indiana University, USA, will focus on achieving smarter and more innovative forms of learning where digital technologies provide learners of all ages with open, informal, adaptive, nontraditional, and self-directed learning opportunities. **Tak-Wai Chan** from National Central University, Taiwan, will share with us his vision of “Global Harwell” as the ultimate educational goal and how Seamless Interest-Driven Co-Creator Theory (SIDC) can contribute to achieving this goal. **Davinia Hernández-Leo** from Universitat Pompeu Fabra, Barcelona, Spain, will explicate how technology can support learning design and the orchestration of complex learning scenarios and thus improve the efficiency and effectiveness of teachers’ tasks. **Masaru Kitsuregawa** from the Research Organization of Information and Systems, Japan will talk about the research data management platform, GakuNin RDM, that provides support for publishing and sharing of big data including educational data, which has strong implications for learning analytics and educational datamining. There will also be three equally inspiring theme-based invited speeches. **Kaushal Kumar Bhagat** from Indian Institute of Technology Kharagpur, India, will present the potential benefits of game-based learning and how it can be used to create engaging and effective learning experiences. **Brendan Flanagan** from Kyoto University, Japan, will discuss challenges and opportunities of educational data science focusing on reading systems. **Daner Sun** from Education University of Hong Kong will talk about the evolution of mobile learning

environments and share insights gained from her experiences in research and teaching. These speeches connect with the essence of the conference theme in different ways and will stimulate reflections and inspire us to rethink the design of digital technologies and their impacts on education and the society.

Indeed, organizing such a large-scale conference requires the orchestrated efforts and unwavering support from the conference organizing committee members and conference paper reviewers. I would like to express my sincere appreciations to all the individuals who have rendered their help in every possible way to make this conference a reality. The names of the hard-working Local Organizing Committee (LOC) chair and team members, International Program Coordination (IPC) chairs, Sub-conference chairs, Program Committee (PC) members and reviewers, chairs and organizers of Workshops, Interactive Events, Tutorials, Panels, Work-In-Progress Posters (WIPP), Doctoral Student Consortium (DSC), Early Career Workshops (ECW), Executive Summary (ES), APSCE Merit Scholarship, and Showcase of Advancements in Technology-Enhanced Learning in Underrepresented Countries (SATELUC) are enlisted in the proceedings. I am also grateful to all the paper authors and registered participants for their exciting academic contributions to the fruitful intellectual exchange in this conference.

Last but not list, I would like to express my heartfelt appreciation to the Managing Secretary of APSCE Pham-Duc Tho for his support, the standing committee for being flexible and proactive, and the consultants for sharing their experiences and wisdom and advising us along the way.

I hope all participants will have opportunities to renew friendships, forge new friendships and professional collaborations. I trust that you will have a productive and fun-filled time at this very special conference and leave Matsue —a picturesque city with rich and remarkable heritage—with beautiful, affectionate memories.

Thank you!

MESSAGE FROM THE INT'L PROGRAM COORDINATION CHAIRS

Ju-Ling SHIH
Program Coordination Chair
National Central University, Taiwan

Akihiro KASHIHARA
Program Coordination Co-Chair
University of Electro-Communications, Japan

The International Conference on Computers in Education (ICCE) is an annual conference series encompassing a broad range of issues related to using Information and Communication Technology (ICT) for education, organized by the Asia-Pacific Society for Computers in Education (APSCE). ICCE 2023 takes place at Matsue, Shimane prefecture, Japan from December 4-8, 2023. It aims to bring together researchers from all over the world to share and exchange research and to develop and deploy new ideas that span the field of Computers in Education.

Following the tradition of previous conferences in this series, ICCE 2023 is organized as a meta-conference, where there are seven Sub-Conferences, each of which focuses on specialized themes. Each Sub-Conference is organized by a program committee appointed by the respective Special Interest Group (SIG – see https://apsce.net/sigs). These Sub-Conferences are:

- **C1: ICCE Sub-Conference on Artificial Intelligence in Education/Intelligent Tutoring System (AIED/ITS)**
- **C2: ICCE Sub-Conference on Computer-supported Collaborative Learning (CSCL) and Learning Sciences (LS)**
- **C3: ICCE Sub-Conference on Advanced Learning Technologies (ALT), Learning Analytics, Platforms and Infrastructure**
- **C4: ICCE Sub-Conference on Classroom, Ubiquitous, and Mobile Technologies Enhanced Learning (CUMTEL)**
- **C5: ICCE Sub-Conference on Educational Gamification and Game-based Learning (EGG)**

- **C6: ICCE Sub-Conference on Technology Enhanced Language Learning (TELL)**
- **C7: ICCE Sub-Conference on Practice-driven Research, Teacher Professional Development and Policy of ICT in Education (PTP)**

The International Program Committee is led by a strong and dedicated team, which includes the Conference Chair, the Program Coordination Chair and Co-Chair, Sub-Conference Chairs and Co-Chairs and experts in the field of Computers in Education from many different countries or economies. Former ICCE local organizing and program coordination chairs have played important roles as consultants in overseeing the organization process of this conference.

The conference received a total of 256 papers (192 full, 44 short, and 20 posters) from 26 different countries or economies. Table 1 provides the submissions by the country of the first author in each paper.

Table 1. Submission Statistics (based on first author's country)

Countries or Economies					
Japan	67	Thailand	5	France	1
Taiwan	44	Poland	4	Germany	1
China	41	Australia	2	Italy	1
India	19	Indonesia	2	New Zealand	1
Hong Kong	17	Spain	2	Nigeria	1
Philippines	15	Tunisia	2	Norway	1
Singapore	13	Canada	1	Turkey	1
Malaysia	6	Croatia	1	Viet Nam	1
United States	6	Ecuador	1		

All papers were subjected to a rigorous review process by 3 to 5 reviewers from the respective Sub-Conference program committees. After the reviews were completed, a meta-review was provided for each paper. In total, 740 reviews and meta-reviews were received. After a discussion period within the individual program committees led by the Sub-Conference Executive Chairs and Co-Chairs, recommendations were made to the Program Coordination Committee Chair and Co-Chair, who oversaw the review process and quality for all Sub-Conferences.

This resulted in 44 full, 67 short, and 48 poster acceptances across all of the seven Sub-Conferences. The overall acceptance rate for full papers is 22.92%. The acceptance rate for the full papers in the individual Sub-Conference closely mirrored the overall acceptance rate. This is a testimony to the continued maintenance of the quality of presentations in our conference. The complete statistics of paper acceptance is shown in Table 2.

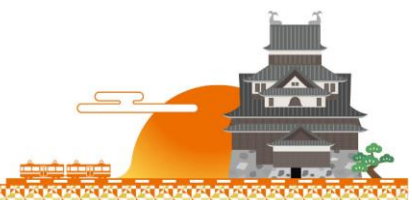


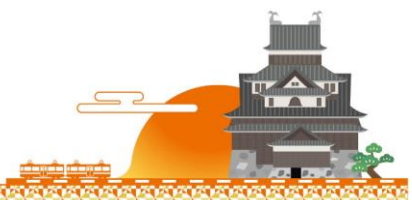
Table 2. Paper Acceptance Statistics

	Total Submissions	Submitted as Full Only	Accepted as Full	Full Only(%)	Accepted as Short	Accepted as Poster	Overall Accepted(%)
C1 - AIED/ITS	46	37	8	21.62%	5	12	54.35%
C2 - CSCL/LS	36	26	6	23.08%	11	8	69.44%
C3 - ALT/LA/PI	49	39	10	25.64%	13	8	63.27%
C4 - CUMTEL	19	14	2	14.29%	5	3	52.63%
C5 - EGG	33	29	7	24.14%	7	7	63.64%
C6 - TELL	27	18	4	22.22%	12	4	74.07%
C7 - PTP	46	29	7	24.14%	14	6	58.70%
ICCE 2023	256	192	44	22.92%	67	48	62.11%

In addition to full papers, short papers and posters, ICCE 2023 includes various program components, such as Keynote Speeches, Theme-based Invited Speeches, Workshops, Interactive Events, Panels, Work-in-Progress Posters (WIPP), Extended Summary (ES), Doctoral Student Consortia (DSC), and Early Career Workshop (ECW). All the papers in these program components are published in separate proceedings with their own ISBN numbers. Pre-conference events are held on the first two days of the conference, including 13 workshops, 4 Interactive Events, DSC, ECW, and APSCE Student Wing Workshop.

