ICCE 2024

32nd International Conference
on Computers in Education
25 – 29 November 2024

MANILA, PHILIPPINES

CONFERENCE PROCEEDINGS

VOLUME I

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Message from the

Conference Chair

Maria Mercedes T. RODRIGO

Conference Chair
Ateneo de Manila University
Philippines

On behalf of the organizing committee, I would like to welcome all participants of the 32nd International Conference on Computers in Education (ICCE) 2024, the flagship conference of the Asia-Pacific Society for Computers in Education (APSCE). I am particularly delighted to welcome this conference back to Manila. This is the second time we have been privileged to host ICCE, and we are grateful to APSCE for this opportunity.

The conference theme of ICCE 2024, "Educational Technologies: Empowering Minds from Diverse Contexts" signifies the importance of catering to learners from diverse cultural and socio-economic backgrounds. With the geometric growth of artificial intelligence applications, the digital divide threatens to increase, further separating those with high access to technology from those from under-resourced contexts. It is therefore important to design educational interventions to a wide breadth of learner types, in order to ensure education quality and equity.

As part of our program, we welcome four world-class keynote speakers: **Michelle BANAWAN** of the Asian Institute of Management, Philippines will present her work on learning from Generative Artificial Intelligence (GenAI) through an in-depth examination of how it processes knowledge and constructs reasoning paths. **Mirjam HAUCK** is from the Open Centre for Languages and Cultures and Associate Head for Internationalisation, Equality, Diversity and Inclusion in the School of Languages and Applied Linguistics at the Open University/UK. She will discuss a framework for critical virtual exchange as a context for critical Global Citizenship Education. **Dragan GAŠEVIĆ** is Distinguished Professor of Learning Analytics and Director of Research in the Department of Human Centred Computing of the Faculty of Information Technology and the Director of the Centre for Learning Analytics at Monash University, Australia. He will discuss FLoRA, a platform that uses AI to support complex reading and writing tasks. Finally, **Seiji ISOTANI**, Visiting Professor of Education at the Harvard Graduate School of Education, USA and a Professor of Computer Science and Learning Technology at the University of São Paulo, Brazil, will be discussing his work on the impact of gamification on learning and motivation and the strategies for achieving effective personalization.

They will be joined by three inspiring theme-based speakers. **Ching Sing CHAI** is a professor at the Chinese University of Hong Kong and Associate Dean of Higher Education. He will discuss a reframing of the Technological Pedagogical Content Knowledge (TPACK) framework as the Intelligent Pedagogical Content Knowledge (IPACK) for AI. **Wenli CHEN**, an Associate Professor and Head of the Learning Sciences and Assessment Academic Group at the National Institute of Education, Nanyang Technological University (NTU) Singapore, will present her work on Multi-Modal Learning Analytics. Finally, **Johanna PÖYSÄ-TARHONEN** is a senior researcher at the Finnish Institute for Educational Research (FIER), University of Jyväskylä, Finland, and a Docent at the Philosophical Faculty, University of Eastern Finland. She will discuss the current landscape, challenges, and prospects of computer-supported collaborative work.

For making ICCE 2024 possible, I thank the organizing committee for all their hard work and perseverance. I thank the International Program Coordination Chair and Co-Chair, Akihiro Kashihara and Bo Jiang, our Local Organizing Committee Chair, Jessica Sugay and her team, and our consultants, Ju-Ling Shih, Hiroaki Ogata, and Lung Hsiang Wong. I also thank the many sub-conference chairs, program committee members, organizers of the Workshops, Tutorials, Work-In-Progress Posters (WIPP), Doctoral Student Consortium (DSC), Posters, Early Career Workshops (ECW), and Extended Summaries (ES). I am grateful to all the paper authors and registered participants for joining us this year.

A special note of thanks goes to Managing Secretary of APSCE Pham-Duc Tho for his tireless work, the standing committee, and the Executive Committee of APSCE.

I thank the “home court” that has given us every possible advantage in their power: Ateneo de Manila University, the Ateneo Laboratory for the Learning Sciences, Faura Research Foundation, and Arete.

Finally, I thank our sponsors: the Office of Naval Research Global, PHINMA Education, PLDT, Smart Communications, Inc., OT Kang Scholarship Foundation, Department of Science and Technology Philippine Council for Industry, Energy, and Emerging Technology Research and Development, SM Foundation, Unilab Foundation, Chemrez Technologies, and CL Follosco Group.

I wish all the participants a fruitful and engaging conference! *Thank you & mabuhay!*

Message from the

International Program Coordination Chairs

Akihiro KASHIHARA

The University of Electro-Communications, Japan

Bo JIANG

East China Normal University, China

Welcome to the 32nd International Conference on Computers in Education (ICCE) organized by the Asia-Pacific Society for Computers in Education (APSCE)! ICCE is an annual conference series addressing a broad range of issues related to using Information and Communication Technology (ICT) for education and learning. ICCE2024 takes place in Manila, Philippines from November 25-29, 2024. The main purpose is to provide researchers from all over the world with the opportunities to share research and new ideas for building the future of the field of Computers in Education.

