29TH INTERNATIONAL CONFERENCE ON COMPUTERS IN EDUCATION

ICCE 2021

November 22-26, 2021

CONFERENCE PROCEEDINGS

Volume I

29th International Conference on Computers in Education Conference Proceedings Volume I

Editors: Maria Mercedes T. RODRIGO, Sridhar IYER, Antonija MITROVIC

Publisher: Asia-Pacific Society for Computers in Education (APSCE)
Address: Center for Science and Technology for Learning,
National Central University,No. 300, Jhongda Road, Zongli District,
Taoyuan City 32001, Taiwan
Telephone: +886-3-4227151 ext. 35407
FAX: +886-3-4227151 ext. 35407
Email: service@apsce.net
Website: http://www.apsce.net

Date of publication: November 22, 2021

ISBN: ISBN 978-986-97214-7-9 (PDF)

EDITORS

Maria Mercedes T. RODRIGO, Ateneo de Manila University, Philippines
Sridhar IYER, Indian Institute of Technology, India
Antonija MITROVIC, University of Canterbury, New Zealand

MESSAGE FROM THE CONFERENCE CHAIRS

Antonija MITROVIC

Conference Chair
University of Canterbury,
New Zealand

On behalf of the organizing committee, I would like to welcome all participants of the 29th International Conference on Computers in Education (ICCE) 2021, the flagship conference series of the Asia-Pacific Society for Computers in Education (APSCE). Last year, we had the first virtual conference, which went well, but we were all hoping that ICCE 2021 would be face-to-face. Unfortunately, that is still not possible. We planned to meet in Bangkok, Thailand, and enjoy the hospitality of our Local organizing committee: Thepchai Supnithi, Niwat Srisawasi and Charoenchai Wongwatkit. We thank them and their team for all their efforts on organizing the conference in Bangkok. They are preparing some virtual content for all of us to make the conference more enjoyable.

The pandemic has brought a lot of anxiety, uncertainty and changes. I would like to thank our standing committee, for being flexible and finding solutions to challenging problems we faced. Our appreciation goes to Pham-Duc Tho, the Managing Secretary of APSCE, the tech wizard who made ICCE 2020 possible. He is still continuing to work tirelessly for APSCE and the conference.

My sincere appreciation goes to Didith Rodrigo and Sridhar Iyer, the chair and co-chair of the International Program Committee respectively. They have put an enormous amount of time in making sure that we have excellent programme at ICCE 2021. My gratitude goes to the chairs of the seven subconferences, organizers of workshops, tutorials, panels, WIPP, DSC, ES, posters, and ECW. And of course, our sincere thanks to all authors, reviewers, presenters, Doctoral students, and other participants. I would also like to thank our consultants, Lung-Hsiang Wong, Hyo-Jeong So and Jon Mason, for sharing their wisdom and advising us along the way.

Four outstanding keynote speakers will share their insights across varying areas in the field of computers in education. The first speaker is Kulthida Tuamsuk, from the Khon Kaen University, Thailand, and she will present at talk about transforming classrooms into learning communities at her university. Pierre Dillenbourg from the Swiss Federal Institute of Technology will talk about his experience with orchestrating classrooms. Tiffany Barnes, from the North Carolina University, will talk about using both human and artificial intelligence to provide better learnig experiences. Gwo-Jen Hwang from the National Taiwan University of Science and Technology will talk about issues in using AIED in the mobile era.

There will also be three equally inspiring theme-based invited speeches. Ana Gimeno from the Universitat Politechnica de Valencia, Spain, will talk about whether MOOCs satisfy learner needs. Baltasar Fernández-Manjón, from the Complutense University of Madrid, Spain, will talk about game learning analytics Jon Mason from the Charles Darwin University, Australia, will talk about questioning in the digital environment.

I hope the participants will find the conference invigorating, relevant and enjoyable!

MESSAGE FROM THE INTERNATIONAL PROGRAM COORDINATION CHAIRS

Maria Mercedes T. RODRIGO

International Program Coordination Chair
Ateneo de Manila University, Philippines

Sridhar IYER

International Program Coordination Co-Chair
Indian Institute of Technology, India

Welcome to the 29th International Conference on Computers in Education (ICCE)! Organized by the Asia-Pacific Society for Computers in Education, this annual conference is a venue in which scholars, researchers, and academics share their work regarding the use of Information and Communication Technology (ICT) in various settings of education.

Because of the continuing COVID-19 pandemic and the travel difficulties related to stemming its spread ICCE 2021 is held virtually from November 22 to November 26, 2021. As with last year's conference, we believe gathering in a virtual space keeps us safer while still allowing us to engage in meaningful and productive dialogs.

ICCE 2021 continues the meta-conference tradition of the previous ICCEs. As such, the conference is organized into seven sub-conference programs specializing specific themes:

- 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, 52 executive Sub-Conference Chairs and Co-Chairs and 253 experts in the field of Computers in Education from 27 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.

ICCE 2020 received a total of 148 submissions (116 full, 28 short, and 4 posters) from 25 different countries or economies. Top three countries with the highest number of submissions are Japan, China, and the Philippines. Submissions were also received from the Middle East, Europe, America and Africa, which signals the international interest toward ICCE 2020. Table 1 provides the submissions statistics by the country of the first author:

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

Countries or Economy			
Australia	4	New Zealand	2
Bangladesh	1	Norway	1
Canada	1	Philippines	18
China	18	Poland	1
Egypt	1	Singapore	3
Germany	1	Spain	4
Hong Kong	6	Sweden	1
India	16	Taiwan	10
Indonesia	1	Thailand	10
Iran	1	Tunisia	3
Israel	1	Turkey	3
Japan	33	United States	6
Malaysia	2		
Total			**148**

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 meta-review was provided for each paper. In total, 650 reviews and meta-reviews were received. After the 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 30 full papers, 57 short papers, and 22 posters accepted across seven Sub-Conferences. The overall acceptance rate for full papers is 25.9%, which reflects our efforts to continue the maintenance of the quality of presentations at ICCE 2021. The complete statistics of paper acceptance is shown in Table 2.

Table 2. Paper Acceptance Statistics

	Submission	**Submit as Full**	**Accepted as Full**	**Full %**	**Accepted as Short**	**Accepted as Poster**	**Overall %**
C1 - AIED/ITS	26	21	5	23.8%	9	4	69.2%
C2 - CSCL/LS	16	10	2	20.0%	4	4	62.5%
C3 - ALT/LA	32	26	8	30.8%	10	7	78.1%
C4 - CUMTEL	17	14	1	7.1%	11	1	76.5%
C5 - EGG	14	10	3	30.0%	6	1	71.4%
C6 - TELL	16	13	3	23.1%	7	2	75.0%
C7 - PTP	27	22	8	36.4%	10	3	77.8%
Total	**148**	**116**	**30**	**25.9%**	**57**	**22**	73.6%

In addition to the main program with seven sub-conferences, ICCE 2021 includes various program components, such as Keynote Speeches, Theme-based Invited Speeches, Workshops, Tutorials, 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 compiled and published in a separate volume with its own ISBN. Pre-conference events are held on the first two days of the conference, including 12 workshops, one tutorial, three panels, DSC, ECW, APSCE Student Wing Workshop, and SIG community building sessions.

We are grateful to all who contributed to ICCE 202's success. We thank all the paper authors for choosing ICCE 2021 as the 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 sharing inspiring research with the ICCE 2021 participants.

In the challenging times we face and those that continue to come, our work becomes more relevant and important than ever. We are grateful to the APSCE community for staying focused and resilient, and for continuing to make the valuable contributions to education that will help shape the minds, hearts, and spirits of future generations.

MESSAGE FROM THE
LOCAL ORGANIZING COMMITTEE CHAIRS

Thepchai SUPNITHI

National Electronics and Computer Technology Center, Thailand

Niwat SRISAWASDI

Faculty of Education, Khon Kaen University, Thailand

Charoenchai WONGWATKIT

Mae Fah Luang University, Thailand

Welcome, all the researchers and participants around the globe to Thailand virtually in ICCE 2021.

This year, our Local Organizing Committee Chairs (LOC) from National Electronics and Computer Technology Center (NECTEC), Khon Kaen University (KKU), and Mae Fah Luang University (MFU), Thailand are greatly privileged to host The 29th International Conference on Computers in Education (ICCE 2021). Thailand is one of the best locations globally, with various activities, food, culture, and travel destinations. In academia, Thailand always successfully hosts and welcomes many scholars, researchers, and professionals through various international academic events.

ICCE 2021 celebrates turning to the third decade of this successfully well-structured event of computers in education. With COVID-19 outbreak, traveling is highly restricted to many countries. ICCE 2021 is presented as a fully virtual conference featuring seven main conferences, twelve pre-conference workshops, an interactive tutorial, early career workshops, doctoral student consortium, work-in-progress events, keynote speakers, and theme-based invited speakers.

We would like to take this opportunity to acknowledge strong partnerships with The Asia-Pacific Society for Computers in Education (APSCE) in making this conference successful. Sincere gratitudes go to the contributions from the international organizing committee, authors, participants, supporters, and sponsors inevitably. With solid collaborations, ICCE 2021 has become one of the amazing conference events in this area.

We believe that this conference is full of wonderful moments, fruitful discussions, and beautiful community buildings.

See you in ICCE 2021. Thank you! ขอบคุณครับ

ORGANIZATION

Organized by: Asia Pacific Society for Computers in Education

Standing Committee

- *Conference Chair*
  Antonija MITROVIC, University of Canterbury, New Zealand
- *International Program Coordination Chair*
  Maria Mercedes T. RODRIGO, Ateneo de Manila University, Philippines
- *International Program Coordination Co-Chair*
  Sridhar IYER, Indian Institute of Technology, India
- *Local Organizing Committee Chairs*
  Thepchai SUPNITHI, National Electronics and Computer Technology Center,Thailand
  Niwat SRISAWASDI, Khon Kaen University, Thailand
  Charoenchai WONGWATKIT, Mae Fah Luang University, Thailand
- *Consultants*
  Hyo-Jeong SO, Eawha Womans University, South Korea
  Jon MASON, Charles Darwin University, Australia

Sub-Conference

C1: Artificial Intelligence in Education/Intelligent Tutoring System (AIED/ITS) and Adaptive Learning

- *PC Executive Chair*
  Kazuhisa SETA, Osaka Prefecture University, Japan
- *PC Co-Chair*
  Patcharin PANJABUREE, Mahidol University, Thailand
  Nguyen-Thinh LE, Humboldt-Universität zu Berlin, Germany
  Valéry PSYCHÉ, Université TÉLUQ, Canada

C2: Computer-supported Collaborative Learning (CSCL) and Learning Sciences

- *PC Executive Chair*
  Camillia MATUK, New York University, USA
- *PC Executive Co-Chair*
  Kate THOMPSON, Queensland University of Technology, Australia
  Daniel BODEMER, University of Duisburg-Essen, Germany
  Sahana MURTHY, Indian Institute of Technology Bombay, India
  Elizabeth Ruilin KOH, National Institute of Education, Singapore

C3: Advanced Learning Technologies (ALT), Learning Analytics and Digital Infrastructure

- *PC Executive Chair*
  Ramkumar RAJENDRAN, Indian Institute of Technology Bombay, India
- *PC Executive Co-Chair*
  Rwitajit MAJUMDAR, Kyoto University, Japan
  Khalid KHAN, Charles Darwin University, Australia
  Ismar Frango SILVEIRA, Mackenzie Presbyterian University, Brazil
  Mohammed SAQR, University of Eastern Finland, Finland

Aditi KOTHIYAL, EPFL, Switzerland

C4: Classroom, Ubiquitous, and Mobile Technologies Enhanced Learning (CUMTEL)

- *PC Executive Chair*
  Jingyun WANG, Durham University, UK
- *PC Executive Co-Chair*
  Michelle BANAWAN, Arizona State University, USA
  Brendan FLANAGAN, Kyoto University, Japan
  Andrea VALENTE, University of Southern Denmark, Denmark

C5: Educational Gamification and Game-based Learning (EGG)

- *PC Executive Chair*
  Hercy N. H. CHENG, Central China Normal University, China
- *PC Executive Co-Chair*
  Borja MANERO, Universidad Complutense de Madrid, Spain
  Mouna DENDEN, University of Tunis, Tunisia
  Armando Maciel TODA, University of São Paulo

C6: Technology Enhanced Language Learning (TELL)

- *PC Executive Chair*
  Agnieszka PALALAS, Athabasca University, Canada
- *PC Executive Co-Chair*
  Mark PEGRUM, University of Western Australia, Australia
  Weichao "Vera" CHEN, Baylor College of Medicine, USA
  Olga VIBERG, KTH Royal Institute of Technology, Sweden

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

- *PC Executive Chair*
  Dan KOHEN-VACS, Holon Institute of Technology, Israel
- *PC Executive Co-Chair*
  Gautam BISWAS, Vanderbilt University, USA
  Marc JANSEN, HOCHSCHULE RUHR WEST, Germany
  Mishra SHITANSHU, Indian Institute of Technology Bombay, India
  Ivica BOTICKI, University of Zagreb, Croatia

Workshop & Interactive Events

- *Chair*
  Charoenchai WONGWATKIT, Mae Fah Luang University, Thailand
- *Co-Chair*
  Chiu-Lin LAI, National Taipei University of Education, Taiwan
  Sasithorn CHOOKAEW, King Mongkut's University of Technology North Bangkok, Thailand

Tutorials

- *Chair*
  Rustam SHADIEV, Nanjing Normal University, China

- *Co-Chair*
  Kaushal Kumar BHAGAT, G. S. Sanyal School of Telecommunications, India

Work-in-Progress Poster (WIPP)

- *Chair*
  Kazuaki KOJIMA, Teikyo University, Japan
- *Co-Chair*
  Mi Song KIM, University of Western Ontario, Canada

Doctoral Student Consortium (DSC)

- *Chair*
  Morris JONG, The Chinese University Hong Kong, Hong Kong
- Co-Chair
  Hiroaki OGATA, Kyoto University, Japan

Early Career Workshop (ECW)

- *Chair*
  Mas Nida BT MD KHAMBARI, Universiti Putra Malaysia, Malaysia
- *Co-Chair*
  Ryan EBARDO, Jose Rizal University, Philippines

Panels

- *Chair*
  Han-Yu SUNG, National Taipei University of Nursing and Health Science, Taiwan
- *Co-Chair*

Extended Summary (ES)

- *Chair*
  Ping LI, The Hong Kong Polytechnic University, Hong Kong
- *Co-Chair*

Merit Scholarships

- *Chair*
  Mohammad Nehal HASNINE, Hosei University, Japan
- *Co-Chair*
  Gökhan AKÇAPINAR, Hacettepe University, Turkey

Special Interest Groups (SIG)

- ***S1: Artificial Intelligence in Education/Intelligent Tutoring Systems/Adaptive Learning (AIED/ITS/AL)***
  Michelle P. BANAWAN, Arizona State University, USA
- ***S2: Computer-supported Collaborative Learning and Learning Sciences (CSCL)***
  Chew Lee TEO, Nanyang Technological University, Singapore
- ***S3: Advanced Learning Technologies, Learning Analytics, Platforms and Infrastructure (ALT)***
  Jin Gon SON, Korea National Open University, Korea
- ***S4: Classroom, Ubiquitous, and Mobile Technologies Enhanced Learning (CUMTEL)***