We would like to thank all who have contributed to making ICCE 2023 a successful conference. First of all, we would like to thank all paper authors for your contributions and for choosing ICCE 2023 as an outlet to present your research. We would also like to thank the IPC Executive Chairs/Co-Chairs and members, who undertook the responsibility of reviewing and selecting papers that represent research of high quality. Specially thanks to our Keynote and Invited Speakers for accepting our invitations and bring inspiring research to ICCE 2023 participants. The Local Organizing Committee deserves a big thank you for their hard work under the tremendous time pressure.

We hope that all participants will find the activities in ICCE 2023 interesting and inspiring, and have opportunities to meet old friends and establish new professional collaborations. Furthermore, we hope that participants will enjoy not only the academic activities, but also the vibrant and exciting culture experience at Matsue, Shimane prefecture, Japan.



MESSAGE FROM THE LOCAL ORGANIZING COMMITTEE CHAIR

Hiroaki OGATA
LOC Chair
Kyoto University, Japan

Kon'nichiwa 😊 (Hello!)

On behalf of the local organising committee, I would like to extend my warm welcome to all delegates of the 31st International Conference on Computers in Education (ICCE 2023), held for the fourth time in Japan (the first time in Chiba in 1999, the second time in Hiroshima in 2007, and the third time in Nara in 2014). It is my great pleasure and honor to host ICCE 2023 as it takes place fully in-person this year. The theme of the conference, "Designing new technologies for education in a big social change world," aptly reflects what we had experienced during COVID-19, and digital technologies adoption including AI and big data has taken an exponential leap for transforming education in the new norm.

It is a great privilege to share our beautiful country with you. I hope you will be able to enjoy Matsue city, which is often referred to as Little Kyoto. Known as the "City of Water", Matsue stands by the Sea of Japan where Lake Shinji and Nakaumi meet, in the middle of Shimane Peninsula. A former feudal stronghold, Matsue is a true castle town crossed with many canals and boasts one of the twelve remaining original castles in Japan, and famous for its beautiful sunsets over Lake Shinji. In addition, Matsue is the birthplace of Japanese culture and origin of conventions in Japanese Mythology.

I would like to thank the APSCE Executive Committee for giving us this wonderful opportunity. Our sincere thanks to the standing committee, the International Program Committee, reviewers, authors, participants and student volunteers. Especially, I would like to express my gratitude to all the local organizing committee members and sponsors: Uchida Yoko Co. Ltd., Photron Limited, Research Council of Evidence-Driven Education, and Learning and Educational Technologies Research Unit, Kyoto University, Japan. Also, this event is supported by Allied Telesis K.K., Digital Knowledge Co., Ltd., IPSJ, IEICE, JAEIS, JSAI, JSET, JSiSE, JASLA, and Shimane University, Japan. We trust all of you will enjoy the conference, and take home a lot of great memories from Matsue city in Shimane prefecture, Japan.

Arigato! 😊 (Thank you!)

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C1: ICCE Sub-Conference on Artificial Intelligence in Education/Intelligent Tutoring System (AIED/ITS) and Adaptive Learning

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May Marie TALANDRON-FELIPE, University of Science and Technology, Phillipines

C2: ICCE Sub-Conference on Computer-supported Collaborative Learning (CSCL) and Learning Sciences

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PC Co-Chair

Daniel BODEMER, University of Duisburg Essen, Germany

PC Co-Chair

Gaoxia ZHU, National Institute of Education, Singapore

SIG Chair

Elizabeth KOH, National Institute of Education, Singapore

C3: ICCE Sub-Conference on Advanced Learning Technologies (ALT), Learning Analytics and Digital Infrastructure

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C4: ICCE Sub-Conference on Classroom, Ubiquitous, and Mobile Technologies Enhanced Learning (CUMTEL)

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Daner SUN, Education University of Hong Kong, Hongkong

C5: ICCE Sub-Conference on Educational Gamification and Game-based Learning (EGG)

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Ahmed TLILI, Beijing Normal University, China

C6: ICCE Sub-Conference on Technology Enhanced Language Learning (TELL)

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C7: ICCE Sub-Conference on Practice-driven Research, Teacher Professional Development and Policy of ICT in Education (PTP)

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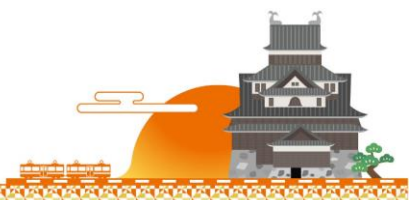

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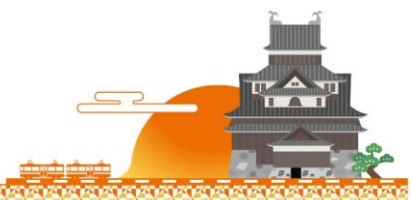

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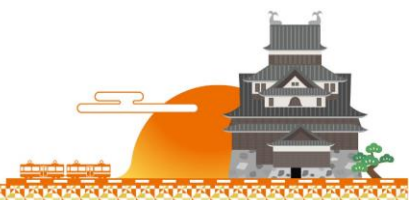

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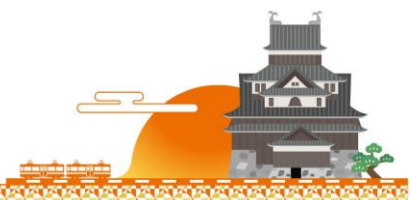

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Sho YAMAMOTO	Kindai University
Kazuaki YOSHIHARA	Kindai University

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SIG 2: Computer-supported Collaborative Learning and Learning Sciences (CSCL)

Elizabeth KOH, Nanyang Technological University, Singapore

SIG 3: Advanced Learning Technologies, Platforms and Infrastructure (ALT)

Eunice SARI, UX, Indonesia

SIG 4: Classroom, Ubiquitous and Mobile Technologies Enhanced Learning

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SIG 6: Technology Enhanced Language Learning (TELL)

Vivian WU, Asia University, Taiwan

SIG 7: Practice-driven Research, Teacher Professional Development and Policy of ICT in Education (PTP)

Mas NidaMDKHAMBARI, Universiti Putra Malaysia, Malaysia

SIG 8: Development of Information and Communication Technology in the Asia-Pacific Neighborhood (DICTAP)

Patcharin PANJABUREE, Mahidol University, Thailand

SIG 9: Educational Use of Problems/Questions in Technology-Enhanced Learning (EUPQ)

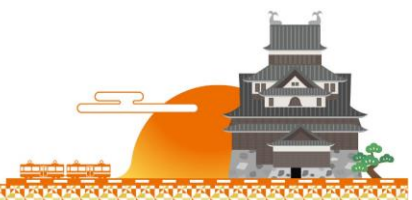
Takahito TOMOTO, Tokyo PolytechnicUniversity, Japan

SIG 10: Learning Analytics and Educational Data Mining (LAEDM)

Ramkumar RAJENDRAN, Indian Institute of Technology Bombay, India

SIG 11: Computational Thinking Education & STEM Education (CTE&STEM)

