ASCILITE
SHAPING THE FUTURE OF TERTIARY EDUCATION

SUSS
SINGAPORE UNIVERSITY OF SOCIAL SCIENCES

36TH INTERNATIONAL CONFERENCE ON INNOVATION, PRACTICE AND RESEARCH IN THE USE OF EDUCATIONAL TECHNOLOGIES IN TERTIARY EDUCATION

Personalised Learning. Diverse Goals. One Heart.

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Performing Arts Theatre

ASCILITE 2019

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Conference Proceedings

Personalised Learning.
Diverse Goals.
One Heart.

36th International Conference of Innovation, Practice and Research in the Use of Educational Technologies in Tertiary Education

Editors:

Sharleen Chew Yi Wei, Chan Kah Mun, Alfieana Alphonso

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ASCILITE 2019 – Personalised Learning. Diverse Goals. One Heart.

The ASCILITE 2019 Conference is ASCILITE's 36th International Conference of Innovation, Practice and Research in the Use of Educational Technologies in Tertiary Education. This year's conference was hosted by the Singapore University of Social Sciences (SUSS), and held at the University's campus, between 2 to 5 December 2019.

The theme of ASCILITE 2019 "Personalised Learning. Diverse Goals. One Heart." brings together the focus on the learner's needs in the use of technology and sound pedagogical practices. It recognizes the diverse motivation behind each learner in the design of curriculum and the common goal in contributing to the betterment of the global society. Singapore, being the place for people of different ethnicity, culture and religion to pursue their passion and dreams, personifies the idea of "Diverse Goals" but "One Heart". This theme also coincides with the educational aspiration of SUSS, and Singapore at large, that regardless of students' goals, different backgrounds or life stages, it aims to equip them with the real-world knowledge and practice-oriented skills to excel, both in life and in their chosen career. Welcome to ASCILITE 2019 in the city state Singapore.

Conference Tracks

Conference submissions identifies the conceptual, applied, and theoretical research contributions on the following six conference tracks:

1. Visions and Explorations in Digital Learning, Pedagogies & Spaces
This exploratory theme encourages the sharing of new, emerging or tentative trials and experimentations of work that incorporates digital technologies into pedagogical instruction and learning, as well as learning spaces.

2. Practices and Challenges in Technology Enhanced Learning
This theme encourages contributions in the states of affairs, structures or collaborations needed, in order for technology enhanced learning to take root in a meaningful, scaled or sustainable manner. Personal reflections on obstacles, mistakes or lessons learnt in systems implementation are welcomed.

3. Nurturing Digital Competencies for Teaching, Learning, Work & Citizenship
This theme focuses on the attributes, attitudes, understandings, skills, dispositions and related digital competencies needed by educators and learners in formal and informal learning environments, including in Institutions of Higher Learning (IHLs) and at the workplace.

4. Data Analytics & Evidence to Improve Teaching & Learning
This theme is for the empirical, quantitative, interpretative or impact analysis of (a) digital learning issues or (b) the use of digital interventions to illuminate issues of teaching and learning.

5. Continuing Education: Learning Enrichment Throughout Life
This theme focuses on inclusive and lifelong learning initiatives or pedagogies related to upskilling and reskilling for work, as well as in the contexts of active and productive leisure, ageing, citizenship to meet local, regional and global learning needs.

6. Technology as a Catalyst for Social Impact
This theme focuses on how technology could be used for learning to create social changes and how educators and students alike can be motivated to use technology to make a difference in the society.

Conference Organisation

The Singapore University of Social Sciences' ASCILITE 2019 Conference Organising Committee, led by Professor Cheah Horn Mun, includes Associate Professor Rebekah Lim Wei Ying, Associate Professor Chui Yoon Ping, Dr Renee Tan Hui Ling, Mr Lee Chye Seng, Ms Chan Kah Mun, Mr David Toh Tian Kheng, Ms Katherine Lin Daomin, Ms Rebekah Lim Shi Yun, Ms Choong Fong Ling, and Ms Stephanie Tiu Ting Wei.

The Conference Programme sub-committee included Dr Low Wai Ping, Dr Patrick Shi, Dr Lin Feng, Dr Vikki Bo, Dr Sharleen Chew Yi Wei, Dr Lyndon Lim, Dr Ho Yan Yin, Dr Regina Lee Wan Peng, Mr Arthur Chia, Mr Eric Lee, Mr Muhammad Firdaus, Ms Jameela Kassim, Ms Cindy Neo Poh Peng, Ms Alfieana Alphonso, Ms

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Review Process

Full papers, Concise papers, Extended Abstracts (PechaKucha), and Posters submitted for the conference underwent a double-blind peer review process. A third blind peer review was conducted if opinions between the two reviewers was divided. This process allowed papers to be ranked and selected for inclusion in the conference. A further review was conducted by the ASCILITE 2019 Academic sub-committee for papers just above and below the anticipated cut line.

Panel discussion, Symposia, Debates, Experimental sessions, and Pre-Conference Workshop submissions underwent a single-blind peer reivew. Proposals that were at the cut-off line were also examined by the ASCILITE 2019 Academic sub-committee.

A total of 199 submissions were received for the 2019 conference, and all were either blind peer reviewed or double-blind peer reviewed. A further 13 non-peer reviewed submissions were added to the programme. The EasyChair Conference Management System was used for the submission and review process, for papers across the six conference themes.

Table 1: Summary of paper submissions and accepatances for ASCILITE 2019

Type	Submitted	Accepted	Rejected	Withdrawn
Double blind peer review				
Full paper	45	35	9	1
Concise paper	74	54	19	1
Poster	26	20	6	0
PechaKucha	32	23	8	1
Sub-total	**177**	**132**	**42**	**3**
Blind peer review				
Panels/ Symposia	5	5	0	0
Debates	2	1	1	0
Experimental sessions	9	7	1	1
Pre-Conference Workshops	6	5	0	1
Sub-total	**22**	**18**	**2**	**2**
Grand total (reviewed)	**199**	**150**	**44**	**5**
Non-Peer Review				
Keynotes	3	3	0	0
AJET sessions	2	2	0	0
SIG sessions	7	6	0	1
TELAS session	1	1	0	0
Innovation award presentations	1	1	0	0
Sub-total (non-reviewed)	**14**	**13**	**0**	**1**
Grand total (all)	**213**	**163**	**44**	**6**

Acknowledgements

The ASCILITE 2019 Conference Organising Committee would like to acknowledge and thank the ASCILITE Executive for their guidance and support, ensuring that this conference ran successfully. In particular, we would like to thank the ASCILITE President, Professor Dominique Parrish, Vice-President Dr Chris Campbell, Secretariat Mr Andre Colbert, Professor Sue Gregory, Mrs Hazel Jones, Dr Julie Willems, and our Executive member liaison, Mr Alan Soong.