Ting-Chia HSU, National Taiwan Normal University, Taiwan

- ***S5: Educational Gamification and Game-based Learning (EGG)***
  Rita KUO, New Mexico Institute of Mining and Technology, Taiwan
- ***S6: Technology Enhanced Language Learning (TELL)***
  Yoshiko GODA, Kumamoto University, Japan
- ***S7: Practice-driven Research, Teacher Professional Development and Policy of ICT in Education (PTP)***
  Sahana MURTHY, Indian Institute of Technology Bombay, India
- ***S8: Development of Information and Communication Technology in the Asia-Pacific Neighborhood (DICTAP)***
  Bo JIANG, Zhejiang University of Technology, China
- ***S9: Educational Use of Problems/Questions in Technology-Enhanced Learning (EUPQ)***
  Kazuaki KOJIMA, Teikyo University, Japan
- ***S10: Learning Analytics and Educational Data Mining (LAEDM)***
  Brendan FLANAGAN, Kyoto University, Japan
- ***S11: Computational Thinking Education & STEM Education (CTE&STEM)***
  Siu Cheung KONG, The Education University of Hong Kong, Hong Kong

C1 PC Members

- Kazuhisa Seta, Osaka Prefecture University, Japan
- Patcharin PanjabureE, Mahidol University, Thailand
- Nguyen-Thinh Le, Humboldt-Universität zu Berlin, Germany
- Valéry Psyché, Université TÉLUQ, Canada
- Sagaya Amalathas, Taylors University, Malaysia
- Ryan Baker, University of Pennsylvania, United States
- Kritya Bunchongchit, Mahidol University, Thailand
- Chih-Yueh Chou, Yuan Ze University, Taiwan
- Philippe Fournier-Viger, Harbin Institute of Technology, China
- Claude Frasson, University of Montreal, Canada
- Yuki Hayashi, Osaka Prefecture University, Japan
- Bastiaan Heeren, Open University, The Netherlands
- Tomoya Horiuchi, Kobe University, Japan
- Sharon Hsiao, Arizona State University, United States
- Akihiro Kashihara, The University of Electro-Communications, Japan
- Tomoko Kojiri, Kansai University, Japan
- Tatsuhiro Konishi, Shizuoka University, Japan
- Noboru Matsuda, North Carolina State University, United States
- Tatsunori Matsui, Waseda University, Japan
- Antonija Mitrovic, University of Canterbury, New Zealand
- Riichiro Mizoguchi, Japan Advanced Institute of Science and Technology, Japan
- Roger Nkambou, Université du Québec à Montréal, Canada
- Ange Tato, Université du Québec à Montréal, Canada
- Jose Luis Perez De La Cruz, Universidad de Malaga, Spain
- Elvira Popescu, University of Craiova, Romania
- Maria Mercedes T. Rodrigo, Ateneo de Manila University, Philippines

- Olga C.Santos, aDeNu Research Group, Spain
- John Stamper, Carnegie Mellon University, United States
- Thepchai Supnithi, NECTEC, Thailand
- Benedict Du Boulay, University of Sussex, United Kingdom

C2 PC Members

- Sahana Murthy, Indian Institute of Technology Bombay, India
- Camillia Matuk, New York University, United States
- Bodong Chen, University of Minnesota, United States
- Elizabeth Ruilin Koh, National Institute of Education, Singapore
- Sven Manske, University of Duisburg-Essen, Germany
- Kate Thompson, Queensland University of Technology, Australia
- Daniel Bodemer, University of Duisburg-Essen, Germany
- Rose Liang, National University of Singapore, Singapore
- Mike Tissenbaum, University of Illinois at Urbana-Champaign, United States
- Amanda Dickes, Gulf of Maine Research Institute, , United States
- Simon Leonard, University of South Australia, Australia
- Cynthia D'Angelo, University of Illinois at Urbana-Champaign, United States
- Brendan Eagan, University of Wisconsin-Madison, United States
- Kristin Searle, Utah State University, United States
- Steven Kickbusch, Queensland University of Technology, Australia
- Hongzhi Yang, The University of Sydney, Australia
- Marcelo Worsley, Northwestern University, United States
- Lenka Schnaubert, University of Duisburg-Essen, Germany
- Tamara Galoyan, University of Utah, United States
- Nick Kelly, Queensland University of Technology, Australia
- Sanjay Chandrasekharan, Homi Bhabha Centre for Science Education, India
- Shilpa Sahay, New York University, United States
- Antonette Shibani, University of Technology, Sydney
- Florence Gabriel, University of South Australia, Australia
- Pei-Yi Lin, National Kaohsiung Normal University, Taiwan
- Iwona Czaplinski, Queensland Univeristy of Technology, Australia
- Natasha Arthars, The University of Sydney, Australia
- Julia Eberle, Ruhr-University Bochum, Germany
- Jürgen Buder, Leibniz-Institut für Wissensmedien, Germany
- Simon Knight, University of Technology, Sydney
- Sarah Dart, Queensland University of Technology, Australia
- Johanna Pöysä-Tarhonen, University of Jyvaskyla, Finland
- Seng Chee Tan, Nanyang Technological University, Singapore
- Chandan Dasgupta, Indian Institute of Technology Bombay, India
- Polly Lai, Queensland University of Technology, Australia
- Chew Lee Teo, Ministry of Education, Singapore

C3 PC Members

- Oluwafemi Samson Balogun, University of Eastern Finland, Finland
- Vladimir Costas, Universidad Mayor de San Simón, Bolivia
- Regina Motz, Universidad de la República, Uruguay
- Sonsoles López-Pernas, Universidad Politécnica de Madrid, Spain
- Gökhan Akçapınar, Hacettepe University, Turkey
- Aditi Kothiyal, Swiss Federal Institute of Technology in Lausanne, Switzerland
- Khalid Khan, Charles Darwin University, Australia
- Ramkumar Rajendran, Indian Institute of Technology Bombay, India
- Rwitajit Majumdar, Kyoto University, Japan
- Rekha Ramesh, Mumbai University, India
- Maria Eliseo, Universidade Presbiteriana Mackenzie, Brazil
- Mohammed Saqr, University of Eastern Finland
- Jon Mason, Charles Darwin University, Australia
- Yang-Hsueh Chen, National Chengchi Universitry, Taiwan
- Lenka Schnaubert, University of Duisburg-Essen, Germany
- Atsushi Shimada, Kyushu University, Japan
- Emmanuel Awuni Kolog, University of Ghana Business School, Ghana
- Łukasz Tomczyk, Pedagogical University of Cracow, Poland
- Erkan Er, Middle East Technical University, Turkey
- Yongwu Miao, University Duisburg-Essen, Germany
- Ismar Silveira, Universidade Presbiteriana Mackenzie, Brazil
- Minhong Wang, The University of Hong Kong, Hong Kong
- Judith Azcarraga, De La Salle University, Philippines
- Riina Vuorikari, Institute for Prospective Technological Studies
- Victoria Abou Khalil, Kyoto University, Japan
- Mehmet Kokoç, Karadeniz Technical University, Turkey
- Nigel Stanger, University of Otago, Japan
- Luis Anido Rifon, Universidade de Vigo, Spain
- Manuel Caeiro Rodríguez, University of Vigo, Spain
- Marc Jansen, University of Applied Sciences Ruhr West, Germany
- Tore Hoel, Oslo Metropolitan University, Norway
- Weiqin Chen, Oslo Metropolitan University, Norway
- Chew Lee Teo, Ministry of Education, Singapore
- Jerry Chih-Yuan Sun, National Chiao Tung University, Taiwan

C4 PC Members

- 國 豪 黃, National Yunlin University of Science & Technology, Taiwan
- Tai-Chien Kao, National Dong Hwa University, Taiwan
- Su Cai, Beijing Normal University, China
- Jingyun Wang, Durham University, England
- Brendan Flanagan, Kyoto University, Japan
- Michelle Banawan, Arizona State University, United States
- Longkai Wu, National Institute of Education, Singapore

- Daner Sun, The Education University of Hong Kong, Hong Kong
- Mi Song Kim, Western University, Canada
- Kai-Hsiang Yang, National Taipei University of Education, Taiwan
- Iwen Huang, National University of Tainan, Taiwan
- Ivica Boticki, University of Zagreb, Croatia
- Yih-Ruey Juang, Jinwen University of Science and Technology
- Yiu Chi Lai, The Education University of Hong Kong, Hong Kong
- Bian Wu, East China Normal University, China
- Peter Wan, The Education University of Hong Kong, Hong Kong
- Chengjiu Yin, Kobe University, Japan
- Fuhua Lin, Athabasca University, Canada
- Guang Chen, Beijing Normal University, China
- Chen-Yu Lee, Ling Tung University, Taiwan
- Ping He, Tianjin University, China
- Tzu Chi Yang, National Taipei University of Education, Taiwan
- Martina Holenko Dlab, University of Rijeka, Croatia
- Kuo-Liang Ou, National Tsing Hua University, Taiwan
- Kaushal Kumar, Indian Institute of Technology, India
- Igor Mekterović, University of Zagreb, Croatia
- M. Carmen Juan, Universitat Politècnica de València, Spain
- Andrea Valente, University of Southern Denmark, Denmark
- Haiguang Fang, Capital Normal University, China
- Gwo-Jen Hwang, National Taiwan University of Science and Technology, Taiwan
- Huiying Cai, Jiangnan University, China
- Ting-Ting Wu, National Yunlin University of Science & Technology, Taiwan
- Xuefeng Wei, Ludong University, China
- Chih-Ming Chu, National Ilan University

C5 PC Members

- Armando Maciel Toda, University of São Paulo, Brazil
- Borja Manero, Universidad Complutense de Madrid, Spain
- Demetrios Sampson, Curtin University, Australia
- Achraf Othman, Mada center, Qatar
- Mohamed Koutheaïr Khribi, Mada center, Qatar
- Tzu-Chao Chien, National Central University, Taiwan
- Hercy N. H. Cheng, Taipei Medical University, Taiwan
- Sheng-Kai Yin, Cheng Shiu University, Taiwan
- Michal Ptaszynski, Kitami Institute of Technology, Japan
- Mouna Denden, University of Tunis, Tunisia
- Jorge Simoes, Higher Polytechnic Institute of Gaya, Portugal
- Alexandra I Cristea, Durham University, England
- Zhi-Hong Chen, National Taiwan Normal University, Taiwan
- Shu-Yuan Tao, Takming University of Science and Technology, Taiwan
- Sabine Graf, Athabasca University, Canada

- Ju-Ling Shih, National Central University, Taiwan
- Toshihiro Hayashi, Kagawa University, Japan
- Susan Gwee, English Language Institute of Singapore, Singapore
- Pedro Wightman, Universidad del Norte-Uninorte, Colombia
- Fathi Essalmi, University of Jeddah, Saudi Arabia
- Kaoru Sumi, Future University Hakodate, Japan
- Wing-Kwong Wong, National Yunlin University of Science & Technology, Taiwan
- Manuel López Ibáñez, Complutense University of Madrid, Spain
- Aroua Taamallah, University of Sousse, Tunisia
- Anurag Deep, Indian Institute of Technology Bombay, India
- Chung-Yuan Hsu, National Pingtung University of Science and Technology, Taiwan
- Maha Khemaja, University of Sousse, Tunisia
- Gheorghita Ghinea, Brunel University London, England
- Liang-Yi Li, National Taiwan Normal University, Taiwan
- Ben Chang, National Central University, Taiwan
- Liz Bacon, Abertay University, Scotland
- Ismael Sagredo, International University of La Rioja, Spain
- Jianhua Wu, Central China Normal University, China
- Saurabh Mehta, Vidyalankar Institute of Technology, India
- Hiroyuki Mitsuhara, Tokushima University, Japan
- Alejandro Romero Hernández, Complutense University of Madrid, Spain
- Chang-Yen Liao, National Central University, Taiwan
- Ahmed Tlili, Beijing Normal University, China

C6 PC Members

- Wanwisa Wannapipat, Khon Kaen University, Thailand
- Hiroshi Miyashita, Tokyo Metropolitan Showa High School, Japan
- Elena Barcena, National Distance Education University, Spain
- Olga Viberg, KTH Royal Institute of Technology, Sweden
- Liliana Cuesta, University of La Sabana, Columbia
- Weichao Vera Chen, Baylor College of Medicine, United States
- Mark Pegrum, University of Western Australia, Australia
- Chia-Ling Hsieh, National Taiwan Normal University, Taiwan
- Daria Mizza Johns, Johns Hopkins University School of Advanced International Studies, United States
- Louise Ohashi, Meiji University, Japan
- Georgios Kormpas, Al Yamamah University, Saudi Arabi
- Maria Psychogiou, Athabasca University, Canada
- Valentina Morgana, Università Cattolica del Sacro Cuore, Milan
- Rustam Shadiev, Nanjing Normal University, China
- Debra Hoven, Athabasca University, Canada
- Chadia Mansour, Athabasca University, Canada
- Michał B. Paradowski, Institute of Applied Linguistics, University of Warsaw, Poland
- Carl Edlund Anderson, University of La Sabana, Columbia
- Antonie Alm, University of Otago, New Zealand

- Eric Hagley, Hosei University, Japan
- Phil Hubbard, Stanford University, United States
- Chien-Han Chen, Tamkang University, Taiwan
- Apostolos Koutropoulos, University of Masachusetts Boston, United States
- Sandra Gudiño-Paredes, Tecnológico De Monterrey, Mexico
- Yoshiko Goda, Kumamoto University, Japan
- Alex Boulton, University of Lorraine, France
- Di Zou, The Education University of Hong Kong, Hong Kong
- Takafumi Utashiro, Hokkai-Gakuen University, Japan
- Yuichi Ono, University of Tsukuba, Japan
- Misato Oi, Kyushu University, Japan
- Yasushige Ishikawa, Kyoto University of Foreign Studies, Japan
- Salomi Papadima-Sophocleous, Cyprus University of Technology, Cyprus
- Hayo Reinders, Unitec Institute of Technology, New Zealand
- Yanhui Han, The Open University of China, China
- Jiahang Li, Michigan State University, United States
- Adam Roarty, Rikkyo University, Japan
- Xin Chen, Indiana University, United States

C7 PC Members

- Mishra Shitanshu, Indian Institute of Technology Bombay, India
- Dan Kohen-Vacs, Holon Institute of Technology, Israel
- Yogendra Pal, NIIT University, India
- Gautam Biswas, Vanderbilt University, United States
- Marc Jansen, Hochschule Ruhr West, Germany
- Ivica Boticki, University of Zagreb, Croatia
- Chronis Kynigos, The National and Kapodistrian University of Athens, Greece
- Joke Voogt, University of Amsterdam, Netherlands
- Sun Daner, The Education University of Hong Kong, Hong Kong
- Jayakrishnan M. Warriem, Indian Institute of Technology, India
- Ahmed Mohammed, Leyte Normal University, Philippines
- Eran Gal, Holon Institute of Technology, Israel
- Jan Pawlowski, University of Applied Sciences Ruhr West, Germany
- Dan Klein, Holon Institute of Technology, Israel
- Tessy Cerratto-Pargman, Stockholm University, Sweden
- Andreas Lingnau, University of Applied Sciences Ruhr West, Germany
- Ulrich Hoppe, University of Duisburg-Essen, Germany
- Marcelo Milrad, Leyte Normal University, Philippines
- Ahmad Kamal, Linnaeus University, Sweden
- Ronen Hammer, Holon Institute of Technology, Israel
- Brendan Flanagan, Kyoto University, Japan
- Arriel Benis, Holon Institute of Technology, Israel
- Tamar Ronen Fuhrmann, Columbia University, United States
- Peter Seow, National Institute of Education, Singapore
- Winnie Wai Man Lam, The Education University of Hong Kong, Hong Kong
- Fredrik Hanell, Linnaeus University, Hong Kong
- Veenita Shah, Indian Institute of Technology Bombay, India
- Meital Amzalag, Holon Institute of Technology, Israel

- Chee-Kit Looi, National Institute of Education, Singapore
- Hayely Weigelt-Marom, Holon Institute of Technology, Israel
- Lee Shushing, National Institute of Education, Singapore

APSCE FELLOWS PROGRAM

Founded in 2019, the APSCE Fellowship recognizes outstanding members of the Asia-Pacific Society for Computers in Education (APSCE) in the field of computers in education. The title of APSCE fellow indicates, (1) Sustained and distinguished academic contributions to the advancement of research in the field of computers in education at the international level; (2) A strong track record in academic networking and services within the Asia-Pacific region.