Chee Kit LOOI, Nanyang Technological University, Singapore



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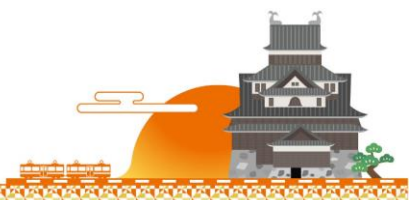
Tanja Mitrovic, University of Canterbury, Christchurch, New Zealand
Tatsunori Matsui, Waseda University, Japan
Elvira Popescu, University of Craiova, Romania
Valery Psyche, Université TÉLUQ, Canada
Maria Mercedes T. Rodrigo, Ateneo de Manila University, Philippines
John Stamper, Carnegie Mellon University, United States
Kazuhisa Seta, Osaka Metropolitan University, Japan
Stefan Slater, Teachers College, United States
Masaki Uto, The University of Electro-Communications, Japan
Jill-Jênn Vie, Inria Lille, France

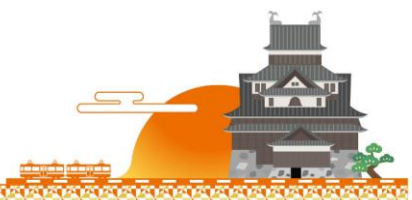


C2: CSCL PC Member

Jürgen Buder, Leibniz-Institut für Wissensmedien, Germany
Sanjay Chandrasekharan, Homi Bhabha Centre for Science Education, India
Ben Chang, National Central University, Taiwan
Ching-Yi Chang, Taipei Medical University, Taiwan
Cheng-Huan Chen, Asia University, Taiwan
Sherry Chen, National Central University, Taiwan
Andrew Clayphan, The University of Sydney, Australia
Pryce Davis, University of Nottingham, United Kingdom
Xueqi Feng, Southern University of Science and Technology, China
Lydia Harbarth, University of Duisburg-Essen, Germany
Jo-Chi Hsiao, National Yang Ming Chiao Tung University, Taiwan
Lingyun Huang, Education University of Hong Kong, China
Gwo-Haur Hwang, National Yunlin University of Science and Technology, Taiwan
Heisawn Jeong, Hallym University, Korea
Vwen Yen Alwyn, Lee, Nanyang Technological University, Singapore
Rose Liang, National University of Singapore, Singapore
Feng Lin, Singapore University of Social Sciences, Singapore
Pei-Yi Lin, National Tsing-Hua University, Taiwan
Sunny Lin, National Yang Ming Chiao Tung University, Taiwan
Kian Keong Aloysiu Ong, National Institute of Education, Singapore
Johanna Pöysä-Tarhonen, University of Jyvaskyla, Finland
Nikol Rummel, Ruhr-Universität Bochum, Germany
Lenka Schnaubert, University of Nottingham, United Kingdom
Osman Tasdelen, Universität Duisburg-Essen de, Germany
Yuyao Tong, University of Hong Kong, Hong Kong
Daiyi Wang, Providence University, Taiwan
Hongzhi Yang, The University of Sydney, Australia
Gaoxia Zhu, National Institute of Education, Nanyang Technological University, Singapore

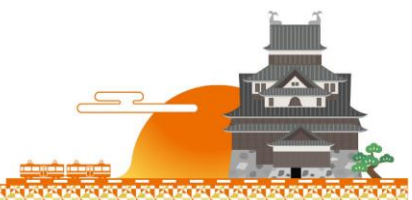
C3: ALT PC Member

Vishwas Punjaji Badhe, Indian Institute of Technology Bombay, India
Oluwafemi Samson Balogun, University of Eastern Finland, Finland
Gaurang Belekar, Indian Institute of Technology, Bombay, India
Manuel Caeiro Rodríguez, University of Vigo, Spain
Liang Changhao, Kyoto University, Japan
Weiqin Chen, Oslo Metropolitan University, Norway
Yiling Dai, Kyoto University, Japan
Syaamantak Das, Indian Institute of Technology Bombay, India
Seb Dianati, Charles Darwin University, Australia
Yoshiko Goda, Kumamoto University, Japan
Carl Haas, University of Waterloo, Canada
Marc Jansen, University of Applied Sciences Ruhr West, Germany
Nisumba Soodhani K, Indian Institute of Technology Bombay, India
Ulfa Khwaja, Indian Institute of Technology Bombay, India
Mehmet Kokoç, Karadeniz Technical University, Turkey
Siu Cheung Kong, The Education University of Hong Kong, Hong Kong
Suman Laudari, Charles Darwin University, Australia
Huiyong Li, Kyoto University, Japan
Sonsoles López-Pernas, University of Eastern Finland, Finland
Rwitajit Majumdar, Kyoto University, Japan
Jon Mason, Charles Darwin University, Australia
Ritayan Mitra, Indian Institute of Technology Bombay, India
Regina Motz, Universidad de la República, Uruguay
Shivsevak Negi, Don Bosco Institute of technology, Mumbai, India
Indrayani Nishane, Indian Institute of Technology Bombay, India
Rumana Pathan, Indian Institute of Technology Bombay, India
Herold Pc, Indian Institute of Technology Bombay, India
Zablon Pingo, university Of Technology, Sydney, Australia
Antony Prakash, Indian Institute of Technology Bombay, India
Ramkumar Rajendran, Indian Institute of Technology Bombay, India
Nihar Sanda, Indian Institute of Technology Bombay, India
Ismaila Temitayo Sanusi, University of Eastern Finland, Finland
Bill Searle, Charles Darwin University, Australia
Niusha Shafiabady, Charles Darwin University, Australia
Jyoti Shaha, Indian Institute of Technology Bomaby, India
Atsushi Shimada, Kyushu University, Japan
Daevesh Singh, Indian Institute of Technology Bombay, India
María Estrella Sousa Vieira, University of Vigo, Spain
Ashwin T S, Indian Institute of Technology Bombay, India
Kyosuke Takami, Education Data Science Center, National Institute for Educational Policy Research (NIER), Japan
Manjunath K Vanahalli, National Institute of Technology, India
Samarth Yadannavar, Indian Institute of Technology Bombay, India



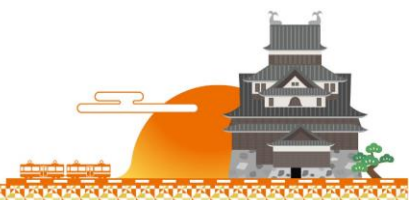
C4: CUMTEL PC Member

Kaushal Bhagat, Centre for Educational Technology, Indian Institute of Technology, Kharagpur, India
Ivana Bosnic, University of Zagreb, Croatia
Ivica Boticki, Fakultet elektrotehnike i računarstva, Croatia
Huiying Cai, Jiangnan University, China
Ben Chang, National Central University, Taiwan
Guang Chen, Beijing Normal University, China
Feng-Kuang Chiang, Shanghai Jiao Tong University, China
Chi-Ming Chu, National Ilan University, Taiwan
Haiguang Fang, Capital Normal University, China
Xueqi Feng, Southern University of Science and Technology, China
Maja Gligora Marković, University of Rijeka, Croatia
Martina Holenko Dlab, University of Rijeka, Croatia
Yih-Ruey Juang, Jinwen University of Science and Technology, Taiwan
Tai-Chien Kao, National Dong Hwa University, Taiwan
Chiu-Lin Lai, National Taipei Univeristy of Education, Taiwan
Chen-Yu Lee, Ling Tung University, Taiwan
Jing Leng, East China Normal University, China
Xiuhan Li, Central China Normal University, China
Ma Luo, East China Normal University, China
Igor Mekterović, Fakultet elektrotehnike i računarstva, Croatia
Kuo-Liang Ou, National Tsing Hua University, Taiwan
Yanjie Song, The Education University of Hong Kong, Hong Kong
Daner Sun, The Education University of Hong Kong, China
Yuyao Tong, University of Hong Kong, China
Zhihong Wan, The Education University of Hong Kong, China
Xuefeng Wei, Ludong University, China
Longkai Wu, National Institute of Education, Singapore
Kai-Hsiang Yang, National Taipei University of Education, Taiwan
Xianmin Yang, Jiangsu Normal University, China
Yuqin Yang, Central China Normal Univerisity, China
Ying Zhan, The Education University of Hong Kong, Hong Kong



