ICOIE2024

International Conference on Open and Innovative Education

PROGRAMME & ABSTRACTS OF PAPERS

3–5 July 2024

Hong Kong Metropolitan University
Hong Kong SAR

Organizer:

香港都會大學
公開進修學院
Hong Kong Metropolitan University
School of Open Learning

開放及創新教育研究所
Institute for Research in Open and Innovative Education

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The organizer reserves the right to amend the programme as and when necessary.

Message from the President, Hong Kong Metropolitan University

Paul LAM Kwan-sing
President
Hong Kong Metropolitan University

It is with great pleasure that I welcome you to the 2024 International Conference on Open and Innovative Education (ICOIE), organised by Hong Kong Metropolitan University (HKMU). This year marks the 11th edition of this conference series. Over the years, as we have navigated the changing landscape of education, ICOIE has served as an excellent platform for researchers and educators interested in educational innovation and openness. It provides an opportunity to share quality research findings, exchange effective practices, and collaborate on strategies for making advances in open and innovative education. The conference has been a beacon of knowledge and innovation, and I am confident that this year's conference will be another success. I look forward to seeing the valuable contributions, insightful discussions, and innovative ideas from all participants.

This year also marks a significant milestone for HKMU as we celebrate our 35th anniversary. From its beginnings as a distance-learning institution, HKMU has grown into a vibrant, comprehensive university that is committed to providing high-quality and flexible education. We have continually enhanced our industry-oriented curricula, invested in state-of-the-art facilities and equipment, and developed a diverse range of experiential learning opportunities to cater for the evolving needs of society and industry. Furthermore, we are keeping abreast of cutting-edge technologies to equip our staff and students with the necessary knowledge and skills to stay competitive in today's fast-paced world. As a flagship event of HKMU, ICOIE demonstrates our unwavering commitment to open and innovative education, as well as our dedication to promoting research and practice in this area.

ICOIE 2024 will address pertinent and timely topics in open and innovative education. The keynote speeches will delve into the important role of artificial intelligence (AI) in education, the benefits and challenges associated with the use of ChatGPT, the synergy between generative AI and learning analytics, the future of distance education in Asia, and the development of China's human resources. The conference will also include a VIP forum with internationally renowned experts sharing their views on the future of open education in light of the changes brought about by education technology. I am sure you will gain useful insights and engage in meaningful academic exchanges by participating in the various conference activities.

I would like to extend my heartfelt gratitude to the Hong Kong Pei Hua Education Foundation, the Sino–British Fellowship Trust, and the Wu Jieh Yee Charitable Foundation for their generous sponsorship of the conference and its delegates. Their support has been instrumental in making this event possible. I would also like to thank the Conference and Programme Organising Committee for their tireless efforts to make this year's ICOIE a great success.

Finally, I would like to thank all of you for attending. I hope that you will find the conference enlightening and that the connections you make will be both professionally and personally rewarding. For those delegates who are participating onsite, I wish you a pleasant stay in Hong Kong.

Message from the Chair, Conference Organising Committee

LI Kam-cheong
Chair
Conference Organizing Committee
Dean, School of Open Learning
Director, Institute for Research in Open and Innovative Education
Hong Kong Metropolitan University

I am delighted to welcome you to the 2024 International Conference on Open and Innovative Education (ICOIE). The conference, as a platform for exchanging ideas, knowledge, and experiences, aims to facilitate the exploration of opportunities arising from the transformation of the education landscape, foster openness and innovation in education, and develop networks and collaborations amongst researchers and practitioners in the field.

Over the years, we have witnessed a diverse range of advancements in education and seen how they have reshaped our approach to education delivery. For instance, recent advances in artificial intelligence have enabled us to transcend traditional teaching and learning approaches and embrace a more adaptive and learner-centric approach. This is just one example of how technology is revolutionising education. ICOIE serves as the ideal platform to strategize on how to leverage the immense transformative potential of educational technologies, and discuss how we can best integrate these advancements into our educational systems to benefit learners worldwide.

ICOIE 2024 has meticulously selected over 100 papers from more than 25 countries/territories worldwide through a rigorous review process. These papers encompass a wide range of topics, such as learning design for engaging students, the application of artificial intelligence and virtual/augmented/mixed reality in education, and innovations in curricula and pedagogy. The diversity of these topics reflects the breadth and depth of research in open and innovative education. To encourage and recognise outstanding research efforts, the conference will present the Best Paper and Excellent Paper Awards, as well as the Student Paper Award. I am certain that you are eagerly anticipating the quality research and practices to be presented.

We are honoured to have five distinguished scholars deliver keynote speeches. They include Professor Mutlu Cukurova from University College London, Professor Maiga Chang from Athabasca University, Professor Dragan Gašević from Monash University, Professor Wu Feng from Peking University, and the Vice-Rector Rahmat Budiman from Universitas Terbuka. Additionally, we will host a VIP forum to discuss the future of open education. We are fortunate to have three esteemed experts as panellists, including Professor Lily Chan, Vice-Chancellor and Chief Executive of Wawasan University; Professor Melinda dela Peña Bandalaria, Chancellor of University of the Philippines Open University; and Professor Olugbemiro Jegede, Foundation Vice-Chancellor of the National Open University of Nigeria. Their speeches and academic exchanges will certainly be enlightening and inspiring.

I would like to express special thanks to the President, Provost, and Vice-Presidents of HKMU for their leadership and unwavering support, which have been vital for the success of the conference. Their vision and commitment to open and innovative education have been a driving force behind this event. My gratitude also goes to the Organising Committee, Programme Committee, and colleagues from the Office of Research Affairs and Knowledge Transfer, the Office for Advancement of Learning and Teaching, the Information Technology Office, and the School of Open Learning for their tireless efforts and dedication.

I encourage you to engage in discussions, share your insights, and build connections. I sincerely hope that you will have a rewarding and enriching experience at the conference.

Committees

Organizing Committee

Chair:	K C LI	School of Open Learning, HKMU
Vice-chairs:	Eva Y M TSANG	Office for Advancement of Learning and Teaching, HKMU
	Philips F L WANG	School of Science and Technology, HKMU
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	William K W TANG	School of Education and Languages, HKMU
	Billy T M WONG	Institute for Research in Open and Innovative Education, HKMU
	Manfred M F WU	Institute for Research in Open and Innovative Education, HKMU

Programme Committee

Chair:	K C LI	Hong Kong Metropolitan University
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	Jimmy X D KANG	Hong Kong Metropolitan University
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	Siu Cheung KONG	The Education University of Hong Kong
	Cindy M F LAM	Hong Kong Metropolitan University
	Queenie P S LAW	Hong Kong Metropolitan University
	Patrick C W LEE	Hong Kong Metropolitan University
	Mei Kuen LI	Hong Kong Metropolitan University
	Shuang LI	Beijing Normal University
	Yosuke MORIMOTO	The Open University of Japan
	Kiyoshi NAKABAYASHI	Chiba Institute of Technology
	Rizwan SALEEM	Virtual University of Pakistan
	Jean SALUDADEZ	University of the Philippines Open University
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	William K W TANG	Hong Kong Metropolitan University
	Norman VAUGHAN	Mount Royal University
	Billy T M WONG	Hong Kong Metropolitan University
	Manfred M F WU	Hong Kong Metropolitan University
	Muhammad ZAHEER	Virtual University of Pakistan

About the Conference

Openness and innovation are major trends in contemporary education, influencing the whole spectrum of education institutions across the globe. Technological advancement and breakthroughs are bringing about a paradigm shift in contemporary education. Modes of learning and teaching are becoming more open and innovative in terms of time, space, curriculum contents, organization, pedagogical methods, infrastructure and requirements. These changes take place virtually in all institutions (offering conventional, online and/or open courses). With this background, Hong Kong Metropolitan University (HKMU) organizes the annual conferences on open and innovative education with the following aims to:

- provide a platform for sharing quality research, effective practices and well-formulated views relevant to open and innovative education;
- facilitate networking and cross-institutional collaboration among researchers and educators in fields of educational innovation and/or openness; and
- promote studies and advancements in open and innovative education.

Topic areas of conference papers include the following:

1. Academic/learning analytics
2. Agile/blended/agile-blended learning
3. AI/VR/AR/MR in education
4. Educational technology
5. Engaging students and learning design
6. Gamification for learning
7. Impacts of pandemic on online learning
8. Innovations in curriculum and pedagogy
9. Open education/OERs/MOOCs
10. Pedagogical innovations
11. Social media and technology-mediated learning communities
12. Technology-enabled student advising
13. Other topics relevant to the conference

Map and Venue

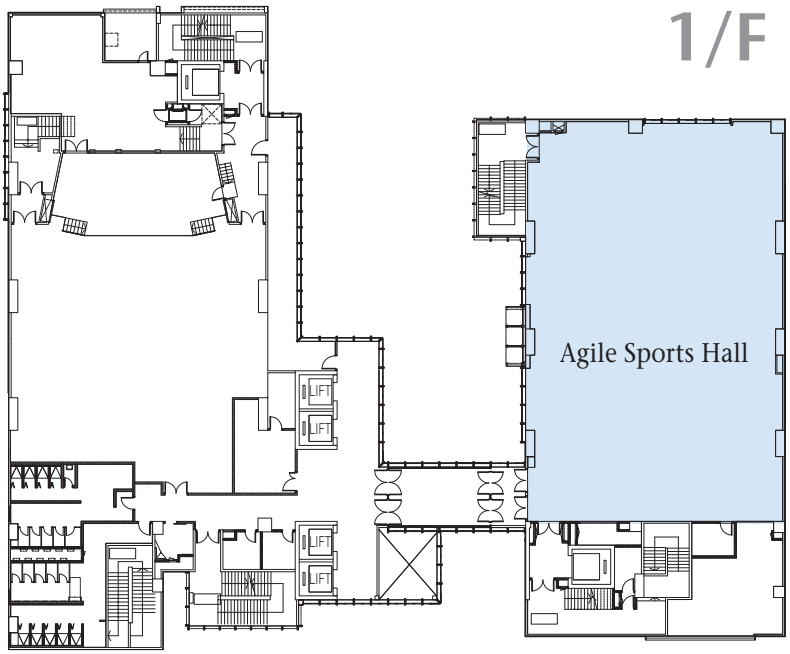
Jockey Club Campus of Hong Kong Metropolitan University

Jockey Club Campus
81 Chung Hau St, Ho Man Tin

Wi-Fi Internet access is available throughout the HKMU campus.
Wi-Fi Username: WIFI2024 Password: HKMU2024
Network: HKMU-Guest

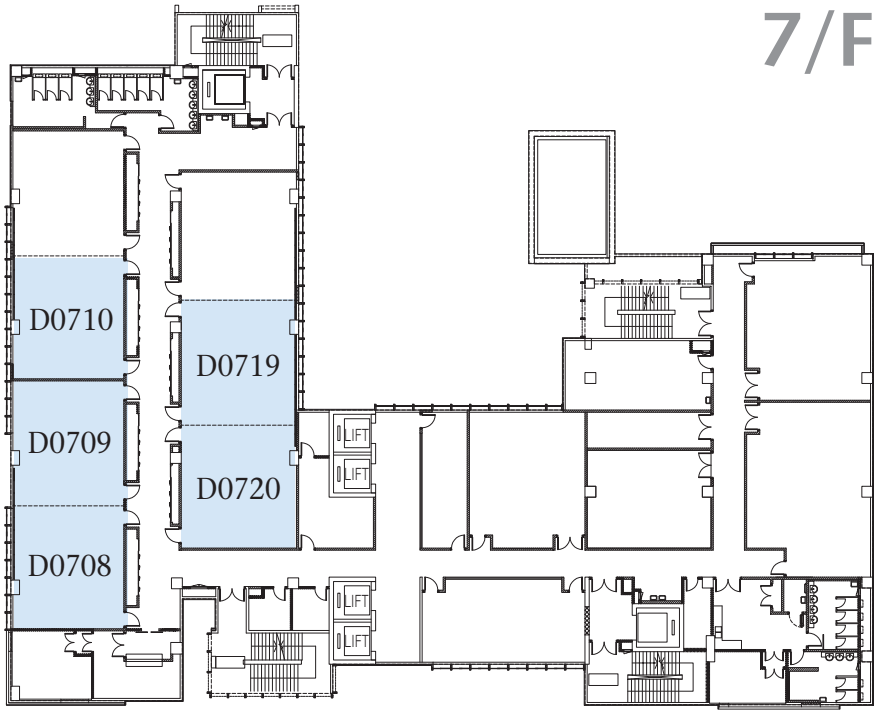
Agile Sports Hall (1/F)

- Opening Ceremony
- Keynote Sessions
- VIP Forum
- Lunch and dinner
- Coffee, refreshments and networking
- Closing Ceremony



D0708, D0709, D0710, D0719, D0720 (7/F)

- Parallel Paper Presentation Sessions



Programme (Pre-conference Seminar)

DAY 0
02 JUL 2024
Tuesday

Tai Ning Hall, 12th Floor, Cheng Yu Tung Building, Main Campus

09:00–09:15	Registration	
09:15–09:20	Opening Remarks	
09:20–10:00	**Pedagogical Theories and Research Design of Artificial Intelligence in Education** Speaker **Gwo-Jen Hwang** Chair Professor and Vice President Taichung University of Education *Please refer to p. 22 for details.*	
10:00–10:25	Refreshments Break	
10:25–11:05	**Dialoguing and Collaborating with Generative AI: Strategies for Educators** Speaker **Jianli Jiao** Professor in Educational Technology South China Normal University *Please refer to p. 22 for details.*	
11:05–11:45	**Technology Empowering Innovative Education: Three Typical Cases** Speaker **Zehui Zhan** Professor School of Information Technology in Education South China Normal University *Please refer to p. 23 for details.*	

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DAY 1
03 JUL 2024
Wednesday

09:30–10:30	Registration	Agile Sports Hall, 1/F
10:30–11:00	Opening Ceremony Welcoming Remarks **Reggie KWAN Ching-ping** Provost Hong Kong Metropolitan University Opening Address **LI Kam-cheong** Chair, Organizing Committee	Agile Sports Hall, 1/F
11:00–12:00	Keynote Session I **AI in Education: Finding the Right Moments of Dependency, Scaffolding, and Competency** Speaker **Mutlu Cukurova** Professor of Learning and Artificial Intelligence Institute of Education – Culture, Communication & Media University College London *Please refer to p. 24 for details.*	Agile Sports Hall, 1/F
12:00–13:30	Lunch	Agile Sports Hall, 1/F
13:30–15:00	Parallel Paper Presentation Session I *Please refer to p. 12 for details.*	D0708–D0710, D0719–D0720, 7/F, Block D
15:00–15:30	Coffee, refreshments and networking	Agile Sports Hall, 1/F
15:30–16:30	Parallel Paper Presentation Session II *Please refer to p. 14 for details.*	D0708–D0710, D0719–D0720, 7/F, Block D
16:40–17:40	Keynote Session II **Internet Dividends and Human Resource Development in China** Speaker **Wu Feng** Professor Graduate School of Education Peking University *Please refer to p. 25 for details.*	Agile Sports Hall, 1/F

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DAY 2
04 JUL 2024
Thursday

09:00–09:30	Registration	Agile Sports Hall, 1/F
09:30–11:00	Parallel Paper Presentation Session III *Please refer to p. 16 for details.*	D0708–D0710, D0719–D0720, 7/F, Block D
11:00–11:30	Coffee, refreshments and networking	Agile Sports Hall, 1/F
11:30–12:30	Keynote Session III **Debates, Experiences and Solutions of Using Generative AI for Learning and Teaching** Speaker **Maiga Chang** Full Professor, Athabasca University Honorary Chair Professor, Multidisciplinary Academic Research Center, Dong Hwa University *Please refer to p. 26 for details.*	Agile Sports Hall, 1/F
12:30–14:00	Lunch	Agile Sports Hall, 1/F
14:00–15:30	VIP Forum **The Future of Open Education** Panelists **Lily Chan** Vice Chancellor and Chief Executive, Wawasan University **Melinda dela Peña Bandalaria** Chancellor, University of the Philippines Open University **Olugbemiro Jegede** Former Secretary General, Association of African Universities Former President of the African Council for Distance Education Foundation Vice Chancellor, National Open University of Nigeria Facilitator **Li Kam-cheong** Dean, School of Open Learning Director, Institute for Research in Open and Innovative Education Hong Kong Metropolitan University *Please refer to p. 29 for details.*	Agile Sports Hall, 1/F
15:40–16:40	Parallel Paper Presentation Session IV *Please refer to p. 18 for details.*	D0708–D0710, D0719–D0720, 7/F, Block D
16:40–17:10	Coffee, refreshments and networking	Agile Sports Hall, 1/F

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17:10–18:10	Keynote Session IV **Distance Education Universities in Asia: Challenges and Opportunities** Speaker **Rahmat Budiman** Vice Rector, Universitas Terbuka Secretary-General of Asian Association of Open Universities (AAOU) *Please refer to p. 27 for details.*	Agile Sports Hall, 1/F
18:10–19:40	Dinner	Agile Sports Hall, 1/F

DAY 3
05 JUL 2024
Friday

09:00–09:30	Registration	Agile Sports Hall, 1/F
09:30–10:30	Parallel Paper Presentation Session V *Please refer to p. 20 for details.*	D0708–D0710, D0719–D0720, 7/F, Block D
10:30–11:00	Coffee, refreshments and networking	Agile Sports Hall, 1/F
11:00–12:00	Keynote Session V **Learning analytics in the age of generative artificial intelligence** Speaker **Dragan Gašević** Distinguished Professor of Learning Analytics Director of Research in the Department of Human Centred Computing of the Faculty of Information Technology Director of the Centre for Learning Analytics at Monash University *Please refer to p. 28 for details.*	Agile Sports Hall, 1/F
12:00–12:30	Closing Ceremony Announcement of Paper Award Results **LI Kam-cheong** Chair, Organizing Committee Closing Remarks **Reggie KWAN Ching-ping** Provost Hong Kong Metropolitan University Closing Address **Eva TSANG Yuen-mei** Vice-chair, Organizing Committee	Agile Sports Hall, 1/F

DAY 1: 3 July 2024 (Wednesday), 13:30–15:00

Parallel Paper Presentation Session I

Room 1 (Venue: D0708)

AI/VR/AR/MR in education

Enhancing the Medical Education on the Diagnoses of Neuro-Ophthalmologic Diseases Through Gamification and Virtual Reality
Tianqin Yang, Vincent W.L. Tam, Edmund Y. Lam, Yuxing Li, Valerie Sophia Chung and Allie Lee
The University of Hong Kong
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Exploring English teachers' acceptance of using generative artificial intelligence tools in open education
Lanxi Hu
The Open University of China
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Assessing Perception and Knowledge Gain in SNAP Hydroponics Adoption through a Virtual Training of Trainers Program
Ricky Bryan U. Biagtan, Lorna G. Matanguihan, Jaia Gabrielle L. Lapiz, Juvelle P. Villanueva, Julianne Q. Afable and Virma Rea Lee
University of the Philippines Los Banos
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Infusing Artificial Intelligence (AI) in teaching secondary school mathematics
Wing Kin Cheng
Hong Kong Metropolitan University
Ming Yan Tsui
United Christian College
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Research on the Application of AI-assisted Learning in Programming Learning
Bing Wu and Yongzhong Zhang
Shanghai Open University
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Room 2 (Venue: D0709)

Engaging students and learning design

Exploring the Learner Interactions in Virtual Classroom Setting
Sujeevi Sapukotanage, Ishara Amarathunga, Ruwanthika Ariyaratna, Chandana Fernando and Hemanthi Samarakoon
The Open University of Sri Lanka
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Exploring Student Perspectives: Synchronous Learning Environment in the University of the Philippines Open University Bachelor of Arts in Multimedia Studies Program
Emely M. Amoloza
University of the Philippines Open University
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Collaborating through Artifacts for Synergy: A Case Study of KIST in Taiwan
Hui-Fen Chen, Han-Wen Teng and Wei-Wen Lin
Taipei University of Education
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Virtual Dorm for Universities without Dormitories to Foster Student Sense of Belonging
Ingrid Wing Lai
Hong Kong Metropolitan University
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An experimental study on the role of data story in an online coding lesson
Manyu Li
University of Louisiana at Lafayette
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An Attempt of Designing and Implementing Environmental Education
Masatoshi Kaimasu
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DAY 1: 3 July 2024 (Wednesday), 13:30–15:00

Parallel Paper Presentation Session I

Room 3 (Venue: D0719)

AI/VR/AR/MR in education

Exploring the Integration of AI and IoT Technologies for Developing Intelligent Campuses in Taiwanese Universities: A Fuzzy Delphi Approach

I-Hua Chang
Chengchi University
Ya-Ling Weng
Taipei University

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AI for academic writing: A synthesis of recent research from 2004 to 2024

Yin Ling Cheung
Nanyang Technological University

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Academic/learning analytics

Assessing the Effectiveness of Hybrid-Flexible training course on AI and Digital Education Innovations for Teacher Development

Jun Xiao and Xiaoxiao Zhu
Shanghai Open University
Wenjun Yang
Shanghai Normal University

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Room 4 (Venue: D0720)

Innovations in curriculum and pedagogy

Understanding English Teachers' Perceptions and the Effectiveness on a Hybrid Mentoring and Coaching Program in Turkey

Hong Yu Connie Au
Gaziantep University

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Cultivating Communities of Practice: University-Secondary School Collaboration for English Language Materials Development

Edith M. Y. Yan
Beijing Normal University-Hong Kong Baptist University United International College

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Rethinking Virtual Exchange: Aligning Frameworks with Learning Outcomes

Connie Li, Sam S. S. Lau and Alvin Tang
Hong Kong Baptist University
Tracy Hui
Birmingham City University

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Pedagogical innovations

An Augmented Intelligence in Education: A Qualitative Conversation on the Integration of Human Intelligence with Artificial Intelligence to Amplify Cognitive Abilities and Create a Symbiotic Relationship Enhancing the Learning Experience

Maximus Gorky Sembiring
Universitas Terbuka

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Survey Research on the Willingness and Capability of Innovation and Entrepreneurship Among Graduate Students

Li Zhang and Qi Peng
Xi'an University of Posts and Telecommunications
Ralf Schellhase
Darmstadt University of Applied Sciences

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Technology-enabled student advising

AI-backed Student Advising in tackling the Employability Gap of University Students under Global Workplace Transition to an Upskilled Workforce

Sam S. S. Lau, Connie Li, Martin Tsui and Vanessa Fan
Hong Kong Baptist University

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DAY 1: 3 July 2024 (Wednesday), 15:30–16:30

Parallel Paper Presentation Session II

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The Results of the Training of oOccupational Competency-based with Blended Learning for Elders in Thailand **Gan Chanyawudhiwan and Kemmanat Mingsiritham** Sukhothai Thammathirat Open University P. 34	**Integrating Aging Education into Designing an Elderly-Friendly Mobile Application: Action research of High School Project-based Curriculum** **Hsien-Ta Cha and Ya Hui Lee** Chung Cheng University P. 56
Exploring the Application of Gerontechnology in Residential Long-Term Care Settings in Taiwan **Yi Fen Wang** Tainan Junior College of Nursing **Hsien-Ta Cha and Ya Hui Lee** Chung Cheng University P. 35	**Investigate the Impact of Self-Efficacy and Intention on Student Utilization of Hybrid Learning Solutions Through the Lens of UTAUT** **Racheal Poh and Heng Wei Lee** Wawasan Open University P. 57
How Blended Learning affected Students' Self-regulated Learning **Mei Ling Law** Pui Ching Middle School P. 35	**Exploring Learning Support for Finance Subjects: A Pilot Study on Scaffolded Approach and Students' Confidence** **Alvin Wong** The Hong Kong Polytechnic University P. 58
	Curriculum Design for Computer Programming Tailored for Mechanical Engineering Students **Yong Ren** University of Nottingham Ningbo China P. 59

DAY 1: 3 July 2024 (Wednesday), 15:30–16:30

Parallel Paper Presentation Session II

Room 3 (Venue: C0710) (Student Paper Presentation Session)

AI/VR/AR/MR in education

Supporting the learning of cross-cultural communication courses using virtual business scenarios

Kangxin Li, Wilfred Wing-Fat Lau and Morris Siu-Yung Jong
The Chinese University of Hong Kong

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Investigating the impact of automated writing evaluation and GenAI on student feedback literacy

Xiaowen Yang
The University of Hong Kong

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Social media and technology-mediated learning communities

Digital Pedagogy in the Social Media Era: Exploring the Motivations of School Teachers as Micro-Celebrities

Ching Ting Tany Kwee
The University of New South Wales
Luis Miguel Dos Santos
Hong Kong Shue Yan University
Hangfei Zhao
Tourism College of Zhejiang
Zeng Lin Wu
Woosong University
Lu Chen
Wuchan Zhongda International School
Yan Wang
Xi'an International Studies University
Jiabao Wu
Changzhou College of Information Technology
Ho Fai Lo
City University of Macau

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Educational technology

The Relationship between Self-regulated Learning Strategies and Academic Achievement in Online Learning Environment: A Systematic Review

Xinyue Tian
Shanghai International Studies University

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Room 4 (Venue: C0719)

Gamification for learning

Gamification for Welfare Literacy: Unveiling the Politics of Welfare Policy in Thailand

Sustarum Thammaboosadee
Thammasat University

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The Effect of High-Intensity Interval Training on the Executive Function of Young Adults: A Systematic Review

Alex So
Hong Kong Metropolitan University

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The Importance of Using Games & Online Teaching in Pain Education Program

Mimi Mun Yee Tse, Tyrone Tai On Kwok, Timothy Chung Ming Wu, Kin Pong To, Percy Poo-See Tse and Jiafan He
Hong Kong Metropolitan University

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Room 5 (Venue: C0720)

AI/VR/AR/MR in education

Enhancing University-Level English Proficiency with Generative AI: Empirical Insights into Automated Feedback and Learning Outcomes

Sumie Chan
The University of Hong Kong
Noble Lo
Lancaster University
Alan Wong
The Chinese University of Hong Kong

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Paradigm Shift in Chinese Writing Assessment through AI-Powered Automated Writing Evaluation (AWE): Chinese Writing Wizard

Shek Kam Ming
Po Leung Kuk Ma Kam Ming College

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Japanese Student Use of and Views on Machine Translation

Yoko Hirata and Yoshihiro Hirata
Hokkai-Gakuen University

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DAY 2: 4 July 2024 (Thursday), 09:30–11:00

Parallel Paper Presentation Session III

Room 1 (Venue: D0708)

AI/VR/AR/MR in education

Exploring the Impact of Virtual Reality Natural Science Courses on Students' Learning Achievement and Learning Participation
Yi-Yun Hsieh and Chiu-Lin Lai
Taipei University of Education
Yi-Hui Lee
Taipei Municipal Nangang Primary School
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Virtual Reality Campus Environment for Enhancing Preliminary Year Student Experience
Gege Zhang and Sannia Mareta
University of Nottingham Ningbo China
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Preparation for an environmental learning trail for community audience: Does 3D virtual site visit replace or complement on-site visit at rehearsal stage?
Mariam Mathew, Endu Tee and Yew Kong Tan
Ngee Ann Polytechnic
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Students' Perception of the Use of GenAI-ChatGPT Tools for Learning
Eva YM Tsang, Mavis Tong, Joey Ng, Kevin Chu and William Tsang
Hong Kong Metropolitan University
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Room 2 (Venue: D0709) (Student Paper Presentation Session)

Engaging students and learning design

Are Peer Assessments Reliable? An Investigation of Chinese University Students' Views
Ziqian Zhou, Lu Chen, Yanlu Wang and Ping Ye
Beijing Normal University-Hong Kong Baptist University United International College
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Students' Personality Type: Does it Affect Relational Reasoning in Solving Mathematics Problems?
Gemi Susanti, Mega Teguh Budiarto and Siti Khabibah
Universitas Negeri Surabaya
Hodiyanto
IKIP PGRI Pontianak
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Effectiveness of an Online Compassion Training on Self-Compassion, Mindfulness, Stress Reduction, and Psychological Well-being in Nursing Students: A Randomized Controlled Trial
Zhi Yang, Mimi Mun Yee Tse and Doris Yin Kei Chong
Hong Kong Metropolitan University
Huiting Huang and Haiyun Fang
Guangzhou Nanfang College
Joanne Wai Yee Chung and Thomas Kwok Shing Wong
Guangzhou Medical University
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Consumer Education Reform as Citizenship Education in Japan: Developing Classes Aimed at Developing Citizens Who Can Make Independent Decisions
Ayuha Miyamoto
Okayama University
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Creative Reasoning of Prospective Mathematics Teachers: Working Memory Capacity Affect of Problem Solving
Buaddin Hasan, Dwi Juniat and Masriyah
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How is Students' Proportional Reasoning Based on Rational Personality Type?
Andi Mariani Ramlan
State University of Surabaya and
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DAY 2: 4 July 2024 (Thursday), 09:30–11:00