The fellowship is for life, whose names shall be indicated on the APSCE website permanently. Furthermore, the APSCE fellows are entitled to complimentary lifetime voting APSCE memberships.

The number of new fellows named each year shall be capped at five (5). An APSCE Fellow must be an existing APSCE member in the year he or she is inducted.

The inaugural cohort of the APSCE Fellowship consists of the three existing APSCE Honorary Executive Committee (EC) members. Subsequently, the APSCE President, the APSCE Award Subcommittee Chair and the Honorary EC members formed the APSCE Fellow Committee to select additional fellows. After the first year (2019), the existing APSCE Fellows, the APSCE President and the Award Subcommittee Chair shall form the APSCE Fellow Committee each year to select new fellows. The APSCE President and the Award Subcommittee Chair are not eligible for APSCE Fellow inductions in the year in which they are serving as APSCE Fellow Committee members.

The full APSCE Fellowship guidelines is available on https://apsce.net/download_data.php?filename=upfile/file/20201001/20201001020522_71700.pdf

The inaugural cohort of APSCE Fellows are (in alphabetical order):

- Tak-Wai CHAN (Taiwan)
- H. Ulrich HOPPE (Germany)
- Chee-Kit LOOI (Singapore)
- Riichiro MIZOGUCHI (Japan)

Two APSCE Fellows inducted in 2020 are (in alphabetical order):

- Gautam BISWAS (USA)
- Siu Cheung KONG (Hong Kong)

DISTINGUISHED RESEARCHER AWARD WINNER

Maria Mercedes (Didith) T. Rodrigo

Professor, Department of Information Systems and Computer Science, Ateneo Laboratory for the Learning Sciences (ALLS), Ateneo de Manila University,

Maria Mercedes (Didith) T. Rodrigo is a professor at the Department of Information Systems and Computer Science of the Ateneo de Manila University. The head of the Ateneo Laboratory for the Learning Sciences (ALLS), her research interests include artificial intelligence in education, technology in education, learning analytics, and affective computing. Under her leadership, ALLS has developed a number of mobile- and PC-based games for learning and augmented reality applications for informal learning in museums. Her team has also conducted eye tracking studies on novice programmer reading, tracing, and debugging skills.

One of her most influential works is her contribution to the development of the Baker Rodrigo Ocumpaugh Monitoring protocol (BROMP), a quantitative field observation method that makes use of interval sampling to record student affect and behavior. Data from BROMP observations as labels to create student models. The BROMP protocol has been used in at least five countries and has become a de facto standard for classroom observations.

She continues to collaborate with colleagues from a variety of institutions including Dr. Ryan Baker and Dr. Jaclyn Ocumpaugh of the University of Pennsylvania's Center of Learning Analytics and Dr. H Chad Lane of the University of Illinois Urbana Champagne.

Dr. Rodrigo is an excellent mentor, as can be seen from a large number of postgraduate students she brings to the ICCE conferences. At ICCE 2019, the best overall paper award was given to one of the papers from her group.

Dr. Rodrigo has served on the Executive Committee of APSCE since 2014. She was the local organizing chair of ICCE 2018, International Program Coordinating Co-Chair of ICCE 2020, and International Program Coordinating Chair of ICCE 2021. She is also on the Executive Committee of the Artificial Intelligence in Education Society and is program chair of the International Artificial Intelligence in Education Conference 2022.

EARLY CAREER RESEARCHER AWARD WINNER (2021)

Bo Jiang

Associate Professor, Department of Educational Information Technology, East China Normal University, China

Dr. Bo Jiang is currently an associate professor in educational technology at the Department of Educational Information Technology, East China Normal University, China. He has a B.S. and M.S. in Computer Science. He received a Ph.D. degree in control science and engineering from Zhejiang University, China. His multidisciplinary background supports his research goal of creating new educational technologies to improve students' learning, and cultivating students' computational thinking as well as artificial intelligence literacy. His research interests include intelligent tutoring technologies, computational thinking education, artificial intelligence education. He has published over 40 publications (25 journal papers) in peer-reviewed journals, conferences, workshops, and book chapters. As project investigator, he received two grants from the National Natural Science Foundation of China. He is an Associate Editor of IEEE Transactions on Learning Technology, and International Journal of Bio-Inspired Computation. He is also elected to the Executive Committee of the Asia-Pacific Society on Computers in Education (APSCE) in 2018.

LAST TEN YEARS'

DISTINGUISHED RESEARCHER AWARD WINNERS

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
Chen-Chung LIU, National Central University, Taiwan
Antonija MITROVIC, University of Canterbury, New Zealand

LAST TEN YEARS'

EARLY CAREER RESEARCHER AWARD WINNERS

2020 - APSCE Early Career Researcher Award
Kaushal Kumar BHAGAT, Indian Institute of Technology, 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 2020 – November 2021)

Webinar 8: "Using Game Jam to Influence Cybersecurity Education"
Speaker: Lorie M. LIEBROCK & Amy KNOWLES, New Mexico Institute of Mining and Technology
Date: 17 December 2020, Thursday
Curated by: Special Interest Group on Educational Games and Gamification (EGG SIG), APSCE

Webinar 9: "Seamless Learning and Contextual Design"
Speaker: Christian GLAHN, Zurich University of Applied Sciences, Switzerland
Date: 24 February 2021, Wednesday
Curated by: Special Interest Group on Classroom, Mobile & Ubiquitous Technology Enhanced Learning (CUMTELL), APSCE

Webinar 10: " Panel on STEM Education in K-12: An International Perspective"
Speaker: Siu Cheung KONG (The Education University of Hong Kong, Hong Kong), Florence SULLIVAN (University of Massachusetts Amherst, USA), Morris Siu-Yung JONG (The Chinese University of Hong Kong, Hong Kong), Ting-Chia HSU (National Taiwan Normal University, Taiwan),& Timothy Ter Ming TAN (Nanyang Technological University, Singapore)
Date: 12 March 2021, Friday
Curated by: Special Interest Group on Computational Thinking Education & STEM Education (CTE&STEM), APSCE

Webinar 11: "Learning by Holding a Conversation with Computer Agents"
Speaker: Art GRAESSER, University of Memphis, USA
Date: 14 April 2021, Tuesday
Curated by: Special Interest Group on Educational Use of Problems/Questions in Technology-Enhanced Learning (EUPQ), APSCE

Webinar 12: "Beyond dashboards-Learning Analytics Architectures, Techniques and Applications"
Speaker: H. Ulrich HOPPE, University of Duisburg-Essen, Germany
Date: 29 April 2021, Thursday
Curated by: Special Interest Group on Learning Analytics and Educational Data Mining (LAEDM), APSCE

Webinar 13: "Speeches & Panel: How does new technology enhance vocabulary learning? Possibilities and issues"
Speaker: Yoshiko GODA (Kumamoto University, Japan), Yanjie SONG (The Education University of Hong Kong, Hong Kong)**,** Nehal HASNINE (Hosei University, Japan), Vivian Wen-Chi WU (Asia University, Taiwan)**,** Yuichi ONO (University of Tsukuba, Japan)
Date: 19 May 2021, Thursday
Curated by: Special Interest Group on Technology Enhanced Language Learning (TELL), APSCE

Webinar 14: "Understanding Learning Process in Classroom Interactions - Machine Learning for Discussion Forum Insights"
Speaker: Swapna GOTTIPATI, Singapore Management University, Singapore
Date: 8 June 2021, Tuesday
Curated by: Special Interest Group on Development of Information and Communication Technology in the Asia-Pacific Neighborhood (DICTAP), APSCE

Webinar 15: "Design and Practice of Gamified Online Course from The Knowledge Structure Embedding Perspective"
Speaker: Li WANG, Open University of China, China
Date: 20 August 2021, Friday
Curated by: Special Interest Group Educational Gamification and Game-based Learning (EGG), APSCE

Webinar 16: "Longitudinal Implications of Wheel Spinning and Productive Persistence"
Speaker: Ryan BAKER, University of Pennsylvania, USA
Date: 10 September 2021, Friday
Curated by: Special Interest Group on Artificial Intelligence in Education/Intelligent Tutoring Systems/Adaptive Learning (AIED/ITS/AL), APSCE

Webinar 17: "Design for Emergence: Conceptual and Technology Support for Student-Driven Knowledge Building"
Speaker: Tan DAO, Beijing Normal University, China; & Guangji YUAN, Nanyang Technological University, Singapore
Date: 27 September 2021, Thursday
Curated by: Special Interest Group on Computer-Supported Collaborative Learning & Learning Sciences (CSCL/LS), APSCE

Webinar 18: "Learning, Teaching, Teacher Professional Development and Policy in the Post-Pandemic World"
Speaker: Camille DICKSON-DEANE (University of Technology Sydney, Australia), Sharon RAVITCH (University of Pennsylvania, USA), Anvar SADAT (Kerala Infrastructure and Technology for Education, India), Jayakrishnan Madathil WARRIEM (Indian Institute of Technology Madras, India)
Date: 19 October 2021, Tuesday
Curated by: Special Interest Group on Practice-Driven Research, Teachers' Professional Development & Policies (PTP), APSCE

Webinar 19: "From Learning Object to Learning Cell, a Resource Organization Model for Ubiquitous Learning"
Speaker: Shengquan YU, Beijing Normal University, China
Date: 2 November 2021, Tuesday
Curated by: Special Interest Group on Advanced Learning Technologies (ALT), APSCE

KEYNOTE SPEAKERS

Kulthida TUAMSUK

Khon Kaen University, Thailand

Title:

Digital Learning Ecosystem for Transforming Classroom into Learning Community: Experiences from the Khon Kaen University Smart Learning Academy

Abstract: Keynote for the topic on digital learning ecosystem for transforming classroom into learning community will be presented based on the lesson learned from the Khon Kaen University (KKU) Smart Learning project which has been implementing at more than 200 junior high schools in the northeast of Thailand for 5 years. The presentation will cover main three topics: (1) initiation and background of KKU Smart Learning Academy; (2) KKU smart learning model, which is the principle and concept of learning competency development of students from the research and development of the research team in the project; and (3) overview of how the KKU smart learning model has been used at schools, and the making process of the digital learning ecosystem in classrooms that promote students' learning. Lastly, conclusion will be on the lessons we have learned from the work.

Keywords: Digital learning ecosystem, Smart learning, Junior high schools, Northeast Thailand, Learning community

Biography: Dr.Kulthida Tuamsuk is currently a Professor and Senior Researcher in Information Science at Khon Kaen University (KKU), Thailand. She is a founder and director of the KKU Smart Learning Academy which is one of the most well-known projects on the development of students' competencies at the secondary level in Thailand. This project is established based on the research works in multi-disciplinary done by researchers from various faculties in KKU. The KKU Smart Learning project has launched and implemented their innovative model (methods and products) for transforming the learning ecology in classroom, through the principled concepts: transforming the students' learning, by transforming the classroom and the teaching approach. The impacts of this project recognized at national level and accepted by the Ministry of Education.

Dr. Kulthida Tuamsuk is also specialized in Digital Humanities Research. Her research works in this field are well recognized and published in high quality international journals. She is a co-founder of a Consortium of iSchools in Asia Pacific (CiSAP), member of the Committee on Digital Humanities, iSchools Organization, and the former member of International Relation Affairs, the Association for Information Science and Technology (ASIS&T).

Pierre DILLENBOURG

Swiss Federal Institute of Technology, Switzerland

Title:

The classroom as a digital system

Abstract: Entering a modern car is like entering a computer with wheels, seats and windows. Similarly, entering a classroom is like entering a large digital system with chairs, windows and a board. The input devices of this system are not a keyboard and mouse, but an entire classroom equipped with sensors. The output device of this system is not a screen but a set of digital elements distributed in the class. The output is of course not a simple reflection of the input but input data are processed by multiple operators that aggregate, compare and visualize data. The resulting dashboards are used for monitoring the learners' progress in order to decide when and to whom to intervene. They are also used to compile data from the constructivist activities for supporting the debriefing phase, as well as to predict the completion time of an activity. Monitoring, debriefing and timing are central processes in classroom orchestration.

Biography: A former teacher in elementary school, Pierre Dillenbourg graduated in educational science (University of Mons, Belgium). He started his research on learning technologies in 1984. In 1986, he has been on of the first in the world to apply machine learning to develop a self-improving teaching system. He obtained a PhD in computer science from the University of Lancaster (UK), in the domain of artificial intelligence applications for education. He has been assistant professor at the University of Geneva. He joined EPFL in 2002. He has been the director of Center for Research and Support on Learning and its Technologies, then academic director of Center for Digital Education, which implements the MOOC strategy of EPFL (over 2 million registrations). He is full professor in learning technologies in the School of Computer & Communication Sciences, where he is the head of the CHILI Lab: "Computer-Human Interaction for Learning & Instruction ». He is the director of the leading house DUAL-T, which develops technologies for dual vocational education systems (carpenters, florists,…). With EPFL colleagues, he launched in 2017 the Swiss EdTech Collider, an incubator with 80 start-ups in learning technologies. He (co-)-founded 4 start-ups, does consulting missions in the corporate world and joined the board of several companies or institutions. In 2018, he co-founded LEARN, the EPFL Center of Learning Sciences that brings together the local initiatives in educational innovation. He is a fellow of the International Society for Learning Sciences. He currently is the Associate Vice-President for Education at EPFL.

Tiffany BARNES

NC State University, USA

Title:

Compassionate, Data-Driven Tutors for Problem Solving and Persistence

Abstract: Dr. Tiffany Barnes is a Distinguished Professor of Computer Science at North Carolina State University, and a Distinguished Member of the Association of Computing Machinery (ACM). Prof. Barnes is Founding Co-Director of the STARS Computing Corps, a Broadening Participation in Computing Alliance funded by the U.S.A. National Science Foundation. Her internationally recognized research program focuses on transforming education with AI-driven learning games and technologies, and research on equity and broadening participation. Her current research ranges from investigations of intelligent tutoring systems and teacher professional development to foundational work on educational data mining, computational models of interactive problem-solving, and design of computational thinking curricula. Her personalized learning technologies and broadening participation programs have impacted thousands of K-20 students throughout the United States.

