

2025 the 14th International Conference on Educational and Information Technology (ICEIT 2025)

☞☞☞ March 14-16, 2025 | Guangzhou, China

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Rajan Kadel, Melbourne Institute of Technology, Australia

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Sho Ooi, Ritsumeikan University, Japan
Anisa Vahed, Xi'an Jiaotong-Liverpool University, China
Lina Jia, Nanjing Normal University&Zaozhuang University, China
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Ahmad Yahya Dawod, International college of digital Innovation Chiang Mia University, Thailand
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Pengfei Lyu, Kitami Institute of Technology, Japan
Thaweesak Yingthawornsuk, King Mongkut's University of Technology Thonburi, Thailand
I. Piniuta, Baranovichi State University, Republic of Belarus
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Rhodessa Cascaro, Mapua Malayan Colleges Mindanao, Philippines
Burra Venkata Durga Kumar, Xiamen University Malaysia, Malaysia
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Ahrar Husain, SGT University, India
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Jia Chen, Central China Normal University, China
Noraida Hj. Ali, Universiti Malaysia, Malaysia
Joseph Jessie S. Oñate, Camarines Sur Polytechnic Colleges, Philippines
Hao Bin Yuan, Macao Polytechnic University, Macao, China
Tanti Listiani, Universitas Pelita Harapan, Indonesia
Melda Jaya Saragih, Universitas Pelita Harapan, Indonesia
Nurbiha Shukor, Univerisiti Teknologi Malaysia, Malaysia
Alpha Man Ho Ling, The Education University of Hong Kong, China
Lingfei Xiao, Nanjing University of Aeronautics and Astronautics, China
Yu-dong Bao, Harbin University of Science and Technology, China
Zhiwei Qi, Yunnan University, China
Qianshun Yuan, Shanghai University of Political Science and Law, China
Samiullah Paracha, Xi'an Jiaotong-Liverpool University, China
Narong Sangwanateee, Suan Sunandha Rajabhat University, Thailand
Ying Tang, Southwest University, China
Xiaohong Li, Zhaotong University, China
Nisakorn Sangwanateee, Suan Sunandha Rajabhat University, Thailand
Namkang Sriwattanarothai, Mahidol University, Thailand

► Welcome Message

It is with great pleasure to welcome you to the 14th International Conference on Educational and Information Technology (ICEIT 2025), which is take place from March 14-16, 2025, in Guangzhou, China, sponsored by South China Normal University, China.

ICEIT 2025 will place a special focus on educational and information technology to address multidisciplinary challenges. Our aim is to enrich the regular program with emerging topics of particular interest in the field of educational and information technology. We encourage authors to exchange ideas, share insights, and explore the latest advancements at the intersection of education and information technology.

Over the next few days, we have curated a diverse program featuring keynote speeches from Cheng, May Hung May, The Education University of Hong Kong, China; Yan Li, Zhejiang University, China and Zhongling Pi, Shaanxi Normal University, China, invited speeches from Suraya Masrom, Universiti Teknologi MARA, Malaysia; Ying Tang, Southwest University, China and Jining Han, Southwest University, China, panel discussions, paper presentations. We hope these sessions will inspire new ideas, spark collaborations, and contribute to the global discourse on the development of educational and information technology.

We extend our heartfelt gratitude to all the authors, reviewers, and organizers whose hard work has made this event possible. We also thank you, our attendees, for your active participation and commitment to advancing the field of educational and information technology.

We sincerely hope that all authors and attendees derive valuable insights and enjoy the presentations and personal interactions throughout the conference. We welcome your suggestions and comments, as they are instrumental in enhancing the organization and quality of future conferences. Your input is greatly appreciated!

We wish you an enriching, stimulating, and enjoyable week of discovery, and looking forward to meeting you again in next year!

ICEIT 2025 Conference Committees

► Guideline

For Onsite Participants

Time Zone

- Guangzhou standard time: UTC/GMT+8

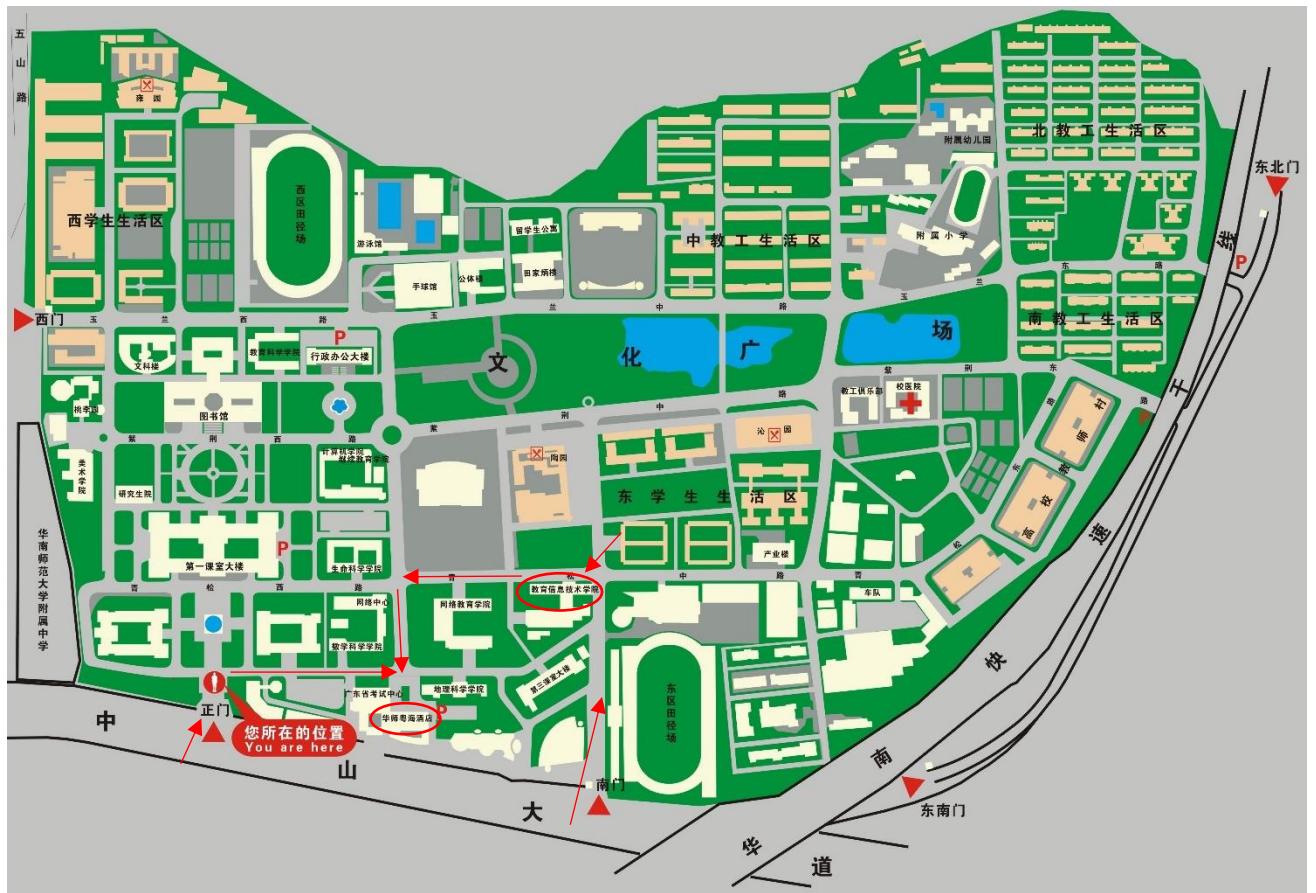
Conference Venue

- 华南师范大学教育信息技术学院

School of Information Technology in Education of South China Normal University

地址：广东省广州市天河区中山大道西 55 号

Address: No.55, West of Zhongshan Avenue, Tianhe District, Guangzhou City (Code:510631)

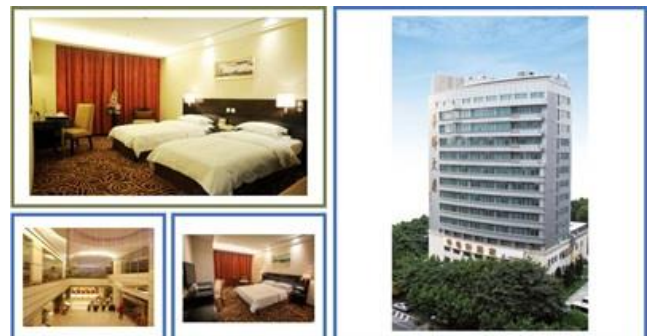


Lodging Accommodation

- 广州华师大厦/华师粤海酒店 (Hua Shi Hotel)

地址：中国广州中山大道西 69 号

Address: No.69 Zhong Shan Avenue West, Tian He, 510631 Guangzhou, China



► Guideline

For Onsite Participants

For Presentation

- The duration of oral presentation slot is 15 minutes (including 2-3 minutes Q&A).
- The duration of poster presentation slot is 5 minutes (including Q&A).
- Your punctual arrival and active involvement in each session will be highly appreciated.
- Get your presentation PPT or PDF files prepared and backed up.
- The regular oral presentation time arrangement is for reference only. In case any absence or some presentations are less than 15 minutes, please join your session earlier.
- A best presentation will be selected from each session which will be announced and awarded a best presentation certificate.

Attention

- For security purpose, all participants are required to wear name badge to all sessions and social function. Entrance into sessions is restricted to registered delegates only.
- For your personal and property safety, please take care of your belongings in public area. Conference does not assume any responsibility for loss of personal belongings of participants.

Emergency Numbers

Medical Emergency: 120

Police: 110

Fire: 119

► Guideline

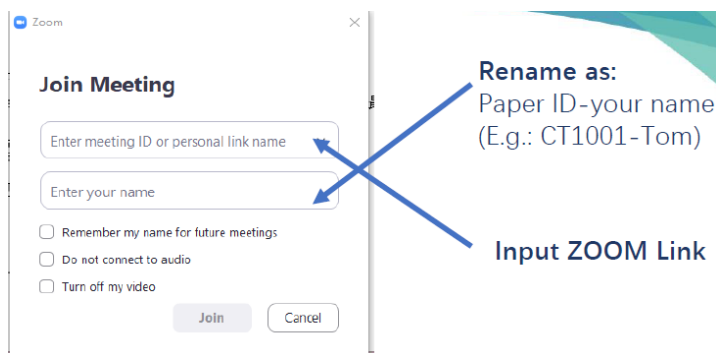
For Online Participants

Time Zone

- Guangzhou standard time: UTC/GMT+8

Platform: ZOOM

- For general users, Zoom Download: <https://zoom.us/>
- For authors in China: Zoom Download: <https://zoom.com.cn/download>
- Please unmute audio and start video during your presentation.
- Use headset with microphone or earphone with microphone.



- Set up your Name.
Authors: Paper ID-Name / T1001-Jimmy Smith
Listener: Listener- Name / Listener- Jimmy Smith
Keynote Speaker: Keynote-Name / Keynote- Jimmy Smith
Invited Speaker: Invited-Name / Invited- Jimmy Smith
Committee Member: Committee-Name / Committee- Jimmy Smith

Conference Recording

- The conference online part will be recorded. We appreciate your proper behavior and appearance.

► Conference Schedule Overview

March 14, 2025 / UTC/GMT+8

Time	Schedule	
10:00-17:00	<p style="text-align: center;">Onsite</p> <p>Registration & Sign-in & Collecting Materials</p>	<p>华南师范大学-教育与信息技术学院 1 楼大厅</p> <p>地址：广东省广州市天河区中山大道西 55 号</p> <p>School of Information Technology in Education of South China Normal University-1st floor</p> <p>No.55, West of Zhongshan Avenue, Tianhe District, Guangzhou City</p>
14:30-15:00	<p>Visiting Activity 校史馆</p>	
	<p style="text-align: center;">Online</p> <p style="text-align: center;">Test for Online Participants</p>	<p style="text-align: center;">ZOOM link:</p> <p style="text-align: center;">https://us02web.zoom.us/j/85826758613</p> <p style="text-align: center;">Password: 031416</p>
10:00-12:00	<p>Online Speakers & Online Session Chairs & Committee Members</p>	
14:00-17:00	<p>Online Paper Presentation Test</p> <p>E08, T3300, T3267, T3303, T3295, T3292, T3291</p> <p>T3210, T3163, T3186, T3214, T2087, T2132, T3283, T2078</p> <p>T2077, T3263, T3271, T3240, T3264, T3156, T3229, T2111</p> <p>T3224, T3265, T3243, T2104, T3165, T3261, T2110, T1029</p> <p>T3266, T3251, T1018, T2073, T3259, E11, T3230</p> <p>T3183, T3308, T3309, E15, T3189, T3190, T1050</p> <p>T3257, T3150, T3162, T3185, T3219, T3142, T2101</p> <p>T1002, T3301, T3248, T3304, T3272, T2067, T3273</p> <p>T2106, T1055, T3181, T2109, T3193, T3293, T3299</p> <p>T3268, T3223, T2131, T3314, T3250, T1027</p>	

► Conference Schedule Overview

March 15, 2025 / UTC/GMT+8

Opening Ceremony & Onsite Schedule

Time	Onsite Schedule	
	华南师范大学-教育与信息技术学院 1 楼 School of Information Technology in Education of South China Normal University ZOOM link: https://us02web.zoom.us/j/85826758613 Password: 031416	
8:00-9:00	Onsite Registration & Sign-in & Collecting Materials	Lobby 1 st Floor
Opening Ceremony Host: Zehui Zhan, South China Normal University, China		
9:00-9:10	Welcome Message Zhongmin Yang, South China Normal University, China	
	Opening Remarks Qingchao Ke, South China Normal University, China Michele Della Ventura, Music Academy 'Studio Musica', Italy	
9:10-9:55	Keynote Speaker I Yan Li, Zhejiang University, China Speech Title: Practice and Studies on AI-assisted Writing Instruction	
9:55-10:20	Group Photo & Coffee Break	
10:20-11:05	Keynote Speaker II Cheng, May Hung May, The Education University of Hong Kong, China Speech Title: Steam Education in Hong Kong–Progress and Challenges	
11:05-11:50	Keynote Speaker III Zhongling Pi, Shaanxi Normal University, China Speech Title: Interaction Matters: Co-viewing Facilitates Learning from Video Lectures	
11:50-14:00	Lunch & Break Location: Hua Shi Hotel (广州华师大厦/华师粤海酒店)	

► Conference Schedule Overview

March 15, 2025 / UTC/GMT+8

Time	Onsite Schedule	
	Invited Speeches & Paper Presentations	
	华南师范大学-教育与信息技术学院 School of Information Technology in Education of South China Normal University	
14:00-16:00	Invited Speaker I - Jining Han, Southwest University, China Session 1 - AI-Driven Pedagogical Innovations and Personalized Learning Systems T3155, T3200, T3238, T3220, T3197, T3221, T3217	教工之家 2 nd Floor
	Invited Speaker II - Ying Tang, Southwest University, China Session 2 - Learning Analytics and Multimodal Assessment Techniques T2112, T2105, T2113, T1039, T1054, T3288, T3161	306 3 rd Floor
	Session 3 - Emerging Technologies in Educational Tools and Knowledge Representation E03-A, T3177, T2129, T3315, T3213-A, T1035, E14, T3208	102 1 st Floor
	Session 4 - Gamification and Immersive Learning Strategies T2099, T3202, T2128, T2123, T3151, T1038, T3310, T1021	104 1 st Floor
16:00-16:20	Coffee Break	
16:20-18:20	Session 5 - Interdisciplinary Competency and Creative Curriculum Development T3140, T2107, T3256, T2114, T3218, T3228, T3279, T2075	教工之家 2 nd Floor
	Session 6 - AI Adoption, Teacher Development, and Student Perspectives T2091, T2088, T1012, T3302, T1006, T2100, T2119, T3232	306 3 rd Floor
	Session 7 - Online Learning Engagement and Adaptive Technologies T3149, T2080, T1005, T2089, T1013, T3280, T3194, T3160	102 1 st Floor
	Poster Session - Intelligent Course Innovation and Multidimensional Assessment T3276, T3282, T2083, T3154, T3244, T3285, E05, T3235, T3137, T2097, T2108, T2064, T1015	讲学厅 西门 1 st Floor
19:00-20:30	Dinner Location: Hua Shi Hotel (广州华师大厦/华师粤海酒店)	