List of Reviewers

The ASCILITE 2019 Conference Organising Committee and Conference Academic sub-committee wish to gratefully acknowledge the efforts of the international body of reviewers for contributions to ASCILITE 2019. Their work in reading and reviewing the 199 submissions was greatly appreciated

Elizabeth Mccarthy	Victoria University, Australia
Yvonne Wisbey	Independent
Chris Campbell	Griffith University, Australia
Zihan Zhou	Singapore University of Social Sciences, Singapore
Joel Gn	Singapore University of Social Sciences, Singapore
Suneeti Rekhari	RMIT University, Australia
Sharon Altena	Queensland University of Technology, Australia
Sandy Barker	University of South Australia, Australia
Leanne Cameron	James Cook University, Australia
Michael Cowling	CQUniversity, Australia
Tracy Douglas	University of Tasmania, Australia
Douglas Eacersall	University of Southern Queensland, Australia
John P Egan	The University of Auckland, New Zealand
Gloria Gomez	Oceanbrowser Ltd., New Zealand
Elaine Huber	The University of Sydney, Australia
Lisa Jacka	Southern Cross University, Australia
Peerumporn Jiranantanagorn	Rajamangala University of Technology Rattanakosin, Thailand
Hazel Jones	Griffith University, Australia
Vitomir Kovanovic	The University of South Australia, Australia
Samantha Newell	The University of Adelaide, Australia
Leonie Sherwin	University of New England, Australia
Chue Shien	Nanyang Technological University, Singapore
Jhee Yoon Sook	The University of Melbourne, Australia
Linda Ward	Technical And Further Education New South Wales, Australia
Juliet Aleta	University of Southern Queensland, Australia and University of the Philippines Open University, Philippines
Diana Andone	Politehnica University of Timisoara, Romania
James Birt	Bond University, Australia
Malcolm Campbell	Deakin University, Australia
Ong Catherine	Nanyang Technological University, Singapore
Yi Wei Chew	Singapore University of Social Sciences, Singapore
Siew Hoong Chow	Singapore University of Social Sciences, Singapore
Thomas Cochrane	Auckland University of Technology, New Zealand
Amelia Dowe	University of Tasmania, Australia
Vebica Evans	The University of Melbourne, Australia
Sue Gregory	University of New England, Australia
Marcus Harmes	University of Southern Queensland, Australia
Yan Yin Ho	Singapore University of Social Sciences, Singapore
Mahen Jayawardena	Deakin University, Australia
Martin Jenkins	Coventry University, United Kingdom
Meena Jha	CQUniversity, Australia
Carol Johnson	The University of Melbourne, Australia
Shazia K. Jan	Macquarie University, Australia
Kavita Kaur	Deakin University, Australia
Suresh Krishnasamy	Nanyang Technological University, Singapore
Richard Lander-Clarke	Australian National University, Australia
Mary Lawson	Deakin University, Australia
Lyndon Lim	Singapore University of Social Sciences, Singapore
Danny Y.T. Liu	The University of Sydney, Australia
Stephen Marshall	Victoria University of Wellington, New Zealand
Victoria I. Marín	University of Oldenburg, Germany
Larry Mcnutt	Institute of Technology Blanchardstown, Ireland
Kristy Newton	University of Wollongong Library, Australia
Rebecca Ng	Australian National University, Australia

Matipa Ngandu	Walter Sisulu University, South Africa
Patrick O'Shea	Immersive Learning Research Network, United States of America
Zhengqi Pan	Singapore University of Social Sciences, Singapore
Sharon Pittaway	Deakin University, Australia
Trisha Poole	University of Southern Queensland, Australia
Greg Preston	Newcastle University, Australia
Michael Roberts	Technical And Further Education Digital New South Wales, Australia
Michael Sankey	Griffith University, Australia
Lenandlar Singh	University of Guyana, Guyana
Lucia Stejer	Kaplan Professional, Australia
Darci Taylor	Deakin University, Australia
Gemma Tur	University of the Balearic Islands, Spain
Amanda White	University of Technology Sydney, Australia
Amy Wong Ooi Mei	Singapore University of Social Sciences, Singapore
Sakinah Alhadad	Griffith University, Australia
William Ashraf	Macquaire University, Australia
Helen Bound	Institute for Adult Learning, Singapore
Alison Casey	The University of Notre Dame, Australia
Kwang Cham	The University of Melbourne, Australia
Elizabeth Cook	Edith Cowan University, Australia
Linda Corrin	Swinburne University of Technology, Australia
Barney Dalgarno	Charles Stuart University, Australia
Kashmira Dave	Charles Darwin University, Australia
Hui Ting Evelyn Gay	Singapore University of Social Sciences, Singapore
Cedomir Chad Gladovic	Holmesglen Institute, Australia
Paul Gruba	The University of Melbourne, Australia
Huong Ha	Singapore University of Social Sciences, Singapore
Kenneth Howah	Central Queensland University, Australia
Henk Huijser	Queensland University of Technology, Australia
Dirk Ifenthaler	University of Mannheim, Germany
Pedro Isaias	The University of Queensland, Australia
Rae Jobst	Griffith University, Australia
Prasart Jongjaroenkamol	Singapore Management University, Singapore
Elaine Khoo	University of Waikato, New Zealand
Lee Kooi Cheng	National University of Singapore, Singapore
David Kwok	Republic Polytechnic, Singapore
Irene Wai Leng Lee	The University of Western Australia, Australia
Steve Leichtweis	The University of Auckland, New Zealand
Joanne Yong-Kwan Lim	Singapore University of Social Sciences, Singapore
Wei Ying Rebekah Lim	Singapore University of Social Sciences, Singapore
Feng Lin	Singapore University of Social Sciences, Singapore
Aastha Malhotra	University of Southern Queensland, Australia
Lorraine Marshalsey	Griffith University, Australia
Rosina Merry	Te Rito Maioha Early Childhood New Zealand, New Zealand
Diego Miguel-Revilla	University of Valladolid, Spain
Adon Moskal	Otago Polytechnic, New Zealand
Vickel Narayan	Auckland University of Technology, New Zealand
Puvaneswari P Arumugam	Deakin University, Australia
Robyn Philip	Flinders University, Australia
Victoria Rosin	Lincoln University, New Zealand
Peter Rutherford	The University of Queensland, Australia
Mark Schier	Swinburne University of Technology, Australia
Alan Soong	National University of Singapore, Singapore
Marko Teras	Tampere University of Applied Sciences, Finland
Peter Westcott	Independent
Penny Wheeler	Macquarie University, Australia
Weipeng Yang	Singapore University of Social Sciences, Singapore
Fang Zheng	Singapore University of Social Sciences, Singapore
Abu Shakil Ahmed	Budapest University of Technology and Economics, Hungary
Sandra Beach	The University of Queensland, Australia