Parallel Paper Presentation Session III

Room 4 (Venue: D0710) (Student Paper Presentation Session) [Putonghua Session]

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Self-Efficacy and Online Learning Engagement in Junior High School Students Learning Russian
Xiaoping Zhang
Shanghai International Studies University
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A study on the equity of for-profit private universities and non-profit private universities in the China's education market: a case of Shanghai
Mian Lin
Lingnan University
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Agile/blended/agile-blended learning

The Effectiveness of Blended Learning Mode on Chinese Characters and Words Learning: An Action Research in a Hong Kong Primary School
Evan Jonas Wong
The Chinese University of Hong Kong
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Educational technology

A Bibliometric Analysis of the Integration of Web-based Learning in English as a Foreign Language Education
Yan Wang
Xi'an International Studies University
Luis Miguel Dos Santos
Hong Kong Shue Yan University
Jiabao Wu
Changzhou College of Information Technology
Ching Ting Tany Kwee
The University of New South Wales
Hangfei Zhao
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AI/VR/AR/MR in education

Artificial Intelligence: Requirements and Challenges, Future Directions
Liu Lu
Shanghai International Studies University
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Room 5 (Venue: D0719) (Student Paper Presentation Session)

AI/VR/AR/MR in education

Analysis of HoloLens-based mixed reality technology and educational applications
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AI/VR/AR/MR in education

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Ying Wang
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Xinuo Liu and Fengxia Li
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AI/VR/AR/MR in education

Research on Man-machine Dialogue Learning Mode based on Generative Artificial Intelligence

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Shanghai Open University

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Engaging students and learning design

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Pre-service English Teachers' Perceptions of Translanguaging as a Pedagogy in Language Teaching

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Exploring the Role of Picture Books in Life Education: An Investigation within Shanghai Kindergartens

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The Education University of Hong Kong

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Mathematics Teachers' Orientation towards Teaching Creativity Using Mathematical Lateral Thinking Problems

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Universitas Negeri Surabaya and STKIP PGRI Lumajang
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Open education/OERs/MOOCs

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Kickstart a Business: Investigating the impact of integrative learning on the development of entrepreneurial mindset in business diploma students **Cheng Leng Tan and Leroy Zhong** Ngee Ann Polytechnic P. 81	A Microlearning Approach to Promote Human-centric Change Management in Tanker Shipping Companies **Vedat Dogancan and Metin Celik** Istanbul Technical University P. 90
Engaging students and learning design	**AI/VR/AR/MR in education**
Do the 21st-Century Skills Affect Student Experience and Achievement in Open Flexible Distance Learning Settings? **Maximus Gorky Sembiring, Rahmat Budiman and Gayuh Rahayu** Universitas Terbuka P.62	Improving English as Foreign Language (EFL) Writing with AI Image Creator: The Way to Implement and Learners' Emotions **Alex Lap-Kwan Lam** The Chinese University of Hong Kong P. 38

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Parallel Paper Presentation Session V

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Engaging students and learning design

Learning by Doing: Why Project-Based Learning Proves to Be an Effective Method for Developing Self-regulation and Other Emotional Competencies in Gen Z Students
Martin Sviatko
CamEd Business School
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Investigating Chinese Postgraduate Students' Perceptions of the Effectiveness of a Pre-sessional EAP Programme in a Sino-British EMI University in Mainland China
Katherine Wang
University of Nottingham Ningbo China
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Cultural connectivity and the Teaching of Malay for Business
Lim Beng Soon
Singapore University of Social Sciences
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Online Learning Engagement: The Role of Individual Self-Efficacy and Institutional Academic Support, and the Mediating Role of Goal Orientation
Man Lung Jonathan Kwok
The Hong Kong Polytechnic University
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Hong Kong Metropolitan University
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Impacts of pandemic on online learning

Students' Reasons for Turning-Off Webcam during Synchronous Online-Learning: A Hong Kong Study
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Djung Laboratory – Digital Interactive Laboratory for Hybrid Learning
Kwanruetai Boonyasana, Pornkid Unkaw, Thathana Kamonnarakitraksa and Sunanta Chutinan
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AI/VR/AR/MR in education

The Development and Application of an AI System CSIEC in the Teaching of English as a Foreign Language
Jiyou Jia
Peking University
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Open education/OERs/MOOCs

Empowering Open Educational Practices through Open-Source Software: A Grounded Theory Approach in the Context of Hong Kong Metropolitan University
Chenggui Duan and Kam Cheong Li
Hong Kong Metropolitan University
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Gwo-Jen Hwang

Chair Professor and Vice President
Taichung University of Education

Prof. Gwo-Jen Hwang is a Chair Professor and Vice President at the Taichung University of Education. His research focuses on action and ubiquitous learning, game-based learning, flipped learning, and AI applications in education. With over 800 publications, including 400 in SSCI journals, he has received numerous awards and serves as an editor for several academic journals. He is also a frequent keynote speaker at international conferences.

Pedagogical Theories and Research Design of Artificial Intelligence in Education

The advancement of artificial intelligence (AI) technologies has captured the attention of researchers worldwide. Nevertheless, integrating AI technologies into school settings presents significant challenges for both researchers and educators, not to mention designing Artificial Intelligence in Education (AIED) research or teaching plans supported by pedagogical theories. In this talk, Prof. Hwang will introduce the fundamental concepts and applications of AI in educational settings and professional training. Subsequently, he will present the design principles of AIED research and the relevant pedagogical theories. Additionally, several examples will be provided to illustrate how to conduct high-quality AIED studies.

Jianli Jiao

Professor in Educational Technology
South China Normal University

Prof. Jianli Jiao is a Professor in Educational Technology at South China Normal University, Guangzhou, China. With a Ph.D. in Educational Technology and a background in Psychology and Education, he has made significant contributions to online education and teacher professional development. Prof. Jiao has received numerous awards for his work, including national recognition for online courses and teaching achievements. He is also an active researcher with publications in MOOCs, educational technology, and mobile learning.

Dialoguing and Collaborating with Generative AI: Strategies for Educators

In the rapidly evolving landscape of educational technology, the emergence of Generative AI (Gen AI) presents unprecedented opportunities and challenges for educators. In this talk, Prof. Jiao will first examine the art of dialoguing with Gen AI using a four-phase methodological approach, supported by real-world cases. After that, Prof. Jiao will propose a framework for human-Gen AI collaboration, highlighting the symbiotic relationship between human and AI in enhancing the learning experience.

Zehui Zhan

Professor
School of Information
Technology in Education
South China Normal University

Prof. Zehui Zhan is a Professor at the School of Information Technology in Education, South China Normal University. She holds a Ph.D. in Educational Technology from South China Normal University and Florida State University. With a strong background in Physics and Digital Media, Prof. Zhan has led numerous funded projects and published extensively in the fields of educational technology, computational thinking, and innovative talent development. Prof. Zhan's research has significantly contributed to the understanding of STEM education and pedagogical strategies in smart classrooms.

Technology Empowering Innovative Education: Three Typical Cases

This keynote speech explores the effectiveness of emerging technologies adopted in innovative education. Three typical cases will be introduced and discussed. Case one adopts the 5P (Phenomenon, Problem, Plan, Prototype, Promotion) model in an entrepreneurial course. Case two pairs student teachers with a ChatGPT in a STEM course. Case three utilizes Internet+ technologies to cultivate interdisciplinary teaching literacy among normal university students under the concept of Outcome-Based Education (OBE).

Keynote Session I

Mutlu Cukurova

Professor of Learning and Artificial Intelligence

Institute of Education – Culture, Communication & Media

University College London

Mutlu Cukurova is Professor of Learning and Artificial Intelligence at University College London. Professor Cukurova investigates the potential of AI to understand and support human learning with a particular interest in "learning how to learn" and solving complex problems collaboratively. His work emphasises human-AI complementarity, aiming to address the pressing socio-educational challenge of preparing people for a future with AI systems that will require a great deal more than the routine cognitive skills currently prized by many education systems and traditional approaches to automation. Professor Cukurova is the Director of the UCLAIT team and works with UNESCO's Unit for Technology and AI in Education as an external expert. He contributed to numerous influential policymaking documents including UNESCO's recent report on Guidance for generative AI in education and research. He is currently leading the report on UNESCO AI competency frameworks for teachers and students. He was the programme chair of the International Conference of AI in Education in 2020, currently serving as the editor of the *British Journal of Educational Technology* and an Associate Editor of the *International Journal of Child-Computer Interaction*.

Keynote address

AI in Education: Finding the Right Moments of Dependency, Scaffolding, and Competency

AI in Education is more than tools like ChatGPT. This talk presents a multi-dimensional view of AI's role in learning and education, emphasizing the intricate interplay between AI and the cognitive processes of learning. Professor Cukurova challenges the prevalent narrow conceptualization of AI as stochastic tools, highlighting the cognitive diversity inherent in AI algorithms, and posits that AI can serve as an instrument for understanding human learning. Early learning sciences and AI in Education research, which saw AI as an analogy for human intelligence, have diverged from this perspective, prompting a need to rekindle this connection. The presentation delves into three conceptualizations of AI in education: the externalization of cognition, the internalization of AI models to influence human thought processes, and the extension of human cognition via tightly integrated human-AI systems. Professor Cukurova argues for a balanced view that recognizes AI's limitations and the need for AI systems that support human agency, facilitate the internalization of learning process models, and enhance human cognition without replacing it. The presentation concludes with an advocacy for a broader educational approach that includes educating about AI itself and innovating educational systems to remain relevant in a world with ubiquitous AI.

Keynote Session II

Wu Feng

Professor
Graduate School of Education
Peking University

Professor Wu Feng works at the Graduate School of Education, Peking University. He is the director of Business-Education Research Center of Peking University and the chairman of the Human Resources Education Professional Committee of the China Adult Education Association. His research areas include digital learning, human resource development, and geriatric education. He has presided over 40 projects including major projects of the National Social Science Foundation and projects of the Ministry of Education. He has published one hundred articles in *Educational Research, Journal of Peking University* and so on. He has won the prize of Peking University's Research Outstanding Achievement Award, the prize of the National Educational Science Research Award, the Prize of Beijing Higher Education Teaching Achievements, the Prize of Talent-Teacher Award in Peking University.

Keynote address

Internet Dividends and Human Resource Development in China

China is transitioning from a stage of rapid economic growth to a stage of high-quality economic development. Internet is a characteristic of China's times. How to fully utilize and release the dividends of the Internet to promote the development of China’s human resources is of significance. The emergence of the Internet has reconstructed a new view of learning time and space, bringing double dividends to the development of human resources. Since 1999, the Internet has brought three new models to China's human resources development, namely the National Distance Education Plan of the Academic Qualification Model, the Enterprise Digital Learning Project of the Ability Model, and the Knowledge Model of university globalization MOOC movement, they have rapidly promoted the development of China's human resources. These three models are facing bottlenecks for further development, and there is still room for greater dividends. The article puts forward corresponding educational policy suggestions, which are: implement the national digital learning project for small and medium-sized enterprises, carry out distance postgraduate education, establish a credit certification system, and promote lifelong learning legislation. These will greatly unleash the dividends of the Internet and promote the rapid development of China’s human resources.

Keynote Session III

Maiga Chang

Full Professor, Athabasca University

Honorary Chair Professor
Multidisciplinary Academic
Research Center,
Dong Hwa University

Professor Maiga Chang is a Full Professor in the School of Computing and Information Systems at Athabasca University, Canada. He is IEEE Senior Member. Professor Chang has been appointed as an IEEE Computer Society Distinguished Visitor for 2023 to 2025 and received Distinguished Researcher Award from Asia Pacific Society on Computers in Education (APSCE) in 2022. Professor Chang is now Vice President (2022~) of International Association of Smart Learning Environments (IASLE), Executive Committee member of Asia-Pacific Society for Computers in Education (2017~2024, APSCE), Global Chinese Society for Computing in Education (2016~2025, GCSCE), and IEEE Computer Society Technical & Conference Activities Board. He is editors-in-chief (2019~) of *Journal of Educational Technology & Society* (Open Access SSCI), *International Journal of Distance Education Technologies* (Open Access ESCI, SCOPUS, EI), and *Bulletin of Technical Committee on Learning Technology* (Open Access ESCI). Professor Chang has given more than 155 talks and published more than 250 conference papers, journal papers, and book chapters.

Keynote address

Debates, Experiences and Solutions of Using Generative AI for Learning and Teaching

While the generative AI (e.g., ChatGPT) is now well-known and popular with the public, the dataset used for training the generative AI is currently too broad to be helpful for teaching and learning. Moreover, the dataset used for training the generative AI has not been entirely vetted by experts — for instance, 60% of the dataset used for training the ChatGPT model comes from the Internet directly. This has important, understudied implications for both educators and learners who might wish to use generative AI tools. I will start this talk by summarizing the opinions and perceptions that educationists and researchers have on ChatGPT's deficiencies, found failures, challenges and risks. I will explain and show audience in the second part of the talk how non-tech savvy teachers can also adopt and use ChatGPT in their courses to design and create pedagogical agent that helps their students learning and practicing. Last but not least, many teachers might have concerns about their students using ChatGPT to write assignments instead of doing so on their own. At the end of this talk. I will introduce our research group's latest research, Authorship Forensic, that can correctly distinguish the works generated by ChatGPT 3.5, ChatGPT 4, and human authors with high precision rate (i.e., not mis-pointing finger on human authors and incorrectly labelling their works as AI-written ones) 98.06% and F0.5 score 0.96 in our preliminary study.

Keynote Session IV

Rahmat Budiman

Vice Rector
Universitas Terbuka

Secretary-General of Asian Association of Open Universities (AAOU)

Rahmat Budiman started taking up his office as the Vice Rector for Institutional Development and Partnership Affairs of Universitas Terbuka (UT) since 2021. In addition to serving as the UT's Vice Rector, he is also concurrently serving as the Secretary-General of the AAOU.

As the Secretary-General of the AAOU, Dr Budiman is responsible for running the administrative, technical, financial and organization work of the association. Various initiatives and innovations have been introduced to foster distance learning. Recently, a book entitled *Open and Distance Education* in Asia was published as an initiative to show how distance teaching universities in Asia emerged, developed, and gained their reputations. As a distance teaching practitioner and enthusiast, he dedicates his research and teaching to develop and foster distance learning in Indonesia in particular and in Asia in general. His research interests include student services, teaching assistance, and distance language teaching. Several publications, including book chapters, proceedings, and journal articles have been published. The most recent articles published were "The digital literacy of first-year students and its function in an online method of delivery" (*AAOU Journal* in 2023) and "Self-efficacy of students taking the English Writing 3 course in an online learning setting" (*Jurnal Pendidikan Terbuka dan Jarak Jauh*, 2023). With his propositional knowledge and professional experience in distance learning, Rahmat Budiman continues to promote, thrive, and disseminate distance learning, both theories and practices.

Keynote address

Distance Education Universities in Asia: Challenges and Opportunities

The COVID-19 pandemic has accelerated the global trend towards distance learning, and Asia has witnessed a significant increase in the number of universities delivering their programs exclusively through distance education. This keynote speech will explore the factors driving this phenomenon and the implications for the future of higher education in Asia.

Starting with the data from an Asian Development Bank report, the speech will examine the rapid growth of distance education universities across Asia. It will then delve into the two key factors contributing to this trend: the pandemic's impact on the shift to remote learning and the regulatory changes in countries like Indonesia that have facilitated the establishment of distance education programs.

The presentation will also discuss the unique characteristics of Asia, such as its large and growing population and the concentration of the world's "mega-universities" in the region. These factors suggest that distance education will play an increasingly crucial role in providing access to higher education and meeting the demand for skilled labour.

Finally, the speech will address the critical question of quality in distance education. It will introduce three key initiatives to ensure the development of high-quality distance education institutions, including the establishment of an international accreditation system, the promotion of cross-border collaboration, and the creation of a dedicated world university ranking for distance education institutions.

Keynote Session V

Dragan Gašević

Distinguished Professor of Learning Analytics

Director of Research in the Department of Human Centred Computing of the Faculty of Information Technology

Director of the Centre for Learning Analytics at Monash University

Dragan Gašević is Distinguished Professor of Learning Analytics and Director of Research in the Department of Human Centred Computing of the Faculty of Information Technology and the Director of the Centre for Learning Analytics at Monash University. Dragan's research interests center around data analytic, AI, and design methods that can advance understanding of self-regulated and collaborative learning. He is a founder and served as the President (2015-2017) of the Society for Learning Analytics Research. He has also held several honorary appointments in Asia, Australia, Europe, and North America. He is a recipient of the Life-time Member Award (2022) as the highest distinction of the Society for Learning Analytics Research (SoLAR) and a Distinguished Member (2022) of the Association for Computing Machinery (ACM). In 2019-2022, he was recognized as the national field leader in educational technology in The *Australian*'s Research Magazine that is published annually. He led the EU-funded SHEILA project that received the Best Research Project of the Year Award (2019) from the Association for Learning Technology.

Keynote address

The 21st Century Disruptive Education in a Time of Transformation

Learning analytics is a well-established field that aims to make use of vast amounts of digital data to understand and enhance learning and teaching practices. The rise of generative artificial intelligence (GenAI) has sparked discussions about the synergy between GenAI and learning analytics. This talk will explore this synergy, specifically focusing on two areas. First, we will explore how GenAI creates a new education context. Learning analytics can offer valuable approaches to assess the effectiveness of GenAI in this new context. By leveraging learning analytics, we can ensure GenAI is utilized effectively in education. Second, we will investigate how GenAI technologies themselves can drive the development of even more powerful learning analytics. The talk will be grounded in findings from numerous empirical studies with direct implications for learning and teaching practice.

VIP Forum

The Future of Open Education

Facilitator

LI Kam-cheong
Dean, School of Open Learning
Director, Institute for Research in Open and Innovative Education
Hong Kong Metropolitan University

Panelists

Lily CHAN
Vice Chancellor and Chief Executive
Wawasan University

Professor Dr Lily Chan is the Chief Executive and Vice Chancellor of Wawasan Open University (WOU) in Penang, Malaysia.

She has been the driving force behind the University's mission of providing lifelong learning opportunities to Malaysians through distance learning for professional and personal development. She aspires to reach out to youths and adult learners who had missed out on tertiary qualifications and those seeking to equip themselves with skills to keep pace with the rapidly changing work environment.

She recently set up the School of Digital Technology (DiGiT) at WOU, a faculty which offers intensive, skills-centric degree programmes in Digital Business and Software Engineering. The DiGiT School has forged agreements with industry partners for the training and placement of its students, enabling them to acquire hands-on work experience.

WOU's innovative tagline, 'Think Tomorrow', speaks of the University's commitment to produce industry-ready graduates who can compete in today's digitally-transformed workplaces. Its online learning platforms are interactive and engaging, designed to offer an enriching student learning experience.

Professor Chan was previously the CEO of NUS Enterprise, the entrepreneurial arm of the National University of Singapore until March 2019. She transformed this division into one of the most esteemed higher education entrepreneurial ecosystems that nurtured hundreds of startup companies.

Before helming NUS Enterprise, she was the Managing Director of Bio*ONE Investments, an investment arm of the Singapore Economic Development Board with a focus on expanding the growth of the biomedical science industry in Singapore.

In recognition of her talents and contribution, she was honoured with the Public Administration Medal (Silver) at the Singapore National Day Awards Ceremony in 2018.

With over 30 years of leadership experience in the triple helix sphere of academia, industry and government, she is focused on implementing digital distance learning initiatives to transform WOUinto a leading educational institution in the country.

Abstract

In the post-pandemic era, despite increased online adoption by conventional universities, open universities are set to advance through enhanced online platforms utilizing AI and even VR, fostering greater student accessibility and engagement. Partnerships with traditional universities and industries will create specialized programs meeting job market needs and enabling smooth credit transfers. Personalized learning driven by data analytics and adaptive technologies will likely provide tailored support for students. The future of open universities promises innovation, collaboration, and a steadfast commitment to democratizing education by expanding access to diverse global learners through flexible and inclusive educational opportunities.

Melinda dela Peña BANDALARIA

Chancellor
University of the Philippines Open University

Professor Melinda dela Peña Bandalaria is full professor at the University of the Philippines Open University (UPOU) and has been its Chancellor since 2016. She is also an Ambassador for Open Educational Resources (OERs) (2021–2024) and a member of the Executive Board (2022–2025) of the International Council for Open and Distance Education (ICDE). She was also appointed as Member of the Governing Board of the SEAMEO Regional Open Learning Centre (SEAMOLEC) for the period 2022–2025 and continues to serve as member of the Executive Committee of the Asian Association of Open Universities (AAOU). Professor Bandalaria also served as AAOU President from 2017–2019. She spearheaded the formation of the Consortium of Distance Education Providers in the Philippines (CODEPP) which provides the platform for collaboration among academic institutions involved in offering inclusive and quality learning opportunities through this mode of instruction and the development and offering of Philippine MOOCs model. Her experience in Open Flexible and Distance eLearning spans more than 25 years doing teaching, developing course packages and research in this mode of delivering instruction. She has published numerous book chapters, journal articles and is often invited to speak in international fora and conferences. Her research interests include Universal Design for Learning (UDL) in an OFDeL setting; open distance eLearning; ICT for Education and Development; and Corporate Social Responsibility Communication. Her contributions to the field of OFDeL had been recognized through the Meritorious Service Award conferred by the AAOU in 2021; and the Prize of Excellence conferred by the ICDE also in 2021.

Abstract

The intensive use of modern ICTs during the COVID-19 pandemic has enabled conventional universities to continue doing online learning as another business model and ensure sustainability of operations in the face of other possible learning disruptions. With the integration of the technologies to the education ecosystem, offering programs in the distance education mode to reach more learners including those beyond the usual geographical limits has become possible.

Is this a threat to Open Universities? Open Universities offer more than just providing an option in terms of instructional delivery. Anchored on the philosophy of openness and inclusion, which is the essence of their establishment, Open Universities had always been challenged to be innovative in the use of technologies to perform this mission resulting to transformative models of education delivery. This will continue to define the distinct position of open universities. This presentation will discuss these transformative models which can also be an articulation of the future of learning.

Olugbemiro Jegede

Former Secretary General,
Association of African Universities

Former President of the African
Council for Distance Education

Foundation Vice Chancellor,
National Open University of Nigeria

Olugbemiro Jegede, is a global academician and a diplomat who has made significant contributions to the development of Nigeria, Africa and the global community in many ways. He propounded two major theories. The first is the *Theory of Collateral Learning* in 1995 to explain how children from the non-western cultures, (especially from Africa, the Caribbean, Asia and the South Pacific) cope with the learning of science through the lenses of their socio-cultural background. The second is the *Theory of Webagogy* in 1999 for the integration of all the viable theories and ideas about information processing, knowledge and symbolic representation under-guarding philosophy, pedagogy and the use of technology (web-based pedagogy).

Professor Jegede was awarded the 2015 International Council for Distance Education (ICDE) Prize for Excellence for Life long Contribution to Open and Distance Learning worldwide, and also awarded the Association of African Universities (AAU) Excellence, and its ambassador in Open and Distance Learning in 2023. He was appointed Emeritus Professor in 2015 by the National Open University of Nigeria.

In addition to being the UNESCO Chair of Open and Distance Learning from 2002 to 2007, Professor Jegede is privileged to be amongst few academics in the world, who have distinguished themselves by holding two Professorial chairs in two distinct areas of expertise. He is therefore a Chair Professor of Science Education (appointed by the University of Abuja in 1990) and a Chair Professor of Research in Open and Distance Learning (appointed by the Open University of Hong Kong in 1997).

He is a fellow of many professional organisations, received honorary doctorate degrees, published more than 25 books, given over 200 keynote addresses and convocation lectures; and published over 186 articles in foremost journals in the world. He has received several awards for his contributions to education.

Abstract

Open and Distance Learning through correspondence studies in 1728 when Caleb Philips advertised for learners to study Shorthand has metamorphosised into what is now known as Open Flexible and Distance Learning (OFDL). Open education began in earnest in 1969 with the first open university, The Open University of the United Kingdon. Since then, the horizon of open education continues to expand, improve in quality and sophistication mainly due to emerging technologies. The main fulcrum of open education is to enhance access. Ensuring that no one is left out. open education has emerged as a transformative force, reshaping traditional paradigms and fostering a more inclusive and accessible learning environment.

The trends in open education reflect a global movement towards democratising knowledge, breaking down barriers to entry, and embracing innovative pedagogical approaches. The overarching theme of the future of open education is open education practice. Through open educational practice, there is a promise of a more equitable and interconnected educational ecosystem, where learners from diverse backgrounds can access high-quality resources, collaborate seamlessly, and chart personalised learning journeys. The trends in open education which will revolutionise the future of open education practices include measurable skills and micro-credentials, artificial intelligence, block chain, virtual and augmented reality, IoT, new LMS, and intelligent and smart use of social media and network. The effects of these will be multi-dimensional and transformative, hugely profound affecting every human on the globe. Institutions must braze themselves for the avalanche of what is to come as the education of the future, which is already upon us.

Abstracts of Papers

An effort has been made to classify the abstracts under the topic areas to which they primarily relate, although in some cases they obviously span more than one topic areas.

Assessing the Effectiveness of Hybrid-Flexible Training Course on AI and Digital Education Innovations for Teacher Development

Jun Xiao and Xiaoxiao Zhu
Shanghai Open University
Wenjun Yang
Shanghai Normal University

The rise of AI technology heralds a new era of smart education. To foster teachers' competence in the AI era, Shanghai Open University and UNESCO IITE have jointly created the training course Artificial Intelligence and Digital Education Innovations for Teacher Development. This study comprehensively assesses the effectiveness of the training course in enhancing teachers' competence by analyzing the participation, satisfaction, and learning effectiveness of the participating teachers.

This training course utilizes a problem-oriented hybrid-flexible training model that focuses on crucial areas such as learning analytics, simulation and gamification, and strategies for integrating the innovation of AI and digital education. Teachers engaged in various learning activities, including text-based learning, assignment submission, discussions, feedback, and video lectures. Additionally, the course offers AI-supported learning environments, enhancing the overall learning experience. Finally, the effectiveness of the training was comprehensively measured through assessments and analyses of platform data, questionnaire responses, and learning outcomes from the 121 teachers who completed the training course.

The results showed that teachers' engagement was higher before and during the lesson (mean=5.13) and increased even further after the lesson (mean=5.23). This increase indicates that teachers were more engaged in self-organization and reflection after learning. Additionally, the study found that teachers were more satisfied with the learning analytics module than with the ethical issues module, indicating a correlation between the practicality of course module content and teacher satisfaction. Finally, the questionnaire analysis on teachers' learning effectiveness showed a significant increase in the teachers' competence in both general awareness of AI and AI-integrated pedagogical knowledge and methods.

This study found that the hybrid-flexible training course improved teacher satisfaction and engagement. The results showed that the training course effectively improved teachers' competence in applying AI to digital education, and revealed that teachers were more inclined to reflect after learning. It also highlights the influence of different learning activities and content on teachers' satisfaction, providing a foundation for the adaptive design of future teacher training courses.

The Effectiveness of Blended Learning Mode on Chinese Characters and Words Learning: An Action Research in a Hong Kong Primary School

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In recent years, the EDB has been promoting the implementation of e-learning in schools. In addition, the impact of the COVID-19 pandemic has led many schools to successfully develop a "blended learning mode" that combines online and face-to-face instruction, incorporating the "new normal" teaching mode into the school-based curriculum. The teaching of characters and words usage has always been emphasized in primary education, as understanding the meaning of characters and words is fundamental to developing students' literacy skills. Teachers have also been exploring different ways to enhance the quality of instruction in this area.

This study uses an action research approach and designs a characters and words learning curriculum using a blended learning mode to investigate whether students can improve their learning outcomes through this learning experience. Students first engage in pre-learning and peer discussions using multimedia courseware provided by the teacher on an online learning platform. During face-to-face classes, the teacher and students focus on discussing the difficulties and challenges encountered during self-study. The study was conducted using a mixed research methodology with a group of 29 grade 4 students, collecting quantitative data through pre-tests and post-tests, as well as qualitative data through a questionnaire survey to gather the opinions of students and teachers.