ICCE 2024 continues the meta-conference tradition of the previous ICCEs. The conference is organized into seven Sub-Conferences specializing specific themes. Each Sub-Conference is organized by a program committee appointed by the respective Special Interest Group (SIG: refer to https://apsce.net/special-interest-groups). These Sub-Conferences are:

- **C1:** ICCE Sub-Conference on Artificial Intelligence in Education/Intelligent Tutoring System (AIED/ITS) and Adaptive Learning
- **C2:** ICCE Sub-Conference on Computer-supported Collaborative Learning (CSCL) and Learning Sciences
- **C3:** ICCE Sub-Conference on Advanced Learning Technologies (ALT), Learning Analytics and Digital Infrastructure
- **C4:** ICCE Sub-Conference on Technology Enhanced Learning for Mobility of Learners and Learning Experiences (TEML)
- **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.

ICCE2024 received a total of 188 papers (153 full, 29 short, and 6 posters) from 21 different countries or economies. Table 1 provides the submissions by the country of the first author in each paper. Top five countries with the highest number of submissions were Japan, Philippines, India, Taiwan, and Hong Kong. Submissions were also received from the Middle East, Europe, America and Africa, which signals the international interest toward ICCE 2024.

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

Countries/Economies					
Japan	49	United States	6	Thailand	2
Philippines	39	Canada	4	Tunisia	2
India	16	Australia	3	Croatia	1
Taiwan	16	Indonesia	3	Israel	1
Hong Kong	13	Malaysia	3	Romania	1
Singapore	12	New Zealand	2	Spain	1
China	11	South Korea	2	United Kingdom	1

All papers were subjected to a rigorous review process by at least three reviewers from the respective Sub-Conference program committees. After the reviews were completed, a metareview was provided for each paper. In total, 660 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 Chair and Co-Chair, who oversaw the review process and quality for all Sub-Conferences. This resulted in 38 full papers, 62 short papers, and 42 posters accepted across the seven Sub-Conferences. The overall acceptance rate for full papers was 24.84%, which reflects our efforts to continue the maintenance of the quality of presentations at ICCE 2024. The complete statistics of paper acceptance is shown in Table 2.

Table 2. Paper Acceptance Statistics

Sub-Conference	C1: AIED/ITS	C2: CSCL	C3: ALT	C4: TEML	C5: EGG	C6: TELL	C7: PTP	Total
Total Submissions	39	19	44	16	21	15	34	188
Submitted as Full Paper	32	13	36	14	20	10	28	153
25% of Submitted as Full Paper	8.00%	3.25%	9.00%	3.50%	5.00%	2.50%	7.00%	38.25%
Accepted as Full Paper	6	3	10	4	5	3	7	38
Full Paper %	18.75%	23.08%	27.78%	28.57%	25.00%	30.00%	25%	24.84%
Accepted as Short Paper	8	7	17	5	5	8	12	62
Accepted as Poster	12	4	10	3	3	1	9	42
Rejected	13	5	7	8	8	3	6	46
Overall %	66.67%	73.68%	84.09%	75.00%	61.90%	80.00%	82.35%	75.53%

In addition to full papers, short papers and posters, ICCE 2024 includes various program components, such as Keynote Speeches, Theme-based Invited Speeches, Workshops, Tutorials, Interactive Events, Panels, Work-in-Progress Posters (WIPP), Extended Summary (ES), Showcase of Advancements in Technology-Enhanced Learning in Underrepresented Countries (SATELUC), 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 8 workshops, 2 tutorials, 2 Interactive Events, DSC, ECW, and APSCE Student Wing Workshop.

We are grateful to all who contributed to making ICCE 2024 a successful conference. First, we thank all the paper authors for their contributions and for choosing ICCE 2024 as a venue to present their 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 bringing inspiring research to the ICCE 2024 participants. The Local Organizing Committee deserves a big thank you for their hard work.

We hope that all participants will find ICCE 2024 interesting and inspiring, and that they will enjoy not only academic activities but also exciting cultural experiences in Manila, Philippines.

Message from the

Local Organizing Chair

Jessica O. SUGAY

Local Organizing Committee Chair
Ateneo de Manila University
Philippines

Welcome to Manila! The Ateneo de Manila University (ADMU), through the Ateneo Laboratory for the Learning Sciences (ALLS) is honored to host ICCE 2024 and to welcome the ICCE community to our Loyola Heights Campus!

After having first hosted ICCE 2018, we thank the Asia Pacific Society for Computers in Education (APSCE) for again entrusting us with this event.

For making this conference possible, we thank our Conference Chair Maria Mercedes RODRIGO, IPC Chair Akihiro KASHIHARA, IPC Co-Chair Bo JIANG, the Local Organizing Committee Core Team – Ma. Rosario M. MADJOS (Registration & Finance), Japheth Duane C. SAMACO (Logistics), John Michael B. SANTOS (Creatives & Publicity), Romell Ian B. DE LA CRUZ (Web Site Management), and Mar Joseph Aureos G. MEJILLA (Programs). We thank the many ADMU undergraduate students who comprise our LOC SubCore and Volunteers Pool.

We thank our sponsors: Areté, Office of Naval Research Global, PHINMA Education, PLDT Smart, O.T. Kang Scholarship Foundation, Inc., DOST-PCIEERD, Faura Research Foundation, SM Foundation, Unilab Foundation, Torre Lorenzo Development Corp., Chemrez Technologies, Inc., CL Follosco Group, Inc., Jack 'n Jill brands — Chippy, Cloud 9, Hello! Desserts, Mang Juan, Piattos, Roller Coaster, and Vcut — and San Miguel Beer.

Lastly, we thank the more than 250 conference participants for all their contributions to the conference and for their presence. We hope that you find some time to enjoy Manila's sites, food, and shopping!