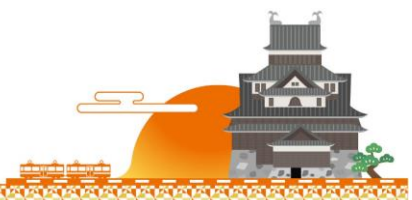
C5: EGG PC Member

Ahmed Ahmim, Faculty of Exact Sciences and Sciences of Nature and Life University of Larbi Tebessi, Algeria
Alex Barrett, Florida State University, United States
Abdelmalek Bouguettaya, CRTI, Algeria
Chefrour, université badji mokhtar annaba, Algeria
Chih-Pu Dai, Florida State University, United States
Zhaihuan Dai, University of South Florida, United States
Samia Drissi, univeristé de souk ahras, Algeria
Maazouzi Faiz, Univ annaba, Algeria
Zakaria Gheid, University of Souk Ahras, Algeria, Algeria
Kamel Eddine Heraguemi, M'sila University, Algeria
Hyangeun Ji, Temple University, United States
Amine Khaldi, kasdi merbah university, Algeria
Lukas Liu, The University of Hong Kong, Hong Kong
Soltani Mohamed, Souk Ahras University, Algeria
Yanjun Pan, Florida STATE UNIVERSITY, United States
Marcela Sávia Pessoa, Universidade do Estado do Amazonas, Brazil
Khedairia Soufiane, souk ahras university, Algeria
Luke West, Florida State University, United States



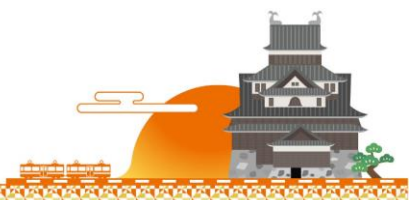
C6: TELL PC Member

Michael Adarkwah, Southwest University, China
Ting Da, Beijing Normal University, China
Reza Hadi Mogavi, Sharif University of Technology, Iran
Feifei Han, Australian Catholic University, Australia
Ahmed Hosny, Beijing Normal University, Egypt
Muhammad Yasir Mostafa, Beijing Normal University, China
Stylianos Mystakidis, University of Patras, Greece
Michelle Siao-Cing Guo, National Taipei University of Business, Taiwan
Wanwisa Wannapipat, Khon Kaen University, Thailand
Vivian Wu, Asia University, Taiwan
Dong Yang, Beijing Normal University, China
Ahmed Mohamed Fahmy Yousef, Fayoum University, Egypt



C7: PTP PC Member

Vishwas Badhe, Indian Institute of Technology Bombay, India
Aparajita Biswal, B H Gardi College of engineering and technology, India
Ivica Boticki, Fakultet elektrotehnike i računarstva, Croatia
Arup Chatterjee, Indian Institute of Technology Madras, India
Rohan Dasgupta, Anjuman-I-Islam's Kalsekar Technical Campus, India
Ajita Deshmukh, MIT-ADT University, Pune, India
Anita Diwakar, Indian Institute of Technology Bombay, India
Lakshmi Ganesh, Indian Institute of Technology Bombay, India
Anchal Garg, University of Bolton, United Kingdom
Arnon Hershkovitz, Tel Aviv University, Israel
Martina Holenko Dlab, University of Rijeka, Croatia
Sajna Jaleel, Mahatma Gandhi University, India
Kapil Kadam, Indian Institute of Technology Bombay, India
Navneet Kaur, Indian Institute of Technology Bombay, India
Najwan Khambari, Universiti Teknikal Malaysia Melaka, Malaysia
Chen-Yu Lee, Ling Tung University, Taiwan
Ganesh Lokhande, Symbiosis International (Deemed) University, India
Jayakrishnan Madathil, Indian Institute of Technology–Madras, India
Hagit Meishar Tal, Holon Institute of Technology (HIT), Israel
Shitanshu Mishra, UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development, India
Priscilla Moses , Universiti Tunku Abdul Rahman, Malaysia
Soumya Narayana, Indian Institute of Technology Bombay, India
Lucian Ngeze, Indian institute of Technology Bombay, India
Yogendra Pal, NIIT University, India
Mrinal Patwardhan, Indian Institute of Technology Bombay, India
Prajish Prasad, FLAME University, India
Rajashri Priyadarshini, Indian Institute of Technology Bombay, India
Ashutosh Raina, Indian Institute of Technology Bombay, India
Rekha Ramesh, Mumbai University, India
Vivek Sabanwar, Indian Institute of Technology Bombay, India
Sameer Sahasrabudhe, Indian Institute of Technology Bombay, India
Charu Saini, UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development, India
Madhuri Srinivas, SMIORE – Education, India
Narasimha Swamy, Indian Institute of Technology Bombay, Mumbai, India
Briju Thankachan, Indian Educational Technology Association, India
Bindu Thirumalai, Tata Institute of Social Sciences in, India
Vikram Vincent, Indian Institute of Technology Bombay, India
Ying Zhan, The Education University of Hong Kong, Hong Kong



EARLY CAREER RESERCHER AWARD WINNER (2023)

Dr. Rwitajit MAJUMDAR is an Associate Professor at the Research and Educational Institute for Semiconductors and Informatics at Kumamoto University. He is attached to the Graduate School of Social and Cultural Sciences in the Division of Instructional System Studies. Before joining Kumamoto University in September 2023, he was a senior lecturer at the Academic Center for Computing and Media Studies at Kyoto University since 2021. He joined as a post-doc researcher in Prof. Hiroaki Ogata's lab and moved to Japan in 2018.

Rwitajit graduated from the Inter-disciplinary program (IDP) in Educational Technology at the Indian Institute of Technology Bombay in India, co-advised by Prof. Sridhar Iyer of the Computer Science and Engineering department and Prof. Aniruddha Joshi from the Design School. He did his undergraduate studies and master's from BITS Pilani, India, in Engineering Technology and Design Engineering. He attended doctoral coursework at the Indian Institute of Science in Bangalore before moving to Mumbai for doctoral research.

Rwitajit's research interests include Learning Analytics, designing data-driven services, and studying human-data interactions in the context of education. In the last five years, he has received 3 national grants from JSPS as PI and 3 as co-PI for research related to the GOAL project for designing data-driven platforms to develop learners' self-direction skills and build knowledge model-based learning infrastructure. At Ogata lab, over the years, Rwitajit worked directly with 7 Ph.D. and 7 master's students and other research members in various learning analytics research projects and has co-authored more than 100 international conference papers and 30 journal publications. He continues to bridge researchers from the East in Japan, India, Taiwan, and the West to share expertise and perspectives in different collaborative research projects. In 2023

He has actively participated in the APSCE events, being co-chair for the Advanced Learning Technologies (ALT), Learning Analytics and Digital Infrastructure sub-conference track of ICCE, organizing workshops related to Learning Analytics as well as Embodied Learning in ICCE and contributing to RPTEL journal as an author as well as reviewer. Rwitajit was also awarded the IEEE TCLT Early Career Researcher Award in Learning Technologies during ICALT 2023.

Along with research, Rwitajit likes to travel and experience local cultures and practices. His hobbies include photography, music, and mending broken potteries with the art of Kintsugi.