The results show that in the blended learning mode, the paired-sample t-test for the accuracy of characters and word operations yielded a calculated p-value of 0.018, which is lower than 0.05. This indicates a significant improvement in students' literacy skills and the cultivation of enhanced reading abilities. However, it may also increase the workload for teachers and the learning burden on students.

The study demonstrates the complementary nature of the blended learning mode and characters and word learning, leading to improved learning outcomes for students. The application of this mode in teaching provides an opportunity to transform "class time" into "learning time," enabling the appropriate development of literacy skills. This has practical implications for schools and the education sector in developing e-learning. However, the results also indicate the need to consider the willingness of teachers and students during the ongoing development process, to avoid additional pressures.

The Results of the Training of Occupational Competency-based with Blended Learning for Elders in Thailand

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The number of elderly people in Thailand has been increasing every day. This change in population structure into an aging society is a challenge that Thailand must prepare for. In addition, Thai society has shifted from an agricultural society to industrial society. Preparing elderly people to be self-reliant is therefore necessary. Seniors who choose to continue working after retirement should start preparing for their occupational competencies before they reach retirement age. Furthermore, nowadays technology plays a significant part in daily life and learning is more convenient, reducing travel time and saving money. Activities to enhance interaction with others in face-to-face or online formats can meet the needs of elderly people who want to learn together. These activities for social interaction can help elderly people become more qualified and efficient in supporting a quality aging society.

This paper is a study of the results of developing occupational competencies for elderly people after retirement in Thailand, using blended learning. Self-study was conducted in a virtual learning environment through video-based and online face-to-face training. Participants include 42 individuals who are approaching retirement age. They can read and write, and they have basic computer skills and other technological devices. The tools used include video clips for self-learning, composed of 6 units, 39 episodes, pre-tests and post-tests of video-based learning, pre-tests and post-tests of online face-to-face training, and evaluation of training skills in real-world settings. Data were analyzed using t-test dependent, mean and standard deviation.

Test scores after studying were higher than they were before studying, statistical significance at the level of .05. Test scores after training were higher than before training, statistical significance at the level of .05. And the results of the analysis of overall performance scores were at a moderate level (M= 2.46, SD. = .51).

Preparation should begin when elderly people are still working and earning a living. In practice, training should be carried out gradually. A caregiver or family member is sometimes required to lead them through tools or various tool symbols. This increases the trainees' confidence. The majority of the trainees are inexperienced at using a keyboard and type slowly. As a result, they began by trying out various tools and using a microphone rather than typing. Interactions between people have a positive impact on the training. There should be video clips available for trainees to watch and review their knowledge.

Exploring the Application of Gerontechnology in Residential Long-Term Care Settings in Taiwan

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The aging population and older adult caregiving have emerged as significant global issues. Taiwan's aging population is projected to exceed 20% of the total population by 2025 and enter a super-aged society. The proportion of individuals over 65 and who require long-term care is expected to surpass 13.3%. However, the high demand for caregiving personnel poses long-term care facilities a challenge, leading to an increasing emphasis on the application of caregiving technology. This study aimed to investigate the experiences of Taiwanese residential long-term care facilities in utilizing gerontechnology, regarding its effectiveness, challenges, and coping strategies.

This research employed a qualitative approach to comprehend the experiences of residential long-term care facilities in applying gerontechnology products. Researchers conducted semi-structured one-on-one in-depth interviews with eight staff members who possessed at least two years of experience in utilizing gerontechnology.

The results include: (a) Gerontechnology can detect older adults' needs of getting out of bed and therefore reduce the chance of falls; wireless transmission of physiological data rather than manual recording saves time; electronic detection of abnormal movements provides real-time alerts; technological aids and gaming devices promote the activities of older adults. (b) The application of gerontechnology is often hindered by poor-quality internet connection, resulting in products not functioning; insufficient information literacy among middle-aged and older caregivers leads to a low acceptance of technology; the high cost of technological products makes expansions and updates challenging; developers' lack of understanding of user needs increases the difficulty of application. (c) To address the challenges encountered, long-term care facilities should strengthen the training and encouragement for caregivers, enhancing their acceptance of technology; improve communication with vendors to modify products and achieve expected benefits; engage caregivers in discussions and generate adaptive strategies to solve problems.

This study revealed that gerontechnology indeed benefits the staff and older residents of residential long-term care facilities. However, overcoming challenges requires education, training, encouragement, and communication to achieve the goals of applying technological care

How Blended Learning Affected Students' Self-regulated Learning

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Blended learning has been a new normal to cope with the threats posted by COVID-19. Hong Kong secondary schools had to adopt the new teaching mode and develop a blended learning curriculum to cater to the rapid changes. To assess students' students learning experiences in blended learning, a study on their self-regulated learning behaviours revealed some implications of integrating face-to-face and online lessons.

In the mixed-method case study, the researcher collected survey data from 117 students from a secondary school that implemented a blended learning curriculum. Both quantitative and qualitative results were collected and analysed and consistently showed that blended learning was a conducive and resourceful learning environment that foster students' self-regulated learning behaviors.

The study found that a more student-centered teaching focus in blended learning fostered students' self-regulated learning behaviours in the new normal, transforming the "one-directional" learning and teaching approach to a "student-centered interactive approach" on the policy level, the curriculum level and the classroom level. Insights are shown on the affiliation between the use of Google Classroom and students' self-regulated learning behaviours in blended learning. The study revealed that Google Classroom served as a centralized platform to facilitate individualized learning while blurring the boundary of "classroom learning".

Blended learning has long been called the "new normal" in higher education. Many scholars have discussed blended learning in relation to teaching effectiveness and pedagogical practices. Few studies have discussed blended learning from students' perspectives. Thus, a gap is noted in studying blended learning curriculum on students' psychological aspects, such as their learning motivation and self-regulated learning tendency in Hong Kong secondary school. This study hopes to provide more insight into the impact of blended learning on students' self-regulated learning behaviors.

A Study on the Appropriateness and Effective Pathways for Integrating National Educational Resources into the Cultivation of Religious Talents under the Perspective of Lifelong Education

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Religious talent training is an important part of our country's religious work, and the integration of national educational resources is key to improving the quality of religious talent training. From the perspective of lifelong education, how to better integrate national educational resources into religious talent training has become an important research topic.

Based on the perspective of lifelong education, this article explores the connotation and dialectical relationship between national education and religious education, analyzes the appropriateness of integrating national educational resources into religious talent training, and further demonstrates its feasibility with practical cases. Based on multidimensional analysis, the article constructs a "Multiaspect integration" of national educational resources to promote religious talent training pathways and development suggestions.

The integration of national educational resources into religious talent training from the perspective of lifelong education is of great significance not only in implementing the Marxist stand on the people but also in assuming responsibility for the well-being of all humanity.

The research presents a novel approach by examining religious talent training through the lens of lifelong education, which is a unique perspective that could reshape the way we consider the integration of national educational resources within religious education. This perspective is valuable, as it not only provides a method to improve the quality of religious talent training by utilizing national educational resources, but it also has profound implications for fostering a more inclusive and culturally aware religious leadership. The integration of these resources is seen as significant for promoting social harmony and interfaith dialogue, suggesting that a more connected and integrated educational system can lead to greater understanding and respect among different faiths and cultures. This research could pave the way for further discussions on building bridges between various educational sectors and contribute to the development of a more harmonious society.

Exploring the Impact of Virtual Reality Natural Science Courses on Students' Learning Achievement and Learning Participation

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Virtual reality has been gradually integrated into many curricula, including nature courses. With the aid of virtual reality, students can learn science from macroscopic and microscopic perspectives. Research has confirmed the effectiveness of virtual reality in increasing students' performance in learning. Although there has been much discussion on students' performance, there has been relatively little discussion on their actual participation in performance.

This study aims to investigate the changes in students' learning outcomes and the relationship with their actual participation in a natural science course through virtual environments. For this purpose, the study developed a virtual reality learning curriculum for natural science and experimented in an elementary school class. A pre-experimental design was used to conduct pre-tests and post-tests of students' learning achievement before and after the learning activities. The study captured the students' question-answering status, the number of scene changes, and the number of tag touches from the system in the virtual reality environment. The question-answering status represents the number of times students answered questions in the virtual reality environment. The number of scene changes represents the number of times students switched scenes during the process. The number of tag touches represents the number of times students touched instructions, task instructions, and moved objects in the virtual reality environment.

The study results showed that students' academic achievement increased significantly, but there was no significant correlation between their achievement performance and their actual participation in virtual reality. However, there was a significant correlation between the actual question-answer status, the number of scene changes, and the number of tag touches in the virtual environment.

This study confirmed that the assistance of virtual reality has a particular effect on improving students' learning performance. Students' actual performance was related to how often they touched the scenes and tags in the virtual reality environment. However, it remains to be explored and discussed if the actual engagement factors can accurately predict students' academic performance

Analysis of HoloLens-based Mixed Reality Technology and Educational Applications

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Mixed-reality devices have progressively found applications in fundamental education, higher education, and vocational education. Pedagogical research is conducted to explore the impact Mixed Reality (MR) has on resources on different levels of educational objectives, analyzing the reasons behind the above-mentioned pedagogical research results. The research contributes to the understanding of the current status of educational applications, technological development, and instructional effectiveness of HoloLens.

This research outlines a rigorous approach for examining the current state of educational research related to HoloLens through co-occurrence analysis, temporal analysis, and clustering analysis, showing in knowledge graphs. It also systematically reviews the relevant theoretical foundations, application methods, and research in educational scenarios worldwide. The study summarizes the application characteristics in different educational stages and fields, conducting educational research to assess the achievement and potential of HoloLens educational applications in meeting revised Bloom's taxonomy objectives. The paper advocates for the involvement of experts, inviting them to match relevant research content with instructional objectives. After that, scientific data analysis using SPSS is implemented. This research also analyzes the technical processes of Microsoft's state-of-the-art MR product, HoloLens.

The expert matching results are tested by Kendall-W concordance coefficient, yielding a value of 0.874. The MR space created by HoloLens contributes to the achievement of factual knowledge, conceptual knowledge, and procedural knowledge at the levels of memory, understanding, application, and analysis. Simultaneously, it plays a regulating role in metacognitive processes and facilitates emotional goals in levels of acceptance and response. HoloLens educational resources fail to effectively promote the attainment of creative-level instructional objectives, which is related to fixed program settings. Therefore, improvements in HoloLens educational application designs are necessary to provide an effective MR learning pathway that stimulates creativity. In another aspect, this characteristic enhances concentration on presented learning content.

This research reviewed educational research related to HoloLens by knowledge graphs. Furthermore, collaborative efforts with experts were initiated, evaluating the achievement and potential of MR environments created by HoloLens. The research conducts an in-depth analysis of the technical workflow, unveiling the mysteries behind the development of HoloLens.

Applying Virtual Learning Environments and Experiential Flipped Learning to Enhance Clinical Skills Training Performance in Novice Registered Nurses

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Facilitating decision-making in authentic contexts is an important educational objective of professional training. However, in the conventional lecture-based training mode, learners generally have few opportunities to practice in authentic contexts under the guidance of instructors. The flipped learning mode of shifting the lectures to the pre-class activity with the presentation of digital media has gradually been receiving attention. However, conventional flipped learning mostly uses videos to present teaching content. In such a learning environment with one-way information and a lack of experience, it is not easy for most learners to experience the actual situation encountered in the nursing procedure, which affects their judgment and performance when dealing with actual scenarios.

This study implemented virtual learning environments to facilitate an experiential learning approach within a flipped learning framework. The VR-based Experiential Flipped Learning (VR-EFL) model incorporates four stages: Abstract Conceptualization, Reflective Observation, Concrete Experience, and Active Experimentation, drawing inspiration from the experiential learning model. In the Abstract Conceptualization stage, conducted before class, learners are guided to identify key concepts while watching instructional videos and to summarize their learning. This is followed by Reflective Observation, where students are encouraged to think deeply and formulate questions based on their summaries. Concrete Experience and Active Experimentation involve engaging with VR scenarios, practical application, and decision-making during class sessions. To assess the effectiveness of this teaching approach, the study was implemented in a blood transfusion safety training course. Novice registered nurses were divided into two groups: an experimental group, that utilized the VR-EFL mode, and a control group, that employed the traditional flipped learning approach.

The results showed that using the VR-EFL mode could not only enhance novice the nursing staff's learning achievement but could also significantly increase their decision-making performance, problem-solving tendency, and classroom engagement.

This study improves novice RNs' training learning achievement and potential from developing their professional capabilities to being competent. Allowing students to engage in an authentic experiential learning process facilitates their problem-solving skills and inspires their higher-order cognitive capabilities so as to transform knowledge into professional skills that can be used to perform clinical tasks.

Improving English as Foreign Language (EFL) Writing with AI Image Creator: The Way to Implement and Learners' Emotions

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Writing has always been considered the most difficult English language skill to master in an English as Foreign Language (EFL) setting. In recent years, Artificial Intelligence-enabled (AI) tools have immensely improved and evolved. It is worth looking into the implementation of AI tools in EFL writing, to take advantage of the trend. This study investigated the use of an AI image creator in EFL writing, focusing on its effect on the learners' emotions towards English writing.

Thirty-two Grade 6 EFL learners from a Hong Kong primary school were included in the study. The study is designed with the mixed-method research (MMR) approach. Both quantitative and qualitative data are included. After the learners completed an English writing task with AI components, a questionnaire about learners' emotions was administrated. It was adopted from the Foreign Language Enjoyment Scale (FLES) and the Foreign Language Learning Boredom Scale (FLLBS). Group interviews were also conducted to collect qualitative data.

This presentation includes the detailed steps to implement the AI tool in EFL writing. The findings show that EFL learners have more enjoyment and less boredom in English writing lessons after the inclusion of an AI component in the writing task. As the AI element was used with a regular English writing task that the learners face as a routine, it showed a promising way to improve overall learning experience in EFL writing. More details will be disclosed in the presentation.

This study opens the unpaved path of using AI-technology-enabled tools in EFL teaching. It shows the potential of using such AI tools does not stop at teaching EFL writing but can be extended to other learning aspects of English language, including reading, listening, and speaking. The author believes this study would be able to provide useful tips for other educators who are interested in using AI tools and e-learning pedagogies. Meaningful insights will be provided to other front-line teachers and school administrators to pick up innovative teaching methods for the betterment of EFL writing.

Virtual Reality Campus Environment for Enhancing Preliminary Year Student Experience

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The work aims at enhancing the preliminary year students' educational experience using a virtual reality (VR)-based campus tour scenario. The UNNC virtual campus environment (VCE) provides a distinctive platform for new students to familiarise themselves with campus culture and environment, exploring non-conventional orientation methods. The VCE was developed as a fully immersive virtual replica of the university, with a classroom dedicated to introducing the computer science major. By accessing this, the students are expected to have a more flexible and personalised educational experience, catering to the needs of diverse student populations, including those who are unable to be physically present in the campus activities.

VCE allows not only for an immersive exploration but also interactive experiences in various learning formats such as multimedia explanations, reading books, interactive quizzes, and gamified learning content. The participants, who are enrolled as the first-year and second-year undergraduate students, were invited to voluntarily participate in the study. They are expected to engage with VCE through simulated activities that closely mimic the actual on-site academic and non-academic scenarios, and complete pre-VR and post-VR experience questionnaires.

The results from the pilot study demonstrate that VCE has an overall positive impact on the students' educational experience. One significant advantage highlighted by the students is that VCE offers a clearer insight into their academic interests, chosen study programmes, and potential career paths. These student participants also show positive perception of VCE. From the data, around 70% of the student participants found the use of immersive VCE as a more effective learning tool than are the conventional teaching methods. It is worth noting that the VCE is also found effective and efficient to aid students' understanding of a certain study programme, such as in this work, the computer science major. Consequently, the results show that students' motivation (88.6% agreed) and engagement (77% agreed) are significantly increased after the VR experiential learning journey. From the interactive quiz embedded in the VCE, 90% student participants obtained higher scores (≥ 5).

This study stands out for its innovative application of VR technology in the field of education. It provides an initial view of shifting the paradigm from a physical orientation programme to a virtual and interactive platform, a novel way for students to engage with their academic environment. The work also highlights how VR technology can be effectively utilised to enhance educational experiences, a step closer to promoting a digital twin campus in higher education.

Japanese Student Use of and Views on Machine Translation

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Recently, due to the exponential advancement in machine translation (MT) technologies, students' use of these resources in tertiary educational settings has become standard practice around the world. However, in language classes, there exist concerns among instructors regarding the accuracy of what they produce and the maintenance of ethical conduct in education. Therefore, despite the accessibility and ease of use for checking lexical and grammatical errors and revising written work, studies have indicated that MT has been regarded as unacceptable and unnecessary in many language classes, especially with students at lower proficiency levels. Although it is the norm for students in Japan to use a wide range of advanced technologies, assessment of the use of MT in language education remains largely unstudied. The aim of this study is to explore how students use MT and what benefits and challenges they experience when utilising them for their own language studies.

This paper reports on a study that investigated Japanese students' experiences and views on the use of MT in English language classes. It also investigates how students' perceptions of such technology affected their learning process and preferences. Data for this study were collected through a questionnaire with 86 Japanese undergraduate university students enrolled in the 2023 academic year.

The findings of this research suggest that students are familiar with a range of MT technologies, and the majority of them acknowledge the benefits of these technologies, particularly in enhancing their confidence in the use of the target language while improving their overall language skills. The findings also suggest that the majority of students appreciate the application of MT as an instructional aid to learn English efficiently and critically assess the output of MT with self-regulatory behaviour they were trained to use in the past.

This quantitative and qualitative small-scale study explores Japanese university students' application of MT in English language classes. The results of this study provide instructors with valuable insights into students' perceptions of new technologies, which can aid in determining the most effective way to utilise these technologies to develop language abilities and to meet different language teaching purposes. Although educational literature on MT continues to be scarce, this study seeks to provide a reference for instructors, while at the same time encouraging them to reflect on their teaching practice, in order to meet students' language learning needs and preferences.

Preparation for an Environmental Learning Trail for Community Audience: Does 3D Virtual Site Visit Replace or Complement On-site Visit at Rehearsal Stage?

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Singapore's Active Beautiful & Clean (ABC) Waters concept has a community aspect to enable stewardship for water. As part of a service-learning project, students conduct an ABC learning trail for the community that links environmental aspects with water quality. Initial preparation involves a guided site visit by the lecturer to familiarize students with the selected site. Using 360VR technology, a 3D Site Visit platform (3DSV) was developed to enable immersive virtual site visits and rehearsals by students individually and in groups, to facilitate preparation.

This study aimed to investigate the effectiveness of the 3DSV in supporting students' preparation for conducting the learning trail at a selected environmental site. The participants were 17 Diploma in Environmental & Water Technology Year 2 students taking the ABC Waters Management module.

In addition to 3DSV, a physical familiarization tour was conducted 6 to 7 weeks before the actual event with the target audience. Students were advised to revisit the site to orientate themselves, rehearse, and plan their learning trail.

A survey measured the students' use of 3DSV, user experiences, and perceptions. A high percentage, 88.2%, of the students reported that their groups used 3DSV to prepare for the learning trail. Of these 3DSV users, 100% found it useful, engaging and helpful when preparing for the on-site learning trail implementation. Most students indicated that 3DSV helped them visualize and encouraged them to make multiple virtual visits to familiarize themselves with the physical site. These were supported by qualitative comments highlighting how 3DSV allowed them to navigate and visualize the site and practice facilitating the learning trail.

The high 3DSV utilization and favorable responses indicated that it is a viable alternative that allows students to prepare better for the actual community event. However, does 3DSV replace the need for on-site rehearsal?

Although most students recognized that 3DSV does not replace the need for on-site visit, many acknowledged that their groups did not rehearse on-site due to the tight schedule and weather condition. Of those who rehearsed on-site, some noted that although 3DSV was useful, it was important to practice on-site. Observations and participants' feedback suggested that all the student groups were able to conduct engaging learning trails. However, the value of on-site rehearsals is aptly emphasized by a student: "We wanted to prepare ourselves for any change [...] and take note of anything special that we could add on...". Future plans include collection of more data in the coming semesters.

Enhancing Medical Education on the Diagnoses of Neuro-Ophthalmologic Diseases Through Gamification and Virtual Reality

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Due to the complex and diverse symptoms of neuro-ophthalmologic diseases, medical training in diagnosing such eye diseases is very challenging and crucial for medical students in ophthalmology. Conventionally, medical students can only learn by rote memorisation through textbooks and then performing case studies for practice/examination under their instructors' guidance, for which learning effectiveness may be hindered. Accordingly, adopting the fundamental design principles of human-computer interaction (HCI) and virtual reality (VR) technologies, our team designed and implemented a VR-based simulation system, the Smart Neuro-Ophthalmologic Disease Educational Research Simulator (SNODERS), to effectively train medical students on the diagnoses of various neuro-ophthalmologic diseases and the effect of extraocular muscles on eye movements in a VR training game environment with different practising sessions and challenging missions.

The SNODERS system enables medical students to practise the examination of neuro-ophthalmologic diseases on a virtual patient by combining gesture recognition and gamification techniques using the latest MediaPipe Framework and the Unity Game Engine. Essentially, the MediaPipe is a machine-learning framework developed by Google to support real-time gesture recognition using simple web cameras. More importantly, with input from our medical experts, new visualisation techniques were developed to quickly convert the captured gesture information into the corresponding eye movements of the virtual patients through the Unity Game Engine. Other than a diversity of scenarios for medical students to practise diagnoses, many challenging game missions were implemented to evaluate and consolidate students' knowledge inside our VR game that can be used as a part of the examination/quiz or informal assessment for medical education.

To evaluate the effectiveness of the proposed SNODERS system for medical education, a set of questionnaires was carefully developed for a group of engineering and medical students to experiment with a prototype of the SNODERS system and then provide some initial feedback. The results of the preliminary system evaluation reveal the effectiveness of the proposed SNODERS system in stimulating students' learning interests and facilitating their learning progress in comprehending the symptoms of neuro-ophthalmologic diseases.

To our understanding, this work represents the first attempt to combine VR-based gesture recognition techniques with

(Cont'd)

gamification to train medical students to diagnose neuro-ophthalmologic diseases effectively. The work reveals the potential applications of gamification and VR technology in various fields of medical education.

Exploring English Teachers' Acceptance of Using Generative Artificial Intelligence Tools in Open Education

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Since OpenAI released ChatGPT in late November 2022, a range of generative artificial intelligence (GenAI) tools based on the state-of-art large language models have emerged. Due to its impressive capabilities to generate realistic, coherent and human-like conversations in response to user input, GenAI has presented new opportunities and concerns for language teaching and learning in open education. However, little is known about language teachers' acceptance of GenAI tools in language education. Language teachers have their own conceptualization of using GenAI tools. Their acceptance of GenAI tools may influence online course and assessment design in practice. This study adopts Technology Acceptance Model to explore English teachers' familiarity with and acceptance of GenAI tools in open education in China.

The methodology adopted in this study includes questionnaires and semi-structured interviews. All participants were English teachers who are teaching in different open universities in China. The data were collected from a questionnaire with a convenience sample of 150 participants and individual interviews with 12 participants.

The preliminary findings indicate the majority of English teachers agree that GenAI tools are important in facilitating teaching and learning in open educational settings. But the new tools have not achieved widespread use in practice, due to the unfamiliarity and concerns associated with GenAI. The English teachers' perceived usefulness of GenAI tools and perceived enjoyment when using the new tools influence their acceptance of GenAI tools. In addition, perceived anxiety influences teachers' intention to use GenAI tools and their acceptance of the new tools.

A complete understanding of English teachers' acceptance of GenAI tools is useful to help them adapt to this innovative technology to improve English instruction in Chinese open and distance education. The study can also provide valuable evidence and recommendations for administrators and policy makers to enhance GenAI tools-related professional training.

Assessing Perception and Knowledge Gain in SNAP Hydroponics Adoption through a Virtual Training of Trainers Program

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The COVID-19 pandemic caused restrictions on human movement and disruption in agricultural production, affecting the availability and accessibility of food to the consuming population. Adapting to these changes, the Institute of Plant Breeding (IPB) transitioned its delivery of extension services to the online mode, ensuring service continuity during these challenging times and helping address food insecurity threats. This study aimed to assess the new training scheme (virtual Training of Trainers (TOT) programme) and its effectiveness in positively influencing the perception of beneficiaries (end-users) towards the adoption of the technology.

A TOT programme was conducted virtually for locally based trainers by the IPB master trainers. The programme included lectures on the basics of SNAP hydroponics, pest and disease management demonstrations, and hands-on activities on how to set up the technology. Participants' knowledge was assessed through pre- and post-training tests with the same questions. Their satisfaction with the training was evaluated using a 5-point Likert scale. Afterward, beneficiaries trained by the locally based trainers evaluated the characteristics of the SNAP hydroponics which are anchored on the five factors influencing the intention to adopt the technology as described in the Diffusion of Innovation theory. The data collected were analyzed using descriptive analysis techniques.

Despite lacking prior experience with SNAP hydroponics and having little to no knowledge gain as shown by the pre- and post-training tests, trained locally based trainers were very satisfied with the conduct of the virtual training programme. This discrepancy might be attributed to changes in psychological factors brought about by slow and intermittent internet connection, multiple users in single accounts, test type and complexity, low retention due to information overload, and probable shift of focus from immediate memorization to just reliance on IEC materials. The potential cognitive biases influencing participant evaluations are also seen as a contributory factor to this observation. Nevertheless, beneficiaries trained by trainers showed promising interest in adopting SNAP hydroponics due to its perceived advantages.

This study highlighted the limitations of the virtual TOT approach in knowledge transfer. It highlights the importance of considering psychological and cognitive factors during training design. The findings provided valuable insights such as not announcing the availability of supplementary materials and adding measures to reduce social desirability biases, for the improvement of future TOT programmes and promoting SNAP hydroponics adoption.

Enhancing University-Level English Proficiency with Generative AI: Empirical Insights into Automated Feedback and Learning Outcomes

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This study was meticulously designed to ascertain the effects of LLM-generated feedback on university students' writing proficiency. We focus in particular on examining the improvements in essay revisions, the degree of student engagement with writing tasks, and the emotional journey students undergo during the writing process. Utilizing a randomized controlled trial, we aim to draw a clear comparison between the experiences and performance of students who benefit from AI-generated feedback and those who do not, providing a comprehensive understanding of the potential of LLMs in fostering writing skills within higher education.

Our methodology incorporates a significant sample size, 918 university students enrolled in English writing courses, offering a robust data set for analysis. The students were randomly assigned to either an experimental group that interacted with feedback produced by the GPT-3.5-turbo LLM, or a control group that proceeded without such technological assistance. We assessed the effect of AI-generated feedback not only through objective metrics, such as automated essay-scoring systems, but also through subjective indices, including detailed student surveys that captured motivational levels and emotional states. This holistic approach to data collection enabled us to gain a comprehensive understanding of the influence of AI-generated feedback on student writing development.

The incorporation of AI-generated feedback into the revision process displayed a significant improvement in the caliber of students' essays. The quantitative data indicated notable effect sizes, and qualitative feedback from students highlighted a surge in motivation and a more positive emotional experience during revisions among those who received AI feedback. These findings underscore the transformative potential of generative AI in enriching the language learning experience and in supporting the academic advancement of students at the tertiary level.

The outcomes of this research carry far-reaching implications for the field of language education. The integration of generative AI tools promises to reshape pedagogical and assessment practices, leading to a more individualized, rapid, and accessible learning process. With these technological advancements comes the responsibility to ensure ethical implementation, which involves maintaining fairness, transparency, and adherence to educational equity. It is vital to navigate these ethical dimensions thoughtfully as AI becomes more embedded in educational practices.

Research on Quality Evaluation of Engineering Education Based on Artificial Intelligence: Taking the Course Analysis of College Physics as an Example

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The aim of this study is to investigate the application of artificial intelligence in the evaluation of the quality of engineering education, in particular the use of data mining, learning analytic techniques, and large language models to identify existing shortcomings in the teaching and learning process and to optimize the learning and teaching process.

In this study, three methods were employed to reduce the dimension of physics exam answer data from 2,053 students: multidimensional item response theory (MIRT), principal component analysis (PCA), and t-distributed stochastic neighbor embedding (t-SNE). Subsequently, a decision tree algorithm was utilized to predict whether students could pass the exam and to compare the effectiveness of the three dimension reduction methods. And combined with Bloom's Taxonomy of Educational Objectives and the classification of exam questions, we further analyzed the importance of different student abilities for passing the exam by using the decision tree classification result obtained from MIRT dimension reduction. Additionally, comprehensive evaluations of classroom teaching records were conducted using a large language model (ChatGPT).