Organization

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SUB-CONFERENCES

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

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PC Co-Chairs
Luc PAQUETTE, University of Illinois at Urbana-Champaign, USA
Michelle P. BANAWAN, Asian Institute of Management, Philippines

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

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PC Co-Chairs
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Lenka SCHNAUBERT, University of Nottingham, UK
Juan ZHENG, Lehigh University, USA

Advisor
Ben CHANG, National Central University, Taiwan

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

PC Executive Chair

Shinobu HASEGAWA, Japan Advanced Institute of Science and Technology, Japan

PC Co-Chairs

Seb DIANATI, Charles Darwin University, Australia
Tudur Sadashiva Ashwin DIXIT, Vanderbilt University, USA
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C4: ICCE Sub-Conference on Technology Enhanced Learning for Mobility of Learners and Learning Experiences (TEML)

PC Executive Chair

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Daner SUN, The Education University of Hong Kong, Hong Kong
Ivica BOTIČKI, University of Zagreb, Croatia
Michael Shane TUTWILER, University of Rhode Island, USA

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

PC Executive Chair

Junfeng YANG, Hangzhou Normal University, China

PC Co-Chairs

Chen SUN, University of Manchester, UK
Chih-Pu DAI, University of Hawaii, Manoa, USA
Lu HUANG, Hangzhou Normal University, China

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

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Jozef COLPAERT, University of Antwerp, Belgium
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Brendan FLANAGAN, Kyoto University, Japan
Yanjie SONG, The Education University of Hong Kong, Hong Kong

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

PC Executive Chair

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PC Co-Chairs

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Prajakt PANDE, Southern Methodist University, USA

OTHER COMPONENTS

Workshop/Tutorial/Interactive Event

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Ma. Louise Antonette N. DE LAS PEÑAS, Ateneo de Manila University, Philippines

Advisor

Chiu-Lin LAI, National Taipei University of Education, Taiwan

Work-In-Progress Posters (WIPP)

Chair

Vwen Yen Alwyn LEE, Nanyang Technological University, Singapore

Co-Chairs

Si ZHANG, Central China Normal University, China
Chiu-Lin LAI, National Taipei University of Education, Taiwan
Yun WEN, Nanyang Technological University, Singapore

Doctoral Student Consortium (DSC)

Chair

Lin FENG, Singapore University of Social Sciences, Singapore

Co-Chair

Vwen Yen Alwyn LEE, Nanyang Technological University, Singapore
Yuyao TONG, The University of Hong Kong
Huiying CAI, Jiangnan university, China

Early Career Workshop (ECW)

Chair

Chiu-Lin LAI, National Taipei University of Education, Taiwan

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Shao-Chen CHANG, Yuan Ze University, Taiwan
Jon MASON, Charles Darwin University, Australia

Advisor

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Extended Summary (ES)
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Consultant
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Technical Advisor
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Showcase of Advancements in Technology-Enhanced Learning in Underrepresented Countries (SALUTEC)
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Lung-Hsiang WONG, Nanyang Technological University, Singapore

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Ivica BOTIČKI, University of Zagreb, Croatia
Nur Aira Abd Rahim, Universiti Putra Malaysia
Saida ULFA, State University of Malang, Indonesia

Panel
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Bo JIANG, East China Normal University, China

Co-Chair
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Christine TABLATIN

SPECIAL INTEREST GROUPS (SIG) 2023-2024

SIG 1: Artificial Intelligence in Education/Intelligent Tutoring Systems/Adaptive Learning (AIED/ITS/AL)
Bo JIANG, East China Normal University, China

SIG 2: Computer-supported Collaborative Learning and Learning Sciences (CSCL)
Lenka SCHNAUBERT, University of Nottingham, UK

SIG 3: Advanced Learning Technologies, Platforms and Infrastructure (ALT)
SIG 4: Technology Enhanced Learning for Mobility of Learners and Learning Experiences (TEML) (formerly CUMTEL: Classroom, Ubiquitous and Mobile Technologies Enhanced Learning)
Ivica BOTIČKI, University of Zagreb, Croatia

SIG 5: Educational Gamification and Game-based Learning (EGG)
Jewoong MOON, University of Alabama, USA

SIG 6: Technology Enhanced Language Learning (TELL)
Yanjie SONG, Education University of Hong Kong, Hong Kong

SIG 7: Practice-driven Research, Teacher Professional Development and Policy of ICT in Education (PTP)
Jayakrishnan Madathil WARRIEM, Indian Institute of Technology of Madras, India

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)
Shitanshu MISHRA, UNESCO MGIEP, India

SIG 10: Learning Analytics and Educational Data Mining (LAEDM)
Ashwin T.S., Vanderbilt University, USA

SIG 11: Computational Thinking Education & STEM Education (CTE&STEM)
Ting-Chia HSU, National Taiwan University, Taiwan

C1: AIED/ITS PC MEMBERS

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Gaoxia ZHU	National Institute of Education, Singapore

C3: ALT PC MEMBERS

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Yiling DAI	Kyoto University, Japan
Seb DIANATI	Charles Darwin University, Australia
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Wen GU	Japan Advanced Institute of Science and Technology, Japan
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C4: TEML PC MEMBERS

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Wararat WONGKIA	Mahidol University, Thailand
Taisei YAMAUCHI	Kyoto University, Japan