Biography: Determining how, when, and whether to provide personalized support is a well-known challenge called the assistance dilemma. A core problem in solving the assistance dilemma is the need to discover when students are unproductive so that the tutor can intervene. This is particularly challenging for open-ended domains, even those that are well-structured with defined principles and goals. In this talk, I will present a set of data-driven methods to classify, predict, and prevent unproductive problem-solving steps in the well-structured open-ended domains of logic and programming. Our approaches leverage and extend my work on the Hint Factory, a set of methods that to build data-driven intelligent tutor supports using prior student solution attempts. In logic, we devised a HelpNeed classification model that uses prior student data to determine when students are likely to be unproductive and need help learning optimal problem-solving strategies. In a controlled study, we found that students receiving proactive assistance on logic when we predicted HelpNeed were less likely to avoid hints during training, and produced significantly shorter, more optimal posttest solutions in less time. In a similar vein, we have devised a new data-driven method that uses student trace logs to identify struggling moments during a programming assignment and determine the appropriate time for an intervention. We validated our algorithm's classification of struggling and progressing moments with experts rating whether they believe an intervention is needed for a sample of 20% of the dataset. The result shows that our automatic struggle detection method can accurately detect struggling students with less than 2 minutes

of work with 77% accuracy. We further evaluated a sample of 86 struggling moments, finding 6 reasons that human tutors gave for intervention from missing key components to needing confirmation and next steps. This research provides insight into the when and why for programming interventions. Finally, we explore the potential of what supports data-driven tutors can provide, from progress tracking to worked examples and encouraging messages, and their importance for compassionately promoting persistence in problem solving.

Gwo-Jen HWANG

National Taiwan University of Science and Technology, Taiwan

Title:

Applications and Research Issues of Artificial Intelligence in Education in the Mobile Era

Abstract: The advancement of artificial intelligence (AI) technologies has attracted the attention of researchers in the globe. However, it remains a challenging task for educational technology researchers to apply AI technologies to school settings, not to mention designing AIED (Artificial Intelligence in Education) studies. In this talk, Prof. Hwang is going to introduce the basic conceptions and applications of AI; following that, potential research issues of AIED in the mobile era are presented. In addition, several examples are given to demonstrate how AI can be used to promote teaching and learning outcomes. Finally, several approaches to designing and implementing AIED research are demonstrated.

Biography: Prof. Gwo-Jen Hwang is Chair Professor of Graduate Institute of Digital Learning and Education in National Taiwan University of Science and Technology. He serves as an editorial board member and a reviewer for more than 40 academic journals of educational technology and e-learning. Currently, he is the Editor-in-Chief /Lead Editor of Australasia Journal of Educational Technology (SSCI), International Journal of Mobile Learning and Organisation (Scopus, Q1), Journal of Computers in Education (Scopus, ESCI) and Computers & Education: Artificial Intelligence (Elsevier).

Prof. Hwang has published more than 700 academic papers, including more than 200 SSCI journal papers. Owing to his reputation in academic research and innovative inventions in e-learning, he received the annual most Outstanding Researcher Award from the National Science Council of Taiwan in the years 2007, 2010 and 2013. Moreover, in 2016, he was announced by Times Higher Education as being the most prolific and cited researcher in the world in the field of social sciences: https://www.timeshighereducation.com/news/ten-most-prolific-and-most-cited-researchers.

THEME-BASED INVITED SPEAKERS

Ana GIMENO

Universitat Politècnica de Valencia, Spain

Title:

Do Massive Open Online Language Courses (LMOOCs) Satisfy Learner Needs?

Abstract: Judging from what we hear and read, there seem to be as many supporters as detractors of Massive Open Online Courses (MOOCs). However, MOOCs are still a growing phenomenon and rely on technology to reach out to potential learners in populated cities as well as remote rural areas. Higher education in particular hasembraced this education "outlet" as a way to cater for an increasing demand for high quality online course materials to cover the needs of professionals who would like to engage in lifelong learning, and to satisfy the need to be at the forefront of educational developments and gain more international visibility. However, currently available MOOC platforms are in many respects limited in terms of courseware design and implementation as they are based on the template approach to software authoring. This limitation increases when we think of MOOCs that are intended for language learning – one of the most cognitively demanding disciplines learners can be confronted with. These MOOCs are commonly referred to as Language MOOCs or LMOOCs. Based on the Prof. Gimeno's experience in designing four upper-intermediate level MOOCs for learners of English as a Foreign Language, which have attracted over 200,000 learners to date from 258 different countries, she will discuss the findings deriving from over 17,000 learner responses to a survey conducted longitudinally over a period of two and a half years to shed light on some of the factors involved in learner motivation, expectations and learning styles. Additionally, as lack of guidance and scaffolding are factors that can lead to learner drop-outs, she will discuss the solutions that were implemented to overcome these deficiencies. In line with this, as some of the more challenging areas in LMOOC design relate to providing opportunities for learners to practise speaking and writing skills, she will discuss ways of designing activities to support learner interaction and communication, considering that these must satisfy learners who come from very different educational backgrounds and cultures.

Biography: Ana Gimeno is Full Professor of English Language in the Department of Applied Linguistics at the Universitat Politècnica de València, Spain. She is Head of the CAMILLE Research Group, devoted to research in CALL and has been project manager of several funded multimedia CALL research and development projects that have led to the publication of a number of language courses in digital format. In 2016, she co-authored the first Spanish as a

foreign language Massive Open Online Course (MOOC) delivered on the US-based edX platform, which has attracted over 350,000 learners from around the world and in 2018 she published the first upper-intermediate English edX MOOC, which has attracted over 200,000 learners. Ana Gimeno is Associate Editor of ReCALL (CUP) and serves on the Editorial Board of Computer-Assisted Language Learning Journal (Taylor and Francis), as well as being editor-in-chief of The EUROCALL Review. She wasPresident of the European Association for Computer–Assisted Language Learning (EUROCALL) for 6 years (2005-2011) and is currently President of the world organisation for computer-assisted language learning, WorldCALL (www.worldcall.org).

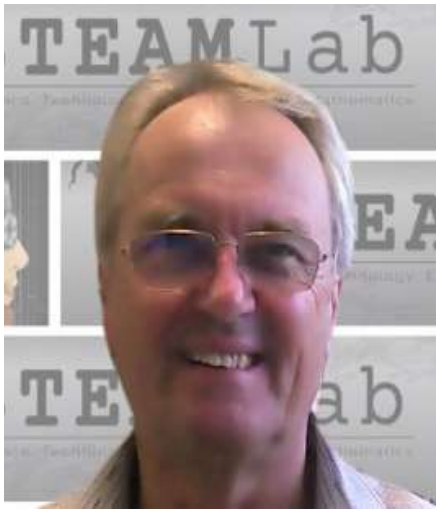
Baltasar FERNÁNDEZ-MANJÓN

Complutense University of Madrid, Spain

Title:
Systematizing Game Learning Analytics for Improving Serious Games Lifecycle

Abstract: Game learning analytics is the collection and analysis of user's gameplay interaction data to provide a better evidence-based insight on the educational process with serious games. The application of game learning analytics can provide a more data-driven scientific approach to improve all the steps of serious games' lifecycle. These steps include not only obtaining a better understanding about players learning and what actually happens when deploying a game in an educational scenario, but also enhancing the earlier steps of design, implementation and the overall quality of serious games. However, there is still a long way to go as learning analytics in games are not yet widespread and, in fact, there are very few serious games scientifically validated. The talk will introduce game learning analytics, their possible contributions to improve serious games lifecycle and the requirements (e.g. data standards, ethical considerations) for their systematization and generalization in real educational settings.

Biography: Dr.Baltasar Fernández-Manjón is a CS full professor (catedrático), and the leader of the e-learning research group e-UCM at the Complutense University of Madrid (UCM). Holder of the Telefonica-UCM Honorary Chair in Digital Education and Serious Games and IEEE Senior Member. Former Vice Dean of Research and Foreign Relationships at UCM. In 2010-11 he was Visiting Associate Professor at Harvard University and Visiting Scientist at LCS Massachusetts General Hospital. He has participated in a number of EU projects related with serious games technology and its application in different domains (e.g. H2020 RAGE and BEACONING, FP7 GALA, LLP SEGAN) where his group has been in charge of the learning analytics applied to the games (e.g. xAPI application profile for serious games, uAdventure for the creation of narrative and geolocation-based serious games). More info at https://www.e-ucm.es/people/balta/



Jon MASON

Charles Darwin University, Australia

Title:

Questioning and the Digital Environment

Abstract: To date, the digital environment has evolved rapidly around three key genres of innovation: search, social, and smart. If we take stock of where we're at right now then there's a mix of potential drivers of change – where technology can empower and enhance our experience and productivity … or it can frustrate and disrupt it. There is therefore both an upside and a downside in each innovation. When it comes to one of the most basic questions we all ask as children trying to make sense of things – why? – we don't yet have access to mature technologies that can scaffold this. This basic question is also fundamental to learning. This presentation will scan through some promising innovations that might inform the way we teach, learn, and research in the digital environment – and, not all these innovations are about technology. Moreover, 'questions that matter' are always contextual. Within these constraints, the question of how to facilitate questioning within the digital environment is the key theme explored in this presentation.

Biography: Dr.Jon Mason is an Associate Professor in Education in the College of Indigenous Futures, Education and Arts at Charles Darwin University (CDU), where he lectures in the broad area of digital technology in education. He also holds adjunct positions at Korea National Open University and East China Normal University. He first joined CDU in 2012 as Director of e-Learning for the Centre for School Leadership, Learning and Development and pursuing an earlier career at the nexus of government digital services, education, and international standardization. Since 2000 he has led delegations from Standards Australia to ISO/IEC JTC 1/SC36 and he has performed editorial roles for international projects, journals, and books. He is an elected member of the Executive Committee of the Asia Pacific Society for Computers in Education (APSCE) and serves on several journal editorial boards. His research encompasses most things where digital technology and learning intersect while also pursuing a keen interest in question formulation, sense-making and the role of wisdom in education.

PROGRAM AT A GLANCE

DSC: Doctoral Student Consortia **ECW**: Early Career Workshop
W: Workshop **WIPP**: Work-in-progress Posters

All times are in Bangkok Time Zone

<table>
<tr><th>November 22
(Monday)</th><th>November 23
(Tuesday)</th><th>November 24
(Wednesday)</th><th>November 25
(Thursday)</th><th>November 26
(Friday)</th></tr>
<tr><td rowspan="2">8:00 – 10:00
Tutorial / W02 / W03 / W04 / W06 / W09</td><td rowspan="2">8:00 – 10:00
DSC / W01 / W07 / W11 / W12</td><td></td><td colspan="2">8:00 – 9:00
Keynote: Tiffany BARNES</td><td></td></tr>
<tr><td>9:00 – 9:40
Opening Ceremony</td><td>9:00 – 9:40
Theme-based Speaker (Jon MASON)</td><td rowspan="2">9:00 – 10:00
Parallel Sessions</td><td rowspan="2">9:00 – 10:00
Keynote: Gwo-Jen HWANG</td></tr>
<tr><td colspan="2">10:00 – 10:20
Break</td><td>9:40 – 10:00
DRA Speech</td><td>9:40 – 10:00
Parallel Sessions</td></tr>
<tr><td rowspan="2">10:20 – 12:00
Tutorial / W02 / W03 / W04 / W06 / W09</td><td rowspan="2">10:20 – 12:00
DSC / W01 / W07 / W11 / W12</td><td colspan="3">10:00 – 10:10
Break</td></tr>
<tr><td>10:10 – 11:10
Keynote: Kulthida TUAMSUK</td><td rowspan="3">11:00 – 12:30
Panel 3</td><td>10:10 – 11:20
Parallel Sessions</td><td>10:10 – 11:10
Parallel Sessions</td></tr>
<tr><td colspan="2">12:00 – 1:00
Lunch</td><td>11:10 – 12:30
Parallel Sessions</td><td>11:20 – 12:30
Parallel Sessions</td><td>11:10 – 12:00
Closing Ceremony</td></tr>
<tr><td rowspan="2">1:00 – 3:00
Student Wing Meeting
W02 / W05 / W06
W08 / W09</td><td rowspan="2">1:00 – 3:00
ECW / W01 / W07 / W10 / W12</td><td colspan="3">12:30 – 1:30
Lunch</td><td rowspan="2">12:00 – 1:30
Lunch</td></tr>
<tr><td>1:30 – 2:50
Panel 2</td><td>1:30 – 2:50
Parallel Sessions</td><td colspan="2">1:30 – 2:30
Keynote: Pierre DILLENBOURG</td></tr>
<tr><td colspan="2">3:00 – 3:20
Break</td><td colspan="2">2:50 – 3:00
Break</td><td colspan="2">2:30 – 2:40
Break</td><td rowspan="2">1:00 – 3:30
EC Meeting</td></tr>
<tr><td rowspan="2">3:20 – 5:00
SIG Leaders Meeting
W02 / W05 / W06
W08 / W09</td><td rowspan="2">3:20 – 5:00
ECW / W01 / W07 / W10 / W12</td><td>3:00 – 3:40
Theme-based Speaker (Ana María GIMENO SANZ)</td><td>3:00 – 4:00
Parallel Sessions</td><td>2:40 – 3:40
Panel 1</td><td rowspan="2">2:40 – 4:00
Parallel Sessions</td></tr>
<tr><td colspan="2">4:00 – 5:30
Parallel Sessions</td><td>3:40 – 4:20
Theme-based Speaker (Baltasar FERNANDEZ-MANJON)</td><td rowspan="2">4:00 – 4:30
Parallel Sessions</td><td rowspan="2"></td></tr>
<tr><td></td><td>5:00 – 6:00
IPC Meeting</td><td colspan="2">4:30 – 5:30
Posters / WIPP</td></tr>
</table>

November 22 (Monday)

Time	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
8:00 – 10:00	Tutorial - Kit-Build Concept Map: Effective Online Learning Through Concept Map Recomposition	Workshop 2	Workshop 3	Workshop 4	Workshop 6	Workshop 9
10:00 – 10:20	BREAK					
10:20 – 12:00	Tutorial - Kit-Build Concept Map: Effective Online Learning Through Concept Map Recomposition	Workshop 2	Workshop 3	Workshop 4	Workshop 6	Workshop 9
12:00 – 1:00	LUNCH					
1:00 – 3:00	Student Wing Meeting	Workshop 2	Workshop 8	Workshop 5	Workshop 6	Workshop 9
3:00 – 3:20	BREAK					
3:20 – 5:00	SIG Leaders Meeting	Workshop 2	Workshop 8	Workshop 5	Workshop 6	Workshop 9

November 23 (Tuesday)

Time	Room 1	Room 2	Room 3	Room 4	Room 5
8:00 – 10:00	DSC	Workshop 1	Workshop 7	Workshop 11	Workshop 12
10:00 – 10:20	BREAK				
10:20 – 12:00	DSC	Workshop 1	Workshop 7	Workshop 11	Workshop 12
12:00 – 1:00	LUNCH				
1:00 – 3:00	ECW	Workshop 1	Workshop 7	Workshop 10	Workshop 12
3:00 – 3:20	BREAK				
3:20 – 5:00	ECW	Workshop 1	Workshop 7	Workshop 10	Workshop 12
5:00 – 6:00	IPC Meeting				

November 24 (Wednesday)