► Conference Schedule Overview

March 15, 2025 / UTC/GMT+8

中文论坛- C-STEAM 跨学科教学论坛

时间	地点	
14:00-18:00	华南师范大学-教育与信息技术学院-1 楼讲学厅	
	汇报主题	汇报人 单位
	基于时空观的 C-STEAM 项目——东莞-阳江跨区域协同创新项目	吴沃林 广东第二师范学院附属阳西第二中学
	基于粤剧及龙舟主题的 C-STEAM 教育——港-佛跨区域协同创新项目	李炜贤 佛山市禅城区澜石小学
	基于花窗主题的 C-STEAM 教育——佛-港-穗跨区域协同创新项目	张秀香 佛山市同济小学
	视觉艺术主导的 C-STEAMS 案例设计与实践研究——以“种子的家”盲盒设计为例	黄菊 梧州市第十六中学
	C-STEAM 教育理念下的传统文化技艺转化研究——以“广西侗族鼓楼”为例	易远铨 梧州市第十六中学
	中国古代科技 STEAM 教学实践研究——以文化与 STEAM 的融合为视角	吴小曲 廉江市实验学校
	传统文化中的 STEAM 教学实践研究——以蚕桑丝织和鲁班锁等为例	张卫红 惠州市第五小学
	书评分享	伍少荣 白沙镇中心小学
		吴沃林 广东第二师范学院附属阳西第二中学
		许广玲 广州市海珠区教育发展研究院
		郝露茜 东莞市塘厦中学
		张英华 佛山市南海区桂城街道桂江小学
		黎清万 东莞市第六高级中学
		吴小曲 廉江市实验学校

► Conference Schedule Overview

March 16, 2025 / UTC/GMT+8

中文论坛- 省百千万智能名师论坛

主题：智慧创未来，技术赋能教育，广东省中小学名教师工作室与广东省科技名师工作室的实践成果。

时间	地点		
9:00-12:00	华南师范大学-教育与信息技术学院-103		
	汇报主题	汇报人	单位
	生成式人工智能赋能智慧教育：课堂教学实践的创新与探索	莫柳咏	茂名市茂南区教师发展中心
	素养导向下初中科创与人工智能课程体系的探索与实践	张清泉	东莞市松山湖实验中学
	中小学人工智能通识教育落地的困境、归因与突围	魏小山	珠海市教育研究院
	基于核心素养的跨学科教育实践研究	李俊	佛山市顺德区大良顺峰初级中学
	促进深度学习的信息技术教学导向工具的设计	彭雪庄	广东省教育厅事务中心 (广东省电化教育馆)
	促进深度学习的人工智能教学：卷积神经网络辅助疾病诊断的项目学习	刘翠霞	惠州中学
	跨学科视角下的 AI 课程教学育人实践与探索	许月媚	广州市南武中学
	小学信息科技学科的智慧课堂转型之路	张英华	佛山市南海区桂城外国语学校
	大观念教学的设计与实施	李宏贞	广州市荔湾区沙面小学

► Conference Schedule Overview

March 16, 2025 / UTC/GMT+8

Online Schedule

Online Schedule	ZOOM (Password for All: 031416)
Invited Speech & Paper Presentations	Online Session A & E & I Zoom Link: https://us02web.zoom.us/j/85826758613
	Online Session B & F & J Zoom Link: https://us02web.zoom.us/j/83557158212
	Online Session C & G Zoom Link: https://us02web.zoom.us/j/86326664147
	Online Session D & H Zoom Link: https://us02web.zoom.us/j/85273066196
Time 9:40-12:00	
Invited Speaker III - Suraya Masrom, Universiti Teknologi MARA, Malaysia Online Session A - Interactive Learning Systems in STEM Education E08, T3300, T3267, T3303, T3295, T3292, T3291	Online Session B - Learning Analytics and Educational Quality Assurance T3210, T3163, T3186, T3214, T2087, T2132, T3283, T2078
Online Session C - AI-Driven Educational Tools and Ethical Implications T2077, T3263, T3271, T3240, T3264, T3156, T3229, T2111	Online Session D - Generative AI and Language Model Applications T3224, T3265, T3243, T2104, T3165, T3261, T2110, T1029
Time 12:00-13:30	Break
Time 13:30-15:15	
Online Session E - Engineering Curriculum Development and Industry Collaboration T3266, T3251, T1018, T2073, T3259, E11, T3230	Online Session F - Blended Learning and Multimodal Instructional Design T3183, T3308, T3309, E15, T3189, T3190, T1050
Online Session G - Cross-Cultural Language Learning and Digital Inclusion T3257, T3150, T3162, T3185, T3219, T3142, T2101	Online Session H - Gamification and Immersive Learning Technologies T1002, T3301, T3248, T3304, T3272, T2067, T3273
Time 15:15-15:30	Break
Time 15:30-17:15	
Online Session I - Sustainable Education and Industry-Academia Synergy T2106, T1055, T3181, T2109, T3193, T3293, T3299	Online Session J - Teacher Training and Academic Integrity Systems T3268, T3223, T2131, T3314, T3250, T1027, T2126

► Keynote Speakers

March 15, Saturday | UTC/GMT+8

9:10-9:55 | 讲学厅 1st Floor - Onsite Talk

Zoom link: <https://us02web.zoom.us/j/85826758613> Password: 031416



Yan Li
Zhejiang University, China

Bio: Yan Li got her Ph. D from Department of Agricultural Education at Texas A&M University in August, 2004. Since September 2004, Dr. Li has been working in College of Education, Zhejiang University. She is the Director of Research Center for AI in Education and Director of Department of Curriculum and Learning Sciences, Zhejiang University. Her research interests include distance education, ICT education, media education, AI in education, diffusion of educational innovations, and etc.

During April-July, 2009, she visited University of Florence, doing research work in area of media education and digital literacy improvement for the youth generation. During June 2014 and June 2015, supported by Chinese Scholarship Council (CSC), Dr. Li visited Indiana University-Bloomington as a visiting scholar, doing Open Educational Resources and MOOCs-related research work with Dr. Curtis Bonk.

In recent decades, she has presided several international-, national- and provincial-level research projects and has published series of academic papers or books in area of educational technology. You may find her papers in journals such as Computers & Education (CAE), British Journal of Educational Technology (BJET), Educational Technology Research & Development (ETR&D), Asia Pacific Journal of Education (APJE), Social Behavior and Personality (SBP), International Journal on Emerging Technologies in Learning (iJET), Journal of International Agricultural and Extension Education (JIAEE), and etc.

Speech Title: Practice and Studies on AI-assisted Writing Instruction

Abstract: The presentation will focus on the practice and studies related to AI-assisted writing instruction. It includes four parts of contents: (1) current status of writing instruction practice and studies; (2) possibility of AI-assisted writing instruction innovation in the age of AI; (3) introduction of main contents of several studies related to AI-assisted writing instruction practice carried out in China; and (4) Implications and suggestions for AI-assisted writing instruction practice and studies in future.

► Keynote Speakers

March 15, Saturday | UTC/GMT+8

10:20-11:05 | 讲学厅 1st Floor - Onsite Talk

Zoom link: <https://us02web.zoom.us/j/85826758613> Password: 031416



Cheng, May Hung May
The Education University of Hong Kong, China
Vice President (Academic), Chair Professor of Teacher Education

Bio: Professor May Cheng May-hung is currently Vice President (Academic) and Chair Professor of Teacher Education of The Education University of Hong Kong (EdUHK).

Professor Cheng began her teacher education work at the Sir Robert Black College of Education in 1990. As a long-serving member of EdUHK and the former Hong Kong Institute of Education, she has taken up academic leadership positions at different stages, such as Associate Vice President (Academic Affairs), Registrar, Acting Dean of the Faculty of Arts and Sciences, Associate Dean (Programmes), and Programme Director. Between 2010 and the end of 2011, Professor Cheng was a Reader in Professional Education in the Department of Education at the University of Oxford, and a fellow of the Governing Body at Kellogg College.

Professor Cheng graduated from The University of Hong Kong with a BSc (First-class Honours) degree, a Certificate in Education (Distinction) and a Master's in Education. She obtained a PhD at the University of Waikato, New Zealand. She served as President of the East Asian Association for Science Education (EASE) from 2016 to 2019. Professor Cheng has actively participated in and made contributions to the international teacher education and science education arena.

Speech Title: Steam Education in Hong Kong – Progress and Challenges

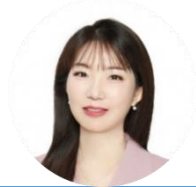
Abstract: STEAM education—an interdisciplinary learning approach that integrates Science, Technology, Engineering, Arts, and Mathematics—has become a cornerstone of educational reform worldwide. In Hong Kong, it is a critical component of the government's strategy to foster creativity, innovation, and talent development, aligning with the National 14th Five-Year Plan and the Chief Executive's Policy Address. This presentation explores the development, challenges, and future directions of STEAM education in Hong Kong, providing a comprehensive overview of government policies, school-based support, professional development, and student engagement. The presentation concludes with a summary of the progress and challenges in promoting STEAM education in Hong Kong. It highlights the need for continued collaboration among schools, government, and professional organizations to address systemic barriers and ensure the sustainable development of STEAM education.

► Keynote Speakers

March 15, Saturday | UTC/GMT+8

11:05-11:50 | 讲学厅 1st Floor - Onsite Talk

Zoom link: <https://us02web.zoom.us/j/85826758613> Password: 031416



Zhongling Pi Shaanxi Normal University, China

Bio: Zhongling Pi is a full professor in the Key Laboratory of Modern Teaching Technology, Ministry of Education at Shaanxi Normal University. Her research interests include video lectures design and learning strategies, learning science, educational psychology, and collaborative learning. Her research work is supported by numerous grants from the National Natural Science Foundation of China, MOE, and Shaanxi province. She has published over 60 journal papers and two academic monographs, of which 26 are top 10% of journal papers. Her research work has been awarded by Shaanxi province.

Speech Title: Interaction Matters: Co-viewing Facilitates Learning from Video Lectures

Abstract: When students engage in learning through synchronous video lectures, they often participate in co-viewing sessions with remote peers online. This online learning approach entails students watching the same video lecture simultaneously, engaging in interpersonal communication, and subsequently collaborating through online platforms to complete tasks associated with the course content. Therefore, student learning processes, including accessing resources, interpersonal communication, as well as execution and regulation, might be influenced by others, which in turn can affect their learning performance. Despite the popularity of co-viewing video lectures, most studies consider viewing video lectures as an individual process. We conducted a series of eye-tracking and fNIRS studies to examine the effects of others' presence and interpersonal communication on co-viewing video lectures. We discovered that interpersonal communication, encompassing both nonverbal and verbal interactions, was essential for co-viewing video lectures. These benefits were influenced by individual differences, the behaviors of others, and task difficulty, as supported by both behavioral and neural evidence. Our research suggests important strategies for students during the co-viewing of video lectures.

► Invited Speakers

March 15, Saturday | UTC/GMT+8

14:00-14:20 | - Onsite Talk | 教工之家 2nd Floor



Jining Han Southwest University, China

Bio: Dr. Jining Han is an associate professor in the Faculty of Education at Southwest University. He earned his Ph.D. in Second Language Acquisition and Educational Technology from the University of South Florida and holds a Master's degree in Pedagogy from Arizona State University. He also received a postdoctoral fellowship position at the Georgia Institute of Technology. He conducts research in applying AI-supported learning, virtual reality in education, and smart learning environment.

Speech Title: Continue Using or Gathering Dust? A Mixed Method Research on the Factors Influencing the Continuous Use Intention for an AI-Powered Adaptive Learning System for Middle School Students

Abstract: This study investigates the factors influencing the continuous use intention of AI-powered adaptive learning systems among middle school students in China. Employing a mixed-method approach, this study integrates Technology Acceptance Model 3 with empirical data collected from middle schools in western China. The main contributions of this study include identifying key determinants of usage intention, such as computer self-efficacy, perceived enjoyment, system quality, and the perception of feedback. The findings provide insights into enhancing education through AI and suggest strategies for developing more effective and engaging adaptive learning systems. This research not only fills a significant gap in the understanding of AI in education but also offers practical implications for educators and policymakers aiming to improve learning outcomes in middle school settings.

► Invited Speakers

March 15, Saturday | UTC/GMT+8

14:00-14:20 | - Onsite Talk | 306 3rd Floor



Ying Tang Southwest University, China

Bio: Dr. Ying Tang is an Associate Professor of Educational Technology at the Faculty of Education, Southwest University, China, and serves as Associate Editor for Future in Educational Research. Prior to joining Southwest University, Dr. Tang was a postdoctoral researcher at Indiana University's School of Informatics, Computing, and Engineering, where she contributed to an NSF-funded project aimed at enhancing cybersecurity and privacy education for computing students in higher education. With a rich, cross-disciplinary academic background, Dr. Tang has authored over forty peer-reviewed publications, many of which have been featured in high-impact journals and conferences, including *Computers & Education*, *Educational Research Review*, *British Journal of Educational Technology*, and the *International Journal of Educational Technology in Higher Education*. Her research primarily focuses on optimizing student learning outcomes in computer-mediated environments, with an emphasis on the integration of innovative educational technologies and effective pedagogical strategies. Her work has been widely cited, with over 2,000 citations since 2020 and an h-index of 16.

Speech Title: A Systematic Review on Using Chatbots to Support Computer-Supported Collaborative Learning

Abstract: As artificial intelligence and natural language processing continue to evolve, chatbots have emerged as promising tools in Computer-Supported Collaborative Learning (CSCL). These intelligent conversational agents facilitate student interactions, support group collaboration, and provide personalized assistance, making them valuable tools in digital learning environments. However, their integration into CSCL remains an evolving field, requiring a deeper understanding of their capabilities, limitations, and impact on learning dynamics. This study presents a systematic review of recent research on the role of chatbots in CSCL, uncovering their technological and pedagogical potentials alongside critical challenges. Examinations reveal key affordances, including personalization, scalability, and real-time support, which enhance collaborative learning through adaptive group coordination, scaffolded knowledge-building, and AI-driven feedback mechanisms. Challenges such as balancing automation with human agency, aligning chatbot functionalities with pedagogical goals, and refining evaluation metrics are analyzed, highlighting design and implementation complexities. The synthesis proposes future strategies to transform chatbots into robust tools for collaborative learning ecosystems. By bridging theoretical insights with actionable design principles, this work offers educators and developers a roadmap to harness chatbots' transformative potential in reshaping CSCL practices.

► Invited Speakers

March 16, Saturday | UTC/GMT+8

9:40-10:00 | - Online Talk

Zoom link: <https://us02web.zoom.us/j/85826758613> Password: 031416



Suraya Masrom Universiti Teknologi MARA, Malaysia

Bio: Associate Professor Ts. Dr. Suraya Masrom leads the Machine Learning and Interactive Visualization (MaLIV) Research Group at the Perak Branch of Universiti Teknologi MARA (UiTM), MALAYSIA. She serves as the chief editor of the Mathematical Sciences and Informatics Journal published by UiTM Press and has been recognized as the recipient of the university's Best Journal Editor award in 2023. She received her Ph.D. in Information Technology and Quantitative Science from UiTM in 2015. Her professional journey began in the realm of information technology, holding a position as an Associate Network Engineer at Ramgate Systems Sdn. Bhd (a subsidiary of DRB-HICOM) in June 1996, shortly after completing her bachelor's degree in computer science from Universiti Teknologi Malaysia (UTM) in March 1996.

Speech Title: Understanding Hyper-Parameters and Feature Importance in GP-Based AutoML for ESG Compliance Prediction

Abstract: Automated Machine Learning (AutoML) offers substantial benefits in addressing real - world problems by expediting the development of machine learning models. In scenarios involving the analysis of companies' Environmental, Social, and Governance (ESG) performance—where datasets often present significant challenges—AutoML emerges as a promising solution to manage these complexities effectively. Despite the growing interest in leveraging Genetic Programming (GP) within AutoML for complex datasets, a critical gap remains: a comprehensive understanding of GP hyper - parameters and their impact on machine learning performance. While GP - based AutoML excels at automating various aspects of model development, limited research has explored the significance of individual features and the effect of GP population size within these models.

This study addresses this gap by presenting an in - depth analysis of model performance from multiple perspectives, including feature selection, GP population sizes, and comparisons with different machine learning algorithms. Additionally, the study offers valuable insights into the relationship between Pearson correlations, machine learning performance, and the importance of specific features.

The results indicate that incorporating all relevant determinants as features in GP - based AutoML, or focusing solely on firm characteristics, leads to superior performance with an optimal balance between True Positive Rate and False Positive Rate. The proposed models demonstrate high accuracy, with Area Under the Curve (AUC) values exceeding 0.9. The novelty of this study lies in its empirical evaluation of various approaches to implementing GP - based AutoML. These findings offer alternative strategies for business investors to identify companies with robust sustainability practices more effectively.