Zan Chen	Institute for Adult Learning, Singapore
Katie Freund	Australian National University, Australia
Inna Geoghegan	Independent
Feifei Han	Griffith University, Australia
Bruce Johnstone	University of London, United Kingdom
Oriel Kelly	New Zealand Tertiary College, New Zealand
Helen Ko	Singapore University of Social Sciences, Singapore
Clare Lloyd	University of Newcastle, Australia
Kulari Lokuge	Monash College, Australia
Sheryl Maher	RMIT University, Australia
Jasvir Kaur Nachatar Singh	La Trobe University, Australia
Hyacinth Steele	Queensland University of Technology, Australia
Vanessa Todd	Macquarie University, Australia
Holly Tootell	University of Wollongong, Australia

Foreword

Whenever significant technological advances are made that have the potential for use in teaching and learning, the imagery of the human educator being replaced by one form of technology or another would inevitably make its appearance. While this 'replacement' has not quite taken roots, the role of the educator has certainly evolved as each introduction of relevant technology nudges and re-shapes teaching and learning practices. In fact, the response of the educator to effectively embrace available technologies represents one of the key challenges, and dare I say, 'joy', in our endeavours to make learning meaningful and integral to each learner.

If we cast our minds back to the impact technologies have on education, from the use of paper to the introduction of computing machines, it is not too difficult to recognise how each major adoption has significantly changed the way in which we interact and learn. However, the spread of these changes tended to be slow; that is, until the emergence of Information and Communication Technologies (ICT) redefines what pace of change means. Specifically, over a short period of time from the early 90s to the present, there are at least three recognisable paradigmatic shifts. First, the easy availability of information provided through the Internet largely means that the educator no longer has a monopoly on factual knowledge. In fact, the individual educator simply cannot compete with knowledge repositories embedded within technology and human networks made accessible through the Internet. Second, the interactivities brought about through Web 2.0 have shifted the interactions from between human and machine, to human and human through a machine. This has greatly increased the ability of the individual to connect with others beyond the space limited by geography. The impact on the way teaching and learning interactions need to be re-designed is palpable. Third, and perhaps the most challenging to date, is that the machines are now capable of learning about the learners, and through such knowledge can potentially customise learning at the individual level. The possibilities opened up by this capability is still under-explored. Within it lurks considerable dangers, and yet also tremendous possibilities that can definitively change teaching and learning interactions.

The theme of this conference recognises these possibilities, and also that it is not just about the use of technology in education. The social dimensions and impact of using technologies in teaching and learning are important aspects that need to be taken into account as we explore and deepen how technologies can support this most human of endeavours – learning.

On this sober and exhilarating note, welcome!

Professor Cheah Horn Mun
Chairperson, ASCILITE 2019 Conference Organising Committee
Assistant Provost and Dean (S R Nathan School of Human Development)
Singapore University of Social Sciences

Keynote Speakers

Emeritus Professor Mike Sharples
Emeritus Professor of Educational Technology Institute of Educational Technology, The Open University, UK

Mike Sharples is Emeritus Professor of Educational Technology in the Institute of Educational Technology at The Open University, UK and Honorary Visiting Professor at the Centre for Innovation in Higher Education, Anglia Ruskin University. His research involves human-centred design of new technologies and environments for learning. He inaugurated the mLearn conference series and was Founding President of the International Association for Mobile Learning. As Academic Lead for the FutureLearn company, he informed the design of its social learning approach. He leads the nQuire project with the BBC to develop a new platform for inquiry-led learning at scale. He founded the Innovating Pedagogy report series and is author of over 300 papers in the areas of educational technology, science education, human-centred design of personal technologies, artificial intelligence and cognitive science.

Professor Sandy Cook
Senior Associate Dean, Duke-NUS Medical School

Dr Sandy Cook received her PhD from Cornell University in Adult and Continuing Education. Her Master's is in Research Methodology and her Bachelor's in Experimental Psychology, both from Ohio State University. Prior to coming to Singapore, she was the Associate Dean for Curricular Affairs at University of Chicago, Pritzker School of Medicine. Dr. Cook joined Duke-NUS Medical School in June 2006, to facilitate the design and implementation of the Educational infrastructure for Duke-NUS Medical school. She facilitated the development of TeamLEAD, the local adaptation of Team-based Learning as the primary instructional strategy for Duke-NUS basic science year. She helped establish the Academic Medicine Education Institute (AM.EI) launched in 2012. AM.EI is a joint venture with Duke-NUS and SingHealth, designed to promote excellence in education for Health Professional Educators. Through AM.EI, she has taught hundreds of faculty from all levels of learning how to use TeamLEAD in their instructional programmes. In 2014, she was accepted into the NUS Teaching Academy Fellows and received the Master Scholar Award from the International Association of Medical Science Educators (IAMSE) in 2016. She is currently the Deputy Head of Office Education and Deputy Director of AM.EI.

Professor Koh Hian Chye
Professor and Director, Business Intelligence & Analytics, Singapore University of Social Sciences

Dr Koh Hian Chye is currently a Professor at the Singapore University of Social Sciences. He serves concurrently as Director of Business Intelligence & Analytics, which is responsible for the implementation of learning analytics in the University, among other things. He has more than thirty years of experience in data analysis and data mining, having served as a statistical/data mining consultant to SMEs, statutory boards, government agencies and large organisations. He has published in international journals and presented at international conferences in various areas in analytics. His main research and teaching interests are in data mining applications in business and education.