C5: EGG PC MEMBERS

Chih-Pu DAI	University of Hawaii, Manoa, USA
Ruiqi DENG	Hangzhou Normal University, China
Jihong DING	Hainan University, China
Ming GAO	Shanghai Normal University, China
Lu HUANG	Hangzhou Normal University
A.Y.M. Atiquil ISLAM	East China Normal University, China
Lukas LIU	The University of Hong Kong, Hong Kong
Jewoong MOON	University of Alabama, USA
Yanjun PAN	Southern Methodist University, USA
Chen SUN	University of Manchester, UK
Dan SUN	Hangzhou Normal University, China
Rui SU	Guangxi Normal University, China
Satoshi TAKAHASHI	Kanto Gakuin University, Japan
Cixiao WANG	Beijing Normal University, China
Junfeng YANG	Hangzhou Normal University, China
Atsushi YOSHIKAWA	Kanto Gakuin University, Japan
Bo ZHANG	East China Normal University, China
Lu ZHANG	Beijing University of Posts and Telecommunications, China
Nuodi ZHANG	Florida State University, USA
Guojing ZHOU	South China Normal University, China
Wenjuan ZHU	Hangzhou Normal University, China

C6: TELL PC MEMBERS

Azzeddine BOUDOUAIA	Zhejiang University, China
Mei-Rong Alice CHEN	Soochow University, Taiwan
Jozef COLPAERT	University of Antwerp, Belgium
Ting DA	Beijing Normal University, China
Brendan FLANAGAN	Kyoto University, Japan
Siao-Cing GUO	National Taipei University of Business, Taiwan
Feifei HAN	Australian Catholic University, Australia
Mohammad Nehal HASNINE	Hosei University, Japan
Chengyuan JIA	Zhejiang University, China
Yuhui JING	Zhejiang University of Technology, China
Seongyong LEE	University of Nottingham Ningbo China, China
Rui LI	Hunan University, China
Jiawen LIU	Nanjing Normal University, China
Kelly LU	Central China Normal University, China
Ahmed Hosny Saleh METWALLY	Helwan University, Egypt
Grace Yue QI	Massey University, New Zeland
Guolong QUAN	East China Normal University, China
Rustam SHADIEV	Zhejiang University, China
Yanjie SONG	The Education University of Hong Kong, Hong Kong
You SU	Beijing University of Posts and Telecommunications, China
Ying TANG	Southwest University, China
Wanwisa WANNAPIPAT	Khon Kaen University, Thailand
Wen-Chi Vivian WU	Asia University, Taiwan
Tosh YAMAMOTO	Kansai University, Japan
Dong YANG	Beijing Normal University, China
Yin YANG	The Education University of Hong Kong, Hong Kong
Chengjiu YIN	Kyushu University, Japan
Roza ZHUSSUPOVA	L. N. Gumilyov Euarsian National University, Kazakhstan

C7: PTP PC MEMBERS

Divya BARANWAL	Southern Methodist University, USA
Ajita DESHMUKH	MIT-ADT University, Pune, India
Natasha GOMES	Goa University, India
Kapil KADAM	D. Y. Patil College of Engineering & Technology, India
Navneet KAUR	Indian Institute of Technology Delhi, India
Priscilla MOSES	Universiti Tunku Abdul Rahman, Malaysia
Lucian NGEZE	University of Dodoma, Tanzania
Prajakt PANDE	Southern Methodist University, USA
Prajish PRASAD	FLAME University, India
Rekha RAMESH	Mumbai University, India
Deepti REDDY	Mukesh Patel School of Technology, Management and Engineering, India
Lakshmi T G	Shikha Academy, India
Briju THANKACHAN	EdTech Society, India
Bindu THIRUMALAI	Tata Institute of Social Sciences, India
Arlene Mae VALDERAMA	José Rizal University, Philippines
Sheeja VASUDEVAN	Indian Institute of Technology, Bombay, India
Vikram VINCENT	Indian Institute of Technology Bombay, India
Jayakrishnan Madathil WARRIEM	Indian Institute of Technology Madras, India

EARLY CAREER RESEARCHER AWARD WINNER (2024)

Dr. Mas Nida Md. Khambari is a Graduate Technologist and Senior Lecturer in Instructional Technology and Learning Design at the Faculty of Educational Studies, Universiti Putra Malaysia (UPM). Her research interests and specialization include Information Technology, Educational Technology, Instructional Technology & Learning Design, Teachers' Professional Development, Digital Learning Agility, and Gamification. She has authored more than 50 research articles in the field of educational technology. She is also a principal investigator to four research grants with a total fund of USD47,465.00. She is also a research collaborator to 14 other research grants in the areas of medical education, engineering education, computer sciences, and science education, amounting to USD207,103.00. The core of her work is in close collaboration with pre-service teachers and practitioners to help them understand and implement creator mindset through design thinking for gamification and develop innovative learning designs that can trigger learners' interest and immerse them in the learning process. She advocates playful yet impactful learning by optimising digital and non-digital technologies that empower both teachers and learners. To date, Mas Nida has produced more than 18 copyrighted innovations, including mobile apps, web-based apps, board games, and teaching modules. Due to her outstanding contributions, she received three of the most coveted awards in UPM — the Putra InnoCreative Award for Best InnoCreative Educator (Face To Face Immersive Learning Experience) in 2019, Vice Chancellor Fellowship Award in Teaching and Learning in 2020, and Outstanding Supervision Award 2023.