► Onsite Sessions

► Session 1: AI-Driven Pedagogical Innovations and Personalized Learning Systems

► Session Chair: Jining Han, Southwest University, China

► 14:00-16:05 | March 15, 2025 | Venue: 教工之家 2nd Floor

► T3155, T3200, T3238, T3220, T3197, T3221, T3217



Speaker: Jining Han, Southwest University, China

Speech Title: Continue Using or Gathering Dust? A Mixed Method Research on the Factors Influencing the Continuous Use Intention for an AI-Powered Adaptive Learning System for Middle School Students

**Invited
Speech**

14:00-14:20

Abstract: This study investigates the factors influencing the continuous use intention of AI-powered adaptive learning systems among middle school students in China. Employing a mixed-method approach, this study integrates Technology Acceptance Model 3 with empirical data collected from middle schools in western China. The main contributions of this study include identifying key determinants of usage intention, such as computer self-efficacy, perceived enjoyment, system quality, and the perception of feedback. The findings provide insights into enhancing education through AI and suggest strategies for developing more effective and engaging adaptive learning systems. This research not only fills a significant gap in the understanding of AI in education but also offers practical implications for educators and policymakers aiming to improve learning outcomes in middle school settings.

Enhancing Academic Integrity in E-Exams Through AI-Driven Proctoring Technologies

Wai Yie Leong

Presenter: Wai Yie Leong, INTI International University, Malaysia

T3155

14:20-14:35

Abstract: The rapid adoption of e-exams in education has revolutionized the assessment landscape, offering flexibility and accessibility to learners worldwide. However, this shift has also raised significant concerns about academic integrity. This study explores the role of artificial intelligence (AI)-driven proctoring technologies in mitigating cheating and fostering fairness in online examinations. Key features of AI-driven proctoring, including facial recognition, gaze tracking, keystroke analysis, and behavioral pattern detection, are analyzed for their effectiveness in ensuring a secure testing environment. The research highlights the challenges associated with these technologies, such as privacy concerns, potential biases, and technical limitations, while proposing solutions to address them. Through a mixed-methods approach combining case studies and surveys, the study evaluates the impact of AI-driven proctoring on student performance, engagement, and trust in e-exam systems. The findings suggest that integrating ethical AI practices and transparent communication can enhance academic integrity while maintaining learner confidence. This research contributes to the ongoing discourse on leveraging technology to uphold educational standards in an increasingly digital world.

Research Trends about Artificial Intelligence in Mathematics Education on the Scopus Indexed with R Studio

Tanti Listiani, Melda Jaya Saragih

Presenter: Tanti Listiani, Universitas Pelita Harapan, Indonesia

T3200
14:35-14:50

Abstract: This research was conducted to see trends regarding Artificial Intelligence, especially in mathematics education. Bibliometric analysis was carried out on data from 2020 to 2025. Selected articles are only in the Scopus database. The method used to conduct the analysis is by analyzing the available on Scopus and utilizing R Studio. In Scopus Data, 525 documents have been filtered according to the appropriate scope. R Studio is used to use the Bibliometric package and then upload the details of the article in the form of BibTeX format. The results show that the most discussed articles about AI are in 2024, while in 2025 they have not been discussed much because when the analysis was carried out it was in early 2025. The country that has done the most research on AI is China. This research provides an understanding that AI encourages independent learning, supports conceptual understanding, and connects theoretical research with practical applications. AI in the field of mathematics education has the potential to redefine the interconnectedness of mathematics education and its integration into interdisciplinary research. Research on AI can continue to be carried out and its positive and negative impacts can be analyzed to create meaningful learning for students.

Empowering Mathematical Problem-Posing Pedagogy with Generative AI: A Theoretical Framework and Case Study

Huijun Shao, Gaohua Tang

Presenter: Huijun Shao, Beibu Gulf University, China

T3238
14:50-15:05

Abstract: In the era of artificial intelligence, fostering creativity, critical thinking, and problem-solving skills has become increasingly important, particularly in mathematics education. Problem-posing pedagogy is recognized as an effective approach to achieving these educational goals. However, teachers often face challenges in task design, creating effective prompts, and managing classroom interactions. This study proposes a novel theoretical framework powered by Generative AI (GAI) to address these challenges. The framework consists of four interconnected stages: Design, Simulate, Engage, and Refine. By leveraging GAI, teachers can generate personalized tasks, anticipate classroom dynamics, and dynamically adjust teaching strategies. A case study demonstrates the framework's potential to enhance student engagement and improve problem-posing activities. Despite its promising potential, the framework requires further empirical validation and optimization through real-world application. Future research will explore the integration pathways of GAI in mathematical problem-posing pedagogy.

The Development of a Collaborative Learning Tool for AI Education: Corobolab

Haibin Lai, Peng Peng, Yuhui Lv, Peiwei Cai, Qiongiong Ma, Zhun Zhang

Presenter: Haibin Lai, South China Normal University, China

T3220
15:05-15:20

Abstract: K-12 Artificial Intelligence (AI) education can potentially benefit from robots based collaborative learning tools. Currently, the scarcity of collaboration-oriented features in most educational robotics poses a challenge to the seamless implementation of collaborative learning in AI education. To address this gap, this paper presents Corobolab, a purpose-built collaborative learning tool for AI education. Its core objective is to facilitate the harmonious integration of AI education and collaborative learning for both educators and learners. Corobolab achieves this by integrating software and hardware platforms, establishing a two-tiered collaborative ecosystem. The shared programming workspace is a key feature, allowing multiple students to engage in real-time collaboration. Here, they can jointly develop and integrate functional modules, promoting teamwork and knowledge sharing. Moreover, Corobolab is highly adaptable. It can be customized according to project requirements by leveraging modular and programmable sensors and robot components. This flexibility enables educators to design courses that are tailored to different teaching objectives as well as collaborative activities. Pilot applications in primary and middle schools showed that Corobolab provides an efficient software-hardware collaborative environment for AI education classrooms. Educators now have access to a versatile set of tools that simplify the process of conducting collaborative learning classes, ultimately enhancing the quality of AI education in the K-12 context.

How to Build an Adaptive AI Tutor for Any Course Using Knowledge Graph-Enhanced Retrieval-Augmented Generation (KG-RAG)

Chenxi Dong, Kan Chen, Shupeì Cheng, Yimin Yuan, Chujie Wen

Presenter: Chenxi Dong, The Education University of Hong Kong, China

T3197
15:20-15:35

Abstract: Integrating Large Language Models (LLMs) in Intelligent Tutoring Systems (ITS) presents transformative opportunities for personalized education. However, current implementations face two critical challenges: maintaining factual accuracy and delivering coherent, context-aware instruction. While Retrieval-Augmented Generation (RAG) partially addresses these issues, its reliance on pure semantic similarity limits its effectiveness in educational contexts where conceptual relationships are crucial. This paper introduces Knowledge Graph-enhanced Retrieval-Augmented Generation (KG-RAG), a novel framework that integrates structured knowledge representation with context-aware retrieval to enable more effective AI tutoring. We present three key contributions: (1) a novel architecture that grounds AI responses in structured domain knowledge, (2) empirical validation through controlled experiments (n=76) demonstrating significant learning improvements (35% increase in assessment scores, $p < 0.001$), and (3) a comprehensive implementation framework addressing practical deployment considerations. These results establish KG-RAG as a robust solution for developing adaptable AI tutoring systems across diverse educational contexts.

T3221
15:35-15:50

Research on the Application and Development of Artificial Intelligence Assisted Education and Teaching under the Perspective of Human-Machine Collaboration

Caixia Yang, Jie Jiang, Mingchen Gao

Presenter: Jie Jiang, Harbin University of Science and Technology, China

Abstract: With the rapid development and application of artificial intelligence technology, education is ushering in unprecedented changes. Through data analysis and intelligent algorithms, AI can achieve an efficient allocation of educational resources and optimization of the teaching process, while human-machine collaboration, as a new educational model, emphasizes the collaboration between human intelligence and machine intelligence, opening up new paths for educational equity and innovation. In this study, we firstly sort out the current status quo related to human-machine collaboration and AI-assisted education; secondly, we analyze the connotation of human-machine collaboration and explore three types of human-machine collaborative teaching forms and related examples in virtual space, physical space, and hybrid space; thirdly, we illustrate the four types of application scenarios of human-machine collaboration in instructional design and teacher-student interaction, which are mainly the application and practice of AI in educational decision-making, intelligent tutoring, automatic assessment, and classroom evaluation scenarios; finally, it analyzes the future development trend of AI+education fusion, and at the same time points out the challenges of teachers' role and responsibility transformation, technology adaptability, and ethical risks, based on which it proposes the development path of future AI + education fusion.

Graph Contrast Learning Fused Question Features Based Knowledge Tracing

Junyi Guo, Ruixin Chen, Zhun Zhang, Qiongxiang Ma

Presenter: Junyi Guo, South China Normal University, China

T3217
15:50-16:05

Abstract: The exponential growth of online education has amplified the need for personalized learning, with Intelligent Tutoring Systems (ITS) providing rich behavioral interaction data for adaptive instruction. However, accurately assessing learners' knowledge states remains a significant challenge. Knowledge Tracing (KT), which predicts student performance based on historical interactions, has emerged as a promising solution. The complexity of KT lies in the multidimensional and dynamic nature of knowledge acquisition. In Graph-based Knowledge Tracing (GKT), current models face limitations in node importance representation, question embedding sparsity, and underutilization of learning features. To this end, this paper proposes the Graph Contrast Learning Fused Question Features Based Knowledge Tracing (GCLFKT) model. Firstly, GCLFKT employs Graph Attention Networks (GAT) to generate aggregated question embeddings, mitigating data sparsity problems associated with question-level embeddings. Furthermore, it incorporates Graph Contrastive Learning (GCL) to enhance embedding representations and integrates rich question features through a feature fusion layer. Experiments on the ASSISTments datasets demonstrate that GCLFKT outperforms several baseline models by over 4% in AUC metrics, with superior predictive performance validated through visualization analysis.

► Onsite Sessions

► Session 2: Learning Analytics and Multimodal Assessment Techniques

- Session Chair: Jinfeng Wang, South China Agricultural University, China
- 14:00-16:05 | March 15, 2025 | Venue: 306 3rd Floor
- T2112, T2105, T2113, T1039, T1054, T3288, T3161



Speaker: Ying Tang, Southwest University, China

Speech Title: A Systematic Review on Using Chatbots to Support Computer-Supported Collaborative Learning

**Invited
Speech
T1030
14:00-14:20**

Abstract: As artificial intelligence and natural language processing continue to evolve, chatbots have emerged as promising tools in Computer-Supported Collaborative Learning (CSCL). These intelligent conversational agents facilitate student interactions, support group collaboration, and provide personalized assistance, making them valuable tools in digital learning environments. However, their integration into CSCL remains an evolving field, requiring a deeper understanding of their capabilities, limitations, and impact on learning dynamics. This study presents a systematic review of recent research on the role of chatbots in CSCL, uncovering their technological and pedagogical potentials alongside critical challenges. Examinations reveal key affordances, including personalization, scalability, and real-time support, which enhance collaborative learning through adaptive group coordination, scaffolded knowledge-building, and AI-driven feedback mechanisms. Challenges such as balancing automation with human agency, aligning chatbot functionalities with pedagogical goals, and refining evaluation metrics are analyzed, highlighting design and implementation complexities. The synthesis proposes future strategies to transform chatbots into robust tools for collaborative learning ecosystems. By bridging theoretical insights with actionable design principles, this work offers educators and developers a roadmap to harness chatbots' transformative potential in reshaping CSCL practices.

Classroom Quality Evaluation System Based on Multimodal Emotion Recognition

Jin Feng Wang, Xiong Shen Xie, Xiao Mei Chen

Presenter: Jinfeng Wang, South China Agricultural University, China

**T2112
14:20-14:35**

Abstract: Smart classes have become an important trend in education today. The new generation of information technology is driving changes in the way education is delivered. Observing students' emotional state in class will help teachers accurately know how students feel about receiving knowledge, in order to adjust the teaching method. However, the lack of emotional interaction between teachers and students in most realistic classrooms will make it difficult for teachers to accurately evaluate students' needs and responses, which affects the quality of teaching. A classroom sentiment evaluation system is proposed based on multi-modal analysis, which adopts vision modal and audio modal to analyze students' emotional state while in class and outputs evaluation scores of classroom quality. The system includes object detection, satisfaction scores analysis, speech recognition, text analysis, and decision feedback

module. Additionally, the system will constraint correlation and provides adjustment decision to further improve quality of classroom teaching. This system is verified by real classroom data and obtains a series of experimental data support, achieving satisfactory results of classroom quality evaluation.

A Data-Analytical Framework for the Early Detection of At-Risk Students in Higher Education

Chenxi Dong, Jonathan C. Yip, Alpha Man Ho Ling, Joyce Lok Yin Kwan, Philip Leung Ho Yu, Albert Lee, Susanna Siu Sze Yeung, Pamela Pui Wan Leung, Eric Kwan Wai Yu, Eric Chi Keung Cheng, Kwok Tung Tsui, May May Hung Cheng, John Chi-Kin Lee, Wai Keung Li

Presenter: Chenxi Dong, The Education University of Hong Kong, China

T2105
14:35-14:50

Abstract: Data analytics has become one of the emerging tools for the future of education. By analyzing aggregated data from various sources, educators can identify at-risk students who are struggling in their courses and apply a variety of interventions to support their learning. However, despite the abundance of educational data available in universities, accurately identifying students at risk of poor performance in a course remains challenging. In a study conducted at a local university in Hong Kong, 90 students in a senior-year psychology course were involved. We employed a novel data-analytics approach that combined LASSO (Least Absolute Shrinkage and Selection Operator) regression and the Youden index to predict student performance and identify potentially at-risk students in the course. Additionally, we developed an open-source Python package (<https://pypi.org/project/dualPredictor/>) based on our method. This tool enables educators to easily apply advanced analytics techniques to their datasets, enhancing the accessibility of technology in education. This work underscores the transformative potential of data-driven, learner-centered approaches in higher education.

Decision Tree for Predicting Student English Writing Performance in the Higher Education

Zhiwei Qi, Yuqing Liu, Xiaoqing Dai

Presenter: Yuqing Liu, Yunnan University, China

T2113
14:50-15:05

Abstract: Decision tree is a machine learning algorithm that can effectively predict student performance. However, the existing performance prediction models rarely analyze the impact of multiple factors on English writing performance. To address this issue, we propose an English writing performance prediction model based on the CART decision tree algorithm. Specifically, we first collect data on motivation, engagement, self-efficacy, parent education, and years of learning English from 974 English major students in four universities in Yunnan Province, China. Then, we preprocess the data by cleaning, transforming, and splitting it into training and testing sets. Next, we build a CART decision tree model using Python 3.0 and the scikit-learn and pandas libraries, and evaluate its performance on the testing set. Finally, we analyze the results to identify the important factors affecting students' English writing performance. The experimental results show that the years of learning English, engagement, and parent education are

the key factors in predicting writing performance, and the proposed model can achieve a prediction accuracy of 83.2%. Overall, our study enriches the existing literature by clarifying the complex factors that influence students' English writing performance and provides an exemplary application of decision tree-based quantitative methods in the realm of English education research.

Empathy-Driven Design: Revamping the Learning Mall UI through Eye-tracking, Participatory and Value-sensitive Design Methodologies

Yao Gu, Samiullah Paracha

Presenter: Yao Gu, Xi'an Jiaotong-Liverpool University, China

T1039
15:05-15:20

Abstract: Learning Management Systems serve as vital tools for promoting quality teaching, learning, and assessments. However, these platforms often suffer from usability issues due to the neglect of learners' visual behavior in their design and implementation. Consequently, most of these applications appear poorly designed and populated by disorganized content— eventually provoking tedious navigations and interactions at the learner's end. Xi'an Jiaotong-Liverpool University uses Learning Mall to organize coursework, and assessment and facilitate staff-student interactions. However, there is a lack of evidence whether any usability study, vis-vis learners' gaze behavior, and visual attention, on the Learning Mall has ever been carried out. To address the knowledge gap, this paper reports on a usability study, linked with Eye-tracking, Participatory, and Value Sensitive Design approaches, in order to bring learner-centered improvements to the Learning Mall interface. Findings from Phase I unraveled several usability issues that affected learners' experience with the Learning Mall, guiding the redesign efforts in Phase II through Participatory Design Workshops, to create high-fidelity prototypes aligned with learners' needs and satisfaction.