TABLE OF CONTENTS

FULL PAPERS

1. Usability and user experience evaluation of Virtual Integrated Patient
Pabba Anubharath, Yoon Ping Chui, Judy Sng Chia Ghee, Lixia Zhu, Kai Tham and Edmund J.D. Lee…….18-28

2. Learning business through digital simulation: An analysis of student reflections
Sandy Barker and Michelle Davy……...29-38

3. The challenge of learning analytics implementation: Lessons learned
Colin Beer, David Jones and Celeste Lawson…….39-49

4. In the Village: Enabling transformative and student led engagement with social science making through the design of technology rich learning spaces
Peter Bryant……50-58

5. At the heart of a diverse technology: Applying a realist evaluation methodology to a university live streaming programme
Mike Bryant, Kris Ryan, Colin Simpson, Alexander Whitelock-Wainwright and Trevor Wood……..59-67

6. Solving ill-structured problems mediated by online-discussion forums: Mass customisation of learning
Ramya Chandrasekaran, Aik Ling Tan, Seng Chee Tan and Foong May Yeong……..68-75

7. Skills, practice and challenges in the adoption of learning technologies in training and adult education
Zan Chen……76-81

8. Learning Analytics implementations in universities: towards a model of success using multiple case studies
Jo-Anne Clark and David Tuffley……..82-92

9. The value of student attendance at face-to-face classes, as part of a blended learning experience
Charlotte Clark and Ger Post……93-101

10. Using discussion forums to support continuing education of workplace learning supervisors: Enabling a community of practice
Deb Clarke……102-111

11. Infographics, assessment and digital literacy: innovating learning and teaching through developing ethically responsible digital competencies in public health
Raya Darcy……112-120

12. Using blogs to develop and determine graduate competencies in an undergraduate business subject
Christopher Deneen, Irshad Ali, Kevin Byard and John Kommunuri……121-129

13. Vision - A space for digital learning and exploring pedagogies: Virtual world education
Sue Gregory, Brent Gregory, Lisa Jacka, David Ellis, Marcus McDonald, Sharon Lierse, Merle Hearns, Suku Sukunesan, Pauletta Irwin, Blooma John, Des Butler, Jason Zagami and Belma Gaukrodger…….130-138

14. Exploring knowledge reuse in design for digital learning: tweaks, H5P, constructive templates and CASA
David Jones……139-148

15. Barriers, enablers, and motivations for staff adoption of learning analytics: Insights for professional learning opportunities from an Australian University
Hazel Jones……149-158

16. Game-Based versus Gamified Learning Platform in Helping University Students Learn Programming
Oka Kurniawan, Norman Tiong Seng Lee, Nachamma Sockalingam and Kin Leong Pey……159-168

17. Do learning technologies contribute to reduce student drop-out? - A systematic review
Berit Lassesen, Maria Hvid Stenalt, Dorte Sidelmann Rossen and Anna Bager-Elsborg……...169-177

18. Predicting At-Risk Students For An Introductory Programming Course: A pilot study
Norman Tiong Seng Lee and Oka Kurniawan……178-185

19. Practices and Challenges in a Flipped EFL Writing Classroom
Su Ping Lee, Elena Verezub and Ida Fatimawati Adi Badiozaman……186-195

20. Data Analytics for Student Profiling and Academic Counselling
Ji Zhi Li, Wai Ping Low, Lokesh Bheema Thiagarajan and Lu Chang Peh……196-205

21. Feeling supported: Enabling students in diverse cohorts through personalised, data-informed feedback
Lisa-Angelique Lim, Anthea Fudge and Shane Dawson……206-215

22. E-learning: Working-adult Students' Attitudes and Performances
Kin Chew Lim, Elaine Chapman and Wai Ping Low……216-225

23. Using TEL for TEL: Building confidence of sessional staff to enhance their students' experience
Danielle Logan, Hazel Jones, Trevor Foster and Lenka Boorer……226-236

24. Profiling Language Learners in the Big Data Era
Mauro Ocana, Hassan Khosravi and Miss Bakharia……...237-245

25. Exploring Nursing Students' Perceptions of Educational Experience and Satisfaction in a Blended Course
Li Ya Sandy Ong and Choon Lang Gwendoline Quek……246-254

26. Defining Digital Literacy: A Case Study of Australian Universities
Nona Press, Puvaneswari P. Arumugam and Kevin Ashford-Rowe……..255-263

27. From text to audiovisual feedback: enhancing clarity, usefulness and satisfaction
Tracii Ryan, Michael Phillips and Michael Henderson……264-271

28. Challenges in sustaining technology enhanced learning: recruitment, employment and retention of learning designers in Australian universities
Christine Slade, Dominic McGrath, Ruth Greenaway and Jeffrey Parker……272-281

29. Learning design is not a prescription: Framing and disposition in collaborative infrastructure
Natalie Spence……282-291

30. Piloted Online Training Module to Teach On-Site Safety in Engineering
Frank Ta, Andrew Valentine, Sally Male and Ghulam Mubashar Hassan……..……292-301

31. Evaluation of the use of VoiceThread for Assessments
Wendy Taleo, Alison Reedy and Pedro Isaias……302-311

32. A Course Level Analysis of Academic Performance on Adult Learners
Jess Tan, Gabriel Gervais and Hian Chye Koh……...312-320

33. Dashboards for Decision Making in Higher Education
Yoke Wah Tang, Toh Suiying and Alex Leow Shuangjie……321-329

34. A three tier model to promote the institutional adoption of learning analytics
Steven Warburton, Irina Elgort and Derek White……..330-339

35. Online Versus Face-to-Face: A Quantitative Study of Factors Influencing Students' Choice of Study Mode using Chi-Square Test and Binary Logistic Regression
Sze Kiu Yeung and Wee Leong Lee……..340-348

CONCISE PAPERS

1. Degree Design Thinking: Integrated design frameworks for emerging online degrees in higher education
Chie Adachi and Marcus O'Donnell……...349-353

2. Employing data to enhance teaching and learning in MENDAKI Tuition Scheme (MTS)
Siti Afiyah Bte Mustapha, Sylvia Chong and Ji Zhi Li……..……354-358

3. "Many hats one heart": A scoping review on the professional identity of learning designers
Sharon Altena, Rebecca Ng, Meredith Hinze, Simone Poulsen and Dominique Parrish……..359-364