Mas Nida's leadership qualities is evident when she was appointed as the Deputy Director (Innovations in Teaching and Learning) at the Centre for Academic Development and Leadership Excellence (CADe-Lead), UPM from 2023 to 2024 where she spearheaded the development of 21 micro-credentials courses. Due to her

leadership acumen, she has just been recently appointed as the Deputy Director of International Institute of Online Education (IIOE) National Centre UNESCO-ICHEI Malaysia. She currently serves as the Visiting Professor at the State Islamic Institute Kerinci, Indonesia.

Mas Nida has contributed tremendously to APSCE's growth at the very early stage of her career until the present. Among the notable positions she has held include being the Chair of SIG: Developments of ICT in the Asia Pacific (DICTAP), Chair of APSCE Merit Scholarship, Chair of SIG: Practice-driven Research, Teacher Professional Development and Policy of ICT in Education (PTP), Chair of Workshop on ICT Trends in Emerging Economies (WICTTEE), Chair of Early Career Workshop (ECW), and Co-Chair of Showcase of Advancements in Technology-Enhanced Learning in Underrepresented Countries (SATELUC). Her hard work and dedication to APSCE were recognized when she was appointed as an Executive Committee member since 2021. Being passionate about her work with APSCE, she took on the challenge as the Local Organizing Chair to host the first ever hybrid ICCE in Kuala Lumpur in 2022.

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

LAST TEN YEARS' EARLY CAREER RESEARCHER AWARD WINNERS

2023 – APSCE Early Career Researcher Award
Rwitajit MAJUMDAR, Kyoto University, Japan

2022 – APSCE Early Career Researcher Award
Daner SUN, The Education University of Hong Kong, Hong Kong

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
Chengjiu 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 2023 to November 2024)

APSCE Webinar #43: How Students Can Creatively Use Chatbots to Create Simulations, Apps, and Much More
Date: 18 March 2024 (Monday)
Speaker: Prof. Ken KAHN, University of Oxford, UK
Moderator: Prof. Ivica BOTICKI, University of Zagreb, Croatia
Curated by: APSCE Classroom, Ubiquitous and Mobile Technology-Enhanced Learning (CUMTEL) SIG (currently TEML SIG)

APSCE Webinar #44: Understanding Self-Directed Out-of-Class Language Learning with Technology
Date: 2 April 2024 (Tuesday)
Speaker: Assoc. Prof. Chun LAI, The University of Hong Kong, Hong Kong
Moderator: Assoc. Prof. Yanjie SONG, The Education University of Hong Kong, Hong Kong
Curated by: APSCE Technology-Enhanced Language Learning (TELL) SIG

APSCE Webinar #45: Scaffolding in Game and Problem-based Learning: Our DBR Story of EcoJourneys
Date: 24 April 2024 (Wednesday)
Speaker: Dr. Haesol BAE, University at Albany, State University of New York, USA
Moderator: Dr. Jewoong MOON - University of Alabama, USA
Curated by: APSCE Educational Games and Gamification (EGG) SIG

APSCE Webinar #46: The Whats, Whys, and Hows of Internet Ethnography for Education
Date: 21 May 2024 (Tuesday)
Speaker: Dr. Ryan EBARDO, De La Salle University, Philippines
Moderator: Dr. Jayakrishnan MAHATHIL, IIT Madras, India
Curated by: APSCE Practice-Driven Research, Teacher Professional Development, Policy of ICT in Education (PTP) SIG

APSCE Webinar #47: Introduction to a Rigorous Process for Asking Better Questions: An Essential and Long-overlooked Learning Technology
Date: 10 July 2024 (Wednesday)
Speakers: Dr. Dan ROTHSTEIN, Right Question Institute (RQI), USA, and
Ms. Tomoko OUCHI, Right Question Institute (RQI), USA
Moderator: Dr. Shitanshu MISHRA, UNESCO MGIEP, India
Curated by: Educational Use of Problems/Questions in Technology-Enhanced Learning (EUPQ) SIG

APSCE Webinar #48: The role of AI in education and assessment
Date: 5 August 2024 (Monday)
Speaker: Prof. Edward PALMER, University of Adelaide, Australia
Moderator: Assoc. Prof. Bo JIANG, East China Normal University, China
Curated by: Artificial Intelligence in Education/Intelligent Tutoring Systems and Adaptive Learning (AIED/ITS/AL) SIG

APSCE Webinar #49: Approaches in Human-AI Collaborative Storytelling towards Learning and Mental Well-being
Date: 22 August 2024 (Thursday)
Speaker: Dr. Ethel ONG, De La Salle University, Philippines
Moderator: Dr. Ryan EBARDO, De La Salle University, Philippines
Curated by: Development of Information and Communication Technology in the Asia-Pacific Neighborhood (DICTAP) SIG

APSCE Webinar #50: Collaborative learning with AI: AI as a partner in CSCL?
Date: 9 September 2024 (Monday)
Panelists: Jason LODGE, University of Queensland, Australia,
Andy NGUYEN, University of Oulu, Finland, and
Yun WEN, Nanyang Technological University, Singapore
Moderator: Lenka SCHNAUBERT, University of Nottingham, UK
Curated by: APSCE Computer-Supported Collaborative Learning and Learning Sciences (CSCL) SIG