Effects of Self-Explanation Strategies and Panoramic Video on Learning Outcomes: A Multimodal Data Analysis

Wenjie Luo, Jiamin Xu, Xinyan Lu, Xudong Zheng

Presenter: Wenjie Luo, Jiangsu Normal University, China

T1054
15:20-15:35

Abstract: The purpose of this study was to investigate the effects of different types of videos and self-explanation strategies on learning engagement and performance. Ninety-six college students were randomly assigned to one of the four conditions in a 2×2 factorial design with videos (panoramic vs. regular) and self-explanation prompts (open-ended vs. structured) as the between-subjects factors. Neurosky mindwave mobile and Tobii pro X3-120 eye-tracker were used to measure participants' learning engagement. Learning performance was measured with retention and transfer tests. The results revealed that (a) panoramic video significantly improved transfer test scores and the total fixation count; (b) structured self-explanation strategies significantly facilitated retention test scores and learning engagement—meditation, the total fixation count, and the mean fixation duration—in the learning process; and (c) the combination of panoramic video and structured self-explanation strategies led participants to focus more deeply on the learning process. This research provides some implications for instructional designers of panoramic videos.

Enhancing Teaching Quality through LLM: An Experimental Study on Prompt Engineering

Chen Enfan

Presenter: Chen Enfan, Guangdong University of Foreign Studies, China

T3288
15:35-15:50

Abstract: This study explores the application of Large Language Models Artificial Intelligence (LLM AI) in the assessment of course teaching quality, aiming to overcome the limitations of traditional teaching evaluation. Taking the experimental courses in School G as an example, we propose CORE, a framework to support generating feedback from student assessment during the course. Through the Solomon four-group design experiment, it validates the significant effectiveness of the teaching quality evaluation feedback generated by LLM in enhancing teachers' teaching quality. This feedback can help teachers improve teaching strategies, boost teaching effects, effectively make up for the limitations of traditional teaching assessment methods, and offer a new perspective and tool for teaching quality evaluation.

The Rise of Artificial Intelligence: The Impact of Artificial Intelligence on Language Learning

Ngan Tran Huynh Chau, Vi Loi Truong, Thuong Hong Thi Nguyen

Presenter: Ngan Tran Huynh Chau, FPT University, Vietnam

T3161
15:50-16:05

Abstract: This study aims to explore the comprehensive impact of AI in language education, focusing on the rapid development of AI technologies and their transformative effects on educational methods. The research examines the use of AI-driven tools such as Duolingo, Google Translate, and Prep.com, which offer engaging learning experiences and effective teaching methods. Additionally, the study highlights the role of facilitating factors and addresses the challenges of social influence and learning motivation in the acceptance of technology. By surveying 230 university students in Can Tho, the study provides insights into how AI enhances language skills, improves communication, and tailors learning paths. At the same time, it examines concerns regarding data privacy and the reduction of human-to-human interaction in the learning process. Overall, the findings suggest that AI significantly contributes to language education while presenting both opportunities and challenges.

► Onsite Sessions

► Session 3: Emerging Technologies in Educational Tools and Knowledge Representation

► Session Chair: Donald Chang, Metropolitan State University of Denver, USA

► 14:00-16:00 | March 15, 2025 | Venue: 102 1st Floor

► E03-A, T3177, T2129, T3315, T3213-A, T1035, E14, T3208

Structuring Assignment Preparation with Artificial Intelligence Tools

Donald Chang

Presenter: Donald Chang, Metropolitan State University of Denver, USA

Abstract: With the increasing adoption of AI tools, attention has turned to how to use such tools to increase efficiency and effectiveness in routine operations. In higher education, faculty and administrators face tremendous challenges in managing the use of AI tools in academic preparation while maintaining academic integrity as students learn to use AI tools for searching content, ideas, structures, outlines, etc. Many students are quick to embrace AI tools, often without explicit consent from their instructors. This makes it increasingly difficult for instructors to fairly review and grade student submissions. Consequently, the use of AI-generated content in academic setting has led to anxiety among both faculty and students. This paper reports on a pilot study examining the use of AI tools in the preparation of a SWOT analysis in two business courses. Students were taught how to conduct searches and research using a structured guideline. The involved search tools include Google, Bing, and two free versions of AI search tools, CoPilot and Gemini. For the AI search tools, selected students learned to set goals, identify relevant subjects and topics, write prompts for search iterations, review and verify generated materials, compile and incorporate content, and editing and polish written reports. Upon submission, their SWOT reports were reviewed and ranked by other students. In addition, study students completed a survey to gauge their experience and satisfaction. The results indicate that AI-assisted SWOT reports were ranked higher with an overall positive and satisfactory student experience for those who use AI search tools. Overall, students believe that AI tools enhance the quality and productivity of their work. In summary, AI tools show promise in enriching academic experience and preparation.

E03-A
14:00-14:15

Integrating Forgetting Factor and Attention Mechanism into Knowledge Tracing

Wei Du, Jiahao Hu, Xianxia Zou, Li Mao

Presenter: Xianxia Zou, Jinan University, China

Abstract: Knowledge tracing (KT) is a core technology in smart education, providing critical information for applications such as exercise recommendation and personalized learning. Deep learning-based KT models, such as DKT, fail to consider forgetting factors, while the SAINT model accounts for forgetting factors but only as input features. This paper proposes a Forgetting Attention Knowledge Tracing (FAKT) model by quantifying multiple forgetting factors into a single forgetting factor and integrating it with attention mechanisms. FAKT demonstrates improved prediction accuracy across four public datasets.

T3177
14:15-14:30

The Development and Application of Virtual Experiment Platform for Function Parameter Passing

Shengli Tian, Tao Hu, Genyuan Du

Presenter: Shengli Tian, Xuchang University, China

T2129
14:30-14:45

Abstract: As computer programs run in the highly complex systems of hierarchical software and hardware, it is difficult to be visually observed, the problem of function parameter passing has become a pain point for teachers and students. There are four ways to pass parameters, and no programming language can support all the four ways. To meet the needs of different learners, an online virtual experiment platform of parameter passing is developed, where the experiments of four methods parameter passing can be carried out. In addition, the experiments could be done by a mobile phone, which the space-time limit of learning is broken. In virtual simulation module, the dynamic changes of computer memory could be simulated and displayed when the function pseudo-code is running, so that the parameter passing process becomes intuitive, and it is easy for students to understand the working mechanism of function parameter passing. Finally, the teaching goal is achieved by the joint action of the other modules, such as basic training, extended improvement and test enhancement, etc. The results of practice show that the enthusiasm and initiative of students are improved, and it has obvious results in assisting students to master the knowledge of function parameter passing.

Interdisciplinary-QG: An LLM-Based Framework for Generating High-Quality Interdisciplinary Test Questions with Knowledge Graphs and Chain-of-Thought Reasoning

Chaocheng Zhong, Feihong Ye, Zihan Wang, Aerman Jigeer, Zehui Zhan

Presenter: Zihan Wang, South China Normal University, China

T3315
14:45-15:00

Abstract: As interdisciplinary education gains prominence in global educational reforms, the design of high-quality interdisciplinary test items remains a challenge due to the complexity of knowledge integration, question difficulty control, and the inefficiency of manual generation. To address these issues, this study introduces Interdisciplinary-QG, an automated interdisciplinary question generation framework based on GPT-4. The framework integrates knowledge graph-enhanced retrieval-based generation with chain-of-thought reasoning and employs a structured BRTE (Background-Role-Task-Example) prompt template, enhancing both accuracy and interdisciplinary coherence. A case study in chemistry demonstrates that Interdisciplinary-QG effectively constructs interdisciplinary knowledge structures and generates high-quality test items with both depth and breadth. Experimental results show that it outperforms the general-purpose LLM ChatGLM in validity, efficiency, and interdisciplinary integration. This study provides new insights into leveraging AI for interdisciplinary education.

Unmanned Engineering Laboratory with a Humanoid Robotic Instructor

Dongkun Han

Presenter: Dongkun Han, The Chinese University of Hong Kong, China

T3213-A
15:00-15:15

Abstract: Hands-on engineering training is of utmost importance in various experimental education disciplines, such as mechanical, electrical, and chemical engineering. The objective of this study is to create an intelligent humanoid chatbot that can replicate the voices of real teachers and offer solutions to students' queries in programming and robotics learning. The core idea is to utilize AI-based voice cloning technology within a text-to-speech system to train the intelligent robot, enabling it to learn from voice samples collected from actual teachers. The chatbot boasts several notable features, including: First, instant conversational responses to students' questions regarding robot assembly and computer programming, encompassing Arduino, MATLAB, Python, and C++. Secondly, video demonstrations to assist students in completing their experiments. In addition, automated assessment of students' performance in specific laboratory tasks. Finally, generation of personalized learning materials based on comprehensive data analysis of students' previous conversations and performance. The developed robotic instructor has proven its effectiveness in four engineering courses, benefiting more than 200 students. This approach exhibits significant potential for application in diverse disciplines, facilitating experiential training.

Research on the construction of adaptive learning system based on knowledge graph in the context of artificial intelligence

Caixia Yang, Yan Ma, Shaojie Yi

Presenter: Yan Ma, Harbin University of Science and Technology, China

T1035
15:15-15:30

Abstract: With the rapid development of emerging technologies such as artificial intelligence, big data and blockchain, digital and intelligent reform of higher education has attracted much attention. At present, artificial intelligence technology is in the development period of transformation from "perceptual intelligence" to "cognitive intelligence", and knowledge graph, as the core driving force to realize "cognitive intelligence", can study the acquired knowledge or data to realize the understanding, reasoning or explanation of human thinking. Although the current adaptive learning system can provide personalized learning resources, students may encounter problems such as understanding problems and lack of immediate feedback in the process of autonomous learning. How to improve the interactivity and tutoring ability of adaptive learning system to better meet students' personalized learning needs has become an urgent problem to be solved. In order to solve this problem, this study proposes to use knowledge graph and other artificial intelligence technologies to enhance the function of adaptive learning system. By integrating intelligent question-answering and intelligent teaching modules, the system will be able to simulate the role of teachers and provide timely feedback and guidance, thus improving the learning experience and efficiency of students.

E14
15:30-15:45

The Impact of Generative AI on Learning Across Grades

Meijuan Xie, Liling Luo

Presenter: Meijuan Xie, Guangxi Normal University, China

Abstract: The emergence of generative AI (GAI) has significantly impacted education,

offering both opportunities and challenges for the sector's digital transformation. As the use of GAI in learning grows increasingly prevalent among students, its adoption varies greatly from one individual to another. Despite this growing trend, research on students' use and perceptions of GAI remains relatively scarce. In our study, we employed a mixed-methods, multiple-case study design to explore the impact of GAI on students across four grades. We focused on six key areas: learning interest, independent learning, problem-solving, confidence, appropriate use, and learning enjoyment. Our results revealed that participants had optimistic expectations regarding the utilisation of GAI to facilitate their learning. They believed that GAI could contribute positively to all six dimensions, enhancing their educational experience. We found that college students exhibited a higher level of performance than high school students across all six aspects. The insights we gained from this study can inform future research in digital education, particularly in understanding the diverse ways in which students interact with and perceive GAI. By recognizing the potential of GAI in transforming education, educators and policymakers can better harness its capabilities to enhance teaching and learning experiences. Additionally, the findings can guide the development of GAI-based educational tools and resources that cater to the needs of students across different grade levels.

Design and Performance Validation of a Computational Thinking Gamified Intelligent Tutoring System Focusing on Thinking Process

Zhilin Cen, Linlin Zheng, Zehui Zhan

Presenter: Zhilin Cen, South China Normal University, China

T3208
15:45-16:00

Abstract: Computational thinking (CT) is recognized as a crucial problem-solving skill in the age of artificial intelligence. However, there remains a significant gap in the availability of intelligent tools that effectively foster computational thinking in line with contemporary educational needs. To address this, the present study proposes a gamified intelligent tutoring system that supports learners' CT development through a process-oriented assessment methodology and targeted guidance. The assessment framework leverages machine learning algorithms to construct predictive models based on the frequency of six behavioral elements observed during gameplay, including a process-oriented failure risk assessment model for formative evaluation and a summative computational thinking level assessment model. The system identifies the critical process element contributing most to the prediction outcome to provide targeted guidance for learners at risk of failure or exhibiting low computational performance. Using a dataset of 754 real learner cases, five machine learning algorithms were compared, and multi-metric evaluation confirmed strong predictive performance, with accuracy exceeding 80%. Logistic regression was selected as the final algorithm due to its simplicity, efficiency, and interpretability, ensuring practical applicability. The tool will enable the scaling and personalization of computational thinking development.

► Onsite Sessions

► Session 4: Emerging Gamification and Immersive Learning Strategies

► Session Chair: Tze Wei Liew, Multimedia University, Malaysia

Chee Yan Choo, Universiti Teknologi MARA, Malaysia

► 14:00-16:00 | March 15, 2025 | Venue: 104 1st Floor

► T2099, T3202, T2128, T2123, T3151, T1038, T3310, T1021

The Effects of Cognitive and Affective Trust in Pedagogical Agents on Flow and Technology Acceptance in a Digital Game-Based Learning Environment

Yahdi Siradj, Tze Wei Liew, Rickman Roedavan, Su-Mae Tan, Bambang Pudjoatmodjo, Mohammad Tariqul Islam Khan

Presenter: Tze Wei Liew, Multimedia University, Malaysia

Abstract: In this study, we investigate the effects of cognitive and affective trust in pedagogical agents on flow and technology acceptance in a digital game-based learning (DGBL) environment. The experiment involved university learners interacting with pedagogical agents simulating professors, peer students, and industry experts to learn Fintech topics within an RPG-styled game. Results based on 204 valid participants indicate that cognitive trust, grounded in beliefs about reliability and competence, significantly impacts perceived usefulness, ease of use, and continuous intention to engage with the platform. Affective trust, rooted in emotional connections and feelings of care, enhances perceived usefulness, ease of use, and flow. Flow and perceived ease of use positively influence learners' intention to continue using the platform. However, perceived usefulness did not significantly affect continuous use intention, a finding consistent with our prior results from the same DGBL environment but with a different sample population. We discuss the critical role of trust dimensions in fostering learner engagement and provide insights for designing pedagogical agents that effectively address both cognitive and emotional aspects of DGBL environments, thereby promoting flow and technology acceptance.

T2099
14:00-14:15

Effect of Gamification on Flipped Learning in Pharmaceutical Chemistry

Long Chiau Ming, Chee Yan Choo

Presenter: Chee Yan Choo, Universiti Teknologi MARA, Malaysia

Abstract: Flipped learning requires students to study and understand the lecture content before attending lectures. The lecture content was provided through instructor-generated video and lecture notes. Our earlier YouTube learning analytics showed most students attend lectures without reviewing the content material. Gamification was introduced to motivate students to study and be prepared for lectures. This study aims to assess the effect of gamification on students' engagement and motivation. The escape room was selected as the assessment tool since it requires students to answer correctly all the questions at every level. Three escape rooms, each with unique interactive features and embedded comprehension questions, were employed to facilitate understanding of fundamental chemistry concepts among first-year pharmacy students. A cross-sectional online questionnaire evaluated student

T3202
14:15-14:30

engagement, and the impact of gamification on their motivation and confidence. Students' engagement was recorded using the number of views on YouTube analytics since the instructor-generated video was uploaded to YouTube. The student's number of views on instructor-generated videos increased with the escape room intervention. The study observed an increase in lecture preparedness and video engagement rates, with students reporting higher motivation, enjoyment, and confidence in their knowledge. While most students completed the escape rooms, participation rates before lectures varied, indicating the need for further exploration of barriers to completion. This gamified approach demonstrated the potential of leveraging game mechanics to transform passive learning into active problem-solving experiences, enhancing both motivation and comprehension in a flipped learning environment. Future studies could explore the longitudinal effects of gamification on student engagement.

Fostering Student Understanding of Space Biology Concepts Through the "Exomon Space" Educational Board Game: A Multidisciplinary Approach to Interactive Learning

Watcharin Unwet, Namkang Sriwattanothai

Presenter: Watcharin Unwet, Mahidol University, Thailand

Abstract: Space biology, an interdisciplinary field within STEM educations, examines the effects of unique environmental factors in space—such as microgravity, radiation, and extreme temperatures—on living organisms. Despite its importance, teaching space biology at the secondary level presents significant challenges, including reliance on expensive technologies and the absence of engaging instructional methods. To address these challenges, the Exomon Space educational board game was developed as an innovative, interactive tool to enhance student understanding of space biology concepts.