4. Piloting Mobile Mixed Reality to Enhance Building Information Modelling Delivery in Construction Education
James Birt and Nikolche Vasilevski……...…365-369

5. One system to examine them all: Defining the complexities of implementing an institution wide online exam model
Peter Bryant and Jacqueline Ruello……370-374

6. Engaging students in a wide-scale educational technology implementation: Investigating student attitudes
Chris Campbell and Megan Duffy……...…375-379

7. Enhancing Learning of System Modelling through 360 degree Virtual Reality Video and 3D Printing
Juan Carlos Munoz, James Birt and Michael Cowling……...380-385

8. MENTOR – Intelligent Mobile Online Peer Tutoring Application for Face-to-Face and Remote Peer Tutoring
Sheng Hung Chung and Seng Chee Tan……..…386-391

9. Developing A Mobile Immersive Reality Framework For Enhanced Simulation Training: MESH360
Thomas Cochrane, Stephen Aiello, Norm Wilkinson, Claudio Aguayo and Stuart Cook……..392-397

10. Using team-based learning in a problem-based learning medical course to improve transition from a pre-clinical to clinical learning environment
Bronwen Dalziel, Slade Jensen, Elizabeth O'Connor, Charles McCafferty and Iain Gosbell……398-402

11. Designing with Constraints: Are we designing for creativity or compliance?
Kashmira Dave and Sue Gregory……...403-406

12. Students' self-regulated learning skills and attitudes in online scientific inquiry tasks
Paula de Barba, Kristine Elliott and Gregor Kennedy……407-412

13. "Okay, but what does it look like?" Building staff capacity in online learning design through role modelling
Joanne Elliott and Darci Taylor……..413-417

14. 25 principles for effective instructional video design
Matthew Fyfield, Michael Henderson and Michael Phillips……...418-423

15. Stakes in the potential of technology-enhanced learning: a STEM faculty case study
Mikkel Godsk……424-429

16. Using business principles to provide education solutions: On-demand exams supported by the progression pipeline
Brent Gregory……..…430-434

17. Investigating lecturers' reasons for adoption of mobile learning in higher education: A Case Study
Ivan Han……435-440

18. Seeing the wood for the trees: Insights into the complexity of developing pre-service teachers' digital competencies for future teaching
Sarah Howard, Jo Tondeur, Jun Ma, Jie Yang and Adam Bridgeman……441-446

19. Improving return on investment in higher education retention: Leveraging data analytics insights
Simon Huband, Eric Parkin, David C. Gibson and Dirk Ifenthaler……447-452

20. Higher Education Stakeholders' Views on Guiding the Implementation of Learning Analytics for Study Success
Dirk Ifenthaler and Jane Yin-Kim Yau……..453-457

21. A Proposal for Enhancing Students' Evaluations through an Adaptive and Progressive Digital Feedback System
Meena Jha, Sanjay Jha, Michael Cowling, Damien Clark and James Picton……458-463

22. Diverse Goals but One Heart with Mixed Reality in Information Systems
Blooma John and Emily Rutherford……...464-469

23. Analysing student interactions in a flipped engineering course
Elaine Khoo, Gareth Ranger, Jonathan Scott and Mira Peter……470-475

24. A Learning Analytics Approach to Model and Predict Learners' Success in Digital Learning
Ean Teng Khor and Chee Kit Looi……476-480

25. Evaluating the implementation of an active learning platform in a team-based learning postgraduate Medical Program
Irene Lee and Helen Wilcox……...481-486

26. Using social annotations to support collaborative learning in a Life Sciences module
Seow Chong Lee, Zheng-Wei Lee and Foong May Yeong……487-492

27. Basic competence in online teaching: Preliminary lessons learned from a university's approach to assure faculty readiness in teaching online
Li Siong Lim, May Lim, Karin Avnit and Ong Chee Ming……493-498

28. Back to Basics: combining analytics and early assessment with personalised contact to improve student progress
Kelly Linden and Lucy Webster……..…499-502

29. Augmenting learning of immunology through an online learning package and a digital game – what's next?
Pey Yng Low, Chun Ming Teoh and Gaik Bee Lim……..503-508

30. Educational Technologists, Universal Design and Transforming Higher Education
Larry McNutt…….509-513

31. Study Progression, Success and Program Component Selection
Eric Parkin, Simon Huband, Dirk Ifenthaler and David Gibson……514-518

32. Personalising medical education: ePortfolios for workplace-based assessment
Robyn Philip, Helen Wozniak, Shari Bowker, Chantal Bailey and Alison Green…….519-524

33. The Active Learning Platform a year after implementation: Lessons from the Lake of Hope
Simone Poulsen, Chris Campbell and Michael Sankey…….525-530

34. Understanding pre-service teachers' experiences of a mixed reality simulation environment: An analysis of pre-service teachers' perspectives on communicating with a simulated parent avatar
Natasha Rappa……531-535

35. Fostering interdisciplinarity through blended learning
Rafi Rashid and Mingxun Lim……..……536-540

36. The semi-formal benchmarking of TEL practice: Helping the TEL community get its act together
Michael Sankey, Chris Campbell and Simone Poulsen…….541-545

37. The evolution of a micro-credential
Vicki Saray and Frank Ponte……..546-551

38. Integrating digital literacies through blended learning in a first-year undergraduate course
Bettina Schwenger…….552-557

39. Developing a DBR Model for Designing Authentic Healthcare Solutions: Mobile and Wearable Technologies
David Sinfield and Thomas Cochrane……558-562

40. The potential of augmented reality to amplify learning and achieve high performance in the flow of work
Caroline Steel…….563-568

41. The Power of Podcasts – sharing stories to transform teaching practices, learning experiences and academic cultures
Natasha Taylor and Lisa Curran…….569-570

42. Client's digital stories: Using the lived experience to personalise online learning
Darci Taylor, Virginia Hagger, Cath McNamara, Tim Crawford and Peter Lane…….571-576

43. Conversational Bots as Electronic Performance Support System for the Professional Development of Teacher Educators
Shamini Thilarajah and Shanti Divaharan……..…577-581

44. Normalising practice – moving a technological implementation from project phase to operational phase
Priscilla Trahar and John Bourke……...582-587.