Through comparing the three dimension reduction methods, it was found that dimension reduction based on Multidimensional Item Response Theory (three-dimensional three-parameter logistic model) performs the best in predictive performance. Combining multidimensional item response theory and Bloom's Taxonomy of Educational Objectives for in-depth analysis, it was observed that students' performances on different ability dimensions had varying degrees of effects on exam results. Moreover, the evaluation results from the ChatGPT revealed deficiencies in cultivating advanced educational objectives in current teaching practices.

This investigation enriches the discourse on linking student learning results with teaching objectives, presenting novel insights into enhancing pedagogical strategies, curriculum development, and the fostering of advanced cognitive skills in engineering education. It heralds a paradigm shift towards AI-driven educational quality assessment, promising significant advancements in teaching efficacy and curriculum optimization.

Artificial Intelligence: Requirements and Challenges, Future Directions

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With the increasing application of artificial intelligence (AI) technology in high-risk areas, research on explainable artificial intelligence (XAI) has been growing. XAI is rapidly being applied in high-risk domains. This study first summarizes the specific needs for XAI in high-risk domains, identifying current research limitations such as technological complexity and lack of user trust. Furthermore, the study highlights that applying XAI in the education sector can promote personalized learning outcomes and optimization though further research is needed to overcome technical and implementation barriers.

This study summarizes the current literature on XAI, outlining the requirements for XAI in focused research areas and presenting the current challenges and limitations. Additionally, it investigates specific applications of XAI in the education sector, demonstrating the potential benefits of its implementation.

The study identified particular needs for XAI in high-risk domains, such as greater transparency and user trust. It also uncovered factors limiting the broader adoption of XAI, including technological complexities and implementation challenges. Furthermore, it highlighted the potential benefits of XAI in education, such as enhancing personalized learning and integrating deep knowledge tracing to explore solutions for explanatory issues in teaching.

This research enhances our comprehension of how XAI is applied and the challenges it faces in high-risk and educational settings. It emphasizes the essential need for further development in XAI to cater to these domains' unique demands and elevate user trust and transparency. The results of this study suggest a direction for future research to investigate further the role of XAI in personalizing and improving learning outcomes.

Supporting the Learning of Cross-cultural Communication Courses Using Virtual Business Scenarios

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Business English, as a particular purpose English, has been criticized for being taught in a way lacking authentic learning contexts for students to gain first-hand practical experience. This study will develop a 360° video-based virtual reality (VR) environment that immerses students in simulated business scenarios. The study will use a quasi-experimental design to investigate the effects of students' conversations with a non-player character (NPC) in virtual business scenarios by intercultural sensitivity (IS) and intercultural communicative competence (ICC).

The proposed quasi-experimental subjects of this quasi-experiment will be undergraduate students majoring in business English. The students will receive instruction with a VR intervention in the first 8 weeks of the study and will receive traditional instruction in the second 8 weeks of the study. Methodologically, mixed data-collection will be adopted, including IS and ICC pre-, post-, delayed post-questionnaire-based surveys and focus group interviews. Eight business scenarios, such as airport pick-up and business negotiations, will be simulated in the VR program. The students will engage in dialogues with VR characters through a head-mounted display and controller, will be able to choose their role in each business scenario (e.g., visitor or company representative), and will be presented with a score after completing each dialogue. Knowledge quizzes will be given in the VR system at the beginning or end of each VR dialogue. Traditional instruction will involve classroom activities, textbook-based lectures, and visual teaching aids, such as slides, video, and audio.

The students will accomplish target language learning and application through interactive, contextualised, and collaborative VR environments. This is expected to enhance their intercultural sensitivity and intercultural communicative competence.

The 360° video-based VR adopted in the proposed research will be customised to suit the cross-cultural course, and the participants will be undergraduate students majoring in business English. The study will address the mismatch between VR content and student backgrounds, and if even students' lack of English proficiency leads to inefficiencies in the experimental process (Ezzaoua, 2024; Akdere et al., 2023; Gao et al., 2021). Intercultural sensitivity and intercultural communicative competence are dynamic and long-lasting. The experimental design proposed for this study differs from that of other studies (Lin et al., 2023; Li et al., 2022; Gao et al., 2021). The follow-up duration will be 8 weeks, rather than 2 days or 2 weeks. This study will provide empirical evidence and serve as a reference for teachers in designing relevant curricula.

Investigating the Impact of Automated Writing Evaluation and GenAI on Student Feedback Literacy

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Feedback is one of the most influential factors in facilitating student learning. Studies have confirmed that feedback generated from automated writing evaluation (AWE) can improve student writing accuracy and performance. However, the impact of AWE on feedback literacy, a crucial skill for lifelong learning, remains unclear. With the emergence of Generative Artificial Intelligence (GenAI) that uses a large language model, the conventional AWE adopting natural language processing faces the potential of reform. Therefore, this study aims to compare how feedback generated from conventional AWE and GenAI influence student feedback literacy in second language writing. Because the main purpose of feedback is to enable students to self-regulate their learning, this study will track student feedback literacy development when utilizing automated feedback through the lens of self-regulated learning. This study will conduct an in-depth investigation into the extent to which students successfully manage to close the single-loop feedback of problem-solving or double-loop feedback of adapting learning strategies with automated feedback.

This research will be embedded in a college English course at a vocational college in mainland China. One group of participants will be asked to revise their writing with the aid of conventional AWE feedback, and the other group will use GenAI feedback. Data will be collected through activity-oriented focus group, screenshots of dialogue with GenAI, reflective writing journals, and background data from conventional AWE platform. This research will be conducted in May.

This research is the first to compare how the conventional AWE feedback and GenAI feedback influence student feedback literacy through the lens of self-regulated learning and the focus of feedback loops. The findings will not only shed light on current student feedback literacy with the two technologies but also provide insights to instructors on how to select or combine the use of the two technologies in enhancing students' feedback literacy and provide scaffolding support. This research will also provide directions on upgrading conventional AWE tools in the era of GenAI.

Applications and Implications of Emerging Technologies in Architecture, Engineering & Construction (AEC) Education: Concerns Shifting from Curriculum Renovation to Industry and Social Impact

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The rapid development of emerging technologies and industries has demonstrated the necessity for transforming the education system to adapt to the demands of contemporary society. The advancement of the entire educational system encompasses but is not limited to the advancement of instructional methodologies and educational materials to empower students with visionary and creative abilities and make a valuable contribution to society. However, the particular influence and development of emerging technologies on AEC education remains an unclear picture, hindering further practice. Hence, this study intends to explore the status quo of applications and implications of emerging technologies on AEC education, examine research gaps, and advise on the potential research directions to contribute to the body of knowledge and benefit the related parties.

The study adapts an integrated approach of bibliometric literature searching, scientific knowledge mapping, and in-depth critical review to critically review the studies published in the applications and implications of emerging technologies in AEC education in the last two decades. After a thorough filtering process, 229 related publications were captured from Scopus. To capture leading information in the field, VOSviewer was employed to identify and visualize the most influential researchers, countries/regions, studies, and the tendency for publication. Networks were also generated to investigate the main research topics, followed by a thorough qualitative review and discussion.

The results reveal a change in the primary areas of interest over the last decade, shifting from curriculum renovation to topics related to broader industry and social impact concerns. The absence of well-established interdisciplinary collaboration among academics in this field impedes the progress of the study on the subject. Moreover, four leading research themes were identified as "curriculum renovation", "innovative technologies in AEC education", "student nurturing and development", and "industry and social impact" and utilized to ascertain current deficiencies in the research and propose possible future research directions.

This study fills the research gap by providing an in-depth analysis of the leading information and future research paths in applications and implications of emerging technologies in AEC education, contributing to the current theoretical information and providing practical guidance and suggestions for related parties.

Exploring the Integration of AI and IoT Technologies for Developing Intelligent Campuses in Taiwanese Universities: A Fuzzy Delphi Approach

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This study aims to construct an index and weight system for intelligent campuses in Taiwanese universities, serving as a reference for universities to promote intelligent campus initiatives. The goal is to enhance learning outcomes, teaching research effectiveness, and administrative efficiency.

This study involved a total of 10 experts and scholars familiar with intelligent campuses in universities as research subjects. Firstly, the index content of intelligent campuses in universities was drafted through a literature review method. Subsequently, a fuzzy Delphi expert group was formed to conduct expert questionnaire surveys and complete the construction of the index. The indicators for constructing intelligent campuses in Taiwanese universities were calculated to obtain left boundary values, right boundary values, and their total utility after defuzzification. In this study, the threshold value was set at 0.5, and any utility value below 0.5 was deleted.

Then, the AHP was used to determine the weights of various aspects and detailed indicators, completing the weight system of indicators for intelligent campuses in universities.

In this study, the indicator details under the six major aspects of intelligent campuses in Taiwanese universities were calculated and filtered based on their total utility values. All 35 indicator details had total utility values exceeding the threshold of 0.5; thus, all 35 indicators were retained. The index for intelligent campuses in Taiwanese universities, as constructed in this study, comprises six major aspects, with a total of 35 indicators. These six major aspects, ranked by weight, include "Intelligent Administration" (36.1%), "Intelligent Learning" (31.5%), "Intelligent Management" (13.9%), "Intelligent Community" (8.4%), "Intelligent Healthcare" (5.4%), and "Intelligent Green Energy" (4.7%).

This study contributes to the field by developing a comprehensive index and weight system specifically tailored for intelligent campuses in Taiwanese universities. This initiative addresses a gap in the existing literature by providing a structured framework to guide universities in implementing intelligent campus initiatives. The use of a fuzzy Delphi expert group and the AHP methodology adds rigour to the index construction process, ensuring its validity and reliability. The findings of the study have several implications for practice and research. Practically, the index and weight system can guide universities in allocating resources and implementing strategies to optimize their intelligent campus development efforts. Additionally,

(Cont'd)

the identification of key aspects such as "Intelligent Administration" and "Intelligent Learning" underscore the importance of integrating technological advancements into administrative processes and educational practices to create a more innovative and efficient learning environment.

Paradigm Shift in Chinese Writing Assessment through AI-Powered Automated Writing Evaluation (AWE): Chinese Writing Wizard

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This study investigates the use of the AI-powered Automated Writing Evaluation (AWE) tool "Chinese Writing Wizard" (巫筆) to enhance feedback in Chinese writing instruction. Traditional written feedback, while detailed and comprehensive, often faces challenges such as timeliness, effectiveness, and emotional engagement. This research aims to explore how AWE can provide immediate corrections, reduce teachers' workload, and enable more timely feedback, thereby promoting better student learning outcomes and fostering a more interactive teacher-student relationship.

This study employs an action research methodology, engaging in reflective cycles of planning, action, observation, and reflection. The research was conducted with a class of 30 students from a secondary school, integrating the "Chinese Writing Wizard" into their writing instruction. The action research design involved three main phases: 1) Introducing the AWE tool and training students on its use, 2) Implementing the tool in writing assignments, and 3) Collecting and analyzing data on student performance and motivation through qualitative and quantitative methods, including writing samples, questionnaires, and interviews.

The findings reveal that the use of AWE tools can significantly improve the efficacy of feedback in Chinese writing instruction. By providing immediate and automated corrections, AWE tools reduce the burden on teachers, facilitate timely feedback, and promote a more engaging and interactive feedback process. The study highlights the potential of AWE tools to revolutionize Chinese writing assessment and enhance the overall quality of writing instruction.

This research demonstrates the potential of AI-powered AWE tools in transforming the feedback paradigm in Chinese writing instruction. The findings underscore the importance of integrating AI technology to create a more dynamic and responsive feedback system, ultimately improving student learning outcomes and fostering better teacher-student interactions.

Students' Perception of the Use of GenAI-ChatGPT Tools for Learning

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The integration of Artificial Intelligence (AI) tools in educational settings has led to a substantial transformation in teaching and learning practices. Specifically, the emergence of Generative Pre-trained Transformer (ChatGPT) and Generative AI (GenAI) has offered students exceptional resources. The paper presents a case study of Hong Kong Metropolitan University, where GenAI-ChatGPT has been embraced as a learning tool to promote academic excellence. This study aims to investigate the specific utilization of GenAI-ChatGPT by students in their learning. By doing so, it will contribute to a comprehensive understanding of the way students perceive their use of ChatGPT and integrate it into their learning processes.

This study employed a mixed-methods approach, utilizing a quantitative survey to collect data on students' usage and feedback of GenAI-ChatGPT tools, followed by a descriptive analysis. The survey results informed a subsequent qualitative study involving focus group interviews, which delved into students' perceptions and concerns regarding the use of GenAI-ChatGPT tools. During the 2023-24 academic year, a survey was administered to gather insights on students' usage and feedback of GenAI-ChatGPT tools for learning. Students from various disciplines voluntarily completed an online questionnaire. Furthermore, 14 full-time students from the nursing and business studies disciplines were selected for interviews to provide a deeper understanding of their learning experiences with GenAI-ChatGPT tools and their reactions to the generated responses.

The study invited 28,054 students to participate in a survey, with 2,887 respondents completing it, yielding a response rate of 10.3%. A significant majority of these respondents (1,963 individuals) indicated a preference for using GenAI-ChatGPT tools in their learning process, primarily for idea generation, information gathering, and translation. The questionnaire focused on three main aspects: user experience, usefulness, and overall satisfaction, with an overall mean score of 3.93, exceeding the average mean score of the 5-point Likert scale (mean=3.00). The p-value for the right-tailed t-test for all three scales was less than 0.001, indicating that students had a positive user experience with GenAI-ChatGPT tools, found them useful in their learning process, and expressed overall satisfaction. However, interviews revealed a degree of caution and skepticism regarding the authenticity and accuracy of information and references provided by GenAI-ChatGPT. Despite these concerns, the study found extensive use of AI tools for learning, with students expressing overall satisfaction with their academic experience using these tools.

The study found overall student satisfaction with AI tools for learning. Students acknowledged their usefulness but suggested improvements and additional support. Although academic effectiveness was not directly measured, student perceptions have significant implications. Caution is advised when using GenAI-ChatGPT tools, especially for assignments checked by ChatGPT detectors. Students are encouraged to critically evaluate information, cross-reference with their notes and Google search, displaying enhanced critical thinking skills. The study emphasizes the importance of thoughtful integration and utilization of AI tools in their learning process, considering student perceptions, feedback, and fostering critical thinking skills.

AI for Academic Writing: A Synthesis of Recent Research from 2004 to 2024

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Educators have recognized that a major challenge for students learning to use AI tools for academic purposes is developing an ability to use AI tools appropriately in written assignments. To identify and evaluate the current state of empirical evidence, a systematic synthesis of published research has investigated the application of AI in diverse contexts internationally including students in secondary schools and universities.

ProQuest and EBSCOhost ERIC databases were used to identify 58 relevant articles published in refereed journals in English from 2004 to 2024 using the following keywords: "artificial intelligence", "AI", "academic writing", "second language", "third language", "foreign language", "writing", "essay", "co-construct", "computer", "technology", and "online". This paper examines articles with a focus on AI in academic writing. Articles that examined writing proficiency and classroom instruction without the inclusion of AI technology, analysis of AI in education, use of technology that is not AI, analysis of AI video materials, AI tools that examined speech, and analysis of plagiarism issues were excluded. The author and the research assistant met every week to discuss, compile, and refine the findings.

Four general claims emerged across an analysis of empirical studies and literature reviews. Each claim has empirical support, but each also warrants further research: (1) Differences may appear in our understanding of the definition of AI; (2) Mixed methods that involve questionnaire and analysis of writing between humans and Chat GPT-generated essays are common in conducting AI research; (3) Student perceptions of GenAI influence their frequency of AI tool utilization; and (4) Instruction can help students improve their uses of AI tools more effectively.

This paper contributes to practice and research in AI in academic writing. First, more emphasis should be placed on AI literacy to ensure that users such as students, educators, and researchers understand the implications of AI usage, as well as how AI can be best used to aid them in the writing process. Second, other research methodologies, such as longitudinal studies, should be used in the study of the impact of AI on academic writing. This method may complement the current findings and build on them to achieve a more conclusive and robust finding. Implications of the study in relation to research, theory, and practice will be discussed.

Infusing Artificial Intelligence (AI) in Teaching Secondary Mathematics

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The purpose of this research is to develop useful AI-integrated mathematics teaching materials and explore innovative pedagogies for using AI in teaching secondary mathematics. Six secondary school teachers have been recruited for training sessions and meetings aiming at equipping them with the necessary skills and knowledge for incorporating AI into their teaching practices. The teachers form three groups to explore different topics. Teachers learn to use various generative AI tools and will apply them to their chosen topics. Each group of teachers is tasked with compiling AI teaching and learning materials. In the presentation, the preliminary findings in the first month of the project will be presented. This includes the materials in (1) preparing teaching and learning materials, (2) preparing assessments, (3) developing remedial and enrichment materials, and (4) teachers' pedagogical adaption in using AI.

Qualitative methodology is used in this study. Observations, interviews and discussions with teachers will then be analyzed with content analysis. Content analysis is employed to analyze observation, interviews, and discussions with secondary mathematics teachers regarding their development of AI-adopted teaching materials.

The major findings at this point of the study are the teaching and learning materials generated by the recruited secondary teachers. Teachers use different AI tools including PhotoMath, Thetawise, Inkey, and Wolfrom Alpha. Examples of AI-generated teaching plans and quizzes, AI-generated remedial and enrichment materials, and teachers' sharing on the adaptation in using AI will be presented. Pedagogical implications on using AI will also be presented.

Although AI in teaching is the hottest topic in research, there is gap in AI teaching in secondary mathematics teaching. Some studies have been conducted exploring teachers' perceptions of AI-adopted curriculum. Yet, there is still much room for further investigation in the practical use of AI in teaching mathematics in the local secondary school context. This study can inform the research community and the teacher training institutions on how AI can shape mathematics teachers in teaching.

The Development and Application of an AI System CSIEC in the Teaching of English as a Foreign Language

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The English chatbot CSIEC (Computer Simulation in Educational Communication) for the instruction of English as a foreign language was developed by the speaker and put on free usage on the Internet in 2003. It has been further developed to an intelligent instruction system by the author and his students and applied in English instruction both in middle schools and in higher education since 2006. This paper will summarize the past experience of this AI system, introduce the latest development enhanced by large language models, and envisage its future.

The main approach of this paper is a systematic literature review. The main publications concerning the CSIEC system will be reviewed and analyzed.

The CSIEC chatbot was recognized as a pioneering human-computer interaction system before 2020. Its chatting mechanism is based on the symbolical or cognitivism theory of AI research. It has been extended to a comprehensive instructional system for the teaching of English as a foreign language, including vocabulary, grammar, listening, speaking, and reading. It is integrated into the regular English curriculum as a blended learning mode. The multiple and long-term quasi-experiments have demonstrated the CSIEC system's effect on the learning performance and motivation of the students from middle schools to universities. It is recognized as an early college-level framework and adaptive learning system for English language learners. The independent development and improvement of this system and its free usage for all users have been guaranteed by the research team and supported by international and national research projects rather than through commercialization. The functionality of the system will be enhanced by the latest advancement of large language models such as ChatGPT and Wenxinyiyan from Baidu.

This comprehensive review study for the CSIEC system will give a valuable reference for the design, development, implementation, application, and evaluation of chatbots and other AI systems for language teaching and learning.

Research on Man-machine Dialogue Learning Mode based on Generative Artificial Intelligence

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Since the outbreak of generative AI in 2022, generative artificial intelligence (AIGC), represented by ChatGPT, ERNIE Bot and others, has brought unprecedented opportunities and challenges to the education field by virtue of its powerful generative ability. Dialogue learning, as an ancient form of learning, is bound to generate new forms and modes under the empowerment of new technologies. How learners can effectively ask questions and how to engage in generative learning through multiple rounds of dialogue with AIGC tools has become a research focus. This study focuses on how to use AIGC for human-machine dialogue learning for adult learners in open distance education, thereby promoting personalized and autonomous learning for learners.

This study first clarifies the connotation, evolution, and types of conversational learning through literature analysis, and combines the advantages and characteristics of AIGC to analyze the value and basic trends of human-machine dialogue learning based on AIGC. Secondly, it focuses on the key issues of human-machine dialogue learning based on AIGC. Research and analysis are conducted from the aspects of AIGC roles, prompt language design, basic processes, etc. Furthermore, a human-machine dialogue learning mode based on AIGC is designed, and the application of AIGC in S University is analyzed. Finally, strategies and methods for promoting a human-machine dialogue learning mode are proposed from the aspects of cultivating problem awareness, identifying language risks, improving mathematical literacy, and avoiding technological dependence.

Through research, it was found that AIGC can act as a diverse dialogue role to engage in dialogue with learners. Through continuous dialogue learning, it can stimulate learners' enthusiasm for learning, shape their subjectivity, and promote the improvement of higher-order thinking. Moreover, how to ask questions to the large language model is a key point for the effective implementation of human-machine dialogue learning, which requires learners to have a sense of the problem, to be able to optimize the content of the questions, to learn questioning techniques, and to be able to identify linguistic, ethical, and other risks, in order to promote the effective implementation of the human-computer dialogue learning model.

This study proposes a human-machine dialogue learning mode based on AIGC, enriching the path of applying it to education, providing a new perspective for personalized self-directed learning of open distance education learners, and injecting new vitality into the application of AIGC to learning.

Research on the Application of AI-assisted Learning in Programming Learning

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With the advancement of big data and artificial intelligence, the integration and application of "artificial intelligence" and "knowledge graph" technologies are emerging in the realm of education. The introduction of these cutting-edge technologies has brought unprecedented opportunities and challenges to online education, particularly in the realm of designing intelligent courseware to support learners in their educational journey.

This study focuses on the design of intelligent courseware featuring an AI assistant for Java programming learning. Leveraging the capabilities of the AI assistant, the intelligent courseware can assess learners' knowledge levels and facilitate in-depth learning experiences. Our aim is to investigate a model for utilizing AI technology in the design of supportive learning materials and to observe the impact AI intervention has on learners' behaviours. Furthermore, we will assess the effectiveness of AI-assisted learning interventions by analyzing learners' performance outcomes.

In this research project, our initial focus was on constructing a course knowledge graph specifically tailored for the Java Programming course. Subsequently, we established connections between test questions and course resources within the knowledge graph framework. Three distinct models of AI-assisted learning were developed, each fostering learner engagement through interactions facilitated by AI assistants. The utilization of AI assistants enabled the realization of these three AI-assisted learning modalities. Furthermore, a total of 10 intelligent AI courseware modules were meticulously designed and completed, as illustrated in Figure 1. These resources were then utilized by students majoring in software engineering over the course of one semester. Upon the conclusion of the semester, detailed logs capturing students' learning behaviours were extracted from the learning platform. By scrutinizing these behaviour logs, we were able to gain insights into students' utilization of AI-assisted courseware. Additionally, academic performance data were extracted from the educational management system, allowing us to establish a correlation between students' learning behaviours and academic achievements. Through this analysis, we aimed to ascertain the extent of the impact AI-assisted courseware had on students' academic performance.

The Impact of Team Formation Criteria on Learning Behaviors, Experiences and Outcomes in Computer-Supported Collaborative Learning

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The current paper analyses the impact of team formation criteria on students' learning behaviours, experiences and outcomes of students in computer-supported collaborative learning.

The study involved 9 groups of third-year bachelor students (N=217) of Peter the Great St. Petersburg Polytechnic University. For our analysis we took indicators of participating behaviours, learning experiences, and learning achievement. Participants' behaviour, including login time, and number of messages and reply posts were automatically recorded by the LMS. To evaluate learning experience dimensions, we used the Learning Experience Questionnaire (LEQ), which consisted of 15 items. Learning outcomes were evaluated by final testing on international business and criterion ratings of two main assignments that were given during the semester. In our study we used one-way analysis of variance (ANOVA), post-hoc independent sample t-tests, and Pearson correlation analysis to define the influence of a team's formation criteria and relationships between considered indicators.

From the the results, we can state that computer-supported collaborative learning is more effective when students with a high level of academic achievement worked in cooperation with students whose level of academic achievement was insufficient. Teams that were formed due to self-formation criteria showed the lowest results of learning behaviour. Based on the results, collaborative work will be more effective if teams are formed due to the level of academic achievements: the cooperation between excellent students and lagging students gives higher general effect.

The findings of the paper contribute to understanding team formation that can serve as an important and valuable tool for forming and building an effective team.

Data Management and Solutions in the Open University from the Big Data Analysis Perspective

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In order to break the Information Island (computer application systems that are not functionally related or mutually supportive and do not share or exchange information) through relevant information technology, the following findings and implications are proposed to solve the cult of big data (the belief in big data only), the risk of "big data only" and the problem of data security.

This article used four methodologies: literature research method, design-based research, questionnaire survey method, and data modeling method.

From the perspective of big data, combined with the university environment of open education, the findings of big data analysis in open education can be determined. Firstly, it is necessary to break the information barrier through relevant information technology, to achieve the real sense of campus openness. Secondly, relevant data and information which can support the construction of an open campus should be provided. Exploring the applications of big data analytics in open education and its extended applications in teaching services, campus services, and campus management is also required. Thirdly, it is necessary to achieve data sharing of university reuse through mutual platform construction. What is more, we must consider hierarchical management and the implementation of intelligent applications as well as strengthening the top-level design, and start pilot study of the Smart Alliance Campus (a campus with a close connection to smart machines and software), protecting data privacy and improving information security at the same time. This also indicates the comprehensive governance of big data in education.

Big data technology is a new technology that has emerged in recent years and is closely integrated with peripheral enabling technologies such as cloud computing and artificial intelligence and is somewhat cutting-edge. The mining and analysis of huge amounts of data is an inevitable trend in the information age. It has become the consensus of society that whoever grasps the data will have the first chance for development. Therefore, it is necessary to use big data analysis as technical support for the long-term development of colleges and universities to have infrastructure construction. We must explore the construction of a new type of learning community that is interconnected, open, and shares high-quality teachers. We must also be committed to making big data analysis technology ubiquitous, popular, intelligent, and more adaptable to the increasingly open and shared modern universities.

Digital Technology Support in Science Laboratory Teaching

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In this study, we report our pilot findings about how the use of GenAI-empowered videos can help in enhancing the learning experience of students in science laboratory teaching. The use of Learning Analytics (LA) can provide valuable insights for us to learn more about students' learning patterns and performance, particularly during and after the COVID-19 pandemic era.

In our study, we tried to use the GenAI-assisted prepared laboratory class videos and Panopto (uRewind) video platform for our two disciplinary subjects: ABCT3622 Experimental Techniques in Chemistry and ABCT3625 Chromatographic Analysis Laboratory. Approximately 40% students agreed/strongly agreed that this approach can help them to learn.

Two disciplinary laboratory subjects (ABCT3622 and ABCT3625) were selected for this study in 2023-4 semester one. Approximately 70 students participated in this research through questionnaire surveys and focus group interviews. We incorporated the GenAI-empowered videos and Panopto (uRewind) to support the flipped classroom learning. The effectiveness of the study was evaluated through questionnaires and focus group interviews to gauge students' perceptions.

We have received students' feedback, and comments indicated their preference for this approach that can facilitate their laboratory study. From students' e-survey feedback, around 40% showed that they agreed or strongly agreed (4/5 out of 5-point scale) that the GenAI-empowered videos can help them to understand the subject matter. Further research is needed to confirm these initial findings and to explore the implications for science education in a post-pandemic context.

Our findings imply that our approach can provide better learning support for our students. Further investigation is required to confirm the findings.

DX and Job-Hunting: Five Presentation Types to Bridge the Analogue-Digital Divide

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Digital Transformation (DX) is a part of many professions now and is essentially unavoidable for students wishing to find full-time office work upon graduation. This paper aims to demonstrate what universities can do to maximize their students' chances of successfully finding work at a time when hiring practices are changing due to the influence of DX. Specifically, we discuss how university-level presentation skills connect to interview performance, for both in-person and online interview formats.

This paper describes curricular innovations made in response to the way employers are currently combining analogue and digital approaches when selecting future employees, as reported by recent job-seekers. Primarily, these changes are comprised of a switch from one analogue and one digitally supported presentation format to two analogue and three new fully digital presentation formats. The revised analogue presentation types are clipboard presentations and poster carousel presentations. The digital formats are recorded self-introductions, L-shaped videos, and over-the-shoulder presentations. We provide examples of each and show their applicability to job-hunting. The paper then shows how the 3V framework, which focuses on students' verbal, vocal, and visual output, is a mechanism that can tie together all of their work relating to presentations, internship performance, and job interview success.