APSCE Webinar #51: Advancing the Theory of Learning by Teaching with a Teachable-agent Technology
Date: 6 November 2024 (Wednesday)
Speaker: Assoc. Prof. Noboru MATSUDA, North Carolina State University, USA
Moderator: Dr. Ashwin Tudur SADASHIVA, Vanderbilt University, USA
Curated by: Development of Learning Analytics and Educational Data Mining (LAEDM) SIG

APSCE Webinar #52: Computational Thinking and AI in Schools: What We Can Do Better?
Date: 20 November 2024 (Wednesday)
Speaker: Prof. Valentina DAGIENE, Vilnius University, Lithuania
Moderator: Prof. Ting-Chia HSU, National Taiwan Normal University, Taiwan
Curated by: Computational Thinking in Education / STEM (CTE/STEM) SIG

KEYNOTE SPEAKER

Michelle Banawan

Asian Institute of Management

C1: Sub-Conference on Artificial Intelligence in Education/Intelligent Tutoring Systems (AIED/ITS)

Learning from Generative AI for Cognitive and Pedagogical Advancement

In an era where Generative AI (GAI) is rapidly transforming education, understanding the cognitive models and knowledge-building processes behind these tools is crucial for educators. This keynote explores the role reversal of learning from GAI—not just in terms of the output it generates but through an in-depth examination of its underlying cognition and reasoning frameworks. By dissecting how AI models like ChatGPT O1 process knowledge, construct reasoning paths, and engage in problem-solving, we can glean insights that reshape how we approach instructional scaffolding and educational design.

The talk will delve into how educators can leverage this understanding to develop more sophisticated scaffolding techniques, informed by GAI's cognition models. Emphasizing the transition from surface-level interactions to a deeper engagement with AI's knowledge construction methods, we will explore strategies that educators can adopt to enhance critical thinking, problem-solving, and inquiry-based learning in students.

Relevant to ICCE's mission to advance educational technology, this presentation offers a forward-looking perspective on how generative AI tools provide not just an instructional aid but also a model for developing more effective educational frameworks grounded in cognitive science and AI reasoning.

Dr. Michelle Pacifico-Banawan currently leads the Bachelor of Science in Data Science and Business Administration at the Asian Institute of Management as Academic Program Director, the Philippines' first Transnational Higher Education Program with the University of Houston. With a Ph.D. in Computer Science from Ateneo de Manila University, her academic career and work has been centered on bridging technology with education, as evidenced by her postdoctoral research at Arizona State University's Science of Learning and Educational Technology Laboratory and her leadership in academia. Her current work extends to pivotal advocacy and research on the impact of Generative AI (GAI) in education and various domains.

Dr. Banawan's dedication to integrating GAI into educational paradigms has seen her actively engage as a resource speaker globally, sharing insights and practical applications of GAI across education, industries, and beyond. She is currently involved in various initiatives in shaping future educational strategies through GAI in Asia and the Pacific. This advocacy allows her to contribute to developing trust in AI systems, governance, creating meaningful engagements, and prioritizing pedagogy to harness AI's potential effectively.

KEYNOTE SPEAKER

Dragan Gašević

Monash University

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

Getting ready for the age of AI: Developing self-regulated learners

The burgeoning field of generative AI presents both opportunities and challenges for education. While AI offers powerful tools, concerns about information accuracy and how individuals interact with generative AI tools underscore the need for strong self-regulated learning (SRL) skills. This talk explores strategies for educators and education technology developers to foster SRL in students, empowering them to become independent and adaptive learners. Drawing on the findings of multiple empirical studies, it will examine the implications of generative AI on SRL abilities, focusing on how learners can effectively engage in evaluative judgment, apply learning strategies, and solve information problems.

The key takeaway is that the use of generative AI tools may limit learners' ability to effectively deploy and develop their SRL skills. The talk will also highlight promising ways to address these limitations. Finally, it will explore potential partnerships to equip educators with the tools needed to prepare learners for an AI-integrated learning landscape.

Dragan Gašević is Distinguished Professor of Learning Analytics and Director of Research in the Department of Human Centred Computing of the Faculty of Information Technology and the Director of the Centre for Learning Analytics at Monash University. Dragan's research interests center around data analytic, AI, and design methods that can advance understanding of self-regulated and collaborative learning. He is a founder and served as the President (2015-2017) of the Society for Learning Analytics Research.

He is a recipient of the Life-time Member Award (2022) as the highest distinction of the Society for Learning Analytics Research (SoLAR) and a Distinguished Member (2022) of the Association for Computing Machinery (ACM). In 2019-2023, he was recognized as the national field leader in educational technology in The Australian's Research Magazine that is published annually. He led the EU-funded SHEILA project that received the Best Research Project of the Year Award (2019) from the Association for Learning Technology.

KEYNOTE SPEAKER

Mirjam Hauck

The Open University UK

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

Critical Virtual Exchange for Critical Global Citizenship Education

UNESCO's (2014) broad definition of Global Citizenship Education is centered on the aim to "empower learners to engage and assume active roles, both locally and globally, to face and resolve global challenges and ultimately to become proactive contributors to a more just, peaceful, tolerant, inclusive, secure and sustainable world" (p. 15). Scholars like Stein and Andreotti (2021) whose works is grounded in critical pedagogy and postcolonial theory, question such common understandings of GCE which foreground self-improvement and the development of leadership skills to save the world rather than addressing the economic and cultural roots of the inequalities in the way power and wealth/labor are distributed in a global complex and uncertain system. They challenge hegemonic discourses, the masking of global complexity, and the perpetuation in education of colonial ideologies, and they encourage us "to think otherwise" (Andreotti, 2006, p. 7).