45. Supporting student writing with an intelligent tutoring system for assignment checking
Peter Vitartas, Sarah Midford and Anastasia Kanjere…….588-592

46. A user-centred approach to understanding the support needs of university teachers using a Learning Management System: A Pilot study
Silvia Vogel, Kirsten Schliephake and Kotsanas George……..593-597

47. An affordance based design framework for technology-enabled learning spaces
Tsering Wangyal and Liang Hong Poh……..598-602

48. Open to learning
Ruth Weeks and Adam Bridgeman……603-611

49. It's Elemental: Technology Enhanced Learning (TEL) as scalable and sustainable student-centered practice in context
Hilary Wheaton and Sherman Young…….612-616

50. Data-informed advisories to support the adult learner in higher education
Adam Wong, Yoke Wah Tang and Sylvia Chong…….617-622

51. What learning means to you: exploring the intersection between educational and digital lives of university students through digital narratives
Tingting Yu and Peter Bryant……623-627

SYMPOSIA/ PANELS

1. Learning Analytics in SUSS: Vision, Action, Implementation, Translation and Collaboration
Hee Kiat Cheong, Hian Chye Koh, Sylvia Chong and Wei Ying Rebekah Lim…….628-629

2. Enhancing the Ethical Use of Learning Analytics in Australian Higher Education
Linda Corrin, Cassandra Colvin, Kirsty Kitto and Danny Toohey……..630-631

3. Technology-enhanced assessment: Seizing opportunities & addressing challenges
Christopher Deneen, Kristine Elliott, Bronwyn Disseldorp and Wei Ying Rebekah Lim……..632-634

4. Are Captured Live Lectures Appropriate for Delivery as Primary Online Course Content? A Question of Fidelity
Carol Miles, David Cameron and Kavitha Palaniappan……..635-637

5. Mobile Learning Special Interest Group Symposium: Revisiting Mobile Mixed Reality
Vickel Narayan, Thomas Cochrane, James Birt, Claudio Aguayo, Todd Stretton, Jin Hong and Michael Cowling……..638-640

DEBATES

1. Academic development for generic competencies for the unknown future
Ulf Olsson, Alan Cliff and Thashmee Karunaratne……641-642

EXPERIMENTAL SESSIONS

1. Creating low-cost, active and immersive Virtual Reality learning experiences
Mark Bailye and Caroline Steel……..643-644

2. Designing learning analytics visualisations that align to learning design
Linda Corrin and Aneesha Bakharia……...645-646

3. Digital History: Unpacking this untapped pedagogical tool
Patricia Hubbard and Darl G. Kolb……647-648

4. E-Portfolios: How to showcase your professional self
Patricia Hubbard and Kevin Kempin……..649-650

5. Playtesting "The Sausage Factory"
Colin Simpson, Kate Mitchell and Wendy Taleo……651-652

6. Decisions, dialogues, dilemmas: the drama of technological innovation in higher education
Colin Simpson, Wendy Taleo, Henk Huijser, Kate Mitchell, Penny Wheeler and Lindsay Rattray…..653-655

7. ITE non-academic entry evaluation using SimLab
Peter Whipp, Susan Ledger and Antoinette Geagea……...656-657

EXTENDED ABSTRACTS (PECHAKUCHA)

A list of PechaKucha titles presented at the conference……...658

PRE-CONFERENCE WORKSHOPS

A list of Pre-Conference Workshop titles presented at the conference……659

POSTERS

A list of Poster titles displayed at the conference……660

Integrating digital literacies through blended learning in a first-year undergraduate course

Bettina Schwenger
The University of Auckland
New Zealand

The use of digital learning in New Zealand's tertiary and higher education opens up new opportunities but simultaneously raises concerns about students' digital literacies. In collaboration with two teachers, the researcher responded to digital information literacy demands in relation to the students' capabilities. The paper considers how integrated online resources were used to develop students' digital information literacy (DIL) in a first-year undergraduate course in Education and to enhance the blended learning in the course. Educational Design Research with three research phases as methodological approach supported the collaboration. Research instruments with students included questionnaires and focus groups; staff shared their experiences through interviews, meetings, emails and reflections.

Keywords: blended learning, digital literacies development, first year undergraduate study.

Situating DIL and blended learning in tertiary and higher education

As New Zealand tertiary institutions increasingly offer online learning in face-to-face courses (blended learning), one of the purposes of the research was to find out how to harness digital affordances for a blended learning design that encourages digital information literacy (DIL) development. With growing diversity and larger numbers of enrolled students in classes, online learning can open up possibilities to enhance students' learning (Mendieta Aguilar, 2015). However, the way blended learning (BL) is designed impacts on the implementation of learning and teaching and on the student experience. Although discipline-specific literacies development is essential for all tertiary students (Feekery, 2013; Gunn, 2013), little research exists about literacies development to address undergraduate course demands with blended learning. This study responded to the research gap.

With the growth of online learning, in general, there is a move towards independent study (Hughes, 2006). It implies that students now even more than before need to find and use digital information independently and critically as Lavoie, Rosman and Sharma (2011) point out. This research investigated how literacy development can be integrated to enhance students BL experience (Bernard et al., 2009; Gunn, 2013) by moving from posting information to include active learning online. Aspects relevant in tertiary learning and teaching were considered, including how teachers design for and integrate online with face-to-face learning and DIL development for studies and work (Schwenger, 2016a; Schwenger, 2016b). Students need to, for example, interpret and judge sources to then produce new information. They have to be aware of key information resources, identify the need for information, plan and search for appropriate sources, critically evaluate, organise, produce and present information (Gosling & Nix, 2011). As students engage with online information, digital information literacy (DIL) has become a standard demand (Hegarty et al., 2010; Hughes, 2006). This research understands DIL as one of six digital capabilities as defined by JISC, shown in figure 1 (2018), such as literacies, learning development, creating, problem solving, communication and collaboration. The JISC model recognises the interconnected nature of broader areas combined by an overarching focus on identity and wellbeing.