Time	Room 1	Room 2	Room 3	Room 4
9:00 – 9:40	Opening Ceremony			
9:40 – 10:00	DRA Speech			
10:00 – 10:10	BREAK			
10:10 – 11:10	Keynote: Kulthida TUAMSUK			
11:10 – 12:30		EGG-1	ALT/LA/DI-1	PTP-1
12:30 – 1:30	LUNCH			
1:30 – 2:50	Panel 2 - Leveraging Student-Generated Ideas (SGI) to facilitate socio-constructivist learning and conceptual change	AIED/ITS-1	TELL-1	PTP-2
2:50 – 3:00	BREAK			
3:00 – 4:00	3:00 – 3:40 Theme-based Speaker 1: Ana María GIMENO SANZ (C6)	AIED/ITS-2	PTP-3	CUMTEL-1
4:00 – 5:30		CSCL/LS-1	ALT/LA/DI-2	CUMTEL-2

November 25 (Thursday)

Time	Room 1	Room 2	Room 3
8:00 – 9:00	Keynote: Tiffany BARNES		
9:00 – 10:00	9:00 – 9:40 Theme-based Speaker (Jon MASON)	AIED/ITS-3	CUMTEL-3
10:00 – 10:10	BREAK		
10:10 – 11:20	11:00 – 12:30 Panel 3 - Seeking quality in EdTech solutions: Perspectives from across the ecosystem	AIED/ITS-4	ALT/LA/DI-3
11:20 – 12:30		CSCL/LS-2	ALT/LA/DI-4
12:30 – 1:30	LUNCH		
1:30 – 2:30	Keynote: Pierre DILLENBOURG		
2:30 – 2:40	BREAK		
2:40 – 4:00	2:40 – 3:40 Panel 1 - The Role of Artificial Intelligence in STEM Education	EGG-2	TELL-2
4:00 – 4:30	3:40 – 4:20 Theme-based Speaker (Baltasar FERNANDEZ-MANJON)	PTP-4	ALT/LA/DI-5
4:30 – 5:30	Posters & WIPP		

November 26 (Friday)

Time	Room 1	Room 2	Room 3
9:00 – 10:00	Keynote: Gwo-Jen HWANG		
10:00 – 10:10	BREAK		
10:10 – 11:10		ALT/LA/DI-6	PTP-5
11:10 – 12:00	CLOSING CEREMONIES		
12:00 – 1:30	LUNCH		
1:00 – 3:30	EC Meeting		

CONFERENCE PROGRAM

DSC: Doctoral Student Consortia **ECW**: Early Career Workshop
W: Workshop **WIPP**: Work-in-progress Posters
F Full Paper (20 mins. presentation, 5 mins. Q&A)
S Short Paper (10 mins. presentation, 5 mins. Q&A)
ES Extended Summary (10 mins presentation + 5 mins Q&A)
D Demo Paper
BOPN Best Overall Paper Nominee
BSPN Best Student Paper Nominee
BTDPN Best Technical Design Paper Nominee

All times are in Bangkok Time Zone

22 November 2021 (Monday)		
8:00 – 10:00	Tutorial: Kit-Build Concept Map: Effective Online Learning Through Concept Map Recomposition *Aryo PINANDITO, Hiroshima University, Japan, Universitas Brawijaya, Indonesia* *Didik Dwi PRASETYA., Hiroshima University, Japan, Universitas Negeri Malang, Indonesia* *Yusuke HAYASHI, Hiroshima University, Japan* *Tsukasa HIRASHIMA, Hiroshima University, Japan*	Room 1
	Workshop W02: The 14th Workshop on Technology Enhanced Learning by Posing/Solving Problems/ Questions Workshop Organizers: *Yusuke HAYASHI, Hiroshima University, Japan* *Tsukasa HIRASHIMA, Hiroshima University, Japan* *Kazuaki KOJIMA, Teikyo University, Japan* *Tomoko KOJIRI, Kansai University, Japan* *Jon MASON, Charles Darwin University, Australia* *Antonija MITROVIC, University of Canterbury, New Zealand* *Fu-Yun YU. National Cheng Kung University, Taiwan* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W02-01 F: Adopting Online Teaching and Learning Utilizing AI Technology Enhancements Throughout the COVID-19 Pandemic and Beyond Paul JENKINS, Nitin NAIK, Longzhi YANG #W02-02 D: A Learning Game on the Structure of Arithmetic Story by Chained Sentence Integration Kohei YAMAGUCHI, Yusuke HAYASHI, Tsukasa HIRASHIMA #W02-03 S: Exploring the Effects of the Collaborative and Cooperative Test-construction Strategies Chun-Ping WU #W02-04 S: Adopting No-Code Methods to Visualize Computational Thinking Derrick HYLTON, Shannon SUNG, Charles XIE #W02-05 F: Co-construction of Question-Led Inquiries Melvin FREESTONE, Jon MASON #W02-06 F: The Design and Effects of Online Contextual Student Generated Questions for English Grammar Learning Chih-Chung LIN, Fu-Yun YU	Room 2
	Workshop W03: Applications of Artificial Intelligence, Data Science and Intelligent Systems for Educational Research and Development (AIDS-ED) Workshop Organizers: *Assoc. Prof. Tossapon BOONGOEN, Mae Fah Luang University (MFU), Thailand* Co-organizers: *Prof. Qiang SHEN & Dr Changjing SHANG, Aberystwyth University, UK* *Asst.Prof. Shao-Chen CHANG, Yuan Ze University, Taiwan* *Prof. Taesu CHEONG, Korea University, South Korea* *Assoc.Prof. Kraisak KESORN Naresuan University, Thailand* *Asst.Prof. Chih-Hung CHEN, National Taichung University of Education, Taiwan*	Room 3

22 November 2021 (Monday)		
8:00 – 10:00	Workshop W03 Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W03-01 F: Adopting Online Teaching and Learning Utilizing AI Technology Enhancements Throughout the COVID-19 Pandemic and Beyond Paul JENKINS, Nitin NAIK, Longzhi YANG #W03-02 F: A Comparative Study of Missing Value Imputation Methods for Education Data Phimmarin KEERIN #W03-03 S: Learning Activities Diagnostic Model Based on Educational Data Mining of Online Social Media Behavior Khwunta KIRIMASTHONG, Pakphoom PROMMOO #W03-04 S: Improved Cluster Analysis for Graduation Prediction using Ensemble Approach Patcharaporn PANWONG, Natthakan IAM-ON, James MULLANEY	Room 3
	Workshop W04: Innovative Designs for Language Education : Transformative Technology Leadership Chair Organizer: *Dr. Bhornsawan INPIN, Mae Fah Luang University, Chiang Rai, Thailand* Co-Chair Organizers: *Xiong YUZHEN, Jinan University, China* *Mei-Rong Alice CHEN, National Taiwan University of Science and Technology, Taiwan* *Chi-Jen LIN, National Taiwan University of Science and Technology, Taipei, Taiwan* *Phirunkhana PHICHIENSATHIEN, Mae Fah Luang University, Chiang Rai, Thailand* Organizers: *Teeraparp PREDEEPORCH, Mae Fah Luang University, Chaing Rai, Thailand* *Nutdhavuth MEECHAIYO, Mae Fah Luang University, Chaing Rai, Thailand* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W04-001: Developing and Evaluating a “Virtual Go Mode” Feature on an Augmented Reality App to Enhance Primary Students’ Vocabulary Learning Engagement Yanjie SONG, Yin YANG, Ka Man LUNG #W04-002: Thai-Chinese Interpretation Online Course Design-Identifying and accommodating learners’ needs Fang YUAN, Kanlaya KHAOWBANPAEW #W04-003: “How Do You Build a Literature Course?”: An Online Resource for Literature Curriculum Development Panida MONYANONT, Teeranuch ANURIT #W04-004: Design and Development of Video Instruction Utilizing a Flipped Classroom Model: Implementing Examples of Synonyms 不 and 沒 Lalita RUKVICHAI, Natsarun LAKSANAPEETI #W04-005: The Development of Flipped Learning Model for Foreign Language Class Chun-Ye KIM #W04-007: A Challenge of Assistive Technology (AT) to the Needs of Visually Impaired (VIP) Learners in English Vocabulary Learning Phirunkhana PICHIENSATHIEN, Bhornsawan INPIN	Room 4
	Workshop W06: The 1st ICCE Workshop on EMBODIED Learning: Technology Design, Analytics & Practices Organizers: *Rwitajit MAJUMDAR, Kyoto University, Japan* *Aditi KOTHIYAL, Swiss Federal Institute of Technology Lausanne (EPFL) Switzerland.* *Prajakt PANDE, Roskilde University, Denmark.* *Shitanshu MISHRA, MGIEP UNESCO, India.* *Jayakrishnan Madathil WARRIEM, IIT Madras, India.* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W06-01 F: Investigating Computer Designs for Grounded and Embodied Mathematical Learning Mitchell NATHAN, Candace WALKINGTON, Michael SWART #W06-02 S: Design for Remote Embodied Learning: The Hidden Village-Online Ariel FOGEL, Michael SWART, Jennifer SCIANNA, Matthew BERLAND, Mitchell NATHAN	Room 5

22 November 2021 (Monday)		
8:00 – 10:00	Workshop W06: The 1st ICCE Workshop on EMBODIED Learning: Technology Design, Analytics & Practices #W06-04 F: Embodied learning in makerspaces Ravi SINHA, Geetanjali DATE, Sanjay CHANDRASEKHARAN #W06-05 F: How Diseases Spread: Embodied Learning of Emergence with Cellulo Robots Hala KHODR, Jerome BRENDER, Aditi KOTHIYAL, Pierre DILLENBOURG #W06-06 S: An AI-enhanced Pattern Recognition Approach to Analyze Children's Embodied Interactions Ceren OCAK, Theodore J. KOPCHA, Raunak DEY #W06-07 S: Programming-RIO: Initiating Individuals into Computational Thinking using Real-world IoT Objects Spruha SATAVLEKAR, Shitanshu MISHRA, Ashutosh RAINA, Sridhar IYER #W06-09 S: Making mechanisms: how academic language mediates the formation of dynamic concepts Joseph SALVE, Pranshi UPADHYAY, Mashood K K, Sanjay CHANDRASEKHARAN #W06-10 F: Preparations for Multimodal Analytics of an Enactive Critical Thinking Episode Rwitajit MAJUMDAR, Duygu ŞAHIN, Yuanyuan YANG, Huiyong LI #W06-11 F: Teacher enaction: modeling how teachers build new mechanism concepts in students' minds Pranshi UPADHYAY, Joseph SALVE, Mashood K K, Sanjay CHANDRASEKHARAN	Room 5
	Workshop W09: The 10th International Workshop on ICT Trends in Emerging Economies (WICTTEE 2021) Chair: *Bo JIANG, East China Normal University, China* Co-chair: *Patcharin PANJABUREE, Mahidol University, Thailand* *Jayakrishnan M., Indian Institute of Technology Madras, India* *May TALANDRON-FELIPE, University of Science and Technology of Southern Philippines, Philippines* Consultant: *Su Luan WONG, Universiti Putra Malaysia, Malaysia* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W09-01 S: Factors that Influence IT Students' Cyberchondria: Perspectives from the Philippines Don Erick BONUS, Ryan EBARDO #W09-02 S: The effectiveness of object-oriented-QR Monopoly in enhancing ice-breaking and education UX: A preliminary study Chien-Sing LEE, Kian-Wei LEE #W09-03 S: Mapping the Development of ICT from the Trend of Blended Learning: A Systematic Literature Review of the Blended Learning Trend in Education Lin WANGA, Muhd Khaizer OMARA, Noor Syamilah ZAKARIAA, & Nurul Nadwa ZULKIFLIB #W09-04 S: Students' Online Learning Experience during the COVID-19 pandemic: A Case Study at Universiti Putra Malaysia Su Luan WONGA, Mas Nida MD KHAMBARIB #W09-05 F: Transactional Distances During Emergency Remote Teaching Experiences Ma. Monica L. MORENO, Maria Mercedes T. RODRIGO, Johanna Marion R. TORRES, Timothy Jireh GASPAR, Jenilyn L. AGAPITO #W09-06 F: Exploring the differences in the cultivation of computational thinking in primary through meta-analysis based on the perspective of the contrast between the East and the West L Xiu GUAN, Guoxia WEIB, Bo JIANG, Xiang FENGA #W09-07 F: Designing Prototype Laryngo-App Using 3D Model in Anatomy of Larynx Poonyawee JIRARATTANAWAN, Ratchanon NOBNOP, Sujitra ARWATCHANANUKUL, Wimwipha SEEDET, Yootthapong TONGPAENG #W09-08 S: Comparing computational thinking in Scratch and non-Scratch Web design projects: A meta-analysis on framing and refactoring Chien-Sing LEE	Room 6

22 November 2021 (Monday)		
8:00 – 10:00	Workshop W09: The 10th International Workshop on ICT Trends in Emerging Economies (WICTTEE 2021) #W09-09 S: ICT used in Problem-Based Learning: Case study of a Thai University Nikorn RONGBUTSRI #W09-10 S: I Work to Learn: The Lived Experiences of Working Students in Online Learning During COVID-19 Ryan EBARDO, Santoso WIBOWO #W09-11 S: Developing a taxonomy of Edtech products for teachers: An integrated analysis from research literature and product landscape ISHIKAA, Gargi BANERJEE, Sahana MURTHY #W09-12 S: A Development of Instructional Video for Increasing Learners' Motivation and Content Mastery in Video Learning Environment Atima KAEWSA-ARD #W09-13 S: Design of Customizable Gamified Augmented Reality Apps: Towards Embracing Active Learning Mas Nida MD KHAMBARI, Dan WANG, Su Luan WONG, Priscilla MOSES, Mohd. Najwan MD. KHAMBARI, Rahmita Wirza O.K. RAHMAT, Fariza KHALID #W09-14 S: Promoting Transformative Citizenship in Diverse Society: An Appraisal of Massive Open Online Course as a Teaching Platform Anna Christi SUWARDI #W09-15 F: Perception of parents towards fun puzzle games in helping mild autistic children improve their computational thinking skills Chien-Sing LEE, Joey Nelson YATIM	Room 6
10:00 – 10:20	BREAK	
10:20 – 12:00	Continuation - Tutorial: Kit-Build Concept Map: Effective Online Learning Through Concept Map Recomposition (Room 1) Workshop W02 (Room 2) / Workshop W03 (Room 3) / Workshop W04 (Room 4) Workshop W06 (Room 5) / Workshop W09 (Room 6)	
12:00 – 1:00	LUNCH	
1:00 – 3:00	Student Wing Meeting: *Alwyn Vwen Yen LEE, Nanyang Technological University, Singapore*	Room 1
	Continuation - Workshop W02 (Room 2) / Workshop W06 (Room 5) / Workshop W09 (Room 6)	
	Workshop W08: Explorations in Online Teaching Modalities and Strategies Organizers: *Ma. Louise Antonette N. DE LAS PENAS, Ateneo de Manila University, Philippines* *Fr. Johnny C. GO, SJ, Ateneo de Manila University, Philippines* *Isabel Pefianco MARTIN, Ateneo de Manila University, Philippines* *Fr. Francis ALVAREZ, SJ, Ateneo de Manila University, Philippines* *Galvin Radley L. NGO, Ateneo de Manila University, Philippines* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #EOTMTS-001 F: Balancing the Pedagogical and Practical Concerns in Remote Higher Education: A Cyberethnography Jose Eos TRINIDAD, Samantha Joan ACKARY, Lyka Janelle PACLEB, Sophia Sue TABANAO, Jan Llenzl DAGOHOY #EOTMTS-004 F: Do Boredom, Escapism, Apathy, and Information Overload lead to Zoom Fatigue? Ryan EBARDO, Reynold PADAGAS, Hazel TRAPERO #EOTMTS-005 F: Exploring student behavior during Student-Generated Questions activities on Programming Learning Pham-Duc THO, Chih-Hung LAI, Thieu-Thi TAI #EOTMTS-006 F: Prelude to Full Online Learning: Educational Interventions from the Voice of the Customers Arlene Mae CELESTIAL-VALDERAMA, Albert A. VINLUAN, Joel B. MANGABA	Room 3