While acknowledging that online interviewing can save them time and money, students report struggling with the increased demands DX places on them. Specific issues students faced regarding digital formats included optimizing device settings, understanding how a room usually used for study may require reconfiguring for online interviews, and reducing potential gaps in quality between what they see and hear on their devices in comparison to what the company interviewing them experiences. In-person presentation skills remain vitally important and, in conjunction with the 3V framework, help to form a base for digital presentation skill improvement.

The 3V framework and the five types of presentation described in this paper enable instructors to assist their students in preparing for internships, job-hunting, and a smooth transition to the workforce. We recommend starting with analogue presentations to build confidence and develop a shared understanding of the 3Vs, and then moving on to recorded self-introductions before having students attempt L-shaped or over-the-shoulder presentations.

A Bibliometric Analysis of the Integration of Web-based Learning in English as a Foreign Language Education

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Web-based learning has assumed a significant role in English as a Foreign Language (EFL) education, as it offers students abundant opportunities to improve their English knowledge and skills. It now incorporates many facets into its application as technological advancement expands its potentiality. This study aims to present a quantitative analysis of the literature on the integration of web-based learning in EFL education and explore the research trends in the past decades.

Using data from the Web of Science database, a bibliometric methodology was adopted by reviewing 821 publications and examining the yearly publication, most-cited authors, most productive authors, countries, and publishers. The WOS in-site functions such as "Refine" and "Analyze" were used to filter out irrelevant articles and examine the key parameters. Further, a cluster analysis was conducted by using VOSviewer software to see the most recurrent keywords in this field.

The findings demonstrate a significant increase in research productivity from 2000 to 2018 with a minor setback onwards, the most productive authors from countries or regions in Asia and the People's Republic of China being the leading country in publications in this domain. The top three publishers were IEEE, Atlantis Press, and Springer Nature. A visualization network graph is generated using VOSviewer to display some prominent trending themes, including "blended learning", "E-learning", "CALL", "autonomous learning", and "MOOC".

This paper contributes by providing an overview of literature published from 2000 to 2023, updating the existing body of knowledge in the field of EFL education, and revealing the current research trends in this field. The use of VOSviewer software offers a nuanced understanding of the interconnectedness within the Web-based learning in EFL education research landscape. In addition, Microsoft Excel is employed to create tables illustrating annual publications, author contributions, and journal rankings, contributing to a comprehensive and detailed analysis. The results show areas of focus in this field and indicate possible future research directions for EFL teachers and teacher education administrators.

The Relationship between Self-regulated Learning Strategies and Academic Achievement in Online Learning Environment: A Systematic Review

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Due to the outbreak of the epidemic in recent years, the education mode of a large number of schools has changed from the traditional face-to-face education to online education. Due to the particularity of online education, it emphasizes that students have a high degree of autonomy and control. As a result, self-regulated learning (SLR) has become a key factor for the success of online teaching. At present, many studies have focused on the relationship between self-regulated learning strategies and academic achievement in online teaching, but the community still holds different views on the relationship between the two. It is necessary to investigate if there is any association between SRL strategies and academic achievement in online learning environment.

On the basis of existing research, this paper uses the systematic literature review method to explore the relationship between SLR strategies and academic achievement in an online environment, and evaluates 1,480 articles through the process of identification, screening, eligibility and inclusion. Seven articles with the highest correlation were selected for detailed analysis.

The results show that Pintrich's SRL strategy classification is mostly adopted by researchers in online environment. And they also use the Motivated Strategies for Learning Questionnaire (MSLQ) to measure SLR. In these studies, research groups are mostly concentrated at the university level. There are few studies at the level of primary and secondary schools and enterprises. Furthermore, most of the SRL strategies, such as seeking help, surface cognitive, and peer learning, are not correlated with academic achievement, and even if they are, the correlation is weak. Metacognitive strategy, effort regulation, time, and study environment are significantly positively correlated with academic achievement. Secondly, there is no correlation between simple cognitive strategies and academic achievement, but there is a positive correlation between deep cognitive strategies and academic achievement.

Through a systematic analysis of the current literature, this study provides a reference for clarifying the relationship between SRL strategies and academic achievement.

An Attempt at Designing and Implementing Environmental Education

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There are many related fields in environmental studies. It is crucial for university students as consumers to consider and tackle the environment multi-dimensionally. Relevant knowledge is required. Accordingly, an introduction to environmental studies is currently being conducted at Kobe Women's University. The subject aims to raise environmental awareness and knowledge in daily life. A learning design, including a flipped classroom, was made. This paper examines the effectiveness of environmental education at universities in Japan.

In the last two years, flipped classrooms have been used. The flipped classroom is dialogic and involves proactive learning. Two ways of communication are established between the lecturer and the students. Students learn the concepts, such as the tragedy of the commons, outside of a classroom. In the classroom, the lecturer asks relevant questions. Consequently, students' deeper understanding of the subject can be expected. They are likely to develop attitudes and tackle real environmental issues, such as littering in tourist sites. Environmental issues are broad, from the global to the local level. After a flipped classroom, students learn about global issues. It is not easy for them to understand the link between global and local issues; that is, daily life affects the environment at the global level. In the learning design, two phases, global and local environmental topics, are learned. After that, attempts are made. During the implementation of the class, questionnaires are given at three times to evaluate students' attitudes to and awareness of environmental issues.

There are many environmental issues in the world. It is not easy to solve these problems. Through the learning process, students gain fundamental ways of approaching and solving/mitigating real environmental issues from the concepts. Once students really learn the concepts, applying them to other environmental issues is not difficult; that is, a flipped classroom can be helpful. The results of three surveys show the shallow learning approach has improved, but the deep learning approach has changed little. It is hard to evaluate the effective learning design for the class. The student could make connections between some environmental problems with environmental concepts.

A learning design, including flipped classrooms, in environmental education was proposed and implemented. After the class, students are able to tackle familiar issues around them. That is, students apply the concepts to real environmental issues between the global and local levels. These processes lead to changes in environmental attitudes and pro-environmental behaviour. The teaching approach should be reviewed to improve learning effectiveness from motivation.

Integrating Aging Education into Designing an Elderly-Friendly Mobile Application: Action Research of High School Project-based Curriculum

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The global proportion of the older adult population continues to grow rapidly, and the traditional concept of "respecting elders" is gradually diminishing in modern society, leading to generational gaps and even age discrimination. Therefore, promoting mutual understanding between different generations is an important issue in current society. The purpose of this study is to intervene in aging education courses for high school students and enable them to apply their knowledge in designing age-friendly mobile applications, thereby transforming modern students' knowledge and attitudes towards aging and promoting intergenerational integration for coexistence.

The researcher adopted an action research method and conducted mixed quantitative and qualitative analysis to transform high school students' age discrimination attitudes through course interventions. The selection of research subjects is based on the researcher's introduction of the significance of this course to the older adult population in the classroom, where four first-year high school students who are interested in learning more about the older population are willing to take the course; they also hope to design age-friendly applications. The researcher intervened with a 12-week course held four times (total of 8 hours), covering topics such as understanding aging, the unique characteristics of the older population, psychological traits, and designing age-friendly applications. In the course design, students are also encouraged to deepen their understanding and communication with different generations by asking questions about the preferred applications of older adults.

The researcher conducted research using self-designed questionnaires and written interview outlines, conducting tests before and after the course to collect research data and analyzing them through a mixed qualitative and quantitative approach. The research tools are divided into two categories: quantitative questionnaires, including the "High School Student Aging Knowledge Questionnaire" and the "High School Student Aging Attitude Scale"; and qualitative interview outlines, including structured written interview outlines on aging concepts and course experiences. Interview questions include: (a) What do you think aging looks like? (b) Please describe the characteristics and behaviours of the "elderly" you encounter in your life. (c) What impressed you most after taking this course? The researcher conducted content analysis to compare changes in the number of vocabulary properties describing aging perspectives between pre-tests and post-tests, and analyzed perspectives using a continuous comparison method.

Exploring Learner Interactions in the Virtual Classroom Setting

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(Cont'd)

The results of high school students' pre- and post-tests in aging education courses include both quantitative and qualitative aspects. (a) The correct answer rate of high school students in the aging knowledge questionnaire increased to 66.6%. (b) High school students' attitudes towards aging improved positively by 60%. (c) When high school students described aging perspectives, a total of 34 negative terms were reduced, and negative terms such as "wrinkles" and "dislike of learning" were no longer used. (d) The most impressive aspect of the aging education course for high school students was the intellectual development of older adults. (e) Through interviews on the preferences of older adults in using mobile applications, high school students gained a deeper understanding of these adults.

Through intervention in aging education courses, students can gain a better understanding of the older adult population; and through course design to promote communication between different generations, younger generations gradually empathize with older adults, thereby eliminating age discrimination in attitudes. In conclusion, students' knowledge and attitudes towards aging gradually change positively, but the total duration of the course intervention in this study is only 8 hours, limiting the extent of improvement in aging knowledge. It is recommended that schools at all levels or government departments attach importance to the positive impact of aging education, integrate aging education into regular formal courses, and allocate longer duration to foster genuine understanding and empathy towards older adults across generations, eliminating discrimination and coexisting harmoniously.

The COVID-19 pandemic forced educational institutions to transform their teaching pedagogy from traditional face to face to a virtual setting. Afterwards, education institutions were increasingly exploring the pros and cons of virtual classes to design learner-interaction-enhanced learning. Hence, the purposes of this study are to understand the nature of learner interactions and explore their perceptions of the experiences in virtual classroom settings.

The study adopted a qualitative research design. A semi-structured, focus group interview was conducted. The eight respondents were purposefully selected. They were final-year undergraduates from the Faculty of Management Studies at the Open University of Sri Lanka who experienced learning in both onsite and virtual classrooms. Thematic analysis was used to analyze the findings.

Three main themes were identified: the nature of learner interactions, the pros and cons of online interactions, and students' commitment to online interactions. The nature of learner interactions was of four types: learner-teacher, learner-learner, learner-content, and learner-media. The learners prefer to interact with teachers physically rather than virtually. However, learners mostly prefer to learn from teachers attached to the central campus and would like to engage even virtually. Further, learners were positive about virtual classes due to flexibility in learning, ability to revisit recordings, having no transportation cost, and ability to balance work–family life. They pointed out that difficulty in resolving complex subject-related issues was the main disadvantage. The study further emphasized that self-commitment is essential for successful virtual learning.

The study provides valuable insights into the way learners perceive and experience their interactions. The study underlines the importance of designing virtual learning environments that promote four types of learner interactions. Further, the study implies the importance of integrating multiple media such as Zoom, LMS, and WhatsApp to interact with digital content. The challenge of conducting complex subjects in virtual mode can be overcome by offering them in blended mode.

Investigate the Impact of Self-Efficacy and Intention on Student Utilization of Hybrid Learning Solutions through the Lens of UTAUT

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The primary purpose of this study is to examine the way performance expectancy, effort expectancy, social influence, and facilitating conditions influence students' self-efficacy and their intentions to engage with the ClassIn platform. This exploration is crucial for effectively implementing and strategically developing hybrid learning solutions, the deployment of ClassIn informed by the widely recognized principles of Technological Pedagogical Content Knowledge (TPACK). The study aims to enhance educational outcomes through optimized technology integration and to provide actionable insights for fostering greater student engagement and improving learning environments.

The pilot study adopted an exploratory, quantitative approach with 58 undergraduate students who are active users of ClassIn at the research site, ensuring they have relevant experience with the system. A structured survey grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) evaluated the impact that constructs such as performance expectancy, effort expectancy, social influence, and facilitating conditions had on self-efficacy. Participants rated these on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). Data analysis was conducted using SmartPLS and Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the proposed causal relationships.

The analysis indicates that while performance expectancy does not significantly affect self-efficacy, effort expectancy, social influence, and facilitating conditions do enhance it. Furthermore, a positive correlation between self-efficacy and the intention to use ClassIn substantiates the critical role of self-efficacy in the acceptance and continued use of technology in education.

This study contributes to the academic literature by analyzing how core UTAUT constructs—performance expectancy, effort expectancy, social influence, and facilitating conditions—affect self-efficacy and technology use in hybrid learning environments. It highlights ClassIn's potential to improve university learning experiences and calls for further research on its wider implementation and effectiveness. The study also suggests investigating additional factors that could influence technology integration in education, aiming to develop a comprehensive framework for deploying and optimizing educational technologies in dynamic academic settings.

Are Peer Assessments Reliable? An Investigation of Chinese University Students' Views

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Although peer assessment has been widely used at the university level and has demonstrated various positive learning outcomes, reliability remains debatable. Students are the main stakeholders of university education. Therefore, it is crucial for their perceptions of peer assessment to be heard and understood. This study investigated the way Chinese TESOL major students perceived peer assessment in comparison to teacher assessment, and how they suggested improving the implementation of peer assessment.

To comprehensively elicit their views on peer assessment, this study conducted semi-structured interviews with a sample of six undergraduate students who were in their third year of study. The students' major was within the education discipline, suggesting they have had a certain amount of background knowledge of the theories of educational evaluations. This is a unique view from that of previous studies, most of which focused on general college students rather than students from a specific major, let alone an education major. The interview questions were open-ended and were divided into two sections, the first section about their personal feelings and the second section about their suggestions for improving this evaluation method. Students' responses were then thematically analyzed with a minimum of 85% intercoder reliability.

The findings reveal that, compared with teacher assessment, students were worried about the validity of peer assessment, which might be influenced by potential bias from personal relationships and lack of assessment expertise. However, students also acknowledged the advantages of peer assessment, such as fostering learning autonomy. To achieve higher credibility of peer assessment, suggestions such as assurance of anonymity, provision of clear evaluation criteria, and teacher training sessions were the most significant points from students.

This study draws on the unique perspectives of education-major students, combining their theoretical knowledge and practical experience, to provide valuable insights into improving peer assessment. It offers realistic references and suggestions for developing an effective hands-on approach to implementing peer assessment in higher education contexts, particularly in China, where peer assessment has not yet been widely used in higher education.

Exploring Learning Support for Finance Subjects: A Pilot Study on the Scaffolded Approach and Students' Confidence

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Learning difficulty in mathematics has captured educators' attention in recent years. Apart from mathematics subjects, some other subjects such as science and finance require students to acquire and apply mathematical knowledge and skills. Cull and Davis (2012) studied students' perception of the use of a scaffolded approach in learning financial planning. Despite the fact that the existing literature leads to more understanding of pedagogy for learning mathematics or finance subjects, different finance courses may have different types of course content, assignments and learning modes. Hence, more studies are required to study learning support for tertiary students. Further research may shed light on the influence of students' motivation and confidence in their learning process. This study focuses on learning difficulties in a finance subject in tertiary education and aims to achieve two main objectives. First, this research will explore students' perception of the scaffolding effects of the use of learning supports for learning a finance subject. Second, this study intends to explore ways of enhancing students' motivation and confidence during the process of their learning.

An exploratory study was conducted in 2023–24. Semi-structured interviews with the aid of a questionnaire were used to collect feedback from three students of tertiary education on voluntary basis as a pilot study. Participants were asked to indicate their perception on questionnaire statements on a 7-point Likert scale. Then, they were asked to share their views accordingly on some open-ended questions.

Preliminary results show that participants perceived the use of drawing and supplementary guided worksheets as helpful supports for their learning. In addition, students' feedback provided evidence that there were scaffolding effects from the learning support provided, and participants had more confidence to attempt questions at a later stage. Moreover, use of real-life or daily-life examples may make their learning more interesting. Furthermore, the sharing of learning patterns and journeys may help increase students' perseverance and confidence during the learning process.

A limited amount of feedback was collected at this stage; therefore, more information and studies are needed to have more understanding of the use of learning support. In spite of the limitations of this pilot study, the preliminary findings call for further exploration and fine-tuning of the use of learning support in response to the courses of different types.

Grit or Enjoyment? Exploring Predictors of Willingness to Communicate in Chinese EMI Classrooms

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Extensive research has been conducted on the intrapersonal characteristics and environmental factors involved in second language (L2) learning. However, L2 grit, a personality trait reflecting the long-term commitment to L2 learning, has been underexplored. Positive emotions, particularly enjoyment, are crucial for fostering learners' resilience and personal resources, directly influencing motivation and engagement in language learning. This study addresses this gap by examining the combined effect of L2 grit and foreign language enjoyment (FLE) on the willingness to communicate (WTC) in L2 among university students in an English-medium-instruction (EMI) setting.

A questionnaire survey was implemented to investigate the relationship between the two psychological factors and learners' WTC, as well as how these factors predict WTC. The questionnaire comprised four parts: 1) L2 Grit Scale, 2) FLE Scale, 3) WTC Scale, and 4) Personal Information. Data were collected from 50 junior students in an English-major programme at an EMI university in Guangdong Province, China. These students generally exhibit strong intrinsic motivation for language learning, rendering their experiences with FLE and L2 grit particularly relevant. Pearson correlation and multiple regression analyses were used to analyze the data.

This study found positive and significant relationships between L2 grit, FLE, and L2 WTC. Students' L2 grit was moderately correlated with WTC (r = .499), and FLE demonstrated a strong positive correlation (r = .819). Regarding the predictive role of these factors, the regression analysis revealed that L2 grit did not serve as a predictive factor for students' L2 WTC, whereas FLE was a significant positive predictor of WTC (β = .848, p < .01), explaining 67.2% of the variance in students' willingness to communicate.

The finding sheds light on FLE, rather than L2 grit, which emerged as a unique predictor of WTC among Chinese EFL learners in an EMI setting. This suggests that fostering positive emotions in the learning process may be more essential for promoting communication in the classroom than previously thought. To align with the importance of FLE for L2 WTC, instructors can create engaging learning environments by incorporating interactive activities, authentic materials, and multimedia resources. Additionally, teaching approaches like Communicative Language Teaching (CLT) and Task-based Language Teaching (TBLT) can be utilized to construct a supportive and stress-free classroom environment that encourages students' willingness to speak and engage in meaningful communication.

Curriculum Design for Computer Programming Tailored for Mechanical Engineering Students

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The Matlab-based computer programming is a core component of the module Programming, Professional and Laboratory Skills for Year 2 undergraduates majoring in mechanical engineering at University of Nottingham Ningbo China. The study aims to discuss the delivery of the module which has undergone substantial transformation to better serve the educational needs and improve the learning experience of the students in the mechanical engineering programme.

The module emphasizes the development of algorithmic problem-solving skills using Matlab. A major innovation in the course is the incorporation of 4 laboratory sessions of a buggy project which enables students to learn how to interface hardware with software using Raspberry Pi-based controller with bread board, general purpose input/output (GPIO) pins, motor control board, and distance detection sensor as experimental platform. The students take the final on-site testing to valuate the buggy's performance. Matlab Grader has also been integrated into the teaching and assessment to further enhance students' understanding of important topics such as functions and advanced input/out commands.

We conducted an anonymous survey to collect student feedback regarding the renovations during the 2019–23 academic years. It shows continuous improvement. Both the survey participation rate and the students' satisfaction rate have been significantly increased after the new module specification was implemented in our campus. Over 60% of the students commented in the survey in 2023 that they liked working in groups on the microcontroller exercises, and that they felt they accomplished and learned more in groups rather than working alone.

With regard to the four weeks experiments with the microcontroller Raspberry Pi, the students have their hands full negotiating the entire scope of work that we envisioned. They have accumulated real experience to deal with Matlab in real life, and have been exposed to hands-on experience. We plan to continue and expand the approach of having the students work in groups for other assignments. The renovations made in the module make a difference to the level of preparedness for embedded programming and to the level of interest in mechatronics.

Exploring Student Perspectives: Synchronous Learning Environment in the University of the Philippines Open University Bachelor of Arts in Multimedia Studies Program

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This study investigates the perceptions of open and distance eLearning (ODeL) undergraduate students regarding the benefits and challenges associated with a synchronous learning environment. The primary purpose is to gain insights into students' experiences engaged in synchronous learning within the context of open and distance education.

Employing a case study framework, this study integrated a qualitative data collection technique. Both surveys and focused group discussions were utilized to ensure a holistic data-gathering process. Participants were undergraduate students enrolled in two courses within the Bachelor of Arts in Multimedia Studies Program. Their insights were solicited during self-reflection exercises, one of the course requirements. Supplementary data were sourced from the Student Evaluation of Teachers. Thematic analysis was employed to discern significant trends and narratives, facilitating a nuanced comprehension of student perspectives. This systematic approach enriched the study's findings by unraveling intricate insights.

The findings of this study shed light on the multifaceted nature of synchronous learning environments in the realm of ODeL. Students' perceptions were diverse, revealing both the benefits and challenges of synchronous learning. The benefits included real-time interaction, enhanced engagement, teamwork and collaboration, a sense of community, and enhanced educational outcomes. The challenges encompassed limited flexibility/inclusivity, time zone disparities, and health-related risks.

Although numerous studies have explored online learning, this study narrows its focus to the synchronous dimension, offering a distinctive perspective on the benefits and challenges within this specific setting. The value of this study lies in its potential to inform educational practitioners, institutions, and policymakers about the intricacies of synchronous learning for ODeL undergraduate students. By identifying both the positive aspects and challenges perceived by students, educators and policymakers can use these findings to better meet the needs of learners and shape the guidelines that facilitate optimal synchronous learning experiences in the context of ODeL.

Learning by Doing: Why Project-Based Learning Proves to Be an Effective Method for Developing Self-regulation and Other Emotional Competencies in Gen Z Students

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This research paper aims to analyze a project-based learning method and its positive effects on building emotional competencies in Gen Z students. In the initial part, the paper outlines project-based learning as a long-established teaching practice, whose origins can be traced to antiquity. The paper then narrows its focus onto a method of project-based learning occurring outside of the classroom settings, the one adopting the form of community service projects. At its core, the paper concentrates on the effects of community service projects on the development of emotional competencies in project participants, with an added focus on self-regulation, motivation, and social skills in leadership and conflict management.

This quantitative research paper uses a descriptive research design, centered on a survey developed in line with the related literature. The research data was collected through a self-administered questionnaire, delivered in paper-and-pen format in November and December 2023. In total, 221 full-time university students, aged 17 to 20, participated in the survey.

Based on the findings, the paper contends that community service projects not only provide Gen Z students with ample opportunities for social and emotional learning, but more crucially, project implementation proves to have positive effects on students' emotional competencies, which include self-regulation, motivation, leadership, and conflict management.

In the conclusion, the paper argues that project-based learning is an effective teaching method that allows project participants to acknowledge and cultivate feelings about themselves, their peers, or the communities they serve. When considering its maximum potential, project-based learning can also be viewed as a vital tool in combating the social and emotional deficiencies that may prevent members of this recently emerged demographic cohort from realizing their full potential.

Investigating Chinese Postgraduate Students' Perceptions of the Effectiveness of a Pre-sessional EAP Programme in a Sino-British EMI University in Mainland China

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This study aimed to investigate Chinese students' perceptions of the effectiveness of an English for Academic Purposes (EAP) pre-sessional programme (PSP) in a Sino-British university in Mainland China. It explored their perceptions of learning experiences regarding teachers' instruction, course materials, assessment methods, academic tasks and teacher-student relationships, as well as students' perceived effect of the PSP on their academic performance including disciplinary writing, speaking, reading, and listening in the subsequent master's degree programme study.

Qualitative semi-structured interviews with a sample of 13 PSP students were utilized to fit in with the exploratory and interpretative nature of this research. The conceptual framework employed in structuring the interview questions encompasses key components including the defined purpose of the interviews, identified thematic areas related to PSP effectiveness, types of questions utilized (open-ended), sequential arrangement of questions, probing techniques employed for deeper exploration, and measures taken to mitigate potential biases.

The results of this study demonstrate that the participants perceived the PSP's teaching approaches and assessment methods as effective in improving their linguistic and academic skills, cultivating them as strategic, autonomous, self-regulated, and independent learners, and the PSP's academic convention tasks as effective in helping them adapt to the new academic and cultural community. However, the PSP's course material content and topics were not effective in maintaining their learning motivation and classroom engagement. Furthermore, the results demonstrated that the participants considered the PSP-learned generic academic strategies and techniques as being effective to improve their performance in academic reading and researching, academic listening and note-taking, individual presentation and collaborative discussion in the postgraduate studies, but the lack of instruction in discipline-specific writing genres and terminologies undermines the effectiveness of PSP in promoting their disciplinary writing assignment results.

Several pedagogical implications based on students' perceptions were generated to incorporate pedagogical approaches that align with the principles of open and innovative education, including subject-specific writing assignments and vocabulary instruction, collaborative learning materials, and process-based approaches, to contribute to the PSP effectiveness offered by EMI universities in Mainland China.

Action Research on Promoting Deep Learning through Project-Based Learning from the Perspective of Embodied Cognition

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To adapt to the new requirements for Chinese language education in the contemporary era, the Ministry of Education advocates for the adoption of diverse teaching methods in classrooms. Among them, project-based learning, which emphasizes the comprehensive development of students' moral, intellectual, physical, aesthetic, and labour skills, aligns with educational ideologies and has gained popularity among teachers. However, despite the emergence and promotion of this novel teaching approach, which has improved learning efficiency and teaching outcomes to a certain extent, doubts remain regarding whether it brings substantial changes to students. Issues such as proceduralized projects and superficial learning are still prevalent. Based on clarifying the inherent logic of embodied cognition theory, project-based learning, and deep learning, this study aims to construct a project-based learning model from the perspective of embodied cognition and propose methods for conducting project-based learning activities. By applying these methods in educational practice, the study aims to address issues in traditional writing instruction, stimulate students' interest in writing, enhance their classroom participation and problem-solving abilities, and ultimately promote deep learning.

Action research serves as the primary research method in this study. The researcher actively participated in three rounds of iterative improvements, emphasizing collaboration with teachers as agents of change. The entire research process was jointly conducted by the researchers and participating teachers. Additionally, classroom observations, interviews, and questionnaires were utilized.

Through the analysis of teaching plans and interviews, issues in the teaching design phase were identified: 1) teachers' instructional beliefs have not yet transformed; 2) teaching objectives are limited to the classroom itself, neglecting the cultivation of students' subsequent abilities; and 3) in actual teaching processes, teachers' approaches to teaching writing are inflexible and fail to adapt to varying content, often resorting to fixed templates regardless of the writing material. Classroom observations and interviews with teachers and students revealed problems in the teaching implementation phase: 1) students struggle to maintain high levels of engagement; 2) significant disparities exist in students' writing proficiency; and 3) students tend to deviate from the topic during discussion. Embodied cognition theory provides theoretical support for project-based learning, enhancing the design and injecting new theoretical vitality, serving as a new fulcrum for designing project-based learning activities.

This study attempts to construct a project-based learning model from the perspective of embodied cognition and iteratively optimizes it through practice, validating the effectiveness in promoting deep learning. This not only enriches the research outcomes on embodied cognition theory and project-based learning but also facilitates teachers in independently conducting project-based learning.

Do 21st-Century Skills Affect Student Experience and Achievement in Open Flexible Distance Learning Settings?

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Universitas Terbuka

This study focused on exploring the impact of 21st-century skills on student experiences and achievements within the context of open flexible distance learning (OFDL). This inquiry aimed to investigate how the acquisition and utilization of 21st-century skills influenced students' learning experiences and their overall achievements. This objective is related to the four questions in the OFDL environment: (1) How did the acquisition and utilization of 21st-century skills affect student engagement and motivation? (2) What challenges do students face in developing and applying 21st-century skills? (3) What teaching and learning strategies can be employed to foster the development of 21st-century skills effectively? (4) What are the implications of 21st-century skills for future employability and lifelong learning in the rapidly changing digital landscape?

Methodically, this inquiry presented a mixed-method exploratory study. It essentially investigated the relationship between 21st-century skills and student experiences and achievements in OFDL settings. Through focus group discussions series and a survey, qualitative and quantitative data were systematically gathered by involving OFDL practitioners and students respectively. The study was conducted at Universitas Terbuka. In the qualitative procedure, the study involved six main variables. They were quantitatively then categorized as independent, mediating, and dependent variables. The study then examines statistically the six variables: three independent variables (foundational literacies, core competencies, and character qualities), with a mediating variable (21st-century great human beings), and two dependent variables (being lifelong learners and responsible global citizens).

In this approach, the study hypothetically identified the impact of those variables on students' outcomes and their development as active participants in a digital and global society. Through an interim comprehensive analysis in the preliminary attempt of qualitative and quantitative approaches, this study provisionally showed that lifelong learners and responsible global citizens in OFDL settings were influenced by: (1) Foundational literacies, (2) Core competencies, and (3) Character qualities. They were comparatively mediated by a 21st-century great human beings variable. Correspondingly, the results conditionally suggested that students predominantly were able to acquire and adapt the implications of 21st-century skills for their future employability through their experiences within and from the OFDL systems.