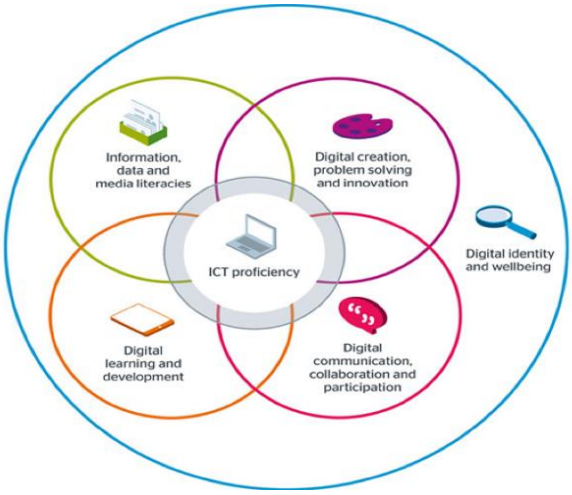

***Figure 1*: Six elements of digital capabilities (JISC, 2018).**

As digital information literacy (DIL) demands always emerge from a certain situation (Whitworth, Fishwick and McIndee, 2011), they result in a "socially situated set of meaning making practices" (Gourlay, 2009, p. 182). In this study, literacies development for students of Early Childhood Education is conceptualised as part of an explicit, situated experience that is integral for the learning process (Bent, 2013; Feekery, 2013; Secker & Coonan, 2013). It is based on the understanding that students new to tertiary study are in general unfamiliar with its standards and requirements (Cope and Kalantzis, 2010).

Background

The paper reports on one part of a doctoral study which investigated during 2016 how to design blended learning with digital information literacy (DIL) to support students' assessment in a first-year undergraduate course. The research questions relevant for this paper was "*How can teachers approach BL for undergraduate students to develop DIL*?". Learning support staff had identified that these students often presented with limited digital information literacy at the institutional learning centre when preparing assessments. The online resources addressed the quality and completion of the course assessment, an ePortfolio. The Bachelor of Teaching (ECE, Early Childhood Education) is offered at a New Zealand polytechnic and attracts a mix of students, including Māori, Pacific Islanders and Pākehā as the largest ethnic groups. The ages range from 17 to over 40 years old with many older students, often first-time and first-in-family to participate in formal tertiary education. The teachers involved in the research wanted to support their students with the institutional direction of offering more blended learning with increased online learning. The wider project team included library staff, Māori colleagues and ECE colleagues.

Research approach

Educational Design Research (EDR) invites iterative development with a phased, structured and reflective approach, is theory informed and aims at designing real-life interventions (Plomp, 2013). The research was conducted through a three phase model, informed by Plomp (2013) and included preliminary research, development and evaluation phase (Figure 2). Thirteen students and two teachers participated in the study during 2016. Students shared their thoughts through initial and final questionnaires and initial foci groups; teachers through initial questionnaire and interview, reflective prompts, emails and a final interview.

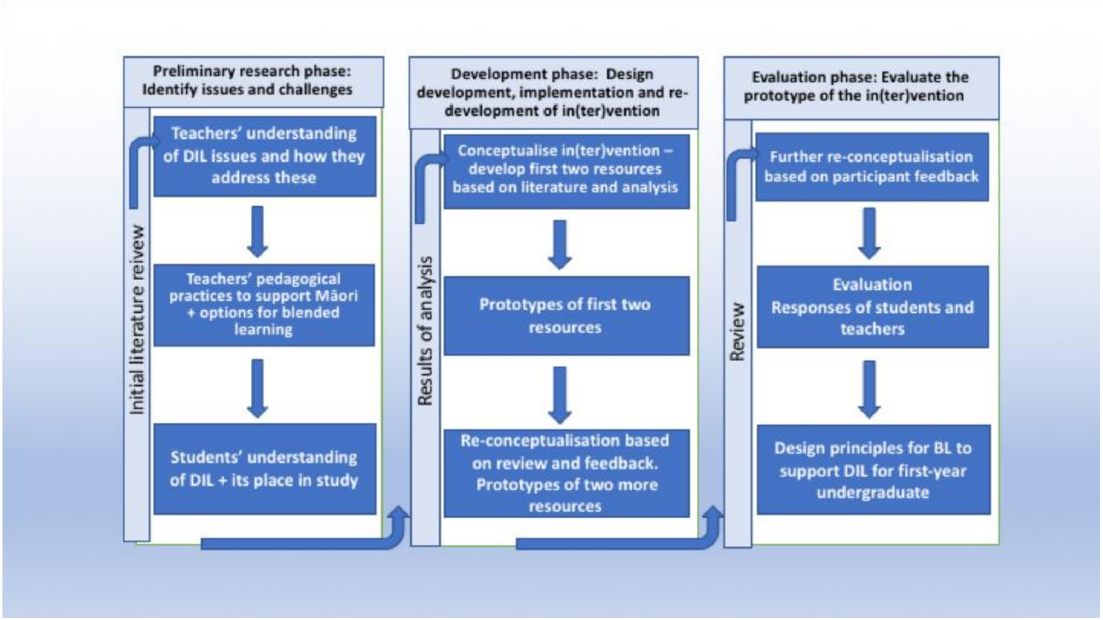

Figure 2: Overview of the three research phases in this study.

Students' DIL practices and assessment demands

The teachers reported that patterns from previous cohorts showed challenges related to the assessment such as inadequate literature. Teachers added after the research had started that many students seemed to consume information instead of adding new insights to existing knowledge. Findings from questionnaires and focus groups indicated that students struggled with evaluating, analyzing and synthesizing to create new information effectively in a digital learning space. Current research, for example by Gosling and Nix (2011), advises connecting any DIL development with the course content and particularly the assessment.

Discussion of findings

Embedding students' DIL through blended learning

Digital learning outcomes had been included in the course prior to the research as well as in Year 2 and 3 courses and provided an opportunity to address the DIL challenges of the ePortfolio assessment through integrating or embedding DIL. After I identified the DIL practices required for successful assessment and the teachers confirmed these, the online affordances of digital tools were considered to then design the student resources with practice and reflection opportunities. The resources were designed to encourage active learning by offering feedback and reflective questions with a focus on what students need to do to achieve the desired learning goals.

The content chosen for the DIL resources was based on the gap between the assessment demands and students' competencies. An initial literature review and first findings from students and conversations with ECE staff informed the first resource, the process of *How do I use information to develop my ePortfolio?* (Figure 3). The process underpins the portfolio compilation but had not been made explicit to students in the past. The process is non-linear and students might go through several iterations of certain actions. There are several occasions of evaluation, for example, students have to evaluate the sources and evaluate if the gained information is helpful to answer the query that underpins the assessment task in the ePortfolio.