22 November 2021 (Monday)		
1:00 – 3:00	Workshop W05: The International Workshop on Learning Innovations in Science and Pre-Engineering Education (IWISPE) Chair: *Jintana WONGTA, King Mongkut's University of Technology Thonburi, Thailand* Co-Chair: *Feline Panas ESPIQUE, Saint Louis University, Philippines* *Cecilia A. MERCADO, Saint Louis University, Philippines* *Hideaki ABURATANI, National Institute of Technology (NIT) HQ, Japan* *Chiu-Lin LAI, National Taipei University of Education, Taiwan* *Ekapong HIRUNSIRISAWAT, King Mongkut's University of Technology Thonburi, Thailand* *Sukanlaya TANTIWISAWARUJI, King Mongkut's University of Technology Thonburi, Thailand* *Charoenchai WONGWATKIT, Mae Fah Luang University, Thailand* Consultant: *Kongkarn VACHIRAPANUNG, Learning Institute of King Mongkut's University of Technology Thonburi, Thailand* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W05-001 S: Using Stellarium in Educating the Young Generation on Ancient Lanna Astronomy Pongsakorn PROMMING, Marut WONGTAPIN, Cherdsak SAELEE, Orapin RIYAPRAO #W05-002 S: Gaining Holistic Insight to Inthakin Festival via Stellarium Sky-mapping Veerapat SINTUPONG, Satanan SANPABOPIT, Suphakarn CHAISUK, Cherdsak SAELEE, Orapin RIYAPRAO #W05-003 F: Development an Online Workshop in Developing AI-Driven Mobile Application: Design and Analysis of Aidea Workshop 2021 Chirayu INTARATANOO, Jintana WONGTA, Natlada SIMASATHIEN, Panchika LORTARAPRASERT, Peerapat SUPASRI, Sattarin CHOOCHOUY #W05-004 S: The Design Process of STEM Learning Activities for Problem-Solving on the PM 2.5 Mask: The case of Primary School in Thailand Jirapipat THANYAPHONGPHAT, Wantana AREEPRAYOLKIJ, Suttikan LAKANUKAN #W05-005 S: ISOCHEM: Development of an Interactive 3D Game on the Web in Augmented Reality to Enhance Students' Learning of Isomers of Organic Chemistry Pannida PRASANSON, Jirapipat THANYAPHONGPHAT, Chatchadaporn PINTHONG #W05-006 S: A Development of Gamified Learning for Nursing Students' Public Health Investigation Process Pimpisa CHOMSRI, Pattranit SRISERM, Mullika MATRAKUL #W05-007 F: Targeting Chemistry Competencies on Plastic Circular Economy with Technology-assisted Citizen Inquiry: A Proposal of Learning Matrix Anggiyani Ratnaningtyas Eka NUGRAHENI, Banjong PRASONGSAP, Niwat SRISAWASDI #W05-008 F: Promoting Core Competencies of High School Biology through Citizen Inquiry Technology: A Case of Polluting Microplastics Arum ADITA, Chawadol SRIBOONPIMSUAY, Niwat SRISAWASDI	Room 4
3:00 – 3:20	BREAK	
3:20 – 5:00	SIG Leaders Meeting: *Weiqin CHEN, Oslo and Akershus University College of Applied Science, Norway*	Room 1
	Continuation - Workshop W02 (Room 2) / Workshop W08 (Room 3) / Workshop W05 (Room 4) Workshop W06 (Room 5) / Workshop W09 (Room 6)	

23 November 2021 (Tuesday)		
8:00 – 10:00	Doctoral Student Consortium Chair: *Morris JONG, The Chinese University Hong Kong, Hong Kong, China* Co-Chairs: *Hiroaki OGATA, Kyoto University, Japan* *Bo JIANG, East China Normal University, China* *Jayakrishnan Madathil WARRIEM, Indian Institute of Technology Madras, India*	Room 1

23 November 2021 (Tuesday)		
8:00 – 10:00	Workshop W01: The Applications of Information and Communication Technologies in Adult and Continuing Education Organizers: *Xibei XIONG, Guangxi Normal University, China* *Chunping ZHENG, Beijing University of Posts and Telecommunications, China* *Jyh-Chong LIANG, National Taiwan Normal University, Taiwan* *Min-Hsien LEE, National Taiwan Normal University, Taiwan* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W01-001 F: Understanding Usage Continuance of Webinars among Professionals in the New Normal Ryan EBARDO, Jefferson COSTALES, Don Erick BONUS, Santoso WIBOWO, John Byron TUAZON, José Rizal University #W01-002 F: Research on Design Thinking and TPACK of Physical Education Pre-service Teachers Hungying LEE, Chingwei CHANG, Chiyang CHUNG #W01-003 F: A Review Study of the Application of Machine Translation in Education from 2011 to 2020 Yuyao ZHEN, Yaning WU, Guangming YU, Chunping ZHENG #W01-004 F: Online Interaction and Learning Engagement of Senior High School Students in a Less-Developed Region in China Jingyi WANG, Chunping ZHENG #W01-005 F: Perceived Teacher Support in Online Literature Reading: Scale Development, Validation, and Prediction of Continuous Reading Intention Yan SUN, Ying ZHOU, Jyh-Chong LIANG #W01-006 F: Exploring the online medical knowledge building in an university general education course Sheng-Han YANG, Jyh-Chong LIANG #W01-007 F: A Practical Study of Information Technology-Driven Teaching Reform of Innovation and Entrepreneurship in Higher Education Zhiming MENG, Xibei XIONG, Yu ZANG #W01-008 F: The Integration of Information Technology with Senior High English Reading Activities—A Case Study in Southwestern China Yanhua CHEN, Kehaoyu CHEN, Chenxi QIN	Room 2
	Workshop W07: The 5th Computer-Supported Personalized and Collaborative Learning Organizers: *Robin CHIU-PIN, Lin National Tsing Hua University, Taiwan* *Sherry Y. CHEN, National Central University, Taiwan and Brunel University, UK* *Gwo-Haur HWANG, National Yunlin University of Science and Technology, Taiwan* *Fu-Yun YU, National Cheng Kung University, Taiwan* *Wenli CHEN, National Institute of Education (NIE), Nanyang Technological University (NTU), Singapore* *Jitti NIRAMITRANON, Kasetsart University, Thailand* *Shu-Yuan TAO, Takming University of Science and Technology, Taiwan* *Hsiu-Ling CHEN, National Taiwan University of Science and Technology, Taiwan* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W07-01 S: Design and Implementation of an iOS APP: Multimedia Interactive System and Items for Woodworking Teaching Chorng-Shiuh KOONG, Hung-Chang LIN, Chao-Chin WU, Chun-Hsien CHEN, Po-Huan LEE, Hsi-Chuan WANG #W07-02 F: The design of An Online Collaborative Orientation's Learning Activities to nurture Soft skills, Life skills and Self-directed learning Chanakan GROSSEAU, Jintana WONGTA, Arnon THONGSAW, Kongkarn VACHIRAPANANG #W07-03 F: Leveraging Context for Computer-Supported Student-generated Questions and EFL Learning in Grammar Instruction: Its Effects on Task Performance Wen-Wen CHENG, Fu-Yun YU	Room 3

23 November 2021 (Tuesday)		
8:00 – 10:00	Workshop W07: The 5th Computer-Supported Personalized and Collaborative Learning #W07-04 Poster: Mobile Learning System Combined with Adaptive Recommendation Mechanism--Taking outdoor learning activities of literature and history as an example Yu-Zhen DAI, Kai-Yi CHIN #W07-05 F: Academic Help-seeking Preference of Students during Online Flexible Learning May Marie P. TALANDRON-FELIPE, Gladys S. AYUNAR, Kent Levi A. BONIFACIO #W07-06 F: A Proposed Teacher Professional Development Program for Promoting Adult Teacher's TPACK in STEM Education Pawat CHAIPIDECH, Niwat SRISAWASDI #W07-07 Poster: The Impact of Inquiry-based Integrated STEM on Student's Perception of Learning Science and Computer Programming Chia-Jung CHANG, Shu-Yuan TAO	Room 3
	Workshop W11: The 5th International Workshop on Information and Communication Technology for Disaster and Safety Education (ICTDSE2021) Organizers: *Hisashi HATAKEYAMA, Tokyo Institute of Technology, Japan* *Hiroyuki MITSUHARA, Tokushima University, Japan* Advisory Member: *Ruggiero LOVREGLIO, Massey University, New Zealand* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W11-002 S: Qualitative Evaluation of Information Display in a Regional Safety Map "Hamādo-map" Yasuhisa OKAZAKI, Tatsunari MEGURO, Hiroshi WAKUYA, Yukuo HAYASHIDA, Nobuo MISHIMA #W11-003 S: Towards Building Mental Health Resilience through Storytelling with a Chatbot Ethel ONG, Melody Joy GO, Rebecalyn LAO, Jaime PASTOR, Lenard Balwin TO #W11-004 F: Observing Evacuation Behaviors of Surprised Participants in Virtual Reality Earthquake Simulator Hiroyuki MITSUHARA, Itsuki TANIOKA, Masami SHISHIBORI #W11-005 S: A Proposal to Use Walk Rally Learning with Mystery Solving to Foster Attachment to Place and Understanding of Regional Characteristics Hisashi HATAKEYAMA, Masao MUROTA	Room 4
	Workshop W12: The 9th Workshop on Technology-Enhanced STEM Education (TeSTEM Workshop) Chair: *Charoenchai WONGWATKIT, Mae Fah Luang University, Thailand* Co-Chairs: *Niwat SRISAWASDI, Khon Kaen University, Thailand* *Patcharin PANJABUREE, Mahidol University, Thailand* *Ying-Tien WU, National Central University, Taiwan* *Sasithorn CHOOKAEW, King Mongkut's University of Technology North Bangkok, Thailand* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W12-01 F: Trends of Engineering Design Process in STEM Education: A Systematic Review of the Evidence during 2017-2021 Teeratat SOPAKITIBOON, Surakit TUAMPOEMSAB, Sasithorn CHOOKAEW, Suppachai HOWIMANPORN #W12-02 S: Design and Development of an Augmented Reality Application for Learning a Serial-Link Robot Kinematics Sarut PANJANA, Tarinee TONGGOED #W12-03 S: Designing a Mobile Application to Promote Vocational Students' Learning in Basic Technical Drawings Course Tiptiya INTIP, Metha OUNGTHONG, Sasithorn CHOOKAEW #W12-04 S: Design and Development of a Low-Cost Robotic Platform for STEM Education of an Automatic Control System: Rotary-Type Double Inverted Pendulum Case Wiput TUVAYANOND, Piyanun RUANGURAI	Room 5

23 November 2021 (Tuesday)		
8:00 – 10:00	Workshop W12: The 9th Workshop on Technology-Enhanced STEM Education (TeSTEM Workshop) #W12-05 S: Developing a PLCs Experimental Kit through Role-playing for Students in Vocational Education Boonkert SONTIPAN, Suppachai HOWIMANPORN, Sasithorn CHOOKAEW #W12-07 S: Using Series Elastic Actuator as a Tool to Motivate Students Engineering Learning in STEM Education Piyanun RUANGURAI, Chaiyaporn SILAWATCHANANAI #W12-08 S: Designing a Project-based Plant to Enhance Mechatronics Students for Self-learning Embedded Control System Chaiyaporn SILAWATCHANANAI, Piyanun RUANGURAI #W12-09 S: Integrated Knowledge and Skills with Multi-Material Learning for Engineering Students during COVID-19 Suppachai HOWIMANPORN, Ornanong TANGTRONGPAIROS, Sasithorn CHOOKAEW #W12-10 S: Design Web-based Personalized Environment for Industrial Robots Learning Dechawut WANICHSAN, Konggrit PITANON, Sasithorn CHOOKAEW #W12-11 F: Development of a Gamified Number Line App for Teaching Estimation and Number Sense in Grades 1 to 7 Debbie Marie B. VERZOSA, Ma. Louise Antonette N. DE LAS PEÑAS, Maria Alva Q. ABERINB , Agnes D. GARCIANO, Jumela F. SARMIENTO, & Mark Anthony C. TOLENTINO #W12-12 F: For People and Planet: Evaluation of an Educational Mobile Game and Teacher Resource Pack Maria Mercedes T. RODRIGO, Johanna Marion R. TORRES, Janina Carla M. CASTRO, Abigail Marie T. FAVIS, Ingrid Yvonne HERRAS, Francesco U. AMANTE, Hakeem JIMENEZ, Juan Carlo F. MALLARI, Kevin Arnel MORA, Walfrido David A. DIY, Jaclyn Ting Ting VIDAL, Ma. Assunta C. CUYEGKENG #W12-13 F: Applying Outcomes-Based Learning in Mechatronics and Robotics Program: Case Study of Singburi Technical College Chatdanai SANEEWONGNAAYUTTAYA, Narongsak SANGNGOEN, Morakot KONGIN, Pattarapong PANHIRUN, Kittichai SAETUNG #W12-15 F: Case-based Professional Learning Course for Fostering Preservice Science Teachers' Technological Pedagogical and Content Knowledge of Inquiry with Mobile Game Phattaraporn PONDEE, Niwat SRISAWASDI	Room 5
10:00 – 10:20	BREAK	
10:20 – 12:00	Continuation - Doctoral Student Consortium (Room 1) Workshop W01 (Room 2) / Workshop W07 (Room 3) Workshop W11 (Room 4) / Workshop W12 (Room 5)	
12:00 – 1:00	LUNCH	
1:00 – 3:00	Early Career Workshop Chair: *Mas Nida MD. KHAMBARI, Universiti Putra Malaysia, Malaysia* Co-Chairs: *Ryan EBARDO, José Rizal University, Philippines* *Sharifah Intan Sharina SYED ABDULLAH, Universiti Putra Malaysia, Malaysia* *Patcharin PANJABUREE, Mahidol University, Thailand* Consultant: *Jon MASON, Charles Darwin University, Australia*	Room 1
	Continuation - Workshop W01 (Room 2) / Workshop W07 (Room 3) Workshop W12 (Room 5)	