T2128

14:30-14:45

This study evaluates the game's effectiveness through a mixed-methods approach involving Grade 10 students from a Thai public school. Participants engaged in a 120-minute session consisting of gameplay, debriefing, and assessment activities. Data were collected using open-ended questions, perception questionnaires, and semi-structured interviews. Results reveal that students perceived the game as engaging, collaborative, and visually appealing, underscoring its potential to promote active learning. However, their conceptual understanding of complex topics, such as the biological effects of microgravity and radiation, remained surface-level. These findings suggest the need for more structured debriefing sessions and supplementary educational materials to deepen learning. The study highlights the value of gamified, multidisciplinary approaches in enhancing STEM education and offers insights for developing educational tools in similar contexts.

Exploring the Impact of Project-based Learning with Flipped Classroom on Practical Skills in Chemical Drawing and AutoCAD

Zehua Huang, Thanin Ratanaolarn, Yuansheng Huang

Presenter: Yuansheng Huang, Jiangmen Polytechnic, China

T2123

14:45-15:00

Abstract: Nowadays, there are some problems in chemical drawing and AutoCAD involving a lack of hands-on practice, disconnection between theory and application, limited individualized instruction, insufficient time for complex projects, and a passive

learning environment. This study proposes using project-based learning with a flipped classroom approach to enhance students' practical skills. In vocational school AutoCAD courses, the issue of students struggling to grasp drawing techniques quickly during class has drawn significant attention. To address this, a controlled experiment was conducted, using an independent samples T-test to examine the statistical significance of the results. The findings revealed that the experimental group's average score was significantly higher than the control group's, with a significance level of P value of 0.05. Additionally, this study suggests that control variable experiments can be integrated into the conventional teaching method to supplement traditional and new teaching methods. Future research could explore single-method comparisons, such as project-based learning or flipped classroom alone, against project-based learning with a flipped classroom setup.

Beyond the Screen: Enhancing Student Engagement in Virtual Classrooms Using Gamification

Wai Yie Leong

Presenter: Wai Yie Leong, INTI International University, Malaysia

T3151
15:00-15:15 Abstract: The shift toward virtual classrooms has revolutionized the educational landscape, offering unparalleled flexibility and accessibility. However, this transition has also presented challenges in maintaining student engagement and fostering interactive learning environments. This paper explores the transformative potential of gamification as a tool to enhance student engagement in virtual classrooms. By integrating game-based elements such as rewards, leaderboards, challenges, and interactive simulations, gamification creates a dynamic and immersive learning experience. The study examines the psychological and pedagogical foundations of gamification, emphasizing its ability to stimulate intrinsic motivation, promote active participation, and improve knowledge retention. Case studies and empirical data from diverse educational settings highlight the effectiveness of gamified strategies in virtual learning environments. Moreover, the paper discusses the challenges of implementing gamification, including potential over-reliance on extrinsic rewards and the need for tailored approaches to meet diverse learner needs. The findings underscore the importance of designing gamified virtual classrooms that balance educational rigor with engaging, student-centered experiences. Ultimately, this research advocates for a thoughtful integration of gamification as a key strategy to enhance learning outcomes and reimagine the future of digital education.

Problem Based and Outcome-based Learning Approach in Digital Logic Circuit Design to Enhance Students' Competency

Narong Sangwanate, Nisakorn Sangwanate, Nuttapong Wattana-siripong

Presenter: Narong Sangwanate, Suan Sunandha Rajabhat University, Thailand

T1038

15:15-15:30

Abstract: The Digital Logic Design course is essential for students in Information Technology, aiming to provide a strong grasp of concepts and sustain ongoing interest. Problem-Based and Outcome-Based Learning methodologies are employed to have students acquire knowledge through real-world problem-solving, fostering critical thinking and self-management skills. This paper introduces an effective

and innovative project involving the design of a logic circuit to control a motorized device. The project includes the creation of a 3-bit binary counting circuit with an asynchronous counter, utilizing flip-flop IC No. 7473 for countdown control, and designing a 00-99 count circuit using IC No. 74LS93. Students engage in exercises involving Boolean logic functions, truth table construction, and logic gate assembly. Beyond digital electronics, the project integrates interdisciplinary elements encompassing mechanics, circuit analysis, and the use of Tinkercad for 3D digital design. Embracing a student-driven project-based learning approach, the project aims to prepare students for successful transitions into higher-degree education.

Teaching Robotics for K-12 Students as Compulsory Subject in Vietnam

Truong Cong Duan, Le Ngoc Tuan, Phung Thi Thu Trang, Nguyen Quang Vu, Do Bao Chau, Tran Thi Bich Hang, Nguyen Xuan Khiem, Tran Phuoc Vinh

Presenter: Cong Duan Truong, FPT University, Vietnam

T3310
15:30-15:45

Abstract: The emphasis on teaching STEM, AI and Robotics has been included in Vietnam's national technology development strategy and assigned to the Ministry of Education and Training for implementation. However, there hasn't been a specific curriculum for this in general education. Only a few high schools have implemented it as an elective or extracurricular activity through STEM or Robotics courses. In this article, we introduce a Robotics teaching program implemented directly for K-12 students across the FPT education (FE) institutions, encompassing 10 school locations in 8 provinces, with 13,000 students and 1,000 teachers. In the initial phase, the program was taught to over 4,000 students in the first semester of each educational stage: grades 6, 7, 10, and 11, with two teaching periods per week. Through this course, students realize their central role, fostering skills in teamwork, communication, time management, problem-solving, and, naturally, the application of STEM knowledge. The results of implementing the Robotics program were assessed through surveys and interviews with students, teachers, and administrative staff. The outcomes indicate that students are enthusiastic and motivated to learn about STEM; teachers can enhance their knowledge, accumulate experience, and become more confident in teaching. Based on the transformations observed in students and teachers, the managers highly regard the success of the program. Students have succeeded in competitions at regional and international levels. Furthermore, the communication impact of teaching, learning, and competing in Robotics has increased the societal interest in the school. We continue to refine the current program, develop courses for the remaining K-12 levels, and expand it across all FE institutions in the process of reaching all provinces in Vietnam.

Design of Educational Tool for Cultivating Children's Awareness of Waste Separation
Zijun Jiang, Juifeng Chang

Presenter: Zijun Jiang, Dongguan University of Technology, China

T1021
15:45-16:00

Abstract: The proper classification and disposal of waste have long been serious societal issues. At present, it is essential to actively promote effective public education to encourage citizens to participate in waste separation. To improve the social environment and enhance public awareness, this study integrates learning theories and the Quality

Function Deployment (QFD) method to design a new educational tool “Panda’s Green Mission”, aimed at helping children develop an awareness of waste separation and learn the relevant knowledge. To validate the design quality, an experiment was conducted using Fuzzy Comprehensive Evaluation (FCE) to assess the product’s quality across various design dimensions. The findings, based on the maximum membership degree, indicate that the design outcomes were rated between "neutral" and "good." The experimental results suggest that the educational tool is feasible, potentially contributing to the improvement of the social environment while fostering children’s correct environmental awareness and sense of responsibility.

► Onsite Sessions

► Session 5: Interdisciplinary Competency and Creative Curriculum Development

► Session Chair: Dongqing Wang, South China Normal University, China

► 16:20-18:20 | March 15, 2025 | Venue: 教工之家 2nd Floor

► T3140, T2107, T3256, T2114, T3218, T3228, T3279, T2075

A Study of the Deming Loop Framework on Course Content Integration of Ideological and Political Elements

Huiqin Du, Muyao Zhang, Zujian Wu

Presenter: Huiqin Du, Jinan Univesity, China

Abstract: There are requirements of exploring how to integrate ideological and political elements (IPE) effectively into the professional talent cultivation process with the aid of new-era artificial intelligence technology, while teaching the course of "Multimedia Processing Technology" in the undergraduate phase of Electronic Information specialties in the higher education. Currently, there is a deficiency in integrating IPE education cohesively into teaching, and conducting IPE within the framework of artificial intelligence. Moreover, the lack of systematic exploration and practice has further diminished the integration of IPE with professional instruction, impacting the fulfillment of the fundamental task of moral education and talent cultivation. This paper explores the adoption of "Deming Wheel with Four Loops" within the framework of an artificial intelligence teaching assistant system. Based on the syllabus, this work integrates IPE cohesively into four key aspects: setting teaching objectives, implementing teaching activities, evaluating teaching effectiveness, and providing feedback and improvement. It forms a closed loop, ensuring the effective IPE implementation in specialized courses. Integrated with the iterative cycles, monotonous teaching about IPE though rigid teaching methods can be identified and addressed. According to questionnaire surveys and data from educational platforms, the "Deming Wheel with Four Loops" has shown significant effectiveness in cultivating comprehensive engineering talents, and enhancement of students' capabilities in developing humanistic, engineering, and scientific research thinking. Furthermore, it has strengthened students' sense of professional identity, mission, and social responsibility.

T3140
16:20-16:35

Empirical Analysis of Knowledge Co-Construction in Educational Metaverse Communities: An Analysis Based on Comments on Social Media Videos

Huijun Ma, Yuying Yang, Yunzhuo Li, Qiyu Zhang, Saiqi Xiong, Jining Han

Presenter: Jining Han, Southwest University, China

T2107
16:35-16:50

Abstract: With the development of the educational Metaverse, its social attributes have become increasingly prominent. Social media platforms serve as important communication and learning communities within the educational Metaverse, and the interactive characteristics of learners within these platforms warrant further exploration. This study focuses on learning the Lua programming language in the Roblox educational metaverse, using YouTube as a case study. Comments from the top five most-viewed

teaching videos were used as the corpus. First, topic modeling was employed to cluster user comments into themes; subsequently, content analysis was used to examine the characteristics and connections between dialogue interactions of Metaverse learners in the learning community and community knowledge construction. An ordinal logistic regression model was then established. The results indicated that the Metaverse learning community has significant potential for educational applications and demonstrates the characteristics of knowledge co-construction.

Evaluating Children's Creative Personality Based on Drawing Works and Behaviors: An Integrated AHP-Delphi Approach

Xia Zhang, ShuYao Ma, Enhua Han, Zehui Zhan

Presenter: Xia Zhang, South China Normal University, China

T3256
16:50-17:05

Abstract: This study proposed an evaluation index model based on Delphi method, and determined the weights of each index through analytic hierarchy Process (AHP). The model has satisfactory reliability (Cronbach's Alpha =.833) and validity (KMO=.703). Sixty students and five art teachers participated in the study. It is found that the characteristics of children's paintings are positively correlated with children's behavior in the process of painting, the independence, cooperation and novelty of creative personality are significantly related to the color, shape and expression of children's paintings.

Interdisciplinary Competence Prediction for Engineering College Students Based on Decision Tree

Zhiwei Qi, Wei Xu, Yuanyuan Wang

Presenter: Wei Xu, Yunnan University, China

T2114
17:05-17:20

Abstract: With the increasing complexity of engineering problems, it is difficult for single-discipline knowledge to solve complex engineering problems, and the cultivation of interdisciplinary ability has become the main goal of engineering education. However, the process of interdisciplinary competence development is affected by many factors, such as student factors, teacher factors, school factors, and artificial intelligence factors. Firstly, we collected data on the influencing factors of interdisciplinary competence, and secondly, we performed data processing and explored the importance of each influencing factor on interdisciplinary competence using the classification and regression trees algorithm. The prediction model and 7 decision rules were obtained after optimizing the decision tree using the cost complexity pruning algorithm, the model has an accuracy rate of 75.1%. Finally, we analyze the experimental results and conclude that teachers' teaching style is the main factor affecting interdisciplinary competence, followed by the frequency of using smart tools, students' motivation to be interdisciplinary, the availability of school facilities, teachers' interdisciplinary background, and school curriculum as important influencing factors. The results of this study will provide applied guidance for the development of interdisciplinary competence among engineering college students.

T3218
17:20-17:35 Online Professional Development Effectiveness and Outcomes for Primary Mathematics Teachers: Study Case in Indonesian Teachers

Melda Jaya Saragih, Tanti Listiani

Presenter: Melda Jaya Saragih, Pelita Harapan University, Indonesia

Abstract: Online professional teacher development needs to be carried out on an ongoing basis by adjusting the needs of teachers in developing the quality of learning. In the preliminary survey, it was found that there is a high need for teachers to master mathematics content and methods of teaching mathematics so that it is easier for elementary school students to understand so that the goal of learning mathematics can be achieved optimally. This study aims to evaluate the effectiveness of the implementation of Online professional development and see the results and impacts that have been carried out to answer the needs of teachers for mastery of mathematics content and methods of teaching mathematics. Data was collected through questionnaires and interviews given to sixteen elementary school mathematics teachers in grade six at Lentera Harapan School spread across various provinces in Indonesia and then analyzed by statistical analysis using the Wilcoxon test. Online professional development has a significant impact on teachers to answer the need for mastery of mathematics content and mathematics teaching strategies for elementary school student. Teachers expect online professional development that answers the needs of teachers to be carried out on an ongoing basis.

Exploring the Dual-Drive Innovation Development Path of AI-Enabled Innovation and Entrepreneurship Education in Higher Education

Caixia Yang, Yuehong Ji, Han Dai

Presenter: Yuehong Ji, Harbin University of Science and Technology, China

T3228
17:35-17:50

Abstract: With the rapid advancement of global science and technology and the continuous evolution of industrial structures, innovation and entrepreneurship education in universities (dual-innovation education) plays an increasingly crucial role in cultivating students' innovation capabilities, practical skills, and entrepreneurial qualities. However, current dual-innovation education faces challenges such as outdated teaching models and uneven resource allocation, with traditional methods struggling to meet the growing demand for innovative talent in modern society. To address these issues, this paper proposes a dual-driven innovation development path for AI-enabled dual-innovation education in universities: one pathway involves AI technology-empowered intelligent and digital-assisted teaching scenarios to drive innovative development, while the other focuses on AI technology-empowered integration of artificial intelligence and dual-innovation practice scenarios to drive innovative development. By empowering dual-innovation education with AI technology, this approach aims to promote the digital transformation and deep content reform of education, ultimately improving quality and efficiency.

T3279
17:50-18:05

The Development and Validation of a Scientific Creativity Assessment Tool for K-12 Students

Shunxin Ji, Baoying Xu, Zehui Zhan

Presenter: Shunxin Ji, South China Normal University, China

Abstract: The measurement of K-12 students' scientific creativity has become a key focus of recent research. However, it is a lack of feasible assessment tools for it. This study aims to develop a Scientific Creativity Assessment Tool (SCAT) tailored for K-12 students. The tool is based on 10 science contexts aligned with the current scientific knowledge, covering biology, chemistry, geography, physics, and interdisciplinary sciences. It includes 14 questions, dividing into two types: problem-finding items and problem-solving items. The assessment evaluates both divergent and convergent thinking as key indicators of scientific creativity. Data were collected from 52 Chinese elementary school students. The results indicate that: (1) The tool demonstrates good item discrimination; (2) The overall reliability is 0.97; (3) The structural validity is robust; (4) The criterion-related validity analysis reveals significant positive correlations between the assessment dimensions and the fluency, flexibility, and originality of the Runco Creativity Assessment Battery (rCAB). These findings suggest that the SCAT is a reliable and objective instrument for assessing scientific creativity and provides a solid foundation for future research in this area.

Assessing Core Competencies in STEAM Education: A Framework for Preparing Pre-Service Teachers in China

Zhexuan Jin, Ying Tang, Helin Zou, Xinxin Cao, Xunqun Chen

Presenter: Ying Tang, Southwest University, China

Abstract: Despite the growing focus on STEAM education in China, there remains a lack of understanding regarding the core competencies required of STEAM educators, as well as the preparedness of pre-service teachers to effectively implement STEAM education. To address the gaps, we developed a framework outlining the essential competencies for STEAM education. This literature-based framework identifies four key areas: (a) value appreciation, (b) knowledge mastery, (c) curriculum development, and (d) implementation and evaluation. Using this framework, we conducted a survey of 194 pre-service teachers to assess their competencies in developing and delivering STEAM education. The findings indicate that the respondents' overall competencies in STEAM education need improvement, particularly in the areas of knowledge mastery and curriculum development. Variations were observed among the respondents from different backgrounds. The study concludes with a discussion of the implications for future research and practice, offering recommendations for better preparing pre-service teachers for STEAM education.

T2075
18:05-18:20

► Onsite Sessions

► Session 6: AI Adoption, Teacher Development, and Student Perspectives

► Session Chair: Hongjiang Wang, South China Normal University, China

► 16:20-18:20 | March 15, 2025 | Venue: 306 3rd Floor

► T2091, T2088, T1012, T3302, T1006, T2100, T2119, T3232

AI Education for Starters: Collaborative Learning Through Violence Detection Challenges

Kazuya Ueki

Presenter: Kazuya Ueki, Meisei University, Japan

T2091
16:20-16:35

Abstract: This study explores an educational approach to introduce artificial intelligence (AI) concepts to beginners through practical implementation. Participants, primarily university students with no prior experience in machine learning, were assigned the task of applying various AI techniques to a shared problem using pre-trained models and publicly available resources. The project encouraged collaboration by having participants explore different methods and integrate their results into a unified framework. Approaches were selected on the basis of their accessibility, complementary features, and efficient utilization of state-of-the-art pre-trained models to achieve meaningful outcomes. The findings showed that even AI beginners could tackle complex AI tasks using existing tools and combining various methodologies. This study underscores the potential of hands-on projects as an effective strategy to develop basic AI skills and foster collaborative problem solving abilities.