LAST TEN YEARS' DISTINGUISHED RESEARCHER AWARD WINNERS

2022 -APSCE Distinguished Researcher Award

Maiga Chang, Athabasca University, Canada

2021 -APSCE Distinguished Researcher Award

Maria Mercedes T. Rodrigo,Ateneo de Manila University, Philippines

2020 -APSCE Distinguished Researcher Award

Wenli CHEN, Nanyang Technological University, Singapore

2015 -APSCE Distinguished Researcher Award

Lung-Hsiang WONG, Nanyang Technological University, Singapore

2014 -APSCE Distinguished Researcher Award

Hiroaki OGATA, Kyushu University, Japan

2011 -APSCE Distinguished Researcher Award

Antonija MITROVIC, University of Canterbury, New Zealand

Chen-Chung LIU, National Central University, Taiwan

LAST TEN YEARS' EARLY CAREER RESEARCHER AWARD WINNERS

2022 - APSCE Early Career Researcher Award

Daner Sun, The Education University of HongKong, HongKong

2021 -APSCE Early Career Researcher Award

Bo Jiang,East China Normal University, China

2020 -APSCE Early Career Researcher Award

Kaushal Kumar BHAGAT, Indian Institute of Technology, Kharagpur, India

2019 -APSCE Early Career Researcher Award

Cheng-Jiu YIN, Kobe University, Japan

2018 -APSCE Early Career Researcher Award

Ting-Chia HSU, National Taiwan Normal University, Taiwan

2017 -APSCE Early Career Researcher Award

Jon MASON, Charles Darwin University, Australia

2015 -APSCE Early Career Researcher Award

Morris Siu-Yung JONG, The Chinese University of Hong Kong, Hong Kong

SPEAKERS OF APSCE WEBINAR SERIES (December 2022 – November 2023)

APSCE Webinar #30: The Metaverse and Language Learning
Date: 16 December 2022 (Friday)
Speaker: Prof. Yu-Ju LAN (National Taiwan Normal University, Taiwan)
Moderator: Prof. Vivian Wen-Chi WU (Asia University, Taiwan)
Curated by: APSCE Technology-Enhanced Language Learning (TELL) SIG

APSCE Webinar #31 : Leveraging Deep NLP and Generative AI in Education
Date: 10 March 2023 (Friday)
Speaker: Dr. Michelle Banawan, Asian Institute of Management, Philippines
Moderator: Dr. May Marie P. Talandron-Felipe, University of Science and Technology of Southern Philippines, Philippines
Curated by: APSCE Artificial Intelligence in Education / Intelligent Tutoring Systems / Adaptive Learning (AI-Ed) SIG

APSCE Webinar #32 : Graphical organizer-based in-field mobile learning
Date: 21 April 2023 (Friday)
Speaker: Prof. Hui-Chun CHU, Soochow University, Taiwan
Moderator: Prof. Jerry Chih-Yuan SUN, National Yang Ming Chiao Tung University, Taiwan
Curated by: APSCE Advanced Learning Technologies, Platforms & Infrastructures (ALT) SiG

APSCE Webinar #33 : Institutional and Psychological Factors Affecting Online Distant Foreign Language Learning Behaviors
Date: 5 May 2023 (Friday)
Speaker: Prof. Yuichi ONO, University of Tsukuba, Japan
Moderator: Prof. Vivian Wen-Chi WU (Asia University, Taiwan)
Curated by: APSCE Technology-Enhanced Language Learning (TELL) SIG

APSCE Webinar #34: Transforming Education with AI and Computational Action
Date: 18 May 2023
PANELIST:
Natalie LAO, Massachusetts Institute of Technology, USA
Mark FRIEDMAN, App Inventor Foundation, USA
Keertan KINI, Stanford University, USA
Chair: Ting-Chia HSU, National Taiwan Normal University, Taiwan
Curated by: APSCE Computational Thinking in Education/STEM (CTE/STEM) SIG

APSCE Webinar #35 : Three Challenges in Implementing Multimodal Learning Analytics in Real Learning Environments
Date: 31 May 2023 (Wednesday)
Speaker: Assoc. Prof. Bertrand Schneider, Harvard Graduate School of Education, USA
Moderator: Dr. Elizabeth Koh, Nanyang Technological University, Singapore
Curated by: APSE Computer-Supported Collaborative Learning / Learning Sciences (CSCL/LS) SIG

APSCE Webinar #36 (Postponed): Smart Technologies in Education: Policies for Effective and Ethical Use
Date: 16 June 2023
PANELIST:
Habibah Ab Jalil, Universiti Putra Malaysia, Malaysia
Vikas Kanungo, World Bank
Lung Hsiang WONG, Nanyang Technological University, Singapore
Moderator: Khaizer Omar Universti Putra Malaysia, Malaysia
Curated by: APSCE Practice-Driven Research, Teachers' Professional Development & ICT Policies (PTP) SIG

APSCE Webinar #37: Moving Toward a Mobile Learning Landscape: Effective Device Integration
Date: 3 July 2023
Speaker: Dr. Helen Crompton, Old Dominion University, USA
Moderator: Dr. Daner Sun, Education University of Hong Kong
Curated by: APSCE Classroom, Mobile and Ubiquitous Technology Enhanced Learning (CUMTEL) SIG

APSCE Webinar #36 (Re-scheduled): Smart Technologies in Education: Policies for Effective and Ethical Use
Date: 31 July 2023
PANELIST:
Habibah Ab Jalil, Universiti Putra Malaysia, Malaysia
Maiga Chang, Athabasca University, Canada
Lung-Hsiang Wong, Nanyang Technological University, Singapore
Moderator: Muhd Khaizer Omar, Universiti Putra Malaysia, Malaysia
Curated by: SIG 7 – Practice-driven Research, Teacher Professional Development and Policy of ICT in Education (PTP)

APSCE Webinar #38: Human-Centered Learning Technologies and Multimodal Data
Date: 21 July 2023
Speaker: Prof. Michail (Michalis) Giannakos
Norwegian University of Science and Technology (NTNU), Norway
Moderator:Dr. Ramkumar Rajendran, IIT Bombay, India
Curated by: APSCE Learning Analytics and Educational Data Mining (LAEDM) SIG

APSCE Webinar #39: Unlocking Potential: Leveraging Multimodal Learning Analytics for Collaborative Learning
Date: 11 August 2023
Speaker: Prof. Dragan Gašević, Monash University, Australia
Moderator: Dr. Ramkumar Rajendran, IIT Bombay, India
Curated by: APSCE Learning Analytics and Educational Data Mining (LAEDM) SIG

APSCE Webinar #40: Where now for 'Smart'? Consequent questions and the co-production of knowledge

Date: 6 September 2023 (Wednesday)
Speaker: Assoc. Prof. Jon Mason, Charles Darwin University, Australia
Moderator: Prof. Takahito Tomoto, Chiba Institute of Technology, Japan
Curated by: APSCE Education Use of Problems/Questions in Technology-Enhanced Learning (EUPQ) SIG

APSCE Webinar #41: Building In-Context Understanding of Learning Behaviors for Designing Game-Based Assessments
Date: 3 October 2023 (Tuesday)
Speaker: Assist. Prof. Zhichun "Lukas" Liu, The University of Hong Kong, Hong Kong SAR
Moderator: Assoc. Prof. Ahmed Tlili, Beijing Normal University, China
Curated by: APSCE Educational Gamification and Game-based Learning (EGG) SIG

APSCE Webinar #42: Digital Transformation of Higher Education: Challenges and Insights
Date: 25 October 2023 (Wednesday)
Speaker: Prof. Merlin Teodosia Suarez, De La Salle University, The Philippines
Moderator: Assoc. Prof. Patcharin Panjaburee, Khon Kaen University, Thailand
Curated by: APSCE Development of Information and Communication Technology in the Asia-Pacific Neighborhood (DIC TAP) SIG

KEYNOTE SPEAKERS

Curtis J. BONK

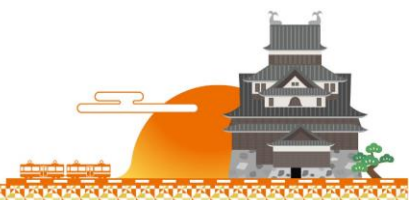
Indiana University, USA

Time to Wake Up from Our Innovative Learning Dreams and Make Smarter Learning a Reality

Abstract: For a half century, educators, psychologists, and researchers have been predicting that highly intensive, innovative, and individualized learning formats are only a few years away. Learners of all ages would enter enticing microworlds, highly engaging learning experience holodecks, fully immersive hands-on scenarios, high fidelity simulations and games, AI-based adaptive microlearning snippets, and completely free and open educational resources and courses on any topic. Massive open online classes were promised one day and then on demand microlearning snippets were delivered in the next. The learning related dreams we had in past decades were quickly forgotten as the next wave of learning technology came along. But all those dreams will prove pointless if they fail to address true problems or issues that some aspect of society is struggling with. It is time to wake up from such dreams of a glistening technological future and have our dream machines help us envision a world filled with open, informal, adaptive, nontraditional, and self-directed learning opportunities. When that happens, we will truly have arrived in the age of smarter and more innovative forms of learning where the learner is finally in charge of the dreams.