The uniqueness of this inquiry continued in addressing identified limitations in pursuing relevant directions for future inquiry. Researchers can then further enrich their understanding of the complex relationships between foundational literacies, core competencies, character qualities, and the cultivation of lifelong learners and responsible global citizens in OFDL settings.

Cultural Connectivity and the Teaching of Malay for Business

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The Malay language is predominantly used in the countries surrounding Singapore and is the national language of the country. However, the younger generations of Singaporeans who are non-Malay do not generally have any competence in the language although it is a language they hear spoken around them in Singapore and when they travel to neighbouring countries. Malay and its variant Bahasa Indonesia has a speaker base of over 350 million in Southeast Asia, but its importance and spread in Singapore has been in decline since the 1980s as Singapore rapidly modernized. This paper will give an insight into how Malay is being promoted to a non-Malay speaking audience in multilingual and multicultural Singapore.

This paper details the development consideration and theoretical underpinnings adopted in the formulation of three proficiency courses in the Malay Language. The courses are designed for working adults who are mainly students of the university and are keen to acquire basic, intermediate and advanced Malay proficiency. It is an attempt to teach the Malay language for the workplace to Singaporeans with very little or no Malay competence for a professional posting to Malay-speaking countries like Malaysia and Brunei.

This paper will detail how language and culture are intertwined in the courses to socialize the students to Malay cultural sensitivities and concepts. The lessons have a two-pronged approach of not just language proficiency but to help the non-Malay speaking students connect with their Malay-speaking audience.

Each course is developed over 30 lessons over 12 weeks and has a novel way of introducing and improving learners' ability in the Malay language within a business context. In addition, each of the 12 weeks of online lessons provides cultural instruction and training to a specific area of cultural competence in Malay. Taken in its entirety, students are oriented to Malay politeness and the importance of form and function in language in a business setting. Students are ultimately trained to have a high degree of language awareness and self-directed learning of the Malay language, as the online learning pedagogy leverages on social media and current advances in interconnectivity.

Collaborating through Artifacts for Synergy: A Case Study of KIST in Taiwan

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This study aims to explore how a school alliance of small rural schools can achieve synergy through collaboration while pursuing the goals of consistency and differentiation. In the specific social context of Taiwan, where a declining birthrate and widening gap between urban and rural areas are prevalent, the problem of rural education is becoming increasingly severe. The government's response, primarily in the form of resource subsidies, has yielded limited results. In light of this, Taiwan's Chengzhi Education Foundation established the KIPP (Knowledge Is Power Program) Inspired School in Taiwan (KIST hereafter) School Alliance, which currently has 11 primary and secondary schools as members. As the KIST expands its influence, it grapples with a unique challenge to balance 'consistency' and 'differentiation'. KIST schools are spread across various counties and cities in Taiwan, each with its own unique composition of teachers and students. The Chengzhi Foundation must coordinate and connect resources and collaborate with the schools and teachers. The research questions focus on how the case achieves collaboration through the design and use of artifacts and what synergies are achieved.

This study employed a qualitative case study method and selected the local representative educational innovation KIST as a research case. Data collection methods include personal interviews, participant observation, documents and archives. The interviewees included foundation personnel, school administrators, and teachers. This study used an inductive approach based on grounded theory and a two-level data analysis method to analyze, extract, and converge the data.

This study found three types of artifacts that achieve three effects: 1. Artifacts: new teacher manuals, cloud teaching resources, and teaching strategy videos. Effects: provide knowledge modules—disassemble the excellent teaching structure learned from KIPP into moderate-sized document content, synchronize with the alliance teachers, and provide a simple framework for teachers to understand, absorb, and then imitate easily. 2. Artifacts: school supervision system, teacher support and guidance system, observation classes. Effects: dismantling steps and ability to push and stack—consider the fear that teachers may have when trying new things, accompany teachers to set stage goals, encourage teachers to internalize the teaching strategies in the template into daily mechanisms through deliberate practice, and dismantle them at the same time The detailed steps allow teachers to accumulate successful experiences and strengthen their confidence in practice gradually. 3.

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Artifacts: Afternoon tea with students, regular training courses based on stages and themes. Effects: teaching empowerment—help teachers enhance their capabilities according to their needs and enable them to communicate and dialogue with other members of the alliance with peace of mind. At the same time, the practical experience of alliance members in the teaching field is collected, and a knowledge database is established for reference by other members who encounter similar situations and difficulties in the future.

This study found that collaboration with artifacts is a useful approach to achieving consistency and differentiation in school alliances. This has implications for the management of school alliances, solving rural education problems, and the circulation and creation of practical teaching knowledge.

Online Learning Engagement: The Role of Individual Self-Efficacy and Institutional Academic Support, and the Mediating Role of Goal Orientation

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The present paper aims to examine the indirect impact of both individual and institutional factors on learning engagement through the mediating role of goal orientation. Moreover, the expectancies-values theory model (EVT model) is used to provide a holistic approach of identifying the antecedents of learning engagement.

Survey data were collected from 249 undergraduate students in one of the higher educational institutions in Hong Kong. Partial least squares structural equation modelling (PLS-SEM) by using SmartPLS 3.0 software was used to analyze the mediating model.

The results found that both individual (computer/internet self-efficacy and online communication self-efficacy) and institutional academic support had indirect relationships with behavioural, emotional, and cognitive engagement via goal orientations. These findings underscored the importance of nurturing domain-specific self-efficacy (i.e., computer/internet self-efficacy and online communication self-efficacy) and institutional support for online learning. Furthermore, this current study revealed the mediating role of goal orientations in these relationships, suggesting that the domain-specific self-efficacy and institutional support would lead to higher students' motivational orientations, which further affect the three facets of learning engagement.

The COVID-19 pandemic has forced all students to attend online lessons. However, current research has limited knowledge about online learning engagement and the application of the EVT model to the online learning environment. The current study offers a comprehensive understanding of the factors leading to different facets of online learning engagement and the mechanism through the lens of EVT model in online learning.

Virtual Dorm for Universities without Dormitories to Foster Student Sense of Belonging

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The primary objective of this project is to design and develop a virtual dormitory for first-year university students at a Hong Kong-based university that does not offer residential dormitories. The project highlights the significance of a sense of belonging for incoming university students and how a lack of engagement and socialization can lead to a diminished sense of belonging. The virtual dormitory aims to provide students various activities and experiences to help them feel more connected to their school and peers.

The platform was developed using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation), a systematic instructional design approach that ensures that all aspects of the learning experience are considered and addressed. The iterative process incorporated user testing in the evaluation phase for continuous improvement and refinement of the platform. A sample of students from a Hong Kong public university tested the virtual dorm prototype, providing feedback through a trial test and interview. This process assessed the prototype's effectiveness and gathered feedback for improvements. Most participants expressed satisfaction with the prototype, appreciating the real-time audio and video interaction with peers. However, some were concerned that it provided users with too much freedom and may require supervision. Further research is needed to understand the extent of a sense of belonging in students.

User test findings suggest the virtual dormitory can increase peer engagement and socialization. The virtual dormitory fosters a sense of community and belonging, leading to improved student satisfaction and academic performance by providing a platform for students to interact and participate in various activities. Furthermore, user testing found that the virtual dormitory can address some of the challenges faced by students who attend universities without dormitories, such as feelings of isolation and disconnection from the university community.

This project presents an innovative solution to address the needs of students who attend universities without dormitories. It highlights the potential benefits of using virtual platforms to enhance students' sense of belonging and engagement. The virtual dormitory not only provides space for students' socialization and engagement but also offers opportunities to participate in activities and experiences that can enhance their university experience. Future advancements imply that virtual platforms could address other university student challenges such as accessing academic resources and support services. Overall, this project contributes to the growing body of research on the use of technology in higher education and offers valuable insights for universities looking to enhance student engagement and satisfaction.

An Experimental Study on the Role of Data Story in an Online Coding Lesson

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The goal of this learning analytic study is to test whether presenting students with a data story (an attractive narrative and visualization of a data example; Lee, 2015) before getting into a coding lesson has an effect on students' experiences and outcomes when learning R programing using an interactive, open R programming lesson previously developed and tested (Li, 2023).

A total of 150 post-secondary students were recruited through Prolific. Participants completed a lesson on graphing plots using R codes. Participants were randomly assigned to either 1) start with a data story and then the coding lesson, or 2) start with the coding lesson and then move on to the data story section. The materials presented to the two groups were the same, except that the order of presentation was different. Qualtrics Survey was used to measure the time participants took on each page. The survey also includes self-report questions that assess students' sentiments throughout the lesson, and pre- and post-tests on various learning perceptions.

Results showed that both groups had a reduction in anxiety in learning R programming and an increase in perceived confidence. The two groups differed slightly on time spent in the lesson and sentiments but not on the assessment scores.

Previous studies showed that a data story was effective in teaching post-secondary data science (Lemieux & Chapman, 2020; Pfannkuch et al., 2010). This study took a step forward and applied the use of data story in an interactive OER tool that was developed using *learnr* and *shiny* web app. This study also used an experimental design to fine-tune an effective learning design for novices in data analysis. This study also brings a reflection of the effective characteristics of using data story in learning design.

Students' Personality Type: Does it Affect Relational Reasoning in Solving Mathematics Problems?

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Reasoning is part of many types of intelligence that are so useful and important that it must be owned and mastered by students, especially when studying mathematics. One type of reasoning that is considered necessary for human mental life is relational reasoning because it describes the essential human ability to think and learn. Many things affect a person's way of thinking and reasoning, one of which is personality type. Each student with a different personality type has a different way of reasoning. This study investigates differences in relational reasoning between extrovert and introvert personality types.

A comparative quantitative approach was used to determine the significant difference in relational reasoning ability of extrovert and introvert personality type students and analyze the quantitative difference in relational reasoning scores between the two personality groups. The research subjects were class VIII Watubangga 1 Junior High School students, totaling 111. The Myers-Briggs Type Indicator (MBTI) questionnaire analysed the subject's personality type. Based on the questionnaire, 50 students had extroverted personality types, and 61 had introverted personalities. Furthermore, data related to relational reasoning were taken using a test instrument. The test consisted of 10 mathematical problems in the form of essays.

Based on the results of the Independent Samples Test, the value of 'Equal variances assumed' is 0.97. This value is more significant than is 0.05. The significance value (sig. 2-tailed) obtained is 0.426, more significant than is 0.05. Thus, it can be concluded that personality type does not affect students' relational reasoning when solving mathematics problems. The researcher assumes that this happens because students with extroverted or introverted personality types in solving the problems given can answer the questions correctly even though they have different ways of working. Students with extroverted or introverted personality types fulfil the indicators of relational reasoning: constructing relationships between elements of known information, relationships between elements of known information and prior knowledge, building relationships based on mathematical symbols and properties/structures, and building relationships between real situations and formal mathematical situations.

The results of this study can contribute to teachers considering that relational reasoning can be developed for all students. Learning methods such as inquiry or Team Games Tournament (TGT) can support the development of relational reasoning skills. Nevertheless, this study has some

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limitations that need to be considered. Firstly, MBTI can be used to measure personality dimensions, but various factors, such as the psychological state of the participants when filling out the questionnaire, may affect the results. Finally, the study sample of 111 individuals may not be sufficient to generalize the findings to a larger population.

Effectiveness of an Online Compassion Training on Self-Compassion, Mindfulness, Stress Reduction, and Psychological Well-being in Nursing Students: A Randomized Controlled Trial

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This study aimed to evaluate the effectiveness of a newly developed online compassion training programme tailored for nursing students, focusing on enhancing mindfulness, self-compassion, stress reduction, and psychological well-being.

In this randomized controlled trial, 96 nursing students were recruited from a nursing school in Guangzhou, China, in October 2023. Participants were randomly assigned to either an experimental group or a wait-list control group. The intervention, an 8-week program delivered via WeChat, included modules on mindfulness, self-compassion, and compassion for others, structured in three progressive phases. Effectiveness was measured with validated Chinese versions of the Mindful Attention Awareness Scale, the Self-Compassion Scale – Short Form, the Perceived Stress Scale and the Psychological Well-Being Scale. Data collection was conducted at three distinct time points: baseline, immediately post-intervention, and two months post-intervention.

Out of the initial 96 participants, 90 nursing students (43 in the experimental group and 47 in the wait-list control group) were included in the final analysis. These students, aged between 19 and 21, were predominantly female and largely non-religious, demonstrating demographic homogeneity across groups. At baseline, no significant differences in outcome measures were observed between the groups. In the experimental group, a statistically significant improvement in mindfulness was observed over time compared to the control group. This group also exhibited significant increases in self-compassion both immediately after the intervention and at the two-month follow-up, demonstrating sustained benefits. Furthermore, they reported notable reductions in perceived stress levels immediately following the intervention, and significant improvements in psychological well-being were observed from baseline to the two-month follow-up. Conversely, the control group experienced a significant decrease in mindfulness from baseline to post-intervention, likely influenced by concurrent academic examinations. No significant changes in self-compassion, perceived stress, or psychological well-being were noted at any point during the study.

This study demonstrated that the newly developed online compassion training programme effectively enhanced mindfulness, self-compassion, stress reduction, and

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psychological well-being among nursing students. It underscores the potential utility of such interventions in health care education settings, especially in environments characterized by high academic and professional stress. Additionally, the study highlights the suitability of the WeChat platform for delivering these interventions, suggesting its value for ongoing use and further investigation in similar contexts.

Consumer Education Reform as Citizenship Education in Japan: Developing Classes Aimed at Developing Citizens Who Can Make Independent Decisions

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The purpose of this study is to examine past consumer education research in Japan in the context of citizenship education and to explore the future of consumer education. In Japan, the implementation of the Consumer Education Promotion Law in 2012 and the lowering of the age of adulthood in 2022 have increased the momentum for consumer education. In response, many consumer education practices and studies have been conducted. In this context, the purpose of this project is to explore future trends in consumer education for fostering consumer citizens by summarizing the current trends in consumer education.

The characteristics of the changes in consumer education since 2000 will be clarified from laws and prior research related to consumer education. Based on this, we will design a consumer education lesson and identify the results of the lesson by practising it with learners.

Since the 2000s, consumer education has shifted from educating so-called "smart consumers" to fostering citizens who contribute to the formation of a better society. In the lesson designed based on this shift, the learners who initially regarded their trading failures as a lack of knowledge, through the practice of Lesson 1, were able to make rational decisions based on their feelings in addition to their individual knowledge and social awareness by drawing on their own experiences of making mistakes. In addition, the practice of Lesson 2 enabled them to form their own opinions about the gap between the principles of consumer-related law and the actual situation of consumers.

The originality of this study is that it aims to nurture the shapers of society. As mentioned, consumer education to date has been aimed at the pursuit of a better life for the individual. Overcoming this challenge, this study was able to verify the effectiveness of this approach by designing and implementing lessons that nurture citizens who will contribute to the formation of a better society.

Creative Reasoning of Prospective Mathematics Teachers: Working Memory Capacity Affect of Problem Solving

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Creative reasoning has an important role in the innovation process and creates new ideas, helps see problems from different points of view, connects unexpected ideas, and produces innovative solutions. Being able to generate new ideas and innovative solutions requires the ability to connect information in our working memory flexibly by connecting information quickly so that we can explore various new solutions. This research aims to see how creative reasoning in problem solving is seen from differences in working memory capacity.

This research was designed with a systematic and structured methodology to look at creative reasoning. A mixed-methods approach (quantitative-qualitative) uses the impact of working memory capacity in solving problems and describes creative reasoning based on differences in working memory capacity. Participants consisted of 62 prospective mathematics teachers. Then one person with high working memory capacity and one person with low working memory capacity were selected for in-depth observation. Working memory capacity data were collected using the OSPAN Test instrument which contains a series of mathematical tasks in the form of mathematical operations. Creative reasoning data were collected using non-routine problem-solving instruments. The analysis steps include data presentation, data reduction and drawing conclusions. Data validation was carried out by time triangulation to see the consistency of the data information obtained.

The research results working memory capacity has a direct impact on the effectiveness of a person's creative reasoning, ability to assemble information quickly and flexibly and make associative relationships between concepts. Subjects with high working memory capacity have varied problem-solving strategies, are able to remember more information and manage it well as strategic support for more complex problems, to produce the right solution. Subjects with low working memory capacity give less varied answers, and the process of remembering and managing information is not good; there is still important information missing, which results in less than perfect solutions, decreased attention to control and lack of accuracy.

The research results can help teachers and instructors to design more effective learning strategies in increasing students' working memory capacity and creative reasoning abilities. Apart from that, evaluating students' creative reasoning abilities use tests or measuring instruments that are appropriate to working memory capacity. Learning materials that are intellectually challenging, involve problem solving, divergent thinking and provide opportunities to explore new ideas can be designed to support students' cognitive development.

How is Students' Proportional Reasoning Based on Rational Personality Type?

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Proportional reasoning is one of the most important competences developed at the high school level, as it is able to strengthen students' knowledge of basic mathematics and provide a further and more learning-centric mathematical foundation. Rationality refers to a type of personality in which the characteristics of the individual are varied, and one type of rational personality describes the individual in dealing with and solving mathematical problems. The rational personality type tends to think abstractly and introspectively, keeping what is thought in mind rather than presenting it to others. Also, it is superior at solving problems. This study is aimed at helping proportional reasoning students solve mathematical problems through in-depth interviews and then describing qualitatively.

This research belongs to the type of explorative exploration with a qualitative approach, so that the final results of the research are able to provide meaningful information to enhance the scope of science. The subjects were taken from 89 students of X Senior High School 1 Wundulako. One female subject of rational personality type and moderate mathematical ability was selected. Valid data are processed through the stages of data classification, data reduction, data presentation, data interpretation, and drawing conclusions.

Based on the results of research, rational subjects can solve mathematical problems, understand covariations, recognize differences between proportional and non-proportional relations in real-world contexts, understand ratios, and develop cross-time strategies. Even in the next step of work, there are calculation errors. There is a right answer to making a comparison of the initial step that is confused by errors on related issues.

Intentional and external factors can be further investigated. There is still no specific research that raises proportional reasoning and rational personality types. This research can be a valuable resource in the world of education to understand proportional reasoning skills and rational personality types.

Gamification for Welfare Literacy: Unveiling the Politics of Welfare Policy in Thailand

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This study addresses the significant lack of understanding of welfare studies within Thailand's compulsory education system, aiming to enhance awareness and knowledge among students and educators. It seeks to bridge the knowledge gap in welfare benefits, historical context, political intricacies, and labour rights, which even highly educated professionals in fields such as technology, economics, engineering, science, and media often lack.

To achieve this, gamification has been introduced into higher education with three primary objectives: 1) Facilitating a seamless connection between welfare and inequality perceptions among students; 2) Illuminating the power dynamics inherent in welfare policy; and 3) Creating an environment conducive to constructive discussions on welfare policy. The research involves the 'Welfare Revolution' game, where seven players assume distinct roles: 3 People, Capitalist, Government, Politicians, and Bureaucrats. Players navigate through seven welfare policy scenarios, negotiating resources to accomplish their mission. The methodology includes a comprehensive analytical framework, examining player interactions, resource allocations, and decision-making processes during game sessions. Data are gathered through observation, player feedback, and post-game discussions.

The study involves master's degree students in non-political sciences, political sciences students, and civil society representatives, ensuring diverse perspectives. Initial findings indicate that the gamification approach significantly enhances understanding of welfare concepts and policies. It fosters a deeper appreciation of the connection between welfare and inequality, elucidates the power dynamics within welfare policy, and promotes constructive discourse among participants.

This research provides valuable insights into the efficacy of gamification as an educational tool in enhancing welfare literacy. By fostering meaningful discourse on welfare policy, it offers a novel approach to addressing educational deficiencies in welfare studies. The findings have significant implications for curriculum development and pedagogical strategies within educational settings, suggesting that gamification can be a powerful tool for bridging knowledge gaps in complex societal issues.

The Effect of High-Intensity Interval Training on the Executive Function of Young Adults: A Systematic Review

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It is known that healthy executive functions (EFs), the core component of human cognitive composition, are vital in enhancing many aspects of fostering well-being, such as learning, goal-directed behaviours, and self-regulation, in young adults. EFs are also believed to be implicated in the decision-making process, particularly in risky situations. Hence, maintaining healthy EFs performance is of paramount importance for young nurse learners working in highly pressurized clinical environments. High-intensity interval training (HIIT) has been reported to be effective in promoting EFs. Existing research, be it experimental studies or systematic reviews, could only provide inconclusive findings and limited understanding to explain the effectiveness of HIIT to foster the EFs of young adults. A quantitative assessment of literature, i.e. systematic review with meta-analysis, is therefore conducted to synthesize answers for this issue.

Adopting the PRISMA checklist as a search strategy, four databases, PubMed, Web of Science, Scopus and CINAHL, are examined. 1) Randomized controlled studies 2) involving HIIT as interventions on 3) young healthy adult population were included in the review. Out of 209 sourced articles, 82 were found to be duplicated, and 98 were deemed not relevant, because 1) exercise intensities are not high enough, and 2) no task involving reaction time or response accuracy were thus omitted. Finalizing with the systematic filtering process, a set of 14 randomized controlled studies involving 473 adult participants is evaluated.

The EFs of 56.5% of the tasks under review are reported to be favourably affected by HIIT. For the EF subdomains, inhibitory control at 66.7%, cognitive flexibility 83.3% and working memory 20% are favourably affected. Determined by meta-analysis, the calculated effect size of EF is large, inhibitory control is medium, cognitive flexibility is small to medium and working memory is large.

The findings of the current review not only provide directionality and dimension of the effect of HIIT on EFs but also shed additional understanding of the blossoming benefits on the fostering of well-being brought by HIIT.

The Importance of Using Games & Online Teaching in Pain Education Program

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Chronic pain has significant physical and social impacts on older adults, particularly during the COVID-19 pandemic. A relatively lower educational level of the older population also poses challenges in managing chronic pain. This study examined the development of a Gamified Web-based Pain Management Program (GAP), a web tool developed to enhance learning of pain management education for older adults in an innovative approach.

This study was a pilot test which included quantitative and qualitative design. Four older adults were recruited as users to participate in developing GAP. The pre- and post-tests were used to evaluate the participants' brief pain inventory scores. The change in scores indicates the potential effectiveness of GAP. They also provided feedback on its usability and effectiveness for further development in interviews.

The findings suggested that GAP could be an effective way to deliver pain education among older adults. Participants reported decreased pain severity and pain interference after using GAP. They enjoyed the online learning mode, various games and activities in delivering pain education knowledge and exercise practices. The feedback from participants provided valuable insights into developing the content and interactive part of the gamification initiative.

The proposal of GAP unfolds its originality as a solution to the challenges of managing chronic pain in older adults. Also, the values of GAP are demonstrated through its potential to address the urgent need for innovative pain management strategies to withstand health care disruptions, such as the COVID-19 pandemic. The implications of this study are significant. It offers an adaptable approach to pain education that benefits older adults with different levels of literacy and access to traditional health care services

Exploring Factors Influencing Completion Rates in an Online Accounting Course during the Covid-19 Pandemic: The Case of Simplified Accounting for Entrepreneurs

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This research investigates factors that influence the completion rates of students in an online accounting course during the Covid-19 pandemic. The study focuses on the online course Simplified Accounting for Entrepreneurs offered by the University of Philippines Open University as a continuing education course. The purpose of the study is to explore the interplay between the learning engagement, quality of learning materials and activities, assessment of performance, and the availability of learner support services and how they influence the completion rate in the context of online education.

A quantitative approach is adopted utilizing data from a student evaluation survey form. Participants in the study were enrollees of Simplified Accounting for Entrepreneurs during the pandemic years. The key variables include completion rate, learning engagement, learning resources, assessment, and learner support services. Statistical tools such as descriptive statistics and correlation analysis are employed in data analysis to look for patterns and associations within the dataset.

The findings of this research underscore the significance of the availability of relevant and accessible learning materials and resources, appropriate assessment methods, and a supportive learning environment as crucial factors in active learner engagement. Students who actively engaged with the course content and participated in learning activities demonstrated higher completion rates.

This research provides a nuanced understanding of the dynamics influencing completion rates in an online accounting course. The implication of the findings extends beyond the specific course, offering valuable insights for the delivery and improvement of online accounting education in a broader context. The findings are particularly relevant to educators, instructional designers, and school administrators seeking to develop strategies that enhance the online learning experience for accounting students as well as learners in a continuing education program, particularly in disruptive events such as the Covid-19 pandemic.

Online Doctoral Degree as an International Trend during and after the COVID-19 Pandemic: Challenges and Experiences

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Internationally, there are two types of doctoral degree training systems, the American and the British system. The American doctoral training system requires learners to complete a series of coursework in a cohort, whereas the British system tends to complete a doctoral thesis as the only requirement. Under the American system, doctoral learners usually study their coursework as a cohort for two years as one of the preparations. Learners usually continue with their thesis afterwards. However, due to the COVID-19 pandemic, many universities have started to offer online-only doctoral degree programmes for students who cannot spend time on campus. Many American learners tend to receive their coursework training together with other classmates in order to exchange knowledge and ideas. During the online cohort, such interpersonal discussions can be missed. Based on this situation, the current study wants to understand the motivations for selecting such online doctoral programmes and the challenges during the online learning voyage.

Under the guidelines of the Social Cognitive Career and Motivation Theory and Self-Efficacy Theory as the theoretical frameworks with the purposive sampling strategy, up to four programs and up to 25 currently enrolled doctoral learners will be invited to join the focus group activities, remarkable item sharing, and member-checking interview sessions for qualitative data sharing.

As this is an ongoing project, the researchers will categorise up to five themes and 10 subthemes for this study. Based on some of the previous studies and the theoretical frameworks, potential themes can be (1) career development, (2) surrounding individuals and environments, and (3) personal considerations. The final themes and findings will be reported during the final stage of this study.

A Comprehensive Overview of the MOE e-Learning Accreditation Mechanism in Taiwan

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This study will contribute to (1) the sustainable development of online doctoral degree learners who want to achieve their doctoral degree as part-time learners, (2) university leaders who can develop online or blended-based doctoral degrees that can meet the needs for many part-time learners who cannot study on campus, and (3) curriculum and materials developers and designers who can create learning materials for students who may rely highly on online learning and technologically assisted materials for their advanced coursework and knowledge, particularly during and after the COVID-19 pandemic.

The twenty-first century is marked by the rise of the information society, witnessing a global surge in e-Learning initiatives. Taiwan's tertiary education institutions have progressively enhanced their digital learning environments in response to this trend. The Ministry of Education (MOE), acknowledging the transformative potential of digital education, not only encourages nationwide higher education institutions to seek accreditation for e-Learning programs and courses but has also accelerated the implementation of distance education in response to the pandemic. The MOE established the e-Learning certification mechanism nearly two decades ago, emphasizing its commitment to ensuring quality in digital education. Despite pandemic challenges, the number of accreditation applications has consistently grown, increasing from 47 cases in early 2021 to 85 in the subsequent period of 2023. The review and certification processes for e-Learning master's programmess and courses have become crucial for maintaining standards in digital education. The MOE aims to enhance the quality of e-Learning and promote its widespread adoption through an impartial review process. This paper provides an in-depth exploration of Taiwan's MOE e-Learning certification mechanism, covering the historical development, stringent evaluation criteria, the current landscape of accredited programmes and courses, a preliminary analysis of prevalent issues, and a forward-looking perspective on future prospects.

The Accreditation Centre for e-Learning (ACE), affiliated with the Open University of Taiwan, is authorized by the MOE to oversee the accreditation review process. As of the 2021 revision, the accreditation criteria require applications to meet stringent conditions. E-Learning master's programmes must adhere to five stipulations with 24 indicators. Course accreditation requires compliance with five stipulations and 20 indicators.

From 2006 to 2023, a total of 114 applications for e-Learning master's programmes were submitted, the number of e-Learning course accreditation applications surpassing 1,000 since 2013. Evaluation by MOE-appointed committees yielded consistent approval rates of 40% to 50% for course accreditation. In contrast, approval rates for e-Learning master programs exhibit more pronounced annual variation.

Upon analysis, preliminary findings highlight challenges in indicators related to synchronous and asynchronous interaction, collaborative strategies, and real-time feedback in instructional assessments. The research outcomes are expected to serve as a valuable reference for future investigations in the field of online learning.

Students' Reasons for Turning Off Webcam during Synchronous Online Learning: A Hong Kong Study

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This study aims to explore students' habit of turning off their webcams during synchronous online learning and the reasons behind their choice.