Factors Influencing the Adoption of Intelligent Resource Recommendation Services by K-12 Teachers in China

Linrong Zhong, Ying Tang, Xinxin Liu

Presenter: Ying Tang, Southwest University, China

T2088
16:35-16:50

Abstract: Recent advancements in intelligent technologies have the potential to enhance the dynamism and relevance of resource recommendation and provision services. Despite this, the adoption of intelligent resource recommendation services (IRRS) among K-12 teachers remains limited, hindering the effective application and evolution of these services. This study aims to address this gap through a two-stage mixed-methods approach. In the first stage, in-depth interviews were conducted with 20 K-12 teachers to identify the key factors influencing their adoption of IRRS. In the second stage, a Likert-type questionnaire was developed based on the interview findings and administered to 384 K-12 teachers to assess their evaluations of existing IRRS. The results reveal that teachers' evaluations of IRRS were based on four key criteria: the functionality of the services, the quality of the content, the professionalism of the presentation, and the personalization of technical services. Despite recognizing the potential of IRRS, the majority of teachers expressed dissatisfaction with the current quality of services and resources, highlighting several areas for improvement in the design and implementation of IRRS in real-world teaching contexts.

Enhancing Professionalism of Primary Mathematics Teachers: Online Training in Concrete, Pictorial, and Abstract

Melda Jaya Saragih, Tanti Listiani

Presenter: Melda Jaya Saragih, Pelita Harapan University, Indonesia

T1012
16:50-17:05

Abstract: Learning mathematics is very beneficial in the student's future lives. However, there are many students who have difficulties in learning mathematics at each of their education levels, so it is important to review the stages of student's cognitive thinking. Considering the stages of thinking at primary school ages, mathematics material needs to be presented in a concrete way. One of them is the Concrete-Pictorial-Abstract (CPA) approach. Seeing the importance of mathematics and the students' difficulties related to their cognitive development stages, teachers need to be continuously equipped with mathematics teaching competencies to achieve learning goals. But, seeing this need, online training was carried out with the Concrete Pictorial Abstract learning method for teachers who teach elementary mathematics to achieve professional teacher competence in teaching and later it will have an impact on students' mastery of mathematics. The purpose of this study is to see the impact of training with Concrete Pictorial Abstract on the professional competence of elementary school mathematics teachers. The method used in this study is quantitative research by comparing the professional competence of elementary school teachers in teaching mathematics before and after being given online training in CPA. Then training will be provided for one school year in accordance with the personal development teacher's schedule. The subjects of the study are 6th grade mathematics teachers at Lentera Harapan schools throughout Indonesia. The results of the study show that online teacher training can improve teachers' professionalism in teaching mathematics

Envisioning the Future of ITE: Lessons Learned from a Systematic Review of the Pandemic Experiences of Teacher Educators

Celina Sarmiento, Jennifer Clifton, Catherine Challen

Presenter: Celina Sarmiento, Queensland University of Technology, Australia

T3302
17:05-17:20

Abstract: The sudden move to emergency remote teaching (ERT) during the pandemic prompted initial teacher education (ITE) programs to adapt quickly to new technologies and learning modalities. It posed challenges to teacher educators tasked with designing instruction that equips preservice teachers with the knowledge and skills essential for their future roles in the classroom. The shift to new modes of teaching and learning presents a valuable opportunity to examine the experiences of teacher educators and use key learning from this period to rethink the future of ITE. This paper expands on a dominant theme that emerged from a systematic review that sought to synthesize the experiences and practices of teacher educators in ITE during the COVID-19 pandemic. The review gathered peer-reviewed articles from three well-recognized educational databases, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). A theme on how the pandemic might influence and shape teacher education in the future emerged among 27 articles. This theme highlights key areas of focus and transformation in ITE to ensure that teacher educators are equipped

to pre-prepare future educators with the skills necessary to meet the evolving educational challenges. The theme encompasses three critical aspects: the pandemic's implications for teacher education, opportunities and advantages of the new learning modality, and recommendations for future research. The findings signify that teacher educators believe that the pandemic prompted changes to teacher education, which would have an impact on the various aspects of the teaching and learning process among future teachers.

A Case Study in Indonesia: Statistics Learning with Project-Based Learning with LMS Moodle

Tanti Listiani, Melda Jaya Saragih

Presenter: Tanti Listiani, Universitas Pelita Harapan, Indonesia

T1006
17:20-17:35

Abstract: This article analyses the cognitive load in statistical learning design using a project-based learning (PjBL) model integrated with Moodle's Learning Management System (LMS). Cognitive load is an important factor that affects the effectiveness of learning, especially in the context of learning that integrates with technology such as LMS Moodle. This study measures the cognitive load felt by students during the statistics learning process through LMS Moodle-based project activities. We collected data using quiz questions, questionnaires, and final tests designed to measure three main components of cognitive load: intrinsic cognitive load (ICL), extraneous cognitive load (ECL), and germane cognitive load (GCL). The implementation of LMS Moodle-based PBS resulted in a favorable category in ICL, with an average score of 67.34. In the meantime, ECL achieved an average score of 81.4, indicating a very good category. The GCL category yielded an average score of 46.62. While ECL yields a very good average, students' GCL results are also quite impressive. We need to implement various strategies to alleviate students' cognitive load. These findings provide valuable insights for developing effective and efficient learning designs in technology-based higher education. This is a suggestion for future research so that researchers can develop learning designs to reduce the cognitive load that occurs.

A Bibliometric Analysis of Visualizing Knowledge Mapping for Learning Management System

Xiquan Ye, Jiaming Wang, Danya Liu, Qinggui Qin

Presenter: Xiquan Ye, Guangdong Business and Technology University, China

T2100
17:35-17:50

Abstract: With the advancement of technology and methodologies, Learning Management System (LMS) has seen a profound and extensive application in the field of education, thereby rendering scientific and systematic research on it particularly significant. The primary objective of this study is to comprehensively explore the current application status and developmental trajectory of LMS in educational practice. To this end, the authors screened approximately 1,347 high-quality related articles from the Web of Science (WOS) and conducted a visual analysis using the CiteSpace. By analyzing countries, institutions, journals, and keywords, this study reveals the research hotspots and evolving trends of LMS over the past two decades. The results show that the research focus of LMS has gradually expanded from the initial exploration of basic theories on system design to a wide range of applications in educational practice.

Furthermore, it has increasingly centered on personalized learning experiences, the improvement of learning efficiency, and the enhancement of learning outcomes. Additionally, the analysis reveals that different countries and regions exhibit diversity and variability in their research emphasis and developmental trends regarding LMS. The conclusions and findings of this study provide some references and insights for future research endeavors and practical implementations of LMS in the field of education. These contributions have the potential to promote ongoing innovation and facilitate the development of LMS in education.

Naive Bayes Classifier Based Digital Intelligence Literacy Prediction for Secondary School Teachers

Zhiwei Qi, Wenlin Liu, Yuqing Liu

Presenter: Wenlin Liu, Yunnan University, China

T2119
17:50-18:05

Abstract: The key to whether artificial intelligence can play a transformative role in the field of education lies in whether it can effectively collaborate with educators and learners. For teachers, effective human-machine collaboration not only requires them to possess digital literacy and artificial intelligence literacy, but also requires them to organically integrate the two to form “digital intelligence literacy”. The prediction analysis is an approach that employs the use of previous data to make predictions about future possibilities, one effective method is to use a Naive Bayes classifier for prediction. In this paper, the Naive Bayes classifier is employed to predict the digital intelligence literacy of secondary school teachers. The methods employed to predict the digital intelligence literacy of teachers comprise three phases: data collection and preprocessing, feature extraction and classification. The proposed and existing algorithm is implemented in Python. The results of the proposed model will be reported for accuracy, precision, recall, F1-score and also generate ROC curves and AUC values to show that the model is well-trained.

AI in Higher Education: A Survey-Based Empirical Study on Applications and Student Expectations

Wenjie Li, Kailin Li, Dong Wu

Presenter: Wenjie Li, Guangzhou Xinhua University, China

T3232
18:05-18:20

Abstract: Artificial Intelligence (AI) is revolutionizing higher education by improving teaching strategies, tailoring learning experiences to individual needs, and simplifying administrative processes. As AI technologies evolve and become integrated into educational settings, their potential to improve educational equity and teaching quality is increasingly recognized. However, challenges such as concerns over data privacy, technical limitations, and the need for effective implementation strategies remain significant barriers to the extensive integration of AI into education. This study explores the practical applications of AI in higher education, focusing on students' perspectives and expectations regarding AI integration. Using a survey-based empirical approach, the research examines how students perceive AI's role in personalizing learning, optimizing educational content, and improving overall learning outcomes. The findings suggest that while students are optimistic about AI's potential, particularly in enhancing personalized

learning with 75.11% expressing positive views, they also have significant concerns. More than half of the participants, 51.9%, expressed worries about data privacy and security, and 52.74% were concerned about AI's inability to understand individual emotional needs. Despite these concerns, the majority, 83.54%, expressed a strong desire for greater AI integration in future courses, recognizing its potential to improve learning experiences. The study concludes by emphasizing the importance of aligning AI technologies with students' needs to optimize educational content, promote fairness, and contribute to ongoing educational reforms. This research provides valuable insights for policymakers and educators seeking to enhance AI integration in higher education and improve learning experiences for students.

► Onsite Sessions

► Session 7: Online Learning Engagement and Adaptive Technologies

► Session Chair: Wai Yie Leong, INTI International University, Malaysia

► 16:20-18:20 | March 15, 2025 | Venue: 102 1st Floor

► T3149, T2080, T1005, T2089, T1013, T3280, T3194, T3160

Personalized AI Solutions for Supporting Communication Needs of Disabled Students

Wai Yie Leong

Presenter: Wai Yie Leong, INTI International University, Malaysia

T3149
16:20-16:35

Abstract: Communication barriers significantly impact the educational experiences and social integration of students with disabilities. Personalized artificial intelligence (AI) solutions offer a transformative approach to addressing these challenges by providing tailored support that adapts to individual needs. This paper explores the design, development, and application of AI-driven tools to support communication for disabled students, with a focus on augmentative and alternative communication (AAC) systems, speech recognition, natural language processing, and real-time adaptive interfaces. Through a review of current technologies and case studies, the research highlights the potential of AI to enhance both verbal and non-verbal communication, enabling more inclusive participation in educational settings. Key considerations such as user-centric design, ethical implications, and the integration of AI tools into existing educational frameworks are discussed. The findings underscore that personalized AI solutions can bridge critical gaps in communication, fostering greater autonomy, confidence, and academic success for students with disabilities. Future directions emphasize interdisciplinary collaboration and advancing AI models to ensure equitable and sustainable outcomes in inclusive education.

Impact of Online Collaborative Problem-based Learning on the Engagement of Year-one Engineering Undergraduates

Yiqing Zhang, Alex Wing Cheung TSE

Presenter: Yiqing Zhang, The University of Hong Kong, China

T2080
16:35-16:50

Abstract: Engagement is an essential concept reflecting students' attitudes and performance in learning activities. Particularly after the outbreak of COVID-19, enhancing learning engagement in the online educational context has become a prominent concern. Effective educational approaches and technology have been combined and applied to improve online education. This quasi-experimental research aimed to explore whether online collaborative problem-based learning (PBL) impacts the engagement of year-one engineering undergraduates in a physics experiment course at a university in Main-land China. 107 students participated in the study, with 52 students assigned to the control group and the remaining to the experimental group. Students in the experimental group participated in PBL activities using online collaborative documents and an online learning platform called Padlet. The Online Student Engagement Questionnaire, measuring engagement across four dimensions including

behavioral, cognitive, affective, and social engagement, was utilized in the pre-tests and post-tests to examine whether online collaborative PBL impacts the engagement of year-one engineering students. The ANOVA results showed significant differences in students' overall engagement as well as cognitive, affective, and social engagement between the experimental group and control group in the post-test and implied that year-one engineering undergraduates' overall engagement and three dimensions of engagement can be enhanced in the educational settings of online collaborative problem-based learning though this did not work with behavioral engagement. Using qualitative approaches, how online collaborative problem-based learning impacted the engagement of year-one undergraduates was investigated deeper in the second phase of this research project and the findings will be presented in another paper.

Research on the Practice Path of Aesthetic Education in Air Service English Based on Smart Scenarios

Weirong Li

Presenter: Weirong Li, Guangzhou Civil Aviation College, China

T1005
16:50-17:05

Abstract: This paper draws on the teaching philosophy of output oriented approach and takes air service English as an example to study the practical path of aesthetic education in air service English based on smart contexts. The paper proposes and analyzes such practical paths of aesthetic education as introducing intelligent contexts of aesthetic education, creating interactive elements of aesthetic education, promoting personalized learning, stimulating creativity, and evaluation. The paper demonstrates the output tasks and practical methods of interdisciplinary integration of air service English and aesthetic education under the empowerment of information technology, thus providing new insights and references for innovative aesthetic education of vocational English in intelligent contexts.

Design and Research of A Computer Network Experimental Teaching System Based on SDN

Jun Tao, Wanfeng Yu, Huihui Han

Presenter: Wanfeng Yu, Anhui Institute of Information Technology, China

T2089
17:05-17:20

Abstract: The importance of computer network experiments in teaching is elaborated, while traditional computer network systems have low efficiency and chaotic management, these shortcomings affect the effectiveness of related teaching heavily. To overcome the shortcomings of traditional experimental systems, a computer network experiment system based on SDN has been constructed, which relies on SDN and AAA to manage network equipment, network simulators, and student experiments. Laboratory managers rely on SDN for device authorization, students rely on SDN for fast and secure computer network experiments, and teachers rely on SDN to obtain corresponding experimental evaluations. Two typical experiments in the experimental system are introduced, and teaching has achieved good results through the experimental system.

T1013 Research on the Study Engagement of Military Academy Students
17:20-17:35 Tianran Zhang, Fang He, Lubin Chang, Hongcan Gu, Junbin Huang, Jiaxin Hou

Presenter: Tianran Zhang, Naval University of engineering, China

Abstract: College students' learning engagement is a hot topic in education research both domestically and internationally. However, there are limitations in the selection of research subjects at present, and research related to the learning engagement of military academy students is relatively rare. Military academy students are not only college students, but also soldiers, which is quite different from local college students. This article is based on the NSSE China questionnaire data of college students from a certain military academy. It analyzes five dimensions of data, including learning challenge, active cooperative learning, teacher-student interaction, rich educational experience, and campus environment support. It is found that the college students from the military academy score high on the time spent on learning, but score low on the completion of short course papers and long papers, reflecting the strict time management of the military academy but weak requirements for high-level academic aspects of students; The score of cooperative learning between teachers and students is low, which may be limited in military schools due to the need for Internet and mobile phone platforms for hybrid teaching; There are fewer opportunities to participate in clubs and weaker interest in applying for professional skills certificates, mainly due to the fact that military academies do not require job opportunities in the market. The high scores of relationships between students, teachers, and leaders reflect obedience to orders and commands, as well as being more proactive in considering others in daily interactions; But scored low in terms of integrating into university life, providing support and assistance for academic studies, and clarifying future development plans.

The Impact of GenAI Assistance on Knowledge Building in Tasks of Different Difficulty Levels

Hui Zhang, Qi Wang

Presenter: Hui Zhang, Beijing Foreign Studies University, China

Abstract: Online learning has emerged as the preferred learning modality for numerous learners. However, during this process, learners' discussions are frequently confined to simplistic question-and-answer sessions, thereby impeding the attainment of high-level knowledge building. Generative Artificial Intelligence (GenAI), equipped with its capabilities of personalized content recommendation and knowledge generation, presents novel practical opportunities for facilitating the construction of high-level knowledge among learners. In this study, a sample of 143 in-service graduate students was selected as participants, and epistemic network analysis was employed to investigate the impact of GenAI on learners' knowledge building processes across different levels of learning tasks. The results of the study indicate that GenAI exerts a relatively weak influence on both low-level and middle-level tasks. Under the GenAI-assisted learning model, learners demonstrated more prominent performance in high-level tasks, showcasing stronger individual analytical abilities and autonomous cognitive characteristics. Nevertheless, GenAI might potentially undermine social interaction and collaboration within their learning process. Based on these findings, this study offers empirical evidence and corresponding recommendations for the application of GenAI in classroom instruction.