23 November 2021 (Tuesday)		
1:00 – 3:00	Workshop W10: The 8th ICCE workshop on Learning Analytics and Evidence-based Education Organizers: *Huiyong LI, Kyoto University, Japan* *Rwitajit MAJUMDAR, Kyoto University, Japan* *Brendan FLANAGAN, Kyoto University, Japan* *Weiqin CHEN, Oslo Metropolitan University, Norway* *Hiroaki OGATA, Kyoto University, Japan* Complete list of papers: (*Note that the actual sequence of presentations will be determined by the workshop organizers*) #W10-001 S: Short Answer Questions Generation by Fine-Tuning BERT and GPT-2 Danny C.L. TSAI, Willy J.W. CHANG, Stephen J.H. YANG #W10-002 S: Exploring the Correlation between Students' Attention and Learning Performance Xin-Ping HUANG, Chung-Kai YU and Stephen J.H. YANG #W10-004 F: Identifying Students' Stuck Points Using Self-Explanations and Pen Stroke Data in a Mathematics Quiz Ryosuke NAKAMOTO, Brendan FLANAGAN, Kyosuke TAKAMI, Yiling DAI, Hiroaki OGATA #W10-005 S: Toward Educational Explainable Recommender System: Explanation Generation based on Bayesian Knowledge Tracing Parameters Kyosuke TAKAMI, Brendan FLANAGAN, Yiling DAI, Hiroaki OGATA #W10-006 S: Performance prediction and importance analysis using Transformer Akiyoshi SATAKE, Hironobu FUJIYOSHI, Takayoshi YAMASHITA, Tsubasa HIRAKAWA, Atsushi SHIMADA #W10-008 F: BEKT: Deep Knowledge Tracing with Bidirectional Encoder Representations from Transformers Zejie TIAN, Guangcong ZHENG, Brendan FLANAGAN, Jiazhi MI, Hiroaki OGATA #W10-010 F: Designing Nudges for Self-directed Learning in a Data-rich Environment Kinnari GATARE, Prajish PRASAD, Aditi KOTHIYAL, Pratiti SARKAR, Ashutosh RAINA, Rwitajit MAJUMDAR	Room 4
3:00 – 3:20	BREAK	
3:20 – 5:00	Continuation - Early Career Workshop (Room 1) Workshop W07 (Room 3) / Workshop W10 (Room 4) / Workshop W12 (Room 5)	
5:00 – 6:00	IPC Meeting	Room 1

24 November 2021 (Wednesday)		
9:00 – 9:40	OPENING CEREMONY	Room 1
9:40 – 10:00	DRA Speech: Maria Mercedes T. RODRIGO, Ateneo de Manila University, Philippines	Room 1
10:00 – 10:10	BREAK	
10:10 – 11:10	Keynote Speech 1: Kulthida Tuamsuk (C7) Moderator: *Thepchai SUPNITHI, National Electronics and Computer Technology Center, Thailand*	Room 1
11:10 – 12:30	EGG-1 Session Chair: *Maria Mercedes T. RODRIGO, Ateneo de Manila University* #6: Integrating Parsons Puzzles with Scratch - BOPN, BSPN (Full) Jeffrey BENDER, Bingpu ZHAO, Lalitha MADDURI, Alex DZIENA, Alex LIEBESKIND, Gail KAISER #3: A RECIPE for Teaching the Sustainable Development Goals (Short) Maria Mercedes T. RODRIGO, Walfrido David DIY, Abigail Marie FAVIS, Francesco AMANTE, Janina Carla CASTRO, Ingrid Yvonne HERRAS, Juan Carlo MALLARI, Kevin Arnel MORA, Johanna Marion R. TORRES and Ma. Assunta CUYEGKENG #20: Children Preference Analysis of A Mathematics Game- “Lily’s Closet" (Short) Wei Tung NIEN, Yi Chen WANG, Joni Tzuchen TANG #154: Tinkery: A Tinkerer’s Nursery for Problem Solving with Lego Mindstorms (Short) Ashutosh RAINA, Sridhar IYER, Sahana MURTHY	Room 2
11:10 – 12:30	ALT/LA/DI-1 Session Chair: *Tsukasa HIRASHIMA, Hiroshima University, Japan* #35: Developing a Generic Skill Assessment System Using Rubric and Checklists (Full) Makoto MIYAZAKI, Hiroyoshi WATANABE, Mieko MASAKA, Kumiko TAKAI #127: A Machine Learning Approach for Estimating Student Mastery by Predicting Feedback Request and Solving Time in Online Learning System (Full) Kannan N, Charles Y. C. YEH, Chih-Yueh CHOU, Tak-Wai CHAN #78: Classification of learning patterns and outliers using Moodle course material clickstreams and quiz scores (Short) Konomu DOBASHI, Curtis HO, Catherine FULFORD, Meng-Fen Grace LIN, Christina HIGA #86: Investigating the Tightness of Connection between Original Map and Additional Map in Extension Concept Mapping (Full) Didik PRASETYA, Aryo PINANDITO, Yusuke HAYASHI, Tsukasa HIRASHIMA	Room 3
	PTP-1 Session Chair: *Dan KOHEN-VACS, Holon Institute of Technology, Israel* #83: Mining Students’ Engagement Pattern in Summer Vacation Assignment (Full) Hiroyuki KUROMIYA, Rwitajit MAJUMDAR, Hiroaki OGATA #140: Alternative Approach for Evaluation Adapted for Times of Emergent Conditions (Full) Dan KOHEN-VACS, Meital AMZALAG #93: The Use of Video Conferencing Applications Facilitating Students' Behavioral Engagement during Synchronous Learning in the Time of Pandemic (Short) Mark Anthony ARIBON III #34: Facilitating collaborative learning among businesses, faculty, and students in a purely online setting (Short) Joseph Benjamin ILAGAN, Matthew Laurence UY, Vince Nathan KHO, Joselito OLPOC	Room 4

24 November 2021 (Wednesday)		
12:30 – 1:30	LUNCH	
1:30 – 2:50	Panel 2 (C2) - Leveraging Student-Generated Ideas (SGI) to facilitate socio-constructivist learning and conceptual change *Lung-Hsiang WONG, Chew Lee TEO, Longkai WU, Nanyang Technological University, Singapore*	Room 1
	AIED/ITS-1 Session Chair: *Ramkumar RAJENDRAN, Indian Institute of Technology Bombay, INDIA* #9: Investigating Engagement and Learning Differences between Native and EFL students in Active Video Watching (Full) Negar MOHAMMADHASSAN, Antonija MITROVIC #121: Authoring Tool for Semi-automatic Generation of Task-Oriented Dialogue Scenarios (Full) Emmanuel AYEDOUN, Yuki HAYASHI, Kazuhisa SETA #53: A System for Generating Student Progress Reports Based on Keywords (Short) Shumpei KOBASHI, Tunenori MINE #134: A coding mechanism for analysis of SRL processes in a technology enhanced learning environment (Short) Rumana PATHAN, Sahana MURTHY, Ramkumar RAJENDRAN	Room 2
	TELL-1 Session Chair: *May Marie P. TALANDRON-FELIPE, Ateneo De Manila University / University of Science and Technology of Southern Philippines, Philippines* #22: Comparison of English Comprehension among Students from different backgrounds using a Narrative-Centered Digital Game - BTDPN (Full) May Marie P. TALANDRON-FELIPE, Kent Levi A. BONIFACIO, Gladys S. AYUNAR, Maria Mercedes T. RODRIGO #88: Modelling the Relationship between English Language Learners' Academic Hardiness and Their Online Learning Engagement during the COVID-19 Pandemic (Short) Lin LUAN, Yanqing YI, Jinjin LIU #92: Design and Evaluation of a Game-based Language Learning Web Application for English Language Learners in Thailand (Short) Kornwipa POONPON, Wirapong CHANSANAM, Chawin SRISAWAT, Trinwattana POOCHANON #136: Proctored vs Unproctored Online Exams in Language Courses: A Comparative Study (Short) Mehmet ÇELIKBAĞ, Ömer DELIALIOĞLU	Room 3
	PTP-2 Session Chair: *Jon MASON, Charles Darwin University, Australia* #105: Low Adoption of Adaptive Learning Systems in Higher Education and How Can It Be Increased in Fully Online Courses (Full) Rhodora ABADIA, Sisi LIU #119: Co-designing for a healthy EdTech ecosystem: Lessons from the Tulna research-practice partnership in India (Full) Aastha PATEL, Chandan DASGUPTA, Sahana MURTHY, Rashi DHANANI #95: The M in STEM and Issues of Data Literacy (Short) Khalid KHAN, Jon MASON #146: Students with Disabilities and Digital Accessibility in Higher Education under COVID-19 (Short) Weiqin CHEN	Room 4

24 November 2021 (Wednesday)		
2:50 – 3:00	BREAK	
3:00 – 4:00	3:00 – 3:40 Theme-based Speaker 1: Ana María GIMENO SANZ, Universitat Politècnica de Valencia, Spain Moderator: *Yoshiko GODA, Kumamoto University, Japan*	Room 1
	AIED/ITS-2 Session Chair: *Yu LU, Beijing Normal University, China* #17: Improving knowledge tracing through embedding based on Metapath (Full) Chong JIANG, Wenbin GAN, Guiping SU, Yuan SUN, Yi SUN #29: Challenges to Applying Performance Factor Analysis to Existing Learning Systems (Short) Cristina MAIER, Ryan BAKER, Steve STALZER #30: Does Large Dataset Matter? An Evaluation on the Interpreting Method for Knowledge Tracing (Short) Yu LU, Deliang WANG, Penghe CHEN, Qinggang MENG	Room 2
	PTP-3 Session Chair: *Lucian NGEZE, Indian Institute of Technology Bombay, India* #102: Development and Preliminary Evaluation of an Online System in Support of a Student-Generated Testlets Learning Activity (Short) Fu-Yun YU #130: Learn to design (L2D): A TPD program to support teachers in adapting ICT learning materials to their local context through research-based strategies (Short) Gaurav JAISWAL, Sunita RASTE, Sahana MURTHY #132: Research on the Construction of Evaluation Indicators System of Pre-service teachers' Teaching Competency in Special Delivery Classroom (Short) Xiangchun HE, Peiliang MA, Xing ZHANG #152: From teaching to teacher training: Embedding important skills needed to develop a teacher trainer in cascaded Teacher Professional Development Programmes (Short) Lucian Vumilia NGEZE, Sridhar IYER	Room 3
	CUMTEL-1 Session Chair: *Brendan FLANAGAN, Kyoto University, Japan* #11: The Potential of Mobile Games in Improving Filipino and English Vocabulary among Children who are Non-native Speakers (Full) May Marie P. TALANDRON-FELIPE, Maria Mercedes T. RODRIGO #106: Analytics of Open-Book Exams with Interaction Traces in a Humanities Course - BOPN (Full) Rwitajit MAJUMDAR, Geetha BAKILAPADAVU, Jiayu LI, Hiroaki OGATA, Brendan FLANAGAN, Mei-Rong Alice CHEN	Room 4
4:00 – 5:30	CSCL/LS-1 Session Chair: *Fu-Yun YU, National Cheng Kung University, Taiwan* #42: Flip & Slack - Active Flipped Classroom Learning with Collaborative Slack Interactions (Full) Kyong Jin SHIM, Swapna GOTTIPATI, Yi Meng LAU #151: Designing Support for Productive Social Interaction and Knowledge Co-construction in Collaborative Annotation - BOPN, BSPN (Full) Xinran ZHU, Hong SHUI, Bodong CHEN #153: Theoretical and Practical Framework for a Multinational, Precollege, Peer Teaching Collaborative (Short) Eric HAMILTON, Danielle ESPINO, Seung LEE #5: A Measure to Cultivate Engaged Peer Assessors: A Validation Study on its Efficacy (Short) Yu-Hsin LIU, Kristine LIU, Fu-Yun YU	Room 2

24 November 2021 (Wednesday)		
4:00 – 5:30	ALT/LA/DI-2 Session Chair: *Hiroaki OGATA, Kyoto University, Japan* #48: Prior Knowledge on the Dynamics of Skill Acquisition Improves Deep Knowledge Tracing - BOPN (Full) Qiushi PAN, Taro TEZUKA #57: Blockchain in Education: Visualizations and Validating Relevance of Prior Learning Data (Short) Patrick OCHEJA, Brendan FLANAGAN, Rwitajit MAJUMDAR, Hiroaki OGATA #91: An AES System to assist teachers in grading Language Proficiency and Domain Accuracy using LSTM networks. (Short) Aditya SAHANI, Forum PATEL, Shivani MEHTA, Rekha RAMESH, Ramkumar RAJENDRAN #52: Analysis of the Answering Processes in Split-Paper Testing to Promote Instruction (Short) Shin UENO, Yuuki TERUI, Ryuichiro IMAMURA, Yasushi KUNO, Hironori EGI #ES-01: Improving Face-to-Face Communication Skills using Active Video Watching (Extended Summary) Ja'afaru MUSA, Antonija MITROVIC, Matthias GALSTER, Sanna MALINEN	Room 3
	CUMTEL-2 Session Chair: *Ryan EBARDO, Jose Rizal University, Philippines* #129: Human Factors in the Adoption of M-Learning by COVID-19 Frontline Learners (Full) Ryan EBARDO, Merlin Teodosia SUAREZ #137: Design Guidelines for Scaffolding Self-Regulation in Personalized Adaptive Learning (PAL) systems: A Systematic Review (Full) Vishwas BADHE, Gargi BANERJEE, Chandan DASGUPTA #120: EXAIT: A Symbiotic Explanation Education System (Short) Brendan FLANAGAN, Kyosuke TAKAMI, Kensuke TAKII, Dai YILING, Rwitajit MAJUMDAR, Hiroaki OGATA #114: Effects of virtual reality on students' creative thinking during a brainstorming session (Short) Mondheera PITUXCOOSUVARN, Victoria ABOU-KALIL, Hiroaki OGATA, Yohei MURAKAMI	Room 4

25 November 2021 (Thursday)		
8:00 – 9:00	Keynote Speech 4: Tiffany BARNES, North Carolina State University, United States Moderator: *Antonija MITROVIC, University of Canterbury, New Zealand*	Room 1
9:00 – 10:00	9:00 – 9:40 Theme-based Speaker: Jon MASON, Charles Darwin University, Australia Moderator: *Ramkumar RAJENDRAN, Indian Institute of Technology Bombay, India*	Room 1
	AIED/ITS-3 Session Chair: *Kazuhisa SETA, Osaka Prefecture University, Japan* #39: In-process Feedback by Detecting Deadlock based on EEG Data in Exercise of Learning by Problem-posing - BOPN, BTDPN (Full) Sho YAMAMOTO, Yuto TOBE, Yoshimasa TAWATSUJI, Tsukasa HIRASHIMA #68: Gaze- and Semantics-Aware Learning Material to Capture Learners' Comprehension Process (Short) Akio OKUTSU, Yuki HAYASHI, Kazuhisa SETA #68: Learning the Condition of Addition and Subtraction Word Problems by Problem-Posing based on Representation Conversion Model (Short) Yusuke HAYASHI, Natsumi TSUDAKA, Kengo IWAI, Tsukasa HIRASHIMA	Room 2