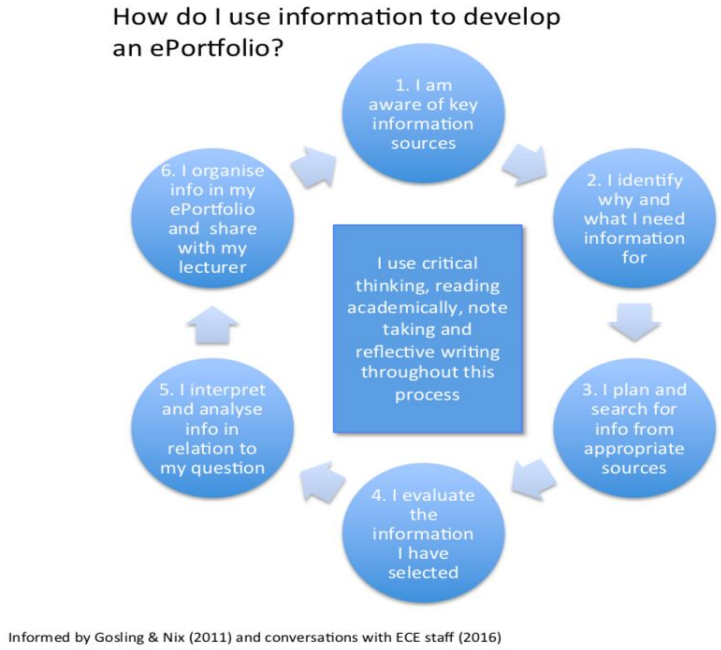

Figure 3: Process of using information for learning.

The first resource provided the information about the process and the actions required by the students combined with reflective questions to consider how to apply the information-handling practices and for what purpose. In the second resource, an ECE scenario with a Moodle Lesson, students could step through the actions to create an entry in their ePortfolio. They had to decide on an aspect related to each action and received feedback; in this way they could apply the complete process. A third and a fourth online resource were equally based on the process and included a quiz and an one-page overview with reflective pop-up questions and automated feedback. Combining these online resources effectively during the semester with the face-to-face learning and teaching emerged as one of the challenges for the teachers (Schwenger, 2017a; Schwenger, 2017b), however, the issues related to the blended learning design cannot be discussed further, due to the length of this article.

In the following, I discuss two areas of DIL challenges that have been important findings in the study.

Students' DIL challenges

Most students in the study seemed to plan and find information via the Internet and went to Google Search as their primary choice but did not mention difficulties in finding appropriate quality literature. Their preferences aligned with how Coonan (2011) describes students' behaviour to often first access the *"unordered, unverified, […] and seductively easy to use*" (p. 12) Internet instead of the library, the "cloistered garden of authorative, trustworthy sources carefully selected for their academic integrity" (Coonan, 2011, p. 12). Badke (2010) points out the required information might be outside the library catalogue. Whatever the exact reasons may be, students seemed more interested in finding the required information than in considering the tools for their search processes. The process and the resources therefore highlighted the importance of understanding the key sources and what information is needed as initial areas of work, based on the lack of quality literature as a key concern identified by the teachers.

Compared with the range of ideas of how students organised information in hard copy or digital, the students did not mention how they evaluate information. This seemed to indicate that they know less about strategies for evaluating as argued by Coonan (2011) and Feekery (2013). As a result of a gap in the existing library resources in terms of developing higher level practices of information handling such as evaluation and analysis, the resources considered how to scaffold students into these higher order functions of information handling. In a limited way, the resources aimed to contribute to this area by including the actions explicitly in the process and in the scenario. Questions were included for students to self-assess and reflect on the required actions, for example when paraphrasing the work of others. More needs to be done, though, to ensure students have the opportunity to improve these higher order functions of information handling in their courses. This raises the question of who is

responsible for working with students so that they can enhance their DIL as they progress in the studies. Tertiary and higher education institutions have to work with their existing students, rather than the students we wish to have.

Contribution and limitations of the study

Although this article does not report the evaluation of the study, in the following some of the formative and summative feedback received are outlined. Teachers appreciated the explicitness of the resources and felt that connecting development with the assessment supported students' assessment success. The teachers reported anecdotal feedback from six students in the first semester who found the tools helpful. Feedback given on four ePortfolio assessments to students at the end of semester 1 showed a positive development in the use of literature in the ePortfolios. Feedback from seven students in a questionnaire at the end of the year indicated that the resources had been useful for their independent study, to develop the necessary actions of the process and successfully prepare the ePortfolio. The teachers confirmed several times explicitly how they valued the integrated online resources to foster students DIL capabilities. At the start of Semester 2, Teacher A reported that the literature in the assignments of the February intake in Semester 1 was of better quality. DIL was more explicitly discussed in the classroom in the first semester, including the introduction of the online resources, and it might have made students more aware of the importance to find quality information.

I recognize that the findings from students, in particular, are limited which is partially due to the small number of participants in each semester. The findings are from a particular situation; however, they can inform learning designers and teachers thinking about what influences learning design and what type of blended learning design can foster digital information literacy and support students' study success. It was an authentic experience, though, in a time of ongoing institutional change. The study contributed to our understanding of the complexity of change initiatives and collaboration and it touched on bigger issues related to digital literacies development that can be expected to surface similarly in other contexts.

Conclusion

The study was based on a holistic approach that recognises DIL development goes beyond skills to include attitudes, practices and behaviour and higher-order information handling practices. The students in the course benefited from DIL development to create new information for their ePortfolio assessment and add to knowledge rather than consuming information, which aligns with findings by Kennedy and Fox (2013). Although the study only seems to have scratched the surface of how students develop DIL through blended learning, it has identified that further work is required to find out more about developing students' digital information literacy effectively throughout their studies. Further work is needed to identify, for example, which areas to develop in the various years of study to staircase students' progression in DIL, who is responsible for developing literacies and how to combine online with face-to-face learning more strongly.

The DIL online resources, through their alignment with assessment demands, have supported the interconnectedness of learning and using information as described by Maybee, Bruce, Lupton, and Pang (2018). To develop DIL, generic one-off workshops, checklists for searching databases on the library website or bibliographic instruction might continue to be part of an institutional solution. Such stand-alone measures can fail, though, to actively engage students and are unlikely to address study specific DIL capabilities. The study findings highlight that integrating DIL within the content and assessment of a blended learning course can provide a vehicle to address DIL study challenges for all students. Furthermore, the study has shown that blended learning with increased online learning can offer new active learning opportunities to foster students' DIL situated in their field of study and at the same time is likely to enhance students' blended learning experience.

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