T3280
17:35-17:50

Bibliometric Analysis and Emerging Research Trends in the Internet of Things (IoT) for Physical Education

Tianyu Gao, Yan Fang

Presenter: Yan Fang, City University of Macau, Macao, China

T3194
17:50-18:05

Abstract: The integration of the Internet of Things (IoT) in Physical Education (PE) has become a burgeoning area of research, driven by advancements in wearable technologies, smart environments, and data analytics. This study conducts a bibliometric analysis to explore the research frontiers, focus areas, and development trends of the Internet of Things (IoT) in the field of physical education. Using literature indexed in SCI and SSCI as of December 24, 2024, covering the period from 2014 to 2024, we employed Citespace to analyze countries/regions, publications, organizations, authors, and citation patterns. We examined 339 articles and 13 review articles, revealing a significant increase in research related to the Internet of Things (IoT) and physical education. Among them, China and South Korea dominate this field, with Linyi University as the top contributor.

Evaluating Text Summarization Tools for Educational Applications: A Study of Copilot, ChatGPT, and Quillbot

Thuong Hong Thi Nguyen, Vi Loi Truong, Ngan Tran Huynh Chau

Presenter: Thuong Hong Thi Nguyen, FPT University, Vietnam

T3160
18:05-18:20

Abstract: The aim of this study is to analyze and evaluate the role of text summarization software (TSumSf) in modern education, aiming to improve learning efficiency and save time for learners. The study uses the BERT algorithm to compare the summarization capabilities of tools such as Copilot, QuillBot, and Chat GPT and compare the similarity (Sim) to the original text while providing information on condensation, accuracy, and time-saving ability. The results show that Copilot is suitable for abstract natural science and computer science texts that need to condense the content, while QuillBot is suitable for natural science articles. Chat GPT provides an overview, suitable for journalistic, literary, and technical-scientific texts. The choice of text summarization tools should be based on the specific purpose of use, thereby best supporting learners in accessing and processing information. Following this study, it was found that the summary ratio ranged from $Sim = 0.83$ to $Sim = 0.97$. In addition, the study also highlighted the importance of user perception of the usefulness and effectiveness of these tools, along with reliable infrastructure and seamless integration into the educational system.

► Poster Session

► Intelligent Course Innovation and Multidimensional Assessment

► **Session Chair: Yunying Yang, South China Normal University, China**

► 16:20-17:30 | March 15, 2025 | Venue: 讲学厅西门 1st Floor

► T3276, T3282, T2083, T3154, T3244, T3285, E05, T3235, T3137, T2097, T2108, T2064, T1015

T3276 16:20-16:25	Design and Application of a Circuit Experimental Course Examination System Zhenhao Li, Lin Li, Zhongxi Liao, Ying Cui, Jun Xiao, Zhidong Wang Presenter: Zhenhao Li, South China University of Technology, China
T3282 16:25-16:30	An Experimental Circuit for Electronic Engineering Training Zhenhao Li, Lin Li, Zhongxi Liao, Ying Cui, Jun Xiao, Zhidong Wang Presenter: Zhenhao Li, South China University of Technology, China
T2083 16:30-16:35	Construction and Evaluation of Experimental and Practical Teaching Cases Based on the Knowledge Graph Yaping Wang, Jiangxu Xu, Yuqi Fan, Xiangfu Fu, Jingang Jiang, Yuhua Zhang Presenter: Yaping Wang, Harbin University of Science and Technology, China
T3154 16:35-16:40	Exploration of Teaching Mode for Cultivating Application-Oriented Talents in Network Engineering Specialty Zhuhua Hu, Yaochi Zhao Presenter: Zhuhua Hu, Hainan University, China
T3244 16:40-16:45	Research on the Multidimensional Evaluation Path for the Intelligent Learning Abilities of College Students Based on AI Meng Zhang, Rui Ren, Lina Jia Presenter: Meng Zhang, Zaozhuang University, China
T3285 16:45-16:50	Research on Automatic Question Generation Methods for Niche Subjects Based on Large Language Models Meng Guo, Bo Sun, Jun He, Feng Zhang Presenter: Meng Guo, Open University of China & Beijing Normal University, China
E05 16:50-16:55	Digital Education Means to Empower Sensor Courses Huimin Zhang, Huan Huang Presenter: Huimin Zhang, Dongguan City University, China
T3235 16:55-17:00	Exploring the Potential of Multimodal Large Language Models as Augmentative and Alternative Communication Systems: Optimization, Challenges, and Ethical Considerations Madian Zhang, Chen Tan, Baikeng Lin Presenter: Madian Zhang, Sun Yat-sen University, China
T3137 17:00-17:05	Predicting Online Learning Performance and Designing Interventions Using Learning Analytics Yanjing Li, Xiaowei Wang, Qiang Fu Presenter: Yanjing Li, Heilongjiang University, China

T2097 17:05-17:10	Research on AI-Driven Teaching of Medical Data Mining Courses under the BOPPPS Model Huirui Han, Heqing Zhan, Wei Liu Presenter: Han Huirui, Hainan Medical University, China
T2108 17:10-17:15	Game-Theoretic Analysis of the Collaborative Relationship Between Teachers and Students in the Application of ChatGPT in Higher Education Qianshun Yuan Presenter: Qianshun Yuan, Shanghai University of Political Science and Law, China
T2064 17:15-17:20	Research on Innovative Teaching Mode of Unmanned Systems Engineering Empowered by Digital Intelligence Technology Mingqiu Ren , Yiheng Tian, Hao Mei Presenter: Mingqiu Ren, Air Force Early Warning Academy, China
T1015 17:20-17:25	Exploring Curriculum Reform for School-Family Cooperation Education Assisted by Information Technology in the Context of Inclusive Education Li Zhang Presenter: Li Zhang, Shanghai Normal University Tianhua College, China

▶ Online Sessions

▶ Session A: Interactive Learning Systems in STEM Education

▶ Session Chair: Suraya Masrom, Universiti Teknologi MARA, Malaysia

▶ 9:40-11:45 | March 16, 2025

▶ Zoom Link: <https://us02web.zoom.us/j/85826758613> | Password: 031416

▶ E08, T3300, T3267, T3303, T3295, T3292, T3291



Speaker: Suraya Masrom, Universiti Teknologi MARA, Malaysia

Speech Title: Understanding Hyper-Parameters and Feature Importance in GP-Based AutoML for ESG Compliance Prediction

Invited

Speaker

9:40-10:00

Abstract: Automated Machine Learning (AutoML) offers substantial benefits in addressing real - world problems by expediting the development of machine learning models. In scenarios involving the analysis of companies' Environmental, Social, and Governance (ESG) performance—where datasets often present significant challenges—AutoML emerges as a promising solution to manage these complexities effectively. Despite the growing interest in leveraging Genetic Programming (GP) within AutoML for complex datasets, a critical gap remains: a comprehensive understanding of GP hyper - parameters and their impact on machine learning performance. While GP - based AutoML excels at automating various aspects of model development, limited research has explored the significance of individual features and the effect of GP population size within these models.

The Effects of Classroom Interaction Strategies on the Development of Higher-Order Thinking in College Students

Ying Yang, Chaojuan Zhang

Presenter: Ying Yang, Yunnan Normal University, China

E08

10:00-10:15

Abstract: The development of higher-order thinking skills has become an important topic in educational practice, and the explosion of emerging technologies provides a new platform for the development of higher-order thinking in college students. From the perspective of classroom interaction, this study designs and constructs a series of classroom interaction strategies supported by the Internet and learning platform to promote the development of college students' high-order thinking skills. Through the analysis of specific indicators such as teacher-student interaction, student-student interaction, interaction with information technology and the development of students' high-order thinking skills, it is found that the classroom interaction strategy supported by technology can improve the overall classroom efficiency, which plays an obvious role in improving students' high-level thinking ability.

Development of Contextualized Interactive E-Module Through Kotobee Application as a Learning Tool for Digital-Based Microlearning Strategy in Biology 10

Minie Bulay, Carlos Miguel Rendon, John Paul Jimenez, Khevin Jhonne Retiza

Presenter: Minie Labadan Bulay, Caraga State University, Philippines

Abstract: Integrating technology into classroom instruction, particularly in biology, can significantly enhance student learning outcomes. This study aims to develop a contextualized interactive e-module through the Kotobee application as a learning tool for digital-based microlearning strategy in biology, focusing on Grade 10 students' least mastered competencies. It has utilized a descriptive-developmental approach combined with one-group pretest-posttest quasi-experimental research design to determine the usability of the developed material. Validation ratings showed that the interactive e-module is highly usable and engaging, with interactive features that encouraged mastery of key concepts. Results on the material utilization revealed a significant improvement in students' pre-test and post-test scores, indicating usability that can aid comprehension and retention of complex biology topics. These suggest that the material is a valuable learning tool for supporting microlearning, promoting active learning, and improving academic outcomes. The study recommends widespread adoption of this interactive e-module in biology instruction and proposes educator training workshops to optimize its use.

T3300

10:15-10:30

Enhancing Students' Comprehension in General Biology I Through Interactive Learning Solution

Jennifer Ann N. Demegillo, Julie S. Berame

Presenter: Jennifer Ann N. Demegillo, Trento National High School, Philippines

Abstract: This study aimed to enhance students' comprehension in General Biology I through interactive learning solutions. The study used purposive sampling, and 102 Grade 11 students under the STEM strand were selected because these were the only learners in senior high school taking General Biology I. A pre-test was conducted to check the participants' background knowledge and existing knowledge of concepts being taught in General Biology I. A pre-test was also performed to assess the respondents' knowledge before administering the primary survey. The material development was based on the least learned competencies identified through the Agusan del Sur Division's Internet-based Performance Rating System (i-PeReS) and administered to the experimental group. Results showed that the interactive learning solution was rated 'Very Satisfactory' for its content, instructional, and technical qualities. The experimental group got a higher total score in the post-test than the control group. Interactive learning solutions are beneficial when used hand in hand with other techniques that address technical and participation difficulties.

T3267

10:30-10:45

Enhancing Students' Engagement and Conceptual Understanding on select biological concepts in an Interactive Learning Management System

Rey Micheal Joseph Lagura, Minie L. Bulay

Presenter: Minie Labadan Bulay, Caraga State University, Philippines

T3303

10:45-11:00

Abstract: Creating an interactive learning environment using a Learning Management System (LMS) is an innovative approach which helps teachers promote essential skills among learners through an effective, efficient, and engaging manner. This study aimed to develop an interactive LMS with the integration of the Next Generation Blended Learning Environment Framework that boosts learners' engagement and conceptual understanding on select biology concepts. The study employed a purposive quasi-experimental design. The participants were Grade 12 students at Carmen National Agricultural High School under General Academic Strand from a public high school in Carmen, Surigao del Sur. The seventy-three (73) students were split into two cohorts: the control (traditional learning approach) and the experimental (Interactive LMS). Quantitative data were obtained from the adapted 40-item conceptual understanding test administered between the two groups before and after the conduct of the study, while students' engagement was gathered through a survey-questionnaire from the experimental group after exposing for five weeks in the interactive LMS. Descriptive and inferential statistics were utilized to substantiate the significant improvements of the study. Results have shown that students' engagement and conceptual understanding significantly improved after exposure to both learning approaches with a p-value of 0.021 as demonstrated in their increasing mean scores in the posttest with large effect sizes of -3.15 . In general, the students' engagement utilizing interactive LMS contributes to the improvement of students' conceptual understanding. Hence, it is suggested for science educators to incorporate interactive LMS in conducting the lessons, especially during the disruption of classes to continue to support students' development of understanding and engagement.

Leveraging Innovative ICT-Integrated Instructional Materials to Strengthen Mathematical Skills: Insights from Philippine Public School

Jonalyn G. Ybanez, Shaira Divine A. Ytac, Kristine J. Yuson, Jereco F. Cultura
Presenter: Jereco Flores Cultura, Caraga State University, Philippines

T3295
11:00-11:15

Abstract: This study aimed to enhance the mathematical problem-solving skills of Grade 2 pupils in subtraction with regrouping using ICT-integrated instructional materials. The research employed a pre-test and post-test design with 30 Grade 2 pupils from Alviola Integrated School-Elementary as participants. A quantitative approach was utilized, with mean, standard deviation, and paired t-tests to analyze the collected data. Findings revealed a significant improvement in the pupils' performance after implementing the intervention. The paired t-test showed a statistically significant difference, confirming the effectiveness of the ICT-integrated instructional material in improving the pupils' mathematical problem-solving skills. The result highlights the use of ICT in engagement enhancement, motivation, and comprehension in mathematics, demonstrating that a technology-based approach strengthens the ability of pupils to solve subtraction with regrouping.

T3292
11:15-11:30

Classroom Store Simulation Challenge: An Innovative Pedagogical Strategy to Enhance Primary Learners' Math Problem-Solving Skills in the Philippines

Ivy A. Bonite, Jianshe Paula B. Calo, Vanesa B. Cuevas, Jereco F. Cultura
Presenter: Jereco Flores Cultura, Caraga State University, Philippines

Abstract: This study investigates the impact of the Classroom Store Simulation Challenge on enhancing the mathematical problem-solving skills of Grade 2 learners in the Philippines. A total of 31 heterogeneous learners who scored below mastery level participated in a quantitative research design that utilized pre-and post-test assessments to measure improvements in problem-solving abilities. Statistical analysis, including means and paired t-tests, revealed a significant increase in learners' performance following the intervention, demonstrating the effectiveness of this innovative approach. While contextualized learning has been widely applied in education, this study advances the field by integrating technology-enhanced simulations, interactive problem-solving, and real-world application. This combination has not been explored in early numeracy education. Unlike traditional contextualized learning strategies that rely on static word problems, the Classroom Store Simulation Challenge immerses learners in experiential, real-world transactions, where they use digital and play money in simulated buying and selling activities. This engaging, hands-on approach bridges conceptual understanding with practical application, fostering more profound learning, enhanced engagement, and improved problem-solving proficiency. The findings highlight the potential of simulation-based, contextualized learning as a scalable, evidence-based strategy for strengthening early mathematics education.

Boosting the Reading Skills of Primary Learners in the Philippines: The Impact of an Innovative ICT - Based PLAY Strategy

Jereco F. Cultura, Kate Collien T. Algonas, Kristine Mae B. Canomay, Rea B. Goloran
Presenter: Jereco Flores Cultura, Caraga State University, Philippines

Abstract: This study examines the effectiveness of the PLAY (Participate, Learn, Apply, Yield) Strategy integrated with Information and Communication Technology (ICT) in enhancing English word recognition skills among Grade 1 pupils in the Philippines. A quantitative research approach was employed, with pre- and post-test assessments to measure improvements in pupils' performance. The results revealed a significant increase in the pupils' reading proficiency following the intervention, reflecting a shift from the Average to Closely Approximating Mastery category. The study underscores the positive impact of ICT- integrated, PLAY-based strategies on early literacy development. This innovative intervention offers a novel approach to engaging young learners through phonics-based songs, interactive games, and structured activities, providing a dynamic and enjoyable way to foster reading skills. The findings contribute to the growing body of research on effective literacy interventions and highlight the potential of combining ICT with play-based learning to enhance educational outcomes in early primary education.

T3291
11:30-11:45

► Online Sessions

► Session B: Learning Analytics and Educational Quality Assurance

► Session Chair: Zhanji Yang, Naval Petty Officer Academy, China

Shang Wang, Beijing Polytechnic, China

► 10:00-12:00 | March 16, 2025

► Zoom Link: <https://us02web.zoom.us/j/83557158212> | Password: 031416

► T3210, T3163, T3186, T3214, T2087, T2132, T3283, T2078

A Review of Research, Hot Topics, and Emerging Trends in Learning Management Systems for Undergraduate Education: A Bibliometric Analysis

Xinru Zhao, Zhixiong Tang, Wanru Zhao, Ruixin Chen, Long Liang

Presenter: Wanru Zhao, Guangxi University of Finance and Economics, China

Abstract: To understand the research trends, hot topics, and emerging patterns in Learning Management Systems (LMS) for undergraduate education, a bibliometric analysis was conducted using CiteSpace and VOSviewer based on literature from the Web of Science Core Collection. The analysis covered publications from 2001 onwards. The results delineate the annual publication trends, disciplinary distribution, and the most influential and productive authors, institutions, and countries. This study also reveals the research development trajectory in this field over the past two decades and projects future research trends. LMS research in undergraduate education experienced a slow initial growth phase but has seen rapid expansion and stabilization since 2017. The research is concentrated in disciplines such as Engineering, Computer Science, and Environmental Sciences Ecology, indicating a significant interdisciplinary nature. The top three authors by publication volume are Frede Blaabjerg, Weihao Hu, and Thar Baker. The USA, People's Republic of China, and England are the leading countries in terms of research contributions, with notable institutions including the State University System of Florida, the University of California System, and Harvard University. Keyword cluster analysis identifies eight major research themes: artificial intelligence, tropical production forest, digital twin, combining deep learning, procedural knowledge, big data, reinforcement learning, and federated learning. Keyword emergence and timeline analysis suggest that future research on LMS in undergraduate education will move towards more intelligent, personalized, interdisciplinary, and secure directions.