A 20-minute self-administered online survey was conducted at a university in Hong Kong with 367 students from all programmes (a total of 8,000 students). The primary outcome was students' habit of turning off the webcam during synchronous online learning, which was tapped by the major question, "How often do you turn off your webcam during synchronous online classes?" in the first part of the questionnaire. Students were also asked whether there were variations for turning off the webcam in different time slots, lectures, or courses. Furthermore, respondents were asked to give their reason(s) if selecting "Yes". The secondary outcome was the reason(s) for turning off the webcam during synchronous online learning. At the end of the questionnaire, some open-ended questions were included to explore further reasons for students' turning off the webcam and their suggestions for their teachers and institution.

The results highlighted the fact that only 4.8% of participants never turned off their webcams during synchronized online sessions. Students who lived in low monthly income districts, or who lived with their friends or classmates, and who were enrolled in undergraduate courses, during their three to five school years were more likely to turn off their webcams during synchronous online classes. The main reasons concerned appearance, desire to ensure the privacy of the living conditions and family members. There was no statistical difference in academic performance between students who turned their webcams on/off during the online courses.

Understanding the reasons associated with turning off webcam behaviour provides directions for educators and the government to construct supportive strategies to foster online learning and advance our understanding of the issue for better management in the future.

Towards a Digitally Enabled Higher Education Landscape in South Africa: Reflections from the Covid-19 Experience

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The Covid-19 pandemic was a pivotal moment for higher education worldwide, as an environment of restricted face-to-face contact severely compromised teaching and learning. The urgent adoption of various digital technologies attempted to address the challenges of ensuring continuity in the academic project. Reflecting on the current post-pandemic period is crucial to understand how higher education institutions learned from the experience of increased digital technology usage during the pandemic.

This paper draws on studies undertaken on the South African higher education sector in its attempt to respond to the Covid-19 crisis through the use of online teaching and learning methods. Key insights are then summarised from these studies before recommendations are suggested that address the various challenges at the macro, meso, and micro levels of the higher education eco-system.

These included: Emergency Remote Teaching and Learning lacked time for intentional design as an online experience; investment in digital technology including infrastructure was funded by each institution; the input of digital and IT professionals was critical to its success; the low-tech, inclusive parameters adopted precluded more interactive synchronous teaching experiences; academics were unfamiliar and ill-prepared to deal with the range of digital technology options at short notice; the haste of ERTL provision resulted in burnout and frustration for academics; academics were concerned about student access, success, and their overall wellbeing; students were not systematically introduced to online learning skills and self-management expectations; lack of interaction and online environment restrictions led to student disengagement and affected learning quality; and, the use of digital technologies in ERTL did not promote inclusivity for marginalised students and those with disabilities.

The experiences of the pandemic captured in this paper reveal that the South African higher education sector has systemic challenges including infrastructural issues and is not yet prepared for productive and effective online teaching and learning. An inclusive blended learning option is seen as a route to enhance student access, engagement, and success.

Djung Laboratory – Digital Interactive Laboratory for Hybrid Learning

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The purpose of the study is to design and evaluate how Djung Laboratory improves learning and teaching through digital technologies, increases flexibility in class management, develops students' abilities, and enhances learning outcomes in both onsite and online classrooms.

The research technique consists of doing documentary research to review literature on a digital interactive laboratory and hybrid learning. In order to better understand students and construct the laboratory, a questionnaire for the 405 graduates was then created. Additionally, in-depth interviews with four English teaching specialists, three English teachers, and three students from Thailand, Finland, and the UK were conducted. Subsequently, cooperative endeavours were undertaken to refine the laboratory's blueprint in response to suggestions and carry out experimental investigations to evaluate its efficacy. Lastly, experimental research that compares Djung Laboratory's effects to traditional teaching methods and employs classroom observation to measure student involvement and learning objectives provide a thorough evaluation of the laboratory's contribution to creative hybrid education.

Positive results were found using a variety of approaches in the research findings. The congruence of Djung Laboratory with digital interactive learning trends is validated by documentary research. In-depth interviews with experts, teachers and students reveal how to design the laboratory and how it can make onsite and online learning efficient. After that, this digital interactive laboratory's design and testing in the lab demonstrates its capabilities. The effectiveness of the laboratory is assessed through experimental research, and its practical application and influence on collaborative learning are gleaned from class observations and students' learning diary. Because of improving hybrid learning environments significantly, the Djung Laboratory invention received a gold medal at the Japan Design, Idea, and Invention Expo 2022.

In a practical seminar, 67.36% of the 3,009 teachers/instructors agree that the Djung Laboratory includes environmentally friendly equipment and large-scale collaborative learning capabilities. Together, these elements save costs and produce a learning environment that is both highly engaging and scalable. The value of the lab lies in its ability to facilitate both physical and virtual learning settings, fostering critical thinking and raising academic performance while making students happier.

Shaping Creative Pedagogies in Teacher Education: Exploring Formative Assessment to Nurture Creative Pre-Service Teacher

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This study explores the effectiveness of integrating creative pedagogies with formative assessment (FA) for pre-service teachers. Creativity is an essential skill for 21st-century students. Hence, teacher education programmes aim to cultivate creative pre-service teachers who can then foster creativity in their students. Moreover, FA may improve the quality of education when applied properly. Thus, it may be meaningful for teacher educators to integrate formative assessment with creative pedagogies, including flipping classrooms, online or hybrid teaching, role-playing, student-centered curriculum, and teaching through assessment. According to the formative assessment theory, FA has the potential to guide teacher educators to provide feedback that helps learners know "how to get there." It may also guide pre-service teachers to recognize the importance of creativity and practise creative pedagogies themselves. Consequently, pre-service teachers experienced in creative pedagogies applied with FA may improve their personal creativity levels and then be more skilled to cultivate their future students. Therefore, this quantitative research intended to explore what can pre-service teachers benefit from creative pedagogies combined with FA during their university careers.

Chinese pre-service teachers were surveyed about their experiences with these integrated approaches and their impact on creativity and future teaching intentions. We examined whether these experiences influenced their creativity levels and willingness to use creative pedagogies after graduation. The participants were recruited through convenience sampling and invited to answer three groups of questions. The first group focused on their experience of specific creative pedagogies during their teacher education careers. The second group collected their self-evaluation of creativity levels before and after graduation from ten sub-dimensions. The last group investigated their tendency to adopt specific creative pedagogies in their future teaching.

Most participants reported increased personal creativity levels (99 out of 103) and a strong intent (93 out of 103) to use these pedagogies in their future teaching, demonstrating a positive influence on pre-service teachers' creativity and motivation. Therefore, integrating FA with creative pedagogies might has a positive influence on Chinese pre-service teachers' creativity and motivation to teach creatively. This evidence suggested that intentionally integrating 21st-century skills into teacher education through creative, student-centered approaches with FA may contribute to shaping future educators who can then foster creativity and adaptability in their students.

Based on the findings, we appeal to teacher educators to emphasize the importance of applying creative pedagogies in teacher education, empowering creative pedagogies with FA, and the positive impact of training creative pedagogies among pre-service teachers on students' learning in the 21st century. In conclusion, we recommend prioritizing the integration of creative pedagogies with FA in teacher education to foster 21st-century skills in future educators.

Understanding English Teachers' Perceptions and the Effectiveness on a Hybrid Mentoring and Coaching Program in Turkey

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To maintain the teaching quality of an institute, continuous professional development for both novice and experienced teachers is crucial for school improvement. Mentoring and coaching are standard professional development techniques that are frequently employed in educational institutions. It is an effective leadership strategy that aims to enhance the professional pedagogical knowledge and skills of teachers. The effectiveness of traditional formal mentoring and coaching, which allows mentors and mentees to exchange information and skills in person, has been amply supported by several research studies. Due to the development of technology and the effects of the pandemic, online mentoring and coaching has lately emerged as a new type of mentoring and coaching strategy. E-mentoring has also been found to be helpful for both mentors and mentees as knowledge and skills are still shared and transferred. Yet, there has not been a lot of research on this topic. Hence, the main objective of this study is to examine English teachers' perceptions of a hybrid mentoring and coaching programme in Turkey's educational system. Both the mentor and the mentee discuss how their teaching careers have been affected by a hybrid mentoring and coaching programme. The second goal of this study is to assess the effectiveness of this hybrid format and how it facilitates the interaction between the mentor and the mentee. The advantages and disadvantages of this hybrid format will also be discussed.

Using both a quantitative and a qualitative research design, this descriptive study lasted for approximately 16 weeks. It focused on a one-on-one hybrid mentoring and coaching approach. A new graduate teacher was assigned the role of the mentee in this study, and an experienced teacher was assigned the role of the mentor. Both the mentor and the mentee were employed at a private STEM institute. Peer observations (mentoring) were conducted face to face for 15 weeks, allowing mentors and mentees to communicate synchronously and directly. A Zoom online feedback session (coaching) was employed each week. In the feedback session, the mentor and mentee reviewed a different topic that the researcher had assigned and reflected on what they shared and transferred. Both the mentor and the mentee were asked to complete an online survey about the efficacy and their perceptions of this hybrid mentoring coaching programme following all observation and online feedback sessions. Mentor and mentee engaged in an interview to share their opinions on how this hybrid programme mediated their relationship at the end of the study.

The survey's findings showed that both the new teacher and the experienced teacher viewed this hybrid mentoring and coaching as a valuable tool for their careers in continuing professional development. This professional development, according to both participants, enhanced their pedagogical knowledge and skills. Both agreed that the formality of peer observations improved their understanding of their professional responsibilities in the workplace and sharpened their skills. The outcomes of the online sessions demonstrated that the hybrid mentoring and coaching program enabled both the mentee and the mentor to communicate more freely and without any communication barriers. They concurred that online feedback sessions were more efficient in communication and interaction, enabling more natural growth of relationships. The results of the interview also showed that, in general, teachers were satisfied with the hybrid mentoring and coaching programme. They believed that hybrid mentoring programme was beneficial for fostering better relationships at work, and desired a longer study period.

The study's findings are expected to enhance the literature on hybrid mentoring as a field, because relatively little research on hybrid mentoring and coaching has been done in the Turkish context. This study offers an understanding of the development of hybrid mentoring and coaching and provides guidance for school administrators and teachers on how to improve

Cultivating Communities of Practice: University-Secondary School Collaboration for English Language Materials Development

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In the dynamic landscape of 21st-century education, universities face the challenge of fostering active learning that equips students with both competence and knowledgeability for navigating the complexities of real-world practice. This study investigates a collaborative partnership between a university English-major programme and a secondary school English department, specifically examining the development of in-house English language teaching materials through the lens of communities of practice (CoP). By analyzing the features and efforts of effective collaboration and the professional growth experienced by participants, this study seeks to inform future models that nurture both competence and knowledge in language education, ultimately equipping students to flourish in the modern world.

This study employed a qualitative approach, utilizing semi-structured interviews. Interviewees included six mentor teachers and six Teaching-English-to-Speakers-of-Other-Languages (TESOL) undergraduates who were engaged in a two-semester collaborative project. The project focused on creating, implementing, and evaluating English language materials that addressed specific needs and interests of the school students. The project brought together groups of Year-3 or Year-4 TESOL students from an English-major programme at a university in Zhuhai and their mentor teachers from the English department of a secondary school in Hong Kong.

Informed by the CoP framework (Wenger-Trayner & Wenger-Trayner, 2015), interview data were analyzed using a content analysis approach. A coding scheme mapped CoP dimensions (domain, community, practice) to research objectives concerning collaboration and professional growth in materials development. Predefined themes (Shared Interest, Shared Competence, Joint Activities, Relationship Building, etc.) and sub-themes were used to identify relevant text segments in the interviews, capturing both positive and negative experiences. Recurring patterns and key insights were then identified and summarized from coded segments within each sub-theme for both mentor teachers and TESOL students.

The project fostered a shared interest in improving student learning through in-house materials development, leading to open communication, knowledge exchange, and professional growth. Distinct experiences and challenges emerged due to communication issues and limited online interaction between mentor teachers and TESOL students. Improved communication tools, timely feedback, and stronger mentor-student relationships could enhance collaboration. Both groups actively participated in creating resources, integrating technology, and developing materials. However, communication, time constraints, and varying commitment levels affected the sustainability of interactions and resource development.

The identified challenges underscore the need for improved communication tools, timely feedback mechanisms, and strengthened mentor-student relationships to facilitate sustainable and effective partnerships between universities and secondary schools, thereby preparing students to thrive in the dynamic 21st-century educational environment.

Pre-service English Teachers' Perceptions of Translanguaging as a Pedagogy in Language Teaching

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Globalization in the twenty-first century has triggered a significant shift towards multilingualism, translanguaging emerging as a pedagogical approach to embracing learners' full linguistic resources in multilingual communities. Despite this trend, Teaching English to Speakers of Other Languages (TESOL) predominantly emphasizes monolingual approaches, potentially challenging TESOL students in real-world classrooms where learners might grapple with confusion during full immersion in English. This situation often prompts pre-service teachers to consider effective ways of incorporating learners' own languages into their teaching. Therefore, this study aims to investigate the perceptions of 94 participants from two English as a medium of instruction (EMI) universities, majoring in English-related subjects, regarding pedagogical translanguaging. It also examines perceptual differences among Year 2, Year 3, and Year 4 students, along with the varied instructional levels they taught during internships.

Data were collected through a questionnaire survey and semi-structured interviews to explore participants' perceptions. In total, 94 participants completed the questionnaire, seven of whom from different year levels were then interviewed. Survey data were analyzed using descriptive statistics (mean scores and standard deviation of translanguaging attitudes) and inferential statistics of one-way analysis of variance (ANOVA) to compare participants' perceptions across year levels and instructional levels. Interview data were then analyzed thematically to address participants' attitudes towards translanguaging, using Macaro's (2005) framework, which includes virtual position, maximal position, and optimal position.

The quantitative results revealed that around 88% of participants held positive attitudes towards using translanguaging strategies to explain abstract concepts and engage low-proficiency language learners. Neutral attitudes focused on concerns about potential disruptions in classroom dynamics and uncertainties about its effectiveness in developing English productive skills. The qualitative results showed that all seven interviewees held either maximal or optimal positions. Discussions revolved around translanguaging functions and contextual factors. Both quantitative and qualitative findings indicated that Year 4 participants and those teaching lower grade levels were more supportive of translanguaging.

This study sheds light on the potential hesitations pre-service teachers have about using pedagogical translanguaging, particularly regarding classroom management and its effectiveness in developing productive English skills. This highlights the need for TESOL programmes to address these concerns and equip future teachers with the necessary strategies and resources. Specifically, equipping pre-service teachers with practical resources like lesson plans and teaching materials demonstrating effective translanguaging implementation can bridge the gap between theory and practice. Moreover, establishing online forums or communities of practice would connect pre-service teachers with experienced educators, providing valuable advice and sharing teaching experiences related to pedagogical translanguaging.

A Study on Digital Reform of English Listening and Speaking Courses at the Open University of China

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Empowering courses with modern information technology is one of the important ways to reform traditional courses. This study aims to explore the digital reform of English listening and speaking courses at the Open University of China (OUC), focusing on the implementation of digital tools to enhance students' learning experiences and outcomes.

The study begins with a review of the current landscape of English listening and speaking courses at OUC, highlighting the challenges faced by traditional online learning platforms. These challenges include limited student engagement, lack of personalized learning opportunities, and difficulties in assessing spoken language proficiency.

To address these issues, this study proposes a digital reform framework that incorporates modern technologies such as online learning platforms, adaptive systems, mobile applications, and speech recognition software. The study employs a mixed-methods approach, combining quantitative data analysis with qualitative feedback from students. Quantitative data are collected through pre- and post-tests, assessing students' language proficiency, and engagement. Qualitative data are mainly gathered through interviews, providing insights into students' perceptions of the digital reform and its effects on their learning.

The findings reveal that the digital reform has had a positive impact on English listening and speaking courses at OUC. Students reported increased engagement and motivation, as well as improved language proficiency. The use of reformed online learning platforms, adaptive systems, and mobile applications enabled more interactive and personalized learning experiences. Furthermore, the use of speech recognition software for pronunciation practice and AI-driven chatbots for conversational English has led to notable improvements in oral fluency and confidence. The digital reform also addresses the challenges of diverse learning needs and geographical distribution inherent in OUC's student population, enabling students to progress at their own pace and location.

In conclusion, the digital reform of English listening and speaking courses at OUC holds promise for enhancing educational outcomes, which provides reference for the other digital reform of courses inside and outside OUC.

Blended Teaching Design Based on the BOPPPS Model

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This study aims to investigate the effectiveness of a blended teaching design based on the BOPPPS model, using an English Speaking 01 course of the Open University of China as a case study.

The methodology of the study is summarized here. The BOPPPS model, consisting of six interrelated components (Bridge-in, Objective, Pre-assessment, Participatory Learning, Post-assessment, and Summary), was chosen for its potential to enhance students' engagement and improve learning outcomes. This study employs a mixed-methods approach, combining quantitative and qualitative research methods, to investigate the implementation and impact of the blended teaching design based on the BOPPPS model in an English Speaking 01 course. This study breaks the six components of the BOPPPS model to apply to an English Speaking 01 course online (Moodle platform) and offline (face-to-face teaching), in order to fully leverage the advantages of the flexibility of the model combined with blended teaching, to enrich learning materials, speaking activities, and provide more feedback to students. A questionnaire about students' needs and challenges in the course will be sent before the model is applied to the course. Then after one semester, a satisfaction survey will be sent to the same group of students. In addition, 10 teachers will be interviewed to find out the applicability of the effectiveness of the BOPPPS model in blended teaching design. The sample population includes undergraduate students and English teachers from OUC.

The expected findings will indicate that the BOPPPS model effectively promotes student engagement and speaking ability in blended teaching. Students are likely to report higher levels of motivation, participation, and satisfaction with the course when using the BOPPPS model applied to blended teaching. Additionally, teachers who use the BOPPPS model will find the blended teaching design more structured and flexible, providing teachers more space to design activities and give students feedback.

The originality of this study lies in its in-depth examination of the BOPPPS model's application in a blended English Speaking 01 course. The study provides practical insights and guidelines for English teachers at OUC seeking to enhance learning experiences through blended teaching. Furthermore, the study contributes to the existing body of knowledge by providing empirical evidence of the BOPPPS model's effectiveness in improving English speaking skills and student engagement in a blended learning environment. The mixed-methods approach used in this study, combining quantitative and qualitative research

Kickstart a Business: Investigating the Impact of Integrative Learning on the Development of Entrepreneurial Mindset in Business Diploma Students

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methods, adds robustness to the findings and ensures a comprehensive understanding of the BOPPPS model's impact on the English Speaking 01 course. The study also explores the challenges and opportunities of implementing the BOPPPS model in blended teaching, offering valuable recommendations for teachers in similar contexts.

Business students undergo a Common Business Programme in Year 1, eventually branching out to five different diplomas. Each semester, students take four or five modules. Students tend to learn them in isolation and have difficulty understanding how they are connected. Aligned with the institution's graduate outcomes, in addition to entrepreneurial mindset, values and competencies, the business school aims to develop collaboration and cross-cultural sensitivity, communication, critical thinking and problem-solving skills.

A module, Kickstart a Business (KAB), was conceived to facilitate students' development of entrepreneurial skills through developing a business idea into a minimum viable product. Students were required to integrate and apply concepts from the legal, financial accounting, design, and business communication modules to real-world problems. Students were trained in Design Thinking and Lean Startup Methodology, as they are applicable across different business contexts. This culminated in a virtual investor showcase, where industry collaborators selected the top three projects with commercial potential. Student perception data were collected through a post-semester survey with over 620 responses. Feedback was also sought from four KAB tutors.

Student comments from the Module Experience Survey bore out the intent of the module. Students from five disciplines commented that it helped them to develop an innovative and entrepreneurial mindset. The module seamlessly integrated content from the other modules taken in the same semester. In addition, the module helped them to develop critical thinking and problem-solving, as well as creativity, teamwork, and big picture thinking.

The tutors commented that, by using a business idea as the anchor to integrate and apply the theories and concepts from all the modules undertaken in the same semester, students learned to consider the impact of their decisions on the various functions of a business.

The KAB module represented a strategic shift towards a more integrated and application-focused learning approach in business education. This initiative directly addressed the observed challenge of students learning business modules in isolation. KAB effectively bridged theoretical knowledge with practical application, enabling students to apply concepts from various business disciplines. The approach also aligned with the broader educational objectives of developing key graduate competencies demanded in the business world.

Exploring the Role of Picture Books in Life Education: An Investigation within Shanghai Kindergartens

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This research aims to examine the role of picture books in imparting life education to preschool children, particularly on the practical implementation in 20 Shanghai kindergartens.

The study utilizes a mixed-methods approach. A questionnaire survey was conducted involving 128 preschool teachers, followed by in-depth interviews with 56 selected teachers. The standard deviation (SD) of teaching years among participants was 8.3. It scrutinizes the current usage of life education picture books at schools, thereby identifying suitable books and developing a theoretical framework and strategic methods for life education through picture books.

Preliminary findings suggest that teachers face challenges in interpreting picture book themes, implementing diverse teaching methods, and extending related activities. Among the eight curricula identified by Shih (2022), the life event core curriculum was ranked the lowest. Teaching methods often lack variety, and extension activities lack clarity and focus. Furthermore, critical areas of life education, such as death education, are often neglected due to traditional attitudes.

This study contributes to the limited body of research on the use of picture books for life education in preschool settings, offering valuable insights and strategies for educators and parents. The findings highlight the need for greater emphasis on comprehensive life education, including often overlooked aspects like death education, thus providing a roadmap for a more holistic approach to early childhood education.

Rethinking Virtual Exchange: Aligning Frameworks with Learning Outcomes

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Virtual exchange (VE) is an innovative educational approach that enables students to engage with peers across different cultures, locales, and time zones to complete coursework, all under the supervision of an educator (O'Dowd, 2018). Nowadays, the development of a global mindset and the promotion of internationalization are essential metrics for assessing the performance of business schools globally. Therefore, VE initiatives play a crucial role in equipping students with the competencies necessary to succeed in international business environments (Cheng, Adekola, Shah & Valyrakis, 2018). Despite its growing importance, there remains a notable gap in the research concerning the underlying framework of VE and its impact on the learning outcomes of business students. This qualitative study is set to explore the influence of different VE models (PRE-COIL versus COIL) on student learning outcomes within business programmes. Collaborative Online International Learning (COIL) typically spans 4 to 8 weeks and includes ice-breaking activities, collaborative tasks, and reflection sessions. PRE-COIL represents a more informal engagement with foreign partners. During PRE-COIL, students convene to brainstorm topic content, aiming to enrich their understanding with diverse cultural perspectives. This research will provide insights to the academic community to creatively expand beyond traditional COIL methodologies to potentially include a PRE-COIL framework, contingent on desired learning outcomes.

This qualitative study involved conducting focus group interviews with business students in Hong Kong who had previously participated in two distinct virtual exchange frameworks: PRE-COIL and COIL. The first group comprised university students from Hong Kong and the US. The second group included university students from Hong Kong, the US, and Brazil.

The thematic analysis of our study centered on two core themes: content knowledge, and team effectiveness. On the theme of content knowledge, both PRE-COIL and COIL participants noted a limited impact. However, the PRE-COIL approach stood out in its ability to enhance language confidence and foster an appreciation for cross-cultural exchange among Hong Kong students. This model also inspires an increased sense of innovation, as students learned from their international counterparts. Focusing on team effectiveness, the COIL framework set itself apart. Participants reported that COIL's structured collaboration with international peers provided them with more profound team-based experiences. They reflected on their progression through the five stages of team development, indicating

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a deeper journey of team development in the COIL environment.

Traditionally, when academics implement virtual exchange programmes, they align all tasks with the collaborating institutions, to ensure consistency. However, our findings indicate a consensus among participants from both PRE-COIL and COIL groups that their engagement in VE did not directly contribute to an increase in content knowledge. Our findings also suggest that a PRE-COIL approach could foster a creative mindset and enhance language competencies. By contrast, a conventional COIL framework appears to be more suitable for courses that emphasize teamwork as a key learning outcome. This study aims to provide new insights to academia, encouraging a re-evaluation of virtual exchange frameworks to better align them with desired learning outcomes.

Investigation of University-Industry Collaboration of Final Year Project in a Joint-Venture University

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The purpose of this study is to examine the collaboration between the university and industry. In particular, in the context of the Sino-United Kingdom joint-venture University of China and from the perspective of university teaching staff, the factors that influence the collaboration between university and industry in undergraduate final year projects was investigated.

A systematic literature review was carried out to understand the exciting research in the subject of the synergies between university and industry in higher education. A semi-structured interview survey was conducted with front-line teaching staff that have led or participated in the supervision of undergraduate final year projects within nine science or engineering programmes of the college in the chosen university.

The results showed that the collaboration between university and industry is an important approach to cultivate future science and engineering talents. However, many challenges are faced in different stages of the collaboration. The interview survey showed that industry was involved in the teaching activities of final year projects of science and engineering programmes in different stages, such as proposing a topic, supervising students, providing field resources, and participating in the assessment. However, there were several issues raised from the collaboration. For instance, at the university level, there is a lack of standard guidelines for staff to follow in collaborating with industry, a lack of dedicated budget to support the collaboration, and a lack of reward mechanisms to motivate the teaching staff and students working with industry. In addition, because the teaching and working language is English in the joint-venture university, whereas the working language is Chinese in local industry, language becomes a barrier that hinders potential collaborations with local industry.

The originality of this work is in the fact that it investigates the problems in the collaboration from the perspective of the front-line teaching staff and focuses on the final year projects of science and engineering programmes as well as the context of a joint-venture university. In addition, novel suggestions are made based on the literature review and interview survey which could provide inspiration for institutions to reflect on and enhance their industry-education collaboration at different stages, such as preparation, management, and evaluation.

Navigating Literacy and Numeracy across the Curriculum

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The purpose of this paper is to show ways in which literacy and numeracy were taught to struggling readers and writers across the curriculum using the theory of Systemic Functional Linguistics. Four subjects taught across secondary schools were nominated for the project. The subjects history, geography, science, and mathematics were selected. The Gallipoli conflict, a historical event that took place in Turkey in 1915, forms the setting of this project. The participants were 74 girl students aged 15 and 16 in a rural secondary school in Australia. The main purpose of the research project was to demonstrate that literacy and numeracy skills are best taught within the context of curriculum areas.

Genre pedagogy was used to teach the literacy processes of comprehending and composing texts through the literacy genres of narrating, describing, explaining, and persuading. At the beginning of the project, students were presented with a YouTube clip showing joint troops from Australia and New Zealand, also called the Australian and New Zealand Service Course (ANZACS), landing in Gallipoli, where they were met with stiff resistance from the Turkish army. After watching the clip, students were also asked to visit the library, read, and research the topic 'the Gallipoli conflict' of 1915. The students were given a sub-theme where they were asked to use the title 'the senselessness of war'. After completing their research, they made oral presentations based on their findings of 'the Gallipoli landing'. They narrated, described, and explained events about this topic. Students persuaded the readers that 'war is an expensive and senseless activity'.

The main findings are that students expressed themselves better when required to study within the confines of genre. Students gathered the main features of narrative texts, descriptive texts, explanatory texts, and persuasive texts. They gathered knowledge that was transferrable and portable. Researching the topics assisted struggling readers and writers to overcome the cognitive burden of searching for content to write about. Students found it easier to navigate through the subject areas.

The study has useful implications for the teaching of curriculum subjects, in that teaching content in context was shown to be beneficial to struggling readers and writers.

Mathematics Teachers' Orientation towards Teaching Creativity Using Mathematical Lateral Thinking Problems

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There has been much academic and practical discussion over incorporation of creativity into mathematics. However, teacher orientation has not been revealed much in the positioning of learning that teaches creativity through lateral thinking problems in the mathematics classroom. Teachers, who lead the learning process play an essential role in ensuring that students' success in mathematics is influenced by their mathematical creativity. The purpose of this study was to get a descriptive orientation of mathematics teachers about teaching creativity through mathematical lateral thinking problems.

This research was qualitative-descriptive with a semi-structured interview approach. The number of participants was one outstanding junior mathematics teacher and one outstanding senior mathematics teacher in East Java, Indonesia. The research instrument uses an interview guideline that includes six question items based on orientation components of pedagogical content knowledge theory. Data collection was conducted through deep interviews and observation of classroom learning. The data collected were analyzed descriptively by grouping interview and observation results based on indicators.