Biography: Curtis J. Bonk is Professor in the School of Education at Indiana University (IU) teaching psychology and technology courses and Adjunct in the School of Informatics at IU. He is a former software entrepreneur, certified public accountant, corporate controller, and educational psychologist who presently is an educational technologist, award-winning writer, highly published researcher, statewide and national awardee in innovative teaching with technology, and internationally acclaimed presenter. Curt is the author of over 400 publications including 20 books such as the Handbook of Blended Learning: Global Perspectives, Local Designs, MOOCs and Open Education in the Global South, The World is Open: How Web Technology is

Revolutionizing Education, and Transformative Teaching Around the World. He has given close to 2,000 talks around the world, including over 300 keynote and plenary talks. In 2020, Curt was awarded the IU President's Award for Excellence in Teaching and Learning Technology and in 2021, he received the David H. Jonassen Excellence in Research Award. Recently, the American Educational Research Association named him a 2022 AERA Fellow for his exceptional contributions to, and excellence in, education research, and the following week, he was honored with the International Engagement award from the IU School of Education. In 2022, he was also listed in the top 2% of scientists in the world based on publication citations for career. In 2023, AERA awarded Curt and his colleague Dr. Min Young Doo from Kangwon National University in Korea with the Outstanding International Research Collaboration Award. Curt Bonk co-hosts the weekly award-winning podcast show, Silver Lining for Learning (https://silverliningforlearning.org/). He can be contacted at cjbonk@indiana.edu and his homepage is http://curtbonk.com/.



KEYNOTE SPEAKERS

Tak-Wai CHAN

National Central University, Taiwan

Global Harmony and Wellbeing
——Should it be our Ultimate Educational Goal Worldwide?

Abstract: More than 160 years ago, Dickens wrote in the first sentence of his A Tale of Two Cities: "It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair...". Today, the human lifespan has extended, but millions of people have deceased in a short time before our eyes due to COVID-19. Digitization enables all of us to connect and communicate, but we constantly quarrel over different beliefs; online games offer immersive experience, but the specter of children's addiction looms large; artificial intelligence promises to enhance our lives, yet it harbors the potential of great harm to human beings; the advent of metaverse could herald a luminous future, but it may also signal a dark abyss to come; we cheer for technological advancement, but are simultaneously beset by concerns over environmental pollution, wealth disparity, and other daunting challenges.

During my keynote address at AIED2007, I put forward my observation: our research community has been experiencing three orientations of research: dream-oriented, adoption-oriented, and humanity-oriented. Humanity-oriented research, which was emerging at the time, addresses that learning should go beyond knowledge acquisition, and hence it should cover cognitive, affective, social and attitudinal domains. For the sake of humanity, we should strive to lay the foundations for the future world by bettering yourself, nurturing a caring family, incubating a humane society, fostering a peaceful and collaborative world.

Furthermore, I posed 4 grand challenge problems. The first three were informed by my observation of research in artificial intelligence in education (AIED), computer-supported collaborative learning, mobile learning, and game-based learning, as well as by the challenges of transforming education at that time. The fourth problem, the 'global educational goal problem'—rethinking the educational goal from the global perspective—was due to the threats such as nuclear holocaust, earth resource exhaustion, climate change, societal polarization, and mass extinction of species. These issues present profound risks to humanity and the planet's future. There is an increasing concern about whether our descendants will be able to survive on Earth, let alone live enjoyably. Recognizing the pressing need to address the global educational goal problem, I reordered the four problems in my last slide, placing it as the first grand challenge problem.

I acknowledge that when I first posed the global educational goal problem, I didn't have any idea about the answer, and I believed that this was the case for most other researchers in our field as well. However, the problem is so fundamental that it underpins why we do what we do.

Given the recent regrettable conflicts in the world, leaders in a prominent society in our field have recently raised questions and made statements: "Can we develop partnerships, processes, and learning environments that can reduce divisiveness and engender abilities to talk, work, and learn across differences? Can we design to disrupt othering and hate and to promote empathy and care? There is growing urgency to continue developing theory and practice to address this aim. We have expertise in our membership, we need to learn from each other, especially from those who have been thinking about this for a while now. This is where we can make a difference and take action as a Society." The world truly stands on the brink of peril. Can we coexist harmoniously with our environment? What is the future of humankind? What role do we, as educators, play in shaping the world of tomorrow?

What is education? It is said that at the end of World War II, a letter was found in a Nazi concentration camp. It is addressed to Teachers (Note 1).

Dear Teachers:

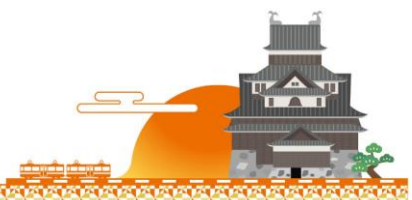
I am a survivor of a concentration camp. My eyes saw what no man should witness: gas chambers built by learned engineers, children poisoned by educated physicians, infants killed by trained nurses, women and babies shot and burned by high school and college graduates.

So, I am suspicious of education.

My request is: help your students become human. Your efforts must never produce learned monsters, skilled psychopaths, educated Eichmanns. Reading, writing, arithmetic are important only if they serve to make our children more human.

If knowledge and human values are disconnected, can education lead to a more civilized world? If global society is not harmonious, can wellbeing be achievable?

Mandela once said, "Education is the most powerful weapon which you can use to change the world." Indeed, education stands as a beacon of hope for the future. The education we impart today will shape the destiny of all humans in the years to come.



In two decades or so, today's students in schools and universities will become the pillars of our society.

Designing the future of education is equivalent to designing the future world. Educational researchers—particularly those in our community who are engaged with technology—bear an even greater responsibility to lead change through global collaboration.

In this talk, I will share some thoughts based on years of ongoing discussions among a group of international researchers (Note 2). First, we may define the 'ultimate educational goal worldwide' as the final, most far-reaching aspiration that people envision, plan, and commit to achieving in education. It is designed to serve everyone across all societies and cultures, transcending individual and societal objectives to embrace humanity as a whole. For the sake of brevity, we will refer to the 'ultimate educational goal worldwide' simply as the 'ultimate educational goal' henceforth.

Second, assuming the ‘ultimate educational goal’ exists, its realization would necessitate a form of ‘ultimate education.’ Perhaps we can formulate this ultimate education as follows:

ultimate education = (ultimate educational goal, design theory, future digital world)

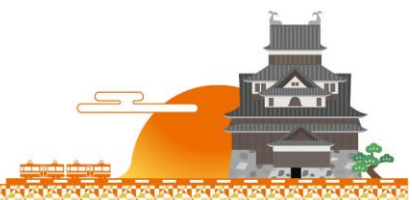
In this formulation, the ‘ultimate educational goal’ represents 'why' and 'what' to learn; design theory informs 'how' to learn; and ‘future digital world’ addresses ‘who’ and 'where' to learn, as well as how the ultimate education can be supported by and integrated into the digital future world, propelling the transformation of education toward that overarching goal.

We propose 'Global Harmony and Wellbeing' (abbreviated as ‘Global Harwell’) as a candidate for the ultimate educational goal in this formulation (Note 3). We use 'candidate' to acknowledge that, after thorough discussion, other superior options for the ultimate educational goal may emerge. Additionally, we introduce the Interest-Driven Creator (IDC) Theory as a candidate for the design theory—a theory planned to be a revised version of its predecessor. Moreover, we suggest the term 'Seamless AI World' is a candidate concept (or notion) that succinctly and accurately captures the essence of the future digital world (Note 4).