Similarly, Helm and Hauck (2020) distinguish between hegemonic and non-hegemonic forms of virtual exchange (VE). VE refers to structured online collaborative learning between geographically and/or culturally diverse groups of students, aimed at fostering intercultural dialogue through digitally mediated project work. VE is a research-informed practice and serves as a valuable tool in advancing Internationalisation at Home in Higher Education, integrating intercultural dimensions into curricula, and expanding opportunities for global learning beyond physical mobility.

Reljanovic Glimäng (2022) adds an additional conceptual layer to Helm and Hauck's distinction, namely the notion of safe (hegemonic) versus brave (non-hegemonic) spaces in VE where learners can engage in thinking otherwise.

Non-hegemonic, brave VE, then, is critical virtual exchange (CVE) which I propose as an ideal context for critical Global Citizenship Education in Andreotti's (2006) sense, i.e. with notions of power, voice, and difference at its core. I will introduce a framework for CVE (Hauck, 2023; in press) that highlights what distinguishes this approach to Internationalisation at Home (Beelen and Jones, 2015; O'Dowd & Beelen, 2021) from VE as we know it, and will present exchange examples from both the Global North and the Global South that speak to the CVE agenda.

Dr. Mirjam Hauck is the Director of The Open Centre for Languages and Cultures and Associate Head for Internationalisation, Equality, Diversity and Inclusion in the School of Languages and Applied Linguistics at the Open University UK. She is also a Senior Fellow of the UK's Higher Education Academy and has written numerous articles and book chapters on the use of technologies for the learning and teaching of languages and cultures, in virtual exchange (VE) contexts in particular, i.e. online collaborative learning between groups of students in different cultural contexts and/or geographical locations.

Currently her scholarly work focuses on theorizing and framing the nascent field of critical virtual exchange (CVE), i.e. VE through the social justice and inclusion lens which aims to ensure more equitable and inclusive student exchange experiences.

Dr. Hauck presents regularly at conferences, seminars, and workshops worldwide. She is the President of the European Association for Computer Assisted Language Learning (EUROCALL), and the Chair of the Language and Culture Expert Community of the European Association for International Education (EAIE). She serves as Associate Editor of the *CALL Journal* and is a member of the editorial board of *ReCALL and LLT*.

KEYNOTE SPEAKER

Seiji Isotani

University of Sao Paulo / Harvard University

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

Personalized Gamification Experiences: From Design to Impact

The one-size-fits-all approach to designing gamification experiences has led to uneven results. While it may work well for some, it can demotivate others due to its failure to account for individual or domain-specific differences. This issue is particularly problematic in educational settings, where learning outcomes are strongly linked to student motivation and engagement. In response, personalized gamification offers a promising solution by tailoring learning experiences to individuals. However, several key questions must be addressed to achieve effective personalization: What specific elements should be used to adapt the design? How does gamification influence students, and how does its impact evolve over time? How can personalization be (semi-)automated to ensure scalability and efficiency? In this keynote, I will synthesize findings from multiple studies conducted by my group, exploring the impact of gamification on learning and motivation, as well as various strategies for personalization. These strategies include the use of player profiles and learning activity types to adapt gamification designs through machine learning. Our empirical studies indicate that personalized gamification can enhance students' flow experience, motivation, and learning outcomes. Additionally, we examine potential risks, such as gender bias in the design of gamification systems, which may lead to unintended consequences.

Seiji Isotani is a Visiting Professor of Education at the Harvard Graduate School of Education and a Professor of Computer Science and Learning Technology at the University of São Paulo, Brazil. He earned his Ph.D. from Osaka University, Japan, and was a postdoctoral researcher at Carnegie Mellon University. For over 15 years, Isotani has dedicated his research career to advancing the science of how people learn with interactive and intelligent educational technologies, and to exploring the design and implementation of public policies that ensure every student receives the personalized support needed for fulfilling and meaningful educational experiences. He is renowned for his work in the fields of Gamification in Education and Artificial Intelligence in Education for resource-constrained environments.

Since 2017, he has served as a technical and scientific advisor to the Brazilian Ministry of Education, designing and implementing public policies related to educational technologies. He was a key contributor to the development of norms for the K-12 Computer Science Curriculum in Brazil and to the design and implementation of educational policies that have significantly influenced over 50 million students nationwide. Examples include the policy to evaluate, acquire, and distribute books to every student in the country, the establishment of the Brazilian National Hybrid Learning Network, and the Policy for Learning Recovery. The latter policy was acclaimed at the 2022 World Economic Forum as a groundbreaking post-COVID-19 innovation.

THEME-BASED INVITED SPEAKER

Ching Sing Chai

Chinese University of Hong Kong

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

In search of Intelligent Pedagogical Content Knowledge (IPACK)

The advancements of artificial intelligence (AI) have made it necessary for teachers to consider how they could integrate AI into teaching and learning. While research in this area is still in its early stage, it seems clear that the technological pedagogical content knowledge needs to be reframed as intelligent pedagogical content knowledge (IPACK), especially for the use of AI in Education (AIED). This study attempts to provide a pilot review on existing studies and propose an initial framework to facilitate teacher's design of IPACK. Associated case studies from various subjects will also be shared.