25 November 2021 (Thursday)		
9:00 – 10:00	CUMTEL-3 Session Chair: *Aungtinee KITTIRAVECHOTE, Bansomdejchaopraya Rajabhat University, Thailand* #55: Comparison of Experts and Novices in Determining the Gravitational Acceleration using Mobile Phone with Phyphox Application (Short) Aungtinee KITTIRAVECHOTE, Thanida SUJARITTHAM #116: Karyotype: An interactive learning environment for reasoning and sense making in genetics through a case-based approach (Short) Sunita RASTE, Anurag DEEP, Sahana MURTHY #117: Design and Deployment of a Mobile Learning Cloud Network to Facilitate Open Educational Resources for Asynchronous Learning (Short) Joselito Christian Paulus VILLANUEVA, Mark Anthony MELENDRES, Catherine Genevieve LAGUNZAD, Nathaniel Joseph LIBATIQUE #147: TinkerBot: A Semi-Automated Scaffolding Agent as a Companion for Tinkering. (Short) Shruti JAIN, Ashutosh RAINA, Sridhar IYER	Room 3
10:00 – 10:10	BREAK	
10:10 – 11:20	AIED/ITS-4 Session Chair: *Ethel ONG, De La Salle University, Philippines* #65: An Improved Model to Predict Student Performance Using Teacher Observation Reports - BSPN Menna FATEEN, Kyouhei UENO, Tsunenori MINE #23: Diverse Linguistic Features for Assessing Reading Difficulty of Educational Filipino Texts (Short) Joseph Marvin IMPERIAL, Ethel ONG #41: Using Qualitative Data from Targeted Interviews to Inform Rapid AIED Development (Short) Jaclyn OCUMPAUGH, Stephen HUTT, Juliana Ma. Alexandra L. ANDRES, Ryan BAKER, Gautam BISWAS, Nigel BOSCH, Luc PAQUETTE, Anabil MUNSHI #128: Reflection Support Environment for Creative Discussion Based on Document Semantics and Multimodal Information (Short) Atsuya SHONO, Yuki HAYASHI, Kazuhisa SETA	Room 2
	ALT/LA/DI-3 Session Chair: *May Kristine Jonson CARLON, Tokyo Institute of Technology, Japan* #64: A Thematic Summarization Dashboard for Navigating Student Reflections at Scale (Full) Yuya ASANO, Sreecharan SANKARANARAYANAN, Majd SAKR, Christopher BOGART #43: Learning Analytics Dashboard Prototype for Implicit Feedback from Metacognitive Prompt Responses (Short) May Kristine Jonson CARLON, Jeffrey CROSS #62: Analysing reachable and unreachable codes in App Inventor programs for supporting the assessment of computational thinking concepts (Short) Siu Cheung KONG, Chun Wing POON, Bowen LIU #96: Conceptual Level Comprehension Support of The Object-Oriented Programming Source-Code Using Kit-Build Concept Map (Short) Nawras KHUDHUR, Pedro Gabriel Fontales FURTADO, Aryo PINANDITO, Shimpei MATSUMOTO, Yusuke HAYASHI, Tsukasa HIRASHIMA	Room 3
11:00 – 12:30	Panel 3 - Seeking quality in EdTech solutions: Perspectives from across the ecosystem Sahana MURTHY, Indian Institute of Technology Bombay, India	Room 1
11:20 – 12:30	CSCL/LS-2 Session Chair: *Priscilla MOSES, Universiti Tunku Abdul Rahman, Malaysia* #113: Laboratory Study on ICAP Interventions for Interactive activity: Investigation Based on Learning Performance (Full) Shigen SHIMOJO, Yugo HAYASHI #38:STEM and Non-STEM Students' Perception towards Work Environment and Career Prospect (Short) Priscilla MOSES, Tiny Chiu YUEN TEY, Phaik Kin CHEAH	Room 2

25 November 2021 (Thursday)		
11:20 – 12:30	CSCL/LS-2 #79:Fostering conceptual change in software design (Short) Lakshmi T G, Sridhar IYER #87:The Effectiveness of Collaborative Concept Map Recomposition and Discussion with Kit-Build Concept Map in Online Learning (Short) Aryo PINANDITO, Didik PRASETYA, Nawras KHUDHUR, Yusuke HAYASHI, Tsukasa HIRASHIMA	Room 2
	ALT/LA/DI-4 Session Chair: *Paraskevi TOPALI, GSIC-EMIC Research Group, Spain* #144: Profiling Student Learning from Q&A Interactions in Online Discussion Forums - BSPN (Full) De Lin ONG, Kyong Jin SHIM, Swapna GOTTIPATI #82: Supporting MOOC Instructors in the Identification of Learner Problems Framed within the Learning Design (Short) Paraskevi TOPALI, Alejandro ORTEGA-ARRANZ, Alejandra MARTÍNEZ-MONÉS, Sara VILLAGRÁ-SOBRINO, Juan Ignacio ASENSIO-PÉREZ, Yannis DIMITRIADIS #124: Automatic classification of MOOC forum messages to measure the quality of peer interaction (Short) Urvi SHAH, Richa RAMBHIA, Prakruti KOTHARI, Rekha RAMESH, Gargi BANERJEE #150: Identifying and Comparing Topic Categories and Interaction Features in MOOC Discussions Supported by Danmaku (Short) Bo YANG	Room 3
12:30 – 1:30	LUNCH	
1:30 – 2:30	Keynote Speech 3: Pierre DILLENBOURG, Swiss Federal Institute of Technology, Switzerland Moderator: *Kate THOMPSON, Queensland University of Technology, Australia*	Room 1
2:30 – 2:40	BREAK	
2:40 – 3:40	Panel 1 - The Role of Artificial Intelligence in STEM Education *Siu Cheung KONG, The Education University of Hong Kong, Hong Kong*	Room 1
2:40 – 4:00	EGG-2 Session Chair: *Jonathan DL CASANO, Ateneo de Manila University, Philippines* #50: Tactical Knowledge Acquisition Support System from Play Videos of Esports Experts (Full) Minato SHIKATA, Tomoko KOJIRI #103: Robot with Embodied Interactive Modes as a Companion Actor in Journey of Digital Situational Learning Environment and its Effect on Students' Learning Performance - BTDPN (Full) Vando Gusti AL HAKIM, Su-Hang YANG, Jen-Hang WANG, Chiu-Chen YEN, Lung YEH, Gwo-Dong CHEN #8: Designing Games for Stealth Health & Healthy Lifestyle Education (Short) Nilufar BAGHAEI #107: Xiphias: Using A Multidimensional Approach Towards Creating Meaningful Gamification-Based Badge Mechanics (Short) Jonathan CASANO, Jenilyn AGAPITO, Nicole Ann TOLOSA	Room 2
	TELL-2 *Session Chair: Jingjing LIAN, Peking University, China* #36: A Quasi-experimental Study of University English Learners' Engagement in a Flipped Classroom - BOPN, BSPN (Full) Jingjing LIAN, Jiyou JIA #26: Integrating E-learning into Self-regulated Learning Instruction: A Holistic Flipped Classroom Design of a Classical Chinese Reading Intervention Program (Short) Kit Ling LAU #84: A Flipped Model of Active Reading Using Learning Analytics-enhanced E-book Platform (Short) Yuko TOYOKAWA, Rwitajit MAJUMDAR, Louis LECAILLIEZ, Hiroaki OGATA #100: The Learning Potential of Online Student-Generated Questions Based on Given Graphics for English Language Learning (Short) Fu-Yun YU	Room 3

25 November 2021 (Thursday)		
3:40 – 4:20	Theme-based Speaker: Baltasar FERNANDEZ-MANJON, Complutense University of Madrid (UCM) Spain Moderator: *Rita KUO, New Mexico Institute of Mining and Technology, USA*	Room 1
4:00 – 4:30	PTP-4 *Session Chair: Ma. Monica MORENO, Ateneo de Manila University, Philippines* #19: Cura Personalis: Institutionalizing Compassion During Emergency Remote Teaching (Short) Ma. Monica MORENO, Ma. Mercedes RODRIGO, Johanna Marion TORRES, Timothy Jireh GASPAR, Jenilyn AGAPITO #81: Educational leadership and children's resilience: German and Polish schools during COVID-19 (Short) Paulina BURKOT, Amy SEPIOŁ, Nataliia DEMESHKANT	Room 2
	ALT/LA/DI-5 *Session Chair: Yu LU, Beijing Normal University, China* #7: SLP: A Multi-Dimensional and Consecutive Dataset from K-12 Education(Short) Yu LU, Yang PIAN, Ziding SHEN, Penghe CHEN, Shengquan YU #143: Evaluation of a Motion Capture and Virtual Reality Classroom for Secondary School Teacher Training. (Short) Sandra ALONSO, Daniel LÓPEZ, Andrés PUENTE, Alejandro ROMERO, Ibis ALVAREZ, Borja MANERO	Room 3
4:30 – 5:30	Posters / Work-in-progress Posters	Room 2

26 November 2021 (Friday)		
9:00 – 10:00	Keynote Speech 2: Gwo-Jen HWANG, National Taiwan University of Science and Technology, Taiwan Moderator: *Jingyun WANG, Durham University, UK*	Room 1
10:00 – 10:10	BREAK	
10:10 – 11:10	ALT/LA/DI-6 *Session Chair: Nguyen-Thinh LE, Humboldt-Universität zu Berlin, Germany* #54: From Hello to Bye-Bye: Churn prediction in English Language Learning App (Full) Daevesh SINGH, Rumana PATHAN, Gargi BANERJEE, Ramkumar RAJENDRAN #126: How Can Pedagogical Agents Detect Learner's Stress? (Full) Nguyen-Thinh LE, Melanie BLECK, Niels PINKWART	Room 2
	PTP-5 *Session Chair: Siu Cheung KONG, The Education University of Hong Kong, Hong Kong* #60: From Mathematical Thinking to Computational Thinking: Use Scratch Programming to Teach Concepts of Prime and Composite Numbers (Full) Siu Cheung KONG, Wai Ying KWOK #112: GUI Based System for Effortless Program Visualization Creation Using Time Series Information - BOPN, BTDPN (Full) Koichi YAMASHITA, Miyu SUZUKI, Satoru KOGURE, Yasuhiro NOGUCHI, Raiya YAMAMOTO, Tatsuhiro KONISHI, Yukihiro ITOH	Room 3
11:10 – 12:00	CLOSING CEREMONY	
12:00 – 1:30	LUNCH	
1:00 – 3:30	EC Meeting	

POSTERS (P) & WORK-IN-PROGRESS POSTERS (WIPP)

25 November 2021 (Thursday) 4:30 – 5:30 PM, Room 2

P: Poster
WIPP: Work-in-progress Posters

#40 P: Viewpoint Transformation Training System Based on Discovery of Relationships Between Objects
Kota KUNORI and Tomoko KOJIRI

#47 P: Support System for Understanding Intention in Communication Using Diagrams
Koushi UEDA and Tomoko KOJIRI

#49 P: Chinese Grammatical Error Detection Using Adversarial ELECTRA Transformers
Lung-Hao LEE, Man-Chen HUNG, Chao-Yi CHEN, Rou-An CHEN, Yuen-Hsien TSENG

#69 P: Presentation Scenario Design Support System That Prompts Awareness of Other Viewpoints
Kazumi MASAKADO, Yuki HAYASHI, Kazuhisa SETA

#71 P: Visualization of Topics and Logical Development Based on Reader's Understanding of Inter-sentence Relations for Reading Support
Yuki OKANIWA, Tomoko KOJIRI

#28 P: Explore the contribution of learning style for predicting learning achievement and its relationship with reading learning behaviors
Fuzheng ZHAO, Bo JIANG, Juan ZHOU, Chengjiu YIN

#16 P: Research on the application of College Students' online learning cognitive engagement evaluation
Yonghong WANG, Xiangchun HE

#118 P: Integration of Programming-based Tasks into Mathematical Problem-based Learning
Zhihao CUI, Oi-Lam NG, Morris JONG

#149 P: Web-Based Engineering Design Activity in Biology: An Assessment on the Demonstration of Higher-Order Thinking Skills
Ma. Andrea Claire CARVAJAL

#32 P: A Mixed Study to Understand Taiwanese Children's Preference for A Mobile Game
Yi Chen WANG, Wei Tung NIEN, Joni Tzuchen TANG

#133 P: The impact of Augmented Reality applied in Vocabulary Learning and Use on Elementary EFL School Students
Chin-Huang LIAO, Wen-Chi Vivian WU, Tin-Chang CHANG, Chang-Hung LEE

#13 P: Birds of Paradise: A Game on Urban Bird Biodiversity Conservation
Jamielyn Mae VILLANUEVA, Patricia Vianne LEE, James Matthew CUARTERO

#46 P: Suggestions for special education teachers to practice spherical image-based virtual reality instruction in classrooms: a case study
Kun-Hung CHENG

#51 P: Computational Fluency and the Digital Divide in Japanese Higher Education
Luc GOUGEON, Jeffrey CROSS

#70 P: Improvement of Teaching Based on the E-book Reader Logs: A Case Study at High School Math Class in Japan
Taro NAKANISHI, Hiroyuki KUROMIYA, Rwitajit MAJUMDAR, Hiroaki OGATA

#21 P: Composition class using a system that encourages self-review —Focus on second language learning—
Yan ZHAO, Haruhiko TAKASE, Hidehiko KITA

#89 P: Examining the effects of automatic speech recognition technology on learners' lexical diversity
Michael JIANG, Morris JONG, Wilfred LAU

#139 P: Technology Integration in a Communicative English Classroom
Ruth Z. HAUZEL

#WIPP-01: A Trial Study on Restraint of Mind-Wandering while Viewing Educational Videos by Adjusting Biofeedback Operations
Toru NAGAHAMA, Naoki NOSE, Issaku KAWASHIMA, Yusuke MOTITA

#WIPP-02: Narrative Discourse Structure Creation Support System for Reflecting Theme and Emotional Impression
Atsushi ASHIDA, Masataka TOKUMARU, Tomoko KOJIRI

#WIPP-03: Visualization Method of Movement of Teachers and Students in Classroom using OpenPose
Misato FUTATSUISHI, Izumi HORIKOSHI, Yasuhisa TAMURA

#WIPP-04: Development of Mapping Function between Variable Value and Object Properties for Program Behavior Visualization Tool TEDViT
Hiroki SOMA, Satoru KOGURE, Yasuhiro NOGUCHI, Koichi YAMASHITA, Raiya YAMAMOTO, Tatsuhiro KONISHI, Yukihiro ITOH

#WIPP-05: Extraction Method of Characteristics of Important Body Shapes and their Training Order for Motor Skill Acquisition
Jinya SUMIZAKI, Tomoko KOJIRI

#WIPP-06: Instruction Support System Using Impasse Detector and Major Failure Diagnoser for Programming Exercises
Tomoki IKEGAME, Yasuhiro NOGUCHI, Satoru KOGURE, Koichi YAMASHITA, Raiya YAMAMOTO, Tatsuhiro KONISHI, Yukihiro ITOH

#WIPP-07: Augmented Reality (AR) Analytics to Investigate Motor Skills for Crossing the Midline
Manjeet SINGH, Shaun BANGAY, Atul SAJJANHAR

#WIPP-08: Motivating Ethnic Minority Students in Hong Kong to Learn Chinese Culture with EduVenture VR
Morris Siu-Yung JONG, Nelson NG, Eric LUK, Jessie LEUNG, Michael Yi-Chao JIANG, Darwin LAU, Chin-Chung TSAI

#WIPP-09: An Augmented Reality Experience for Generating New Audiences for Spanish Dance
Alejandro ROMERO-HERNANDEZA, Lara MARIN, Borja MANERO

#WIPP-10: The Development and Evaluation of an Online Educational Game Integrated with Real Person-NPC mechanism for History Learning
Shu-Wei LIU, Hung-Yu CHAN, Huei-Tse HOU

#WIPP-11: Role of Preparation using Mobile Application for Summary-speaking Task in Face-to-face English-Speaking Pair Work
Kae NAKAYA, Masao MUROTA

#WIPP-12: Proficiency, learning strategies, and logging behaviors on the dictation training courseware
Yuichi Ono

TABLE OF CONTENTS