Once the ultimate educational goal is identified, to impact education significantly and accelerate its transformation, we may:

1. Build global and local awareness of the goal,
2. Establish experimental and model educational sites in various countries and regions,
3. Create a ‘global ultimate educational park,’ and
4. Disseminate the principles of ultimate education worldwide."

Given its potential far-reaching impact on education, along with its inherent intricacy and the fast-paced nature of the digital world, establishing the ultimate education worldwide will require concerted efforts of several generations. There's an adage: “If you want to go fast, go alone; if you want to go far, go together.” In fact, if you go alone, you won't get anywhere. However, given the pressing urgency humanity faces and our planet teetering on the edge of catastrophe, we must unite to achieve swift



and substantial progress. We cordially invite you to join us in this fruitful dialogue. To facilitate this, we plan to host a series of forums, either online or in person, to deliberate the aforementioned issues at the website: globalharwellgoal.org. We have chosen 'Global Harwell Goal' as the name for our website because the proposed goal can, at the very least, serve as a reference point and stimulate discussions until a more suitable name for the ultimate educational goal is agreed upon.

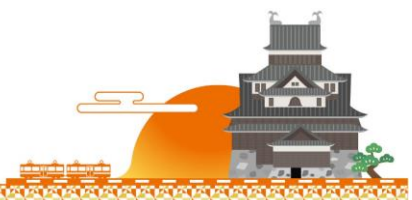
Note 1: Chee-Kit Looi forwarded the story to me. The letter, often attributed to Haim Ginott, was published in his book 'Teacher and Child.'

Note 2: Tak-Wai Chan, Chee-Kit Looi, Siu-Cheung Kong, Wenli Chen, Lung-Hsiang Wong, Su Luan Wong, Ben Chang, Ju-Ling Shih, Ying-Tien Wu, Fu-Yun Yu.

Note 3: It is worth noting that most of us are researchers, not experts in philosophy, politics, or religion. Nevertheless, we can still propose possible candidates for the ultimate educational goal based on our knowledge and life experiences, without deliberately considering religious doctrines or ideological beliefs. Furthermore, if Global Harwell is our ultimate educational goal, its fulfillment would require what we might call Global Harwell Education.

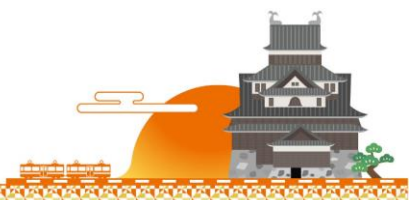
Note 4: If we accept Global Harwell as our ultimate educational goal, addressing the 'why' and 'what'; IDC Theory as our activity design framework, explaining the 'how'; and Seamless AI World as the concept describing the digital future, outlining the 'where' and 'who'; then 'Seamless IDC Theory' could be a theory for designing Global Harwell Education.

Biography: Professor Tak-Wai Chan is a trailblazer in digital learning and a global leader in the field. Almost 40 years ago, at a time when computers and the internet were not yet mainstream in the mid-eighties, he began researching on AI supported learning for his doctoral dissertation, proposing a new genus of AI in education system called learning companion system in 1988. This virtual companion system, called Integration-Kid, was the first artificial companion in the world. In 1989, he and his students started to build the world's first dedicated networked learning system for collaborative learning and learning through competition games, called Distributed West (1992). In early 2000s, he and his colleagues built the largest online learning community called EduCity (1.5 million learners with 1,700 schools involved in 2003), which was also referred as the first learning society in the world. In the same time period, his team conducted frontier research on mobile learning, intelligent classroom, future classroom, interactive clicker, e-schoolbag, one-to-one technology enhanced learning, and so forth. After this series of research, in 2006, working together with a large group of international researchers mainly from the Western countries, he proposed the concept of Seamless Learning. In 2010s, after some long-term experiments on reading (MSSR) and writing in one-to-one technology enhanced classroom, in collaboration with a group of Asian scholars, he proposed the Interest-



Driven Creator (IDC) Theory. Again, he and his colleagues are now calling for building Seamless Interest-Driven Creator (SIDC) Theory with interested researchers.

In addition to his research, Professor Chan has also been a major founder of two societies: the Asia-Pacific Society for Computers in Education (APSCE) and the Global Chinese Society for Computers in Education (GCSCE). These two societies respectively host annual conference series ICCEs and GCCCEs, as well as the journals RPTEL and JLCE. Moreover, to cope with the expanding research community of the field, he has been assisting the establishment of APSCE Theme-Based International Conference Series (TBICS), including CTE-STEM, ICFULL, MetaACES.



KEYNOTE SPEAKERS

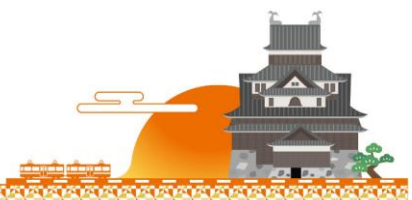
Davinia HERNÁNDEZ-LEO
Universitat Pompeu Fabra, Barcelona, Spain

Computers in Education: how can we support teachers?

Abstract: While it is widely agreed that the role of teachers is key to achieve students' learning, research on how technology can support teachers' tasks is often underemphasized. In this talk I will summarise research results leading to practical implications in the design of technologies that improve the efficiency and effectiveness of teachers' tasks, caring also for their wellbeing. In particular, I will focus on how technology can support learning design and the orchestration of complex learning scenarios, such as computer-supported collaborative learning in large classrooms. The technology presented will include authoring tools, teaching community platforms, enactment systems, orchestration dashboards and data-driven interventions based on learning analytics. I will also discuss synergies between technological solutions emphasizing human-in-control and machine-in-control perspectives. During the talk, participants will be able to experience some notions covered by interacting using the PyramidApp tool and the Integrated Learning Design Environment (ILDE).

Biography: Davinia Hernandez-Leo is Full Professor, Serra Hunter and ICREA Academia Fellow at the Department of Information and Communications Technologies Department (DTIC) at Universitat Pompeu Fabra, Barcelona (Spain), where she is the director of the Interactive and Distributed Technologies for Education research group (TIDE). She obtained a Ph.D. at University of Valladolid, Spain, and has been visiting researcher at Open University of the Netherlands, Fulbright Scholar at Virginia Tech and visiting academic at the University of Sydney. She has published extensively and received several awards, including best and most cited scientific paper awards and

recognitions for technology contributions. Prof. Hernández-Leo has been Vice-President of the European Association for Technology-Enhanced Learning, a Associate Editor of the IEEE Transactions of Learning Technologies, and is currently an elected member of the CSCL Committee within the International Society of the Learning Sciences and member of the Steering Committee of the European Conference on Technology-Enhanced Learning. She is very active in research supervision (PhD students, visitors, etc.), in participation and lead of European and national projects, and in collaborations with companies, non-profit organizations, policy makers and private foundations. Her research activity is broadly centered on the domain of learning technologies, spanning fields such as learning design technology, computer-supported collaborative learning (CSCL), community platforms and learning analytics.



KEYNOTE SPEAKERS

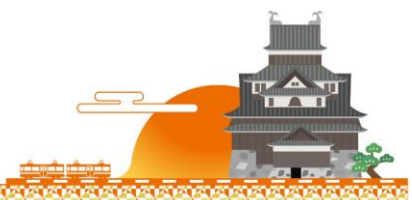
Masaru KITSUREGAWA
Research Organization of Information and Systems, Japan

Building a Research Data Platform and Education

Abstract: We have entered a highly uncertain, unpredictable age beset by natural disasters and wars around the world as well global-scale pandemics. However, we must not despair at this state of affairs and simply wait in hope of better circumstances. Rather, we must move forward with an eye to the future. The Research Organization of Information and Systems (ROIS), consisting of four distinguished research institutes, aims to solve complex phenomena and issues relating to life, the earth, the natural environment, and human society by reframing these issues from the perspective of information and systems while advancing data science to conduct integrated research that transcends disciplinary boundaries. In line with its mission to support resource-sharing and joint research among all universities, ROIS promotes cutting-edge research in specialized fields through joint research that transcends university boundaries by providing researchers nationwide with access to large-scale, state-of-the-art equipment and facilities, big data, valuable materials, and analytical methods. Especially, the National Institute of Informatics replaced the previous Science Information NETwork (SINET) with the world's fastest ultra-high-speed network infrastructure, SINET6, which provides transmission speeds of up to 400 Gbps. In addition to the over 1,000 institutions and universities currently being served, the network will soon be offered to elementary, junior high, and high schools as well. SINET is also expected to make substantial contributions to industry and continuing education. The full rollout of the GakuNin RDM research data management platform not only provides data management support for individual researchers but also

supports the development of open science by providing a platform for the proper release of research data including educational big data.