Ching Sing Chai is a professor at the Chinese University of Hong Kong. He is currently the Associate Dean of Higher Education. His research interests are in the areas of Technological Pedagogical Content Knowledge (TPACK), Artificial Intelligence in education, teachers' beliefs, design thinking and students' learning with ICT. He has published more than 150 journal articles in reputable journals listed in the Web of Science. He has also co-authored several monographs including "Design Thinking for Education: Conceptions and Applications in Teaching and Learning", a Springer-published book.

THEME-BASED INVITED SPEAKER

Wenli Chen

Nanyang Technological University (NTU) Singapore

C4: Sub-Conference on Technology Enhanced Learning for Mobility of Learners and Learning Experiences (TEML)

Multi-Modal Learning Analytics for Learning Design

The Multi-Modal Learning Analytics (MMLA) aims comprehensively understand and optimise learning and the environments in which learning by measuring, collecting, analysing and reporting of various modalities of data about learners and their contexts. Drawing on the learning sciences and cognitive neuroscience theories and methods, Dr Chen Wenli's research team has conducted studies that involve collecting and analysing diverse modalities of data in collaborative learning contexts with the aim to understand and optimize the learning design. The multi-modal data include cognitive (brain activity captured by fNIRS), visual attention (eye movement tracked by eye tracker), and behavioural (verbal, textual, gesture etc) data when learners are engaged in learning activities. Both inter-brain synchrony and joint attention are examined to inform the level of synergy among the learners in collaborative learning. Analysing multi-modal data in temporal manner can provide insights in both learning outcome and process. This fine-grained analysis offers valuable information on the learning trajectory of learners. The MMLA and temporal analysis approaches provide promising results in advancing our understanding and support of learning design. In addition, the methodological, practical, and ethical challenges associated with MMLA are discussed.

Dr. Wenli Chen is an Associate Professor and Head of the Learning Sciences and Assessment Academic Group at the National Institute of Education, Nanyang Technological University (NTU) Singapore. She is a specialized in Computer-

Supported Collaborative Learning (CSCL) and learning analytics. Dr Chen has been invited to deliver keynote speeches at numerous international conferences and has received several Best Paper Awards. She was honoured with the “Distinguished Researcher Award” by the Asia-Pacific Society for Computers in Education and the “Nanyang Education Award” from NTU.

Currently, Dr. Chen serves as the Editor-in-Chief for the Journal of Computers in Education, and Learning: Research and Practice, and as the Associate Editor for Instructional Science, Asia Pacific Journal of Education, and Research and Practice in Technology Enhanced Learning.

Dr. Chen is currently the executive committee member for the Asia Pacific Society of Computers in Education and the Global Chinese Society of Computers in Education. She was the co-chair of the CSCL community committee of the International Society of the Learning Sciences (ISLS) (2016-2021). She was the Program Committee Chair or Co-chair for the International Conference of CSCL in 2022, International Conference on Computers in Education 2017, Global Chinese Conference on Computers in Education 2014, and the Organizing Committee Chair for International Conference of the Learning Sciences 2016, and International Conference on Computers in Education 2012.

THEME-BASED INVITED SPEAKER

Johanna Pöysä-Tarhonen

University of Jyväskylä

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

How to Better Understand the Collaborative Component in Computer-Supported Collaborative Learning (CSCL): Current Landscape, Challenges and Future Prospects

Given the ubiquity of collaboration in everyday learning environments, collaboration is still frequently presumed to manifest spontaneously, without requiring additional support. In the realm of Computer-Supported Collaborative Learning (CSCL), despite a substantial body of research in this field, what underlies successful collaboration and collaborative learning remains a challenge. Since its inception, research in Computer-Supported Collaborative Learning (CSCL) has drawn from a rich mixture of diverse theoretical and methodological underpinnings, merging three interrelated components: collaboration within various social learning formations, centred around a shared task, enabled by technologies. My talk explores the collaborative component within CSCL, with collaboration itself as the object of study. I contend that to focus on collaboration is important as the process of nurturing collaborative practices is likened to foster the development of additional capabilities supporting us to learn. By focusing on the recent CSCL research, including examples of my own work, I will discuss aspects related to the 'anatomy' of (un)successful collaboration. I will explore how we may unveil the complex interacting elements and dynamics of collaboration in CSCL environments through studying the very foundational basis of social interaction by leveraging the theories of joint attention and joint action as well as employing advanced empirical methods such as eye-tracking. I will also address the challenges posed by the increasing complexity of these types

of data, particularly in terms of integrating theories and empirical evidence in this regard. I will conclude by focusing on the emerging opportunities and challenges of collaboration by the integration of AI in CSCL environments, while also raising the question of what collaboration entails within this context.

Dr. Johanna Pöysä-Tarhonen is a senior researcher at the Finnish Institute for Educational Research (FIER), University of Jyväskylä, Finland, and a Docent at the Philosophical Faculty, University of Eastern Finland. She holds a PhD in Instructional Technology from KU Leuven, Belgium. Much of her work has focused on collaborative learning practices in varied technology-rich educational settings, most recently on remote collaborative problem solving. Additionally, she maintains a keen interest in learning environments research, with her current focus on hybrid collaborative learning spaces as well as their scalability across different levels of education. She has led research projects and research bids as well as secured funding for studies in learning environments research and Computer-Supported Collaborative Learning (CSCL), funded by the Research Council of Finland (formerly the Academy of Finland) and the Ministry of Education and Culture, Finland. She has published several research papers in esteemed international journals, field-defining books, and conference proceedings.