The results show teachers believe that the integration of mathematical lateral thinking problems in mathematics is important because it can train students' creativity and fit the curriculum. The basic concept of number operations is an important initial skill before teaching mathematical creativity. They also believe that the integration is optimal for students with intermediate to upper cognitive abilities. Teachers believe that mathematical lateral thinking problems are similar to open-ended problems but more determined with the dynamic process of perception, challenge, alternative, and harvesting.

We present a new framework about teaching mathematical creativity as a synthesis of de Bono's lateral thinking theory into mathematical lateral thinking. The process of cultivating mathematical creativity was carried out through the dynamic stage of mathematical lateral thinking consisting of Perception, Challenge, Alternatives, and Harvesting in solving three types of problems (open-ended, semi-unexpected, unexpected). Professional development for mathematics teachers related to development and the problem-solving process of mathematical lateral thinking is necessary to support the successful application of creativity in the classroom.

Authentic Assessment Design for Working Adults in Open and Distance Learning

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This paper aims to investigate the main and interaction effects of assessment types (authentic and non-authentic) and Cumulative Grade Point Average (CGPA 3.0 and above, 2.5 to 2.99, and 2.49 and below) on students' assignment marks. Assessment is an intrinsic component of teaching and learning, serving the dual purposes of supporting the teaching-learning process and demonstrating appropriate performance. The conventional focus of assessment is on measuring intellectual capacity, prioritising recalling, recognition, and structured answers. Working adults who continue their professional development in an open and distance learning environment need to develop their functioning knowledge. Authentic assessment contextualises learning and assessment, in which students not only acquire knowledge but also transfer their learning into real-world projects.

The two-way between-subjects analysis of variance (ANOVA) was utilised in this study to compute the main and interaction effects on 202 students who enrolled in the Diploma in Early Childhood Education programme, and they were in-service preschool teachers. The two-way ANOVA allows the comparison of assignment marks based on two independent variables, assessment types and Cumulative Grade Point Average (CGPA).

The findings revealed that there was no statistically significant interaction between the effects of assessment types and CGPA on assignment marks [$F(2, 196)=0.783$, $p=0.459$]. However, both assessment types and CGPA had a statistically significant main effect on the assignment marks. Tukey's post hoc tests showed that CGPA 2.49 and below was significantly different from CGPA 3.0 and above and CGPA 2.5 to 2.99. With no significant interaction effect in place, it suggests that possibly CGPA is a strong variable of assignment marks and that its effect is dominant over the effect of assessment types. Another possible reason is that the difficulty levels of the assignments administered in this study were not sufficiently different, which makes the assessment types less likely to interact with CGPA to significantly affect the assignment marks.

This study implies authentic assessment is more relevant to working adults, but the assignment questions and marking rubrics are to be further refined to significantly reflect the different levels of difficulty. Additionally, future research could explore other potential variables such as the length of students' working experience, self-efficacy levels, and learning styles.

Dynamics of cMOOC Learner Interactions in Different Social Media: A Longitudinal Network Analysis

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Engaging with others and developing and optimizing personal social networks based on this interaction is a crucial component in connectivist learning. Social media, as a medium for learners to interact with others, may influence learners' interaction behaviors and, consequently the structure and dynamic evolution of social networks. In cMOOCs, multiple social media platforms are usually integrated, such as Facebook, Twitter, forums, blogs, and WeChat. The purpose of this study is to understand the dynamic interaction characteristics of connectivist Massive Open Online Courses (cMOOCs) learners on various social media platforms.

This study applied a combination of Social Network Analysis (SNA) and the Stochastic Actor-Oriented Model (SIENA) to explore the interactive networks within three distinct social media platforms—blogs, forums, and WeChat—integrated into a cMOOC with 985 registered learners. The study initially employed SNA methodology to examine the characteristics of the social networks emerging from student interactions across three media at various stages of the course. This analysis concentrated on five key attributes of the networks: size, links, weighted links, average outdegree, clustering coefficient, density, modularity, and number of communities. Furthermore, we applied the SIENA method to conduct a thorough investigation into the evolving interaction patterns across three social media platforms over time, focusing on the effects of network structure, homophily, and preferential attachment.

This study identified differences in the interactions on three types of social media based on static network characteristics, which stemmed from differences in the dynamic evolution characteristics. Interactions on WeChat are enriched with dynamic effects—including reciprocity, transitivity, and homogeneity—that enhance network cohesion and clustering, forging a tightly knit, multi-centered network of interactions. In contrast, blogs only exhibited good dynamic characteristics in the early stages, and their networks also have multi-centrality. Forums, however, only have preferential attachment during the mid- to late stages, resulting in a sparse network with a single central node.

These findings provide valuable implications for the design of media and activities in cMOOCs. Inspired by the findings of this study, designers and teachers of cMOOC can optimize the media and activity design to better play the advantages of different social media in promoting interaction, avoid the corresponding interaction limitations, and guide students to effectively use different social media to optimize their social networks and knowledge networks.

Effectiveness of an Online e-Platform for Mental Health Services in Improving Mental Health Status in Hong Kong: A Longitudinal Study

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Emotional disturbances are prevalent among the population of Hong Kong, leading to an elevated demand for mental health services. However, several factors limit the utilization of such services, including extended waiting periods, the stigmatization of emotional disorders, and a shortage of qualified professionals. To mitigate these challenges, the present study developed an online e-platform for mental health services, guided by the principle of lifestyle medicine. The platform provides several types of support, including online brief counselling, online self-help psychological intervention, online live workshops, and mental health articles and information. The online brief counselling was developed using solution-focused brief therapy, which allows focusing on the mild and short-term problem. Several programs were provided or the online self-help psychological intervention; for example, cognitive-behavioral therapy, cognitive-behavioral therapy for insomnia, mindfulness intervention, and introduction to family therapy. These interventions were designed to be self-guided, which includes video, homework, and test. The development of this e-platform offers a promising solution to the challenges faced by individuals seeking mental health services in Hong Kong.

The primary objective of this study was to examine the efficacy of the online e-platform in improving mental health status in Hong Kong. A longitudinal panel study was conducted, and e-platform users were requested to complete the Depression Anxiety Stress Scale-21 (DASS-21) each month between October 2021 and July 2023. A total of 1,358 users participated in the study. Most were female (75%). The majority of participants were aged between 31 and 50 (57%), had completed college (83%), and were full-time workers (64%).

A linear-mixed effects model indicated a significant time effect in depression ($B = -0.08$, $p < 0.001$, 95% CI = [-0.11, -0.05]), anxiety ($B = -0.10$, $p < 0.001$, 95% CI = [-0.13, -0.07]), and stress ($B = -0.14$, $p < 0.001$, 95% CI = [-0.17, -0.10]). This indicated that the user of the mental health e-platform exhibited a significant reduction in depression, anxiety, and stress.

These findings suggest that the online mental health e-platform is effective in improving the mental health status of individuals. Considering the low cost, high accessibility, and minimal therapist involvement, this e-platform is recommended as the first step in addressing mental health concerns.

Empowering Open Educational Practices through Open-Source Software: A Grounded Theory Approach in the Context of Hong Kong Metropolitan University

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This study uses grounded theory to investigate the views and experiences of teachers in Hong Kong Metropolitan University (HKMU) regarding open educational practices (OEP) empowered by open-source software (OSS). The purpose is to understand how OSS contributes to the transformation of traditional educational models and the facilitation of OEP within the context of a higher education institution in Hong Kong.

The research method involves a series of semi-structured interviews with teachers from various faculties at HKMU. The study does not presuppose prior knowledge or engagement in OEP among educators, acknowledging the institution's transition. Interviews will be audio-recorded, transcribed verbatim, and supplemented with brief field notes. The interviews will cover six key areas: 1) introduction to the research background and objectives, 2) educators' experiences with OEP, 3) attitudes and perspectives on OEP, 4) the role and impact of educators in OEP, 5) educators' needs and expectations for OEP, and 6) a summary and outlook.

The study will identify the key elements of OEP as perceived by academic staff, the role of OSS in enabling these practices, and the challenges and opportunities that arise from integrating OSS into educational settings. It will also highlight the evolving role of teachers in the new paradigm of teaching and learning, emphasizing the shift from knowledge disseminators to facilitators of collaborative learning and knowledge development.

This research contributes to the academic discourse by providing a grounded theory analysis of OEP in the context of Hong Kong's higher education system. It offers insights into the practical application of OSS in educational settings and the implications for teacher training and curriculum development. The study's findings have the potential to inform policy and practice, promoting the adoption of OEP that leverage OSS to enhance educational outcomes.

Improving Completion Rates in SWAYAM MOOCs: The Impact of SPOC-Local Chapters

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Since 2012, massive open online courses (MOOCs) have become a key fixture in the global higher education landscape. India launched its own MOOC website, Study Webs of Active Learning for Young and Aspiring Minds (SWAYAM), in 2017. At first, there were difficulties in persuading learners to enrol in the SWAYAM courses, inspiring the faculty members, and overcoming the resistance of institutions to MOOCs as a disruptive technology. From 2017 to 2021, the completion rate of MOOCs on SWAYAM was below 3% (Singh, 2022). Multiple national coordinators in SWAYAM have developed and tested numerous innovative programs. The National Programme on Technology-Enhanced Learning (NPTEL), a collaborative consortium of Indian Institutes of Technology (IITs) in India, has initiated a program called Single Point of Contact (SPOC) at the institutional level. The purpose of this programme is to enhance accessibility, motivate learners to participate in the initiative, and offer guidance through mentors. The aim of this study is to investigate the impact of SPOC interventions on different parameters related to the completion rate of MOOCs. These parameters include educational aspects, technological aspects, behavioural aspects, and professional aspects.

The researcher has done a comparison study to examine learners' impressions of SWAYAM MOOCs in institutions that have a SPOC and institutions that do not have a SPOC. The study was conducted using the descriptive survey research approach. Data were gathered from 218 learners who were registered in the SWAYAM-MOOC programme. The researchers created a perception scale that was used to collect the data in both face-to-face and online settings.

The total completion rate for the SWAYAM MOOC is approximately 6.02% as of March 20, 2024. However, for courses given by NPTEL on SWAYAM that utilize the SPOC model, the completion rate is 12.63%. The study discovered that consistent monitoring and guidance from a mentor have a noteworthy influence on the rate of course completion. Learners in educational institutions that utilize SPOC encounter a reduced number of technical difficulties. Nevertheless, there was no notable disparity in the perceptions of learners when it came to behavioural characteristics. The study found that non-SPOC learners had a significantly positive view of SWAYAM MOOCs in professional considerations.

SWAYAM has achieved remarkable and unparalleled expansion in India. By December 2021, the enrolment of learners in SWAYAM reached a total of 21 million, and this number increased to 41 million by February 2024. Various approaches have led to an improvement in the course completion rate, which has increased from 3.0% to 6.0%. The research findings demonstrate the significance of SPOC in improving retention and completion rates in SWAYAM MOOCs. The success of the SPOC intervention planned by NPTEL has demonstrated that the same approach may be adopted by other national coordinators too.

Investigating the Effect of an Adaptive Learning System on Students' Learning

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The integration of adaptive learning systems in higher education has shown promising potential in enhancing learning outcomes. It is widely acknowledged that user or learner satisfaction plays a crucial role in assessing the success of adaptive learning systems due to the direct and substantial connection between users and the systems. Nonetheless, the influence of adaptive systems on students' satisfaction, particularly in large-scale adult education contexts, remains relatively understudied. This study aims to assess the effectiveness of using adaptive learning systems on large-scale adult English learning outcomes from a learner/user-centered perspective.

More than 1,000 adult students of non-English majors from six branches of the University of China participated in this experimental study. Using a mixed-methods approach, the study combined quantitative data from system log analysis with qualitative feedback through questionnaires. The quantitative analysis employed descriptive and correlation statistics to explore the relationship between user interactions with the adaptive system and their learning outcomes. Qualitative feedback focused on learners' satisfaction of the system's interface, content, personalization, cognition, and perception.

Preliminary results indicate that the adaptive learning system significantly supports personalized education by providing tailored learning resources and paths, which facilitate knowledge acquisition and academic performance. The analysis of user feedback highlights the critical factors of interface design, content appropriateness, and personalization depth in influencing learner satisfaction. The study also identifies areas for improvement, particularly in enhancing adaptive feedback mechanisms and integrating more diverse educational resources to meet varied learner needs.

This research highlights the transformative potential of adaptive learning systems in remote education settings, particularly for adult learners. The findings contribute to the understanding of how personalized learning can be effectively implemented to enhance learner satisfaction and academic success. The study's insights are valuable for educators and technologists aiming to optimize educational technologies for more personalized, engaging, and effective learning experiences in the context of the Open University of China and similar institutions.

Self-Efficacy and Online Learning Engagement in Junior High School Students Learning Russian

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This study focuses on junior high school students' engagement in online Russian language learning. It aims to elaborate on the relationship between self-efficacy and online learning engagement; that is, whether there is a positive correlation between self-efficacy and online learning engagement. The average age of the participants is between 12 and 15 years old. Their native language is Chinese, and all have some foundation in learning Russian. The online Russian course selected in this study is an elementary Russian course, which is relatively easy for most participants.

The study adopted a combined quantitative and qualitative research approach. The quantitative research mainly included designing questionnaires, distributing questionnaires offline, participants filling out questionnaires, collecting questionnaires, while also recording the participants' time spent on online learning and the accuracy rates of corresponding course exercises. SPSS was used to analyze the data obtained. Because the research involved the participants' self-perceived psychological states, and the questionnaire options were relatively fixed, in order to ensure the scientificity and objectivity of the research results. We also adopted a qualitative research method: semi-structured interviews. After completing the first phase of quantitative research, the second phase of qualitative research was conducted to further interpret the data obtained in the first phase.

The results showed a positive correlation between self-efficacy and online learning engagement. Students with higher self-efficacy were more willing to invest in the online Russian course and achieved higher accuracy rates in the corresponding course exercises. They were more active in Russian class and more willing to answer the teacher's questions in Russian.

This study focuses not on mainstream subjects in the traditional sense but on online learning engagement in Russian courses, broadening the scope of research and supplementing previous relevant studies.

A Study on the Equity of For-profit Private Universities and Non-profit Private Universities in China's Education Market: The Case of Shanghai

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The classified management of private education is a major strategic decision for the reform of private education in China. The classification management policy is divided into for-profit private universities and non-profit private universities, and gives them equal legal status. This research discusses the following questions: Is there competition between for-profit private universities and non-profit private universities? In what aspects? What is the level of competition, the scope of competition, and the degree of competition? Has the equity of competition between for-profit private universities and non-profit private universities been fully implemented in reality?

Based on the competition between the two types of universities in the education market, this paper analyzes the equity of the competition between for-profit private universities and non-profit private universities from three dimensions: government funding, faculty competition, and student source.

According to the results of the survey and analysis, there are differences in the equity of competition between for-profit private universities and non-profit private universities in government funding (including land requisition, financial allocation, bank loans), teachers' treatment (including teachers' hukou, professional title evaluation, welfare, application for scientific research projects), and student treatment (including admission, scholarships (grants), student loans). In some aspects, there are similarities.

At the same time, the research conclusions can also bring some suggestions and reflections to the classification management policy.

Catching up with Learning Loss through Online Mathematics Instruction: A Pre-service Teacher's Initiative in Developing Open Educational Resources

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This study aims to explore the development of open educational resources (OERs) by a pre-service mathematics teacher, specifically tailored for senior secondary school students struggling in mathematics. We further examine the influences of these resources on students' achievement and their perceptions of using them in self-directed online learning. Ultimately, the study informs sustainable development strategies for OERs.

The study consisted of two stages. In Stage 1, the pre-service teacher developed OERs associated with a mathematics topic, quadratic functions, using GeoGebra as a production tool. Formative evaluation techniques were employed to improve the quality of OERs. Feedback and suggestions for improvement were collected from three experienced mathematics teachers (Review Cycle 1), after which the revised OERs were evaluated by six teachers (Review Cycle 2) through a follow-up survey. In Stage 2, student participants (n = 13) were invited to use our OERs for remedial learning. Their learning outcomes were assessed through pre- and post-tests, whereas their perceptions and comments on the learning experience were collected using a post-intervention survey.

In Stage 1, the study yielded valuable suggestions from teacher participants in Review Cycle 1, including simplifying instructions in the OERs and providing more revision notes to cater to underperforming students. Teachers involved in Review Cycle 2 generally expressed satisfaction with the revised OERs. The results in Stage 2 indicate a significant improvement in students' mathematics achievement after using the OERs, as evidenced by a notable increase in their post-test scores (Median = 14.0) compared to their pre-test scores (Median = 6.5), with a large effect size (r = 0.88). The post-intervention survey further revealed their confidence in problem solving and satisfaction with the interactive elements in our OERs, highlighting their effectiveness in supporting online mathematics instruction.

The growing emphasis is on fostering students' self-directed online learning, potentially through the use of OERs. This study provides insights into the development and assurance of high-quality OERs that are tailored to address students' learning needs. Furthermore, the findings of the study inform future training of pre-service mathematics teachers, equipping them with the knowledge and skills to develop OERs that can effectively support student learning.

A Microlearning Approach to Promote Human-centric Change Management in Tanker Shipping Companies

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Human-centric change management is a novel idea in organizational transformation. It provides a timely response to the changes. Recently, modernization dynamics have triggered shipping operators to undertake change management practices. The purpose of this study is to conceptualize a microlearning system in tanker shipping companies to promote human-centric change management.

The methodology of the study is based on change management techniques integrated with microlearning principles. It also considers the Management of Change (MoC) element within Tanker Management Self-Assessment (TMSA).

The study might reveal the potential of a microlearning system tailored to tanker shipping companies. Responding to the focused change items (decarbonization), upskilling and reskilling items tailored to key shore-based managers and shipboard personnel in tanker shipping organizations, are determined.

The originality of this study lies in its contributions to the Management of Change (MoC) process in tanker shipping, offering a holistic perspective that explores the upskilling and reskilling of human resources. This study's value proposition extends to its potential to inform strategies for fostering the sustainability of the maritime industry.

An Augmented Intelligence in Education: A Qualitative Conversation on the Integration of Human Intelligence with Artificial Intelligence to Amplify Cognitive Abilities and Create a Symbiotic Relationship Enhancing the Learning Experience

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This study explored the potential benefits of amalgamating human intelligence and intelligence driven by technological advances, Artificial Intelligence (AI), in education. The exploration related to amplifying cognitive abilities and creating a symbiotic relationship that enhances the learning experience. This study aimed to: (1) Elaborate the critical evaluation current state of Augmented Intelligence in Education (AIE), (2) Propose a conceptual framework for the symbiotic relationship between humans and artificial intelligence, and (3) Provide practical guidelines for educators and institutions to effectively integrate AIE into their pedagogical strategies.

Conceptually, this study has alluded to four essential notions: (1) Constructivism, (2) Connectivism, (3) Ethical frameworks, and (4) Human-computer interaction perspectives. Methodically, this inquiry utilized a qualitative approach with a nine-syntax procedure. It was a combination of a systematic and a comprehensive literature review to uncover the answers to identified research gaps and questions. It covers: (1) Identifying the research objectives/questions for the literature review, (2) Determining inclusion and exclusion criteria for selecting sources, (3) Conducting a search of relevant sources, (4) Screening the retrieved articles based on the criteria, (5) Extracting and analyzing the relevant data from the selected articles, (6) Synthesizing and summarizing the findings from the literature, (7) Identifying potential gaps for further research, (8) Incorporating expert perspectives gathered through discussion/consultation activities, and (9) Integrating the findings from the literature review and expert insights to provide comprehensive overview.

The study categorically proposed three practical outlooks to ensure a symbiotic relationship between humans and AI to enhance the learning experience. They are: (1) Ethical considerations, (2) Teacher-student dynamics, and (3) Strategic integration of AI technologies to complement and enhance human intelligence in the educational process with practical examples. It subsequently opened a wider outlook as a result of fostering a symbiotic relationship between human intelligence and AI that makes educational outcomes and learners empowered to thrive. It has also offered theoretical insights, practical guidelines, and illustrative examples to inform pedagogical practice. It will categorically equip individuals with the skills and knowledge needed to succeed in an ever-evolving global landscape.

The distinctiveness of this study is in its comprehensive examination of AIE within the education context at large. Intrinsically, this will serve as a call to action for stakeholders to embrace the transformative potential of AIE by forging a path toward a more inclusive, adaptive, and effective learning ecosystem to shape a better future of education.

Survey Research on the Willingness and Capability of Innovation and Entrepreneurship among Graduate Students

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The aim of this paper is to analyze the factors influencing the willingness and capability of innovation and entrepreneurship among graduate students. Through a questionnaire survey, the views and attitudes of graduate students towards innovation and entrepreneurship were collected. The purpose of this study is to identify the key factors that play a decisive role in the formation process of students' innovation and entrepreneurship capabilities and willingness. It is hoped that these findings will support the improvement and development of innovation and entrepreneurship education in higher education.

This study employs descriptive statistical analysis and multiple regression models to process and analyze the data. Firstly, through descriptive statistical analysis, the basic characteristics of the surveyed graduate student population and the overall trends of entrepreneurial willingness and capability were preliminarily understood. Subsequently, multiple regression models were used to explore how various factors influence the choice of entrepreneurship types among graduate students, thereby determining the key variables affecting entrepreneurial willingness and capability.

The research findings indicate that factors influencing entrepreneurship types include investment risk preferences, work orientation, management and leadership styles, adaptability to change and challenges, personal goals and achievements, personality traits, and lifestyle. Entrepreneurial capability is influenced by goal setting and pursuit, self-management and efficiency, leadership and influence, financial understanding and management, social skills and interpersonal networks, innovation and competitiveness, focus and commitment. It is noteworthy that work orientation, personal goals and achievements, as well as adaptability to change and challenge, are the primary factors influencing entrepreneurial willingness.

The originality of this paper lies in its comprehensive analysis of the factors influencing graduate students' entrepreneurial willingness and capability, providing new insights for improving entrepreneurship education in higher education. The article highlights the importance of work orientation, revealing students' preference for flexible work patterns and goal orientation. These findings not only guide entrepreneurship education in universities but also provide a basis for policymakers to support youth entrepreneurship. Additionally, the study suggests implementing targeted educational activities and policy measures to enhance students' entrepreneurial capabilities and enthusiasm, laying a solid foundation for their successful engagement in entrepreneurship and innovation in the constantly evolving market.

Critical Thinking in a Collaborative Setting: A Systematic Literature Review

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One of the demands of 21st-century skills is to be a good problem solver. Critical thinking has an essential role in the problem-solving process. Also, depending on the natural abilities of individuals, the formation of critical thinking depends on the social environment. Collaborative settings can improve critical thinking skills. When students studied the 'evidence' and 'counterarguments' components by engaging in collaborative group work, they succeeded in providing several clarifications of the meaning of 'concrete' evidence. Therefore, collaboration catalyzes students to think critically. This research explores the characteristics of learning strategies in collaboration settings that can support critical thinking skills by studying relevant literature.

The method used is Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which consists of four stages: identification, screening, eligibility, and inclusion. The PRISMA method was chosen because it can minimize biases and effectively synthesize studies using a systematic search strategy. Searches were carried out in journals published by Springer, to ensure the quality of the articles. The Springer database was chosen because it has a collection of electronic journals with various subjects and various Scopus-indexed journals, which are characteristic of good-quality journals.

The study results show three characteristics of learning strategies in collaborative settings that can support students' critical thinking skills. These findings are: 1) assigning responsibility to each team member; this can be done by dividing the roles of each team member; 2) increasing interaction between team members with some activities; this can be given through discussions that involve problems based on open-ended discussions and arguments; 3) having a peer facilitator in a group who can help the instructor provide implicit critical thinking scaffolding.

It should be noted that this research has limitations. The database used is only one source, Springer. However, for researchers or educational practitioners who support collaborative learning, these findings can be used to determine appropriate learning strategies for developing students' critical thinking skills.

Digital Pedagogy in the Social Media Era: Exploring the Motivations of School Teachers as Micro-Celebrities

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This study delves into the emerging trend of school teachers evolving into micro-celebrities through social media platforms. The aim is to comprehend the motivations driving educators to expand their teaching beyond traditional classrooms and adopt the dual role of educator and social media influencer. Central to this investigation is the research question: Why do secondary school teachers decide to actively engage with their social media accounts and teach there?

This study adopts a qualitative research design, utilising two primary methods: audio-visual content analysis and semi-structured interviews guided by Interpretative Phenomenological Analysis (IPA). A purposive sample of five secondary school teachers, recognised for their substantial use of social media in educational contexts, was selected. The choice of this sample size is appropriate, as it allows for in-depth exploration of individual experiences, which is central to IPA. In the content analysis, the digital content of these educators on platforms like YouTube, Instagram, RED, and TikTok was examined to discern patterns in their pedagogical approaches and engagement styles. The semi-structured interviews aimed to delve deeply into their personal experiences, motivations, and perceptions, IPA providing a framework to interpret how these teachers make sense of their social media engagement in relation to their professional identities.

This study is grounded in the theoretical framework of Social Cognitive Career Theory (SCCT), which provides a lens for understanding how teachers' self-efficacy, outcome expectations, and goal attainments influence their decision to engage in the unique role of educator-influencers on social media. The findings reveal three primary motivations behind teachers' involvement in social media: 1) the desire for wider visibility and knowledge distribution, resonating with their educational responsibilities; 2) the need to become tech-savvy, reflecting an adaptation to the online environment and a willingness to engage students in novel ways, sometimes even reversing traditional roles; and 3) the pursuit of connection and recognition, demonstrating an acute understanding of their audience, which ranges from novices to experts.

This research is distinctive in its exploration of both Western and Chinese social media platforms, notably RED, filling a gap in existing academic exploration. It sheds light on the intriguing paradox of teachers, often overwhelmed with teaching responsibilities yet motivated to undertake the time-consuming task of managing their social media accounts. The findings offer valuable insights into the digital transformation of education, potentially influencing future educational strategies and policies. This study also lays the groundwork for further research into the integration of social media in educational environments and its impact on both the teaching fraternity and the student body.

AI-backed Student Advising in tackling the Employability Gap of University Students under Global Workplace Transition to an Upskilled Workforce

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Employers often express concern about the inadequacy of career planning and employability skills of the new graduate entrants into the job market. The situation is complicated by the changes in job landscapes and job types brought by the adoption of artificial intelligence (AI). There is a pressing need to understand the gaps in knowledge, skills, and attitudes between employers and young jobseekers, which are bounded by the tightening job availabilities and yet a set of ever-evolving skills are expected. The adoption of AI in student career planning and self-analysis enables flexible tracking of student development needs versus market requirements. Consequently, an education structure that combines theoretical learning, technological upskilling, and resilience training would be introduced to enable graduates to be ready to launch their career globally.

A survey was conducted in August to December 2023 to identify the three most desired graduate attributes of first-year university students (N = 1,028, Mean age = 19; 62.41% female) in Hong Kong. The results were compared with the rankings of employers as reported in the Surveys on Opinions of Employers on Major Aspects of Performance of Sub-degree and First-degree Graduates (2016) conducted by the Education Bureau, Hong Kong SAR Government and to the 2022 QS Global Employer Survey; and subsequently to the global reskilling needs in the next five years in the perspective of employers of over 11 million workers as conducted by the World Economic Forum Future Job Reports (2023).

Our study reveals that respondents tend to overweigh the importance of interpersonal skills while overlooking presentation skills and language skills as the essential work-based skills when we compared the data with employers' expectations. The sub-degree counterparts tend to perceive non-knowledge, skills, and attitudes factors such as job experience, appearance, and educational background as desirable employability attributes. Employers deem the attributes of knowledge, skills, and attitudes more valuable. Interestingly, from the outlook of skills that are reported to be of increasing importance by 2027, AI and big data as well as leadership and social influence skills outranked all other elements when compared to their current importance. Analytical skills and creative thinking have the highest training priorities for companies to cope with industry transformation.

This study provides valuable insights into the urgency of filling the competency gaps as perceived by global employers and young jobseekers. This is crucial to bring Hong Kong businesses into the next technological era that is largely feasible only with the presence of a technologically skilled workforce who can perform the upskilled jobs. We seek to investigate how the demand for graduate skills may change in future and which sectors are most at risk of not having the essential employment skills needed. Institutions should be aware of the training priorities in the industry in support of the region's socio-economic transition and business sustainability, and to develop a specific employability skills module to equip students with appropriate employability skills alongside their subject-specific skills.

Acknowledgements

The Conference Organizing Committee would like to acknowledge the following organizations for their generous donations and contributions towards the Conference:

- Hong Kong Pei Hua Education Foundation
- Wu Jieh Yee Charitable Foundation

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Sponsors:

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