Biography: Masaru Kitsuregawa graduated from the Electronics Engineering Department, Faculty of Engineering, the University of Tokyo in March 1978, completed his doctorate in information engineering at the same university and received a Ph.D. in 1983. He became a lecturer at the Institute of Industrial Science in April 1983, an associate professor in 1984, and a professor in 1997, all at the same university. He has been director general of the National Institute of Informatics since 2013. Currently he is a president of Research Organization of Information and Systems in Japan. Dr. Kitsuregawa has made numerous distinguished achievements in the database field over a long period. He was a leading researcher on the high-speed operation of a hashed relational database. With a conventional simple method, the relational database operation cost is the square of the number of records. To solve this problem, he developed the GRACE hash method, which operates a database at a linear cost by combining a dynamic destaging method, bucket adjustment and different implementation methods. This method is referred to in Wikipedia as a basic method of operating a relational database. Today, all major database software programs use a hash algorithm. Dr. Kitsuregawa's research established the foundation of this algorithm. In recognition of his achievements in enhancing database performance, including those mentioned above, he received the ACM SIGMOD E. F Codd Innovations Award, which is the most prestigious award in database system research. He was the first recipient from Asia. Also, he was designated a fellow by IEICE, IEEE, and ACM, and also received many awards, including Achievement Award from IEICE, Medal with Purple Ribbon, and Legion d'Honneur, Chevalier.



THEME-BASED INVITED SPEAKERS

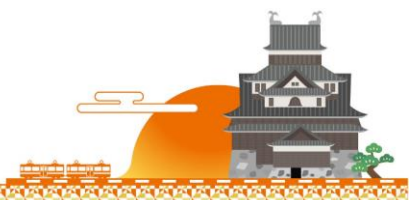
Kaushal Kumar BHAGAT
Indian Institute of Technology Kharagpur, India

Game On! Leveraging the Benefits of Game-Based Learning in the Digital Age

Abstract: In today's digital age, game-based learning has become an increasingly popular way to engage students and enhance their learning experiences. Game-based learning leverages the engaging and immersive nature of games to create a fun and interactive learning environment, which can help students to develop critical thinking, problem-solving, and collaboration skills. In this keynote presentation, we will explore the benefits of game-based learning and discuss how it can be used to meet the needs of today's learners. We will discuss the importance of incorporating game-based learning into the classroom and explore some of the latest research on the effectiveness of this approach. We will also explore some fundamental design principles of successful game-based learning and highlight some of the best practices that educators can use to create engaging and effective games for their students. Finally, we will examine some of the challenges and limitations of game-based learning and discuss how educators can work to overcome these obstacles. Overall, this keynote presentation will provide attendees with a comprehensive overview of game-based learning and its potential to transform education in the digital age. Whether you are an educator, a curriculum developer, or a game designer, this presentation will provide valuable insights into how you can leverage the benefits of game-based learning to create engaging and effective learning experiences.

Biography: Dr. Kaushal Kumar Bhagat is currently working as an assistant professor in the Advanced Technology Development Centre at the Indian Institute of Technology (IIT), Kharagpur, India. He received his Ph.D. from the National Taiwan Normal

University in September 2016. He then served a two-year postdoctoral position at the Smart Learning Institute at Beijing Normal University. In 2015, Dr. Bhagat received NTNU International Outstanding Achievement Award. He was also awarded the 2017 IEEE TCLT Young Researcher award. In 2020, he received APSCE Early Career Researcher Award (ECRA) from the Asia-Pacific Society for Computers in Education. He was also awarded the 2022 Excellence in Distance Education Award (EDEA) by the Commonwealth of Learning (COL), Canada. He is an associate editor of the British Journal of Educational Technology (BJET), Regional Associate Editor (Asia) of the Journal of Learning for Development (JL4D), and editor-in-chief of Contemporary Educational Technology (CET). He is also an editorial board member of several reputed international journals. He is a consultant for international organizations like the Commonwealth of Learning, UNESCO, etc. His research area of interest includes augmented reality, virtual reality, game-based learning, online learning, and technology-enhanced learning.



THEME-BASED INVITED SPEAKERS

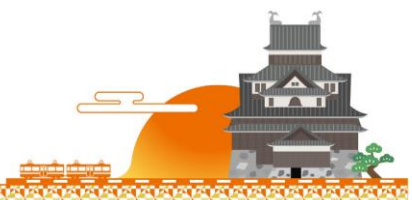
Brendan FLANAGAN
Kyoto University, Japan

Challenges and Opportunities of Educational Data Science for Reading Systems

Abstract: As educational systems are collecting an increasing amount of data on the learning behavior of students, its analysis has given rise to the fields of Educational Data Mining, and more recently Learning Analytics. As a result, educational AI that is constructed from and consumes learning behavior data has become more prevalent in learning systems and is fueling increased research attention in the field. While many datasets have been made public to promote research, important issues such as information privacy have also limited broader analysis and have resulted in data silos and hindered replication studies within the community. This talk will give an overview of educational data science focusing on reading systems and discuss important ongoing challenges including data analysis for niche learning contexts, data divide, and insights into methods for promoting collaboration through synthetic data and their possible limitations.

Biography: Brendan Flanagan is an Associate Professor at the Center for Innovative Research and Education in Data Science, Institute for Liberal Arts and Sciences, and the Data Science Department at the Graduate School of Informatics, Kyoto University. His research interests include Learning Analytics, Educational Data Science, Computer

Assisted Language Learning, and the Application of Blockchain in Education. He has also hosted educational data challenges at prominent international conferences for more than 5 years to promote educational data science research. He is currently the Principle Investigator of several government-funded research projects that investigate knowledge and learning process analysis, and explainable predictions by learning systems, and is also part of a Japanese Cabinet Office (NEDO) funded large research project into educational symbiotic AI systems.



THEME-BASED INVITED SPEAKERS

Daner SUN
Education University of Hong Kong, Hong Kong

Exploring the Evolution of Mobile Learning Environments

Abstract: The rapid advancement of technology and the changing landscape of education have led to significant changes in technology-enabled learning environments. This presentation will explore the impact of changing situations on mobile technology-enabled learning environments, with the speaker sharing insights as both a researcher and an instructor. The talk will cover the evolving distribution and adjustment of components in these environments, as well as changes in pedagogy before, during, and after the Covid-19 pandemic. Additionally, the speaker will highlight the emerging dominance of new technologies in Hong Kong and worldwide, and propose future research directions for mobile learning.

Biography: Dr Daner Sun is an assistant professor at the Department of Mathematics and Information Technology, the Education University of Hong Kong (EdUHK), Hong Kong. Her research interests are mobile learning, STEM education, and higher-order thinking in technology-supported learning. So far, Dr Sun has published more than 30 SSCI journal papers. She serves as the editor/co-editor for conference proceedings and journal special issues and acts as a reviewer in the community. Besides being the awardee of the APSCE Early Career Researcher Award (ECRA) 2022, she is also the awardee of Outstanding Performance in Research 2023, Outstanding Performance in Knowledge Transfer (Team) 2020, and Dean's Research Output Prize 2021 in EdUHK.

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