T3210
10:00-10:15

Leveraging VOSviewer for Knowledge Graph Reasoning Towards Teaching Evaluation in Higher Education Research

Ce Ji, Chunhong Cao

Presenter: Rong Geng, Northeastern University, China

T3163
10:15-10:30

Abstract: Undergraduate teaching plays a fundamental role in higher education, and it is necessary to implement the quality requirements of talent training into the classroom, teachers, especially students' learning results. Teaching evaluation plays a key role in higher education This study assessed existing publications, particularly those conducted between 2020 and 2024. Systematic analysis was carried out leveraging VOSviewer software and the Web of Science (WoS) database. These findings reveal that a total of

303 articles on teaching evaluation in higher education were identified, with contributions from 61 countries. China leads with 141 publications, followed by the USA with 40. There are 151 journals publishing teaching evaluation in higher education. The most frequently used keywords reflecting the current significant research direction in the teaching evaluation in higher education field include students, ratings, quality, model, validity and so on. The study also highlights four research hotspots and four future research directions. This bibliometric analysis provides a novel guide for teaching evaluation in higher education.

University Graduate Employment Quality Evaluation Based on Attention Mechanism Fusing Temporal Convolution and Long Short-Term Memory

Changyue Wang, Jingyu Guo, Leyi Lu, Xinyu Liu, Lin Shi, Pengfei Jiang

Presenter: Changyue Wang, China Agricultural University, China

T3186
10:30-10:45

Abstract: In addressing the issues of inaccurate evaluation results and long evaluation times in college graduate employment quality assessments, this paper proposes an innovative data augmentation network model, ATCLSTM-TimeGAN. The model integrates attention mechanisms, temporal convolutional networks (TCN), and long short-term memory (LSTM) networks, and utilizes an adaptive mechanism to resolve the information loss problem present in traditional TimeGAN models. The model is tested using the Appliances dataset, and experimental results confirm that the proposed data augmentation method is effective in time series prediction tasks, particularly under small sample conditions. Furthermore, the paper demonstrates the superiority of the ATCLSTM-TimeGAN algorithm in the context of college graduate employment quality evaluation models. The experimental results show that the data generated by ATCLSTM-TimeGAN better matches the distribution of the original data and significantly improves both evaluation accuracy and efficiency. The evaluation accuracy exceeds 90%, with an average evaluation time of only 4.40 seconds, outperforming traditional LSTM-TimeGAN methods.

Application Research on Quality Evaluation of College Graduation Thesis Based on Artificial Intelligence

Xiaoli Yang, Xin Xie, Rongyu Cui

Presenter: Xiaoli Yang, Chengdu Neusoft University, China

T3214
10:45-11:00

Abstract: This article focuses on the optimization of the quality evaluation system for college graduation theses, and proposes a solution based on artificial intelligence technology to address the limitations of traditional manual evaluation methods, such as subjectivity, low efficiency, and inconsistent evaluation standards. A quality evaluation model for graduation thesis was developed, which integrates features of layout, writing style, and text semantics. This model utilizes natural language processing and machine learning techniques to automate the processing and analysis of graduation thesis data, aiming to improve the objectivity, accuracy, and efficiency of evaluation. Specifically, the layout features focus on the visual presentation of the paper, while the writing style features emphasize language expression and argumentation, and the deep semantic features delve into the academic value and innovative points of the paper. By integrating

these three characteristics, the model can comprehensively and deeply reflect the quality level of the graduation thesis. To verify the effectiveness and reliability of the model, this study borrowed Tencent's CoQAN model idea for experimental verification. The experimental results show that the model has significant accuracy and stability in the quality evaluation of graduation theses, providing strong technical support for the optimization of the quality evaluation system of university graduation theses. In addition, the application prospects and challenges of artificial intelligence technology in the quality evaluation of graduation theses were discussed, and further research directions and suggestions were proposed.

Bridging Theory and Practice in Outcome-Based Assessment: Developing a Web Application for Learning Outcome Alignment

Abdulsalam K. Alhazmi

Presenter: Abdulsalam K. Alhazmi, University of Science and Technology, Yemen

T2087
11:00-11:15

Abstract: Assessment remains a cornerstone of the educational process, with standardized testing often serving as a primary method for evaluating learning. However, as pedagogical approaches continue to evolve, Outcome-Based Assessment (OBA) has gained prominence as a more comprehensive model that aligns learning outcomes with teaching strategies. This paper explores the significance of OBA, grounded in frameworks of domain learning, and highlights its global adoption as a measure of institutional quality. By focusing on measurable learning outcomes across cognitive domains, OBA enhances student engagement, critical thinking, and skill development. Extending this theoretical foundation, the paper presents an Outcome Based Assessment System (OBAS) developed to facilitate the practical implementation of OBA. OBAS provides a structured framework that links program learning outcomes to course learning outcomes, integrating considerations of learning domains and difficulty levels. By supporting the creation of standardized and authentic OBA assessments, this application empowers educators and institutions to uphold educational quality, foster accountability, and align assessments with targeted learning objectives.

Text Complexity of Chinese University Writing Textbooks: Quantitative Analysis based on Text Features

Zhanji Yang, Xiaohong Li

Presenter: Xiaohong Li, Zhaotong University, China

T2132
11:15-11:30

Abstract: As higher education continues to place greater emphasis on students' writing skills, high-quality writing textbooks have become pivotal to the teaching process. This study employs a text complexity framework to examine the linguistic features of Chinese university writing textbooks, with the aim of evaluating their suitability for fostering students' writing abilities. Specifically, it investigates lexical diversity, syntactic complexity, and readability, providing a theoretical foundation for future textbook improvements and pedagogical optimization. By employing natural language processing (NLP) tools, the study extracts and quantitatively analyzes text features from widely used textbooks, focusing on vocabulary diversity, sentence length, and readability metrics. Statistical methods are then utilized to visualize and compare the data, thereby

assessing the alignment between textbook language characteristics and instructional requirements. The findings reveal notable issues in the linguistic features of Chinese writing textbooks, particularly regarding syntactic complexity and readability. Some textbooks exhibit overly nested sentence structures that pose substantial challenges for novice learners. Moreover, the readability indices vary significantly among different textbooks, suggesting that certain language designs do not fully consider the diverse writing foundations and receptive abilities of various student populations.

Enhancing spelling Proficiency in Higher Education: Leveraging AI for improved learning outcomes

Yassamine Eljai, Marwa Eljai, Khaoula Asmar

Presenter: Yassamine Eljai, Sidi Mohamed Ben Abdellah University, Morocco

T3283
11:30-11:45

Abstract: The increasing use of AI powered tools such as ChatGPT and Grammarly among university students has significantly influenced their approach on improving spelling proficiency. While these tools offer a convenient alternative to traditional learning methods, concerns have arisen regarding over-reliance and diminished self-efficacy, which may impede the learning process. This study explores the opportunities and the challenges associated with AI powered learning tools and examines students' attitudes toward traditional approaches. This paper involved a sample of 50 English department student from the Faculty of Letters and Human Sciences Dhar El Mahraz (FLDM), Sidi Mohamed Ben Abdellah University (USMBA) of Fes- Morocco. The findings provide insights into the implications of AI dependency and the balance between modern and conventional learning strategies.

Automated Analysis of Teaching Models Based on Artificial Intelligence Detection Algorithms

Nie Shuai, Wang Chongwen, Jin Zening

Presenter: Shuai Nie, Beijing Institute of Technology, China

T2078
11:45-12:00

Abstract: This paper proposes an automated analysis of teaching models based on artificial intelligence detection algorithms. It aims to efficiently analyze actual classroom teaching models, providing insights that enable appropriate adjustments to teaching strategies, thereby improving the quality of education. We analyze classroom audio data streams using an improved Emphasized Channel Attention, Propagation and Aggregation-Time Delay Neural Network (ECAPA-TDNN) model and analyze video data streams using an enhanced You Only Look Once-v3 (YOLO-v3) model. Subsequently, the obtained information, such as head-raising rates and speaker identification, is automatically processed using an improved S-T analysis method to derive teaching models. Experimental results show that our analytical method, while ensuring that the results closely reflect reality, achieves an analysis speed 2.81 times faster than traditional methods. This demonstrates the advantages of applying automated teaching model analysis in the educational field.

► Online Sessions

► Session C: AI-Driven Educational Tools and Ethical Implications

► Session Chair: **Xiwen Zhang, Beijing Language and Culture University, China**

► 10:00-12:00 | March 16, 2025

► Zoom Link: <https://us02web.zoom.us/j/86326664147> | Password: 031416

► T2077, T3263, T3271, T3240, T3264, T3156, T3229, T2111

Integrating AI and Data Mining Tools into Information Systems Courses – A Case Study of Successes, Challenges, and Student Outcomes

Adedeji Olugboja

Presenter: Adedeji Olugboja, University City of New York, USA

Abstract: This paper examines the integration of artificial intelligence (AI) and data mining tools into an undergraduate information systems course, assessing its impact on student engagement, comprehension, and practical skill development. With industries increasingly prioritizing data-centric roles, IT education must evolve to equip students with hands-on, technology-integrated skills relevant to workforce demands. Quantitative and qualitative data were collected using a mixed-methods approach to evaluate learning outcomes and instructional efficacy. Key findings revealed that students exhibited a 20% increase in project scores and a 15% improvement in quiz performance, with high engagement levels during hands-on and collaborative activities. Challenges included technical difficulties and varying programming skill levels, suggesting additional support resources were needed. The case study highlights best practices such as incremental skill-building, real-world data usage, and collaborative learning, which foster adaptability and analytical thinking. These results underscore the importance of AI-integrated learning approaches in IT education, bridging theoretical knowledge and industry needs and preparing students for data-driven roles.

T2077
10:00-10:15

Predictive Analytics in Higher Education: A Systematic Literature Review of Machine Learning Models for Forecasting Academic Performance and Ethical Integration

Alex N. Remegio, Jr

Presenter: Alex N. Remegio, Jr, Sultan Kudarat State University, Philippines

Abstract: This systematic literature review examines predictive analytics and machine learning (ML) applications in educational settings from 2019 to 2023. Machine Learning (ML) algorithms are increasingly used to predict students' academic performance and are integral to early warning systems in educational settings. The study looks at several algorithms, from simple linear regression to more complex ensemble and neural network models. It also looks at how well they work in different types of schools and with different types of students. The analysis confirms that ML models provide educators with actionable insights to identify and support at-risk students. Along with evaluating predictive performance, the review discusses the ethical problems of using machine learning in education. These include worries about data privacy, the need for openness, and the possibility of bias in algorithmic decision-making. The paper concludes that while ML holds substantial promise in enhancing educational outcomes, its deployment

T3263
10:15-10:30

requires prudent management to navigate the intersection of technological innovation and ethical practice, ensuring responsible use of data analytics in shaping the future of education.

Shaping the Future of AI in Education: Insights from Pre-Service Science Teachers' Knowledge, Attitudes, and Perceptions

Apple Jane Lima, Joebie Senados, Myzza Grace Senturia, Michelle Jane Simagala

Presenter: Apple Jane Sebarre Lima, Caraga State University, Philippines

Abstract: This study investigated pre-service science teachers' knowledge, attitudes, and perceptions (KAP). It explored which factors most significantly influence their use as an additional search engine tool. The study employed a quantitative approach, using a simple random sampling method and distributed paper-based, closed-ended questionnaires to 148 third-year pre-service science teachers. The study used weighted mean, correlation, and regression analysis to analyze the data. Analysis revealed varying levels of knowledge, with a majority demonstrating their foundational solid understanding. Analysis of specific knowledge questions identified some gaps, particularly regarding participants' understanding of the tool's key strengths. Attitudes towards it were generally neutral across various statements. This suggests ambivalence towards its potential benefits and concerns, such as data security and originality. Perceptions were also neutral to slightly positive views. This indicates cautious optimism about its usefulness and the ethical considerations surrounding its use in academic settings. The study also assessed instructional usage for ChatGPT, revealing a generally positive outlook. It was also found out that perception can be a good predictor for using it. The results suggested that pre-service science teachers are moderately receptive to using it, particularly when considering ethical considerations, responsible use, and accessibility.

T3271
10:30-10:45

Themes, Knowledge Evolution, and Emerging Trends Related to the Application of Artificial Intelligence in Personalized Learning: A Scientometric Analysis in CiteSpace

Qinggui Qin, Jiaming Wang, Shuhan Zhang

Presenter: Qinggui Qin, Macao Polytechnic University, Macao, China

Abstract: Artificial intelligence (AI) plays a pivotal role in the development and growth of personalized learning. Therefore, it is necessary to conduct scientific and in-depth research on the application of AI in this field, systematically analyzing its development trends and research hotspots to provide references for researchers. This study employs a visual bibliometric analysis as the primary research approach, selecting 922 articles from the Web of Science spanning from 2004 to 2024. A comprehensive analysis was conducted using CiteSpace, primarily covering major highly co-cited literature and keywords. The notable findings of this study are as follows: Firstly, the study reveals three major themes related to the application methodology of AI in personalized learning, namely, machine learning, large language models, and personalized recommendation systems. Secondly, the visual timeline reveals the application of Personalized Learning in AI across three phases: Part A (2016-2022), Part B (2019-2024), and Part C (2011-2024). Thirdly, the burst analysis

T3240
10:45-11:00

illustrates the hotspots, especially “intelligent tutoring system”. This study deepens our understanding of the fundamentals and cutting-edge research in the application of AI to personalized learning, thus facilitating the identification of future research directions, as well as teaching practice patterns and trends.

Application and Development Prospects of Large Language Models in the Field of Education: A Survey

Siyu Zhao, Yanghui Tan , Jie Zheng

Presenter: Siyu Zhao, Tianjin University of Technology, China

T3264
11:00-11:15

Abstract: This article provides a comprehensive review of the application of Large Language Models (LLMs) in the field of education. With their powerful data processing, knowledge generation, and automated feedback capabilities, LLMs have demonstrated extensive application potential in personalized learning paths, intelligent teaching assistance, educational resource optimization, and improving educational equity. Based on current academic research, we analyze the theoretical basis, application framework, and typical practical cases of LLMs in this article, and explores their contributions and challenges in educational innovation and equity. The research results indicate that LLMs perform outstandingly in improving teaching efficiency and interactivity, but face multiple challenges in application such as data privacy, model transparency, and fairness. Finally, this article proposes future research directions based on the current development status and trends of LLMs, aiming to promote the intelligent transformation and technological innovation in the field of education.

Application of Artificial Intelligence Discriminant Models in Educational Reform

Chunhong Cao, Shichao Dong, Rong Geng, Ce Ji

Presenter: Shichao Dong, Northeastern University, China

T3156
11:15-11:30

Abstract: Classroom teaching evaluation is a key link in improving the quality of education and teaching and optimizing teaching management. Based on the artificial intelligence discriminant model, this paper explores the specific application of mathematical models in classroom teaching evaluation, aiming to reduce the influence of subjective factors through a data-driven approach, and at the same time, construct a scientific evaluation index system and weight allocation mechanism. This study adopts a multivariate statistical method combining cluster analysis and discriminant analysis to systematize the teaching evaluation data, so as to realize a more scientific and objective teaching evaluation system. This study provides new theoretical and practical support for educational management departments and schools, and promotes the reform and innovation of classroom teaching evaluation.

Random Forest For Predicting Ethical Dilemmas of Artificial Intelligence of Junior High School Students

Zhiwei Qi, Yuanyuan Wang, Xiaoqing Dai

Presenter: Yuanyuan Wang, Yunnan University, China

T3229
11:30-11:45

Abstract: Artificial intelligence (AI) + Education brings education opportunities of junior high school students but also triggers potential ethical dilemmas. Random forest is a

machine learning algorithm that performs well in prediction tasks due to its strong feature screening and noise resistance capabilities. Therefore, we construct a prediction model of ethical dilemmas of AI of junior high school students based on random forest. First, we distribute the questionnaires to 362 junior high school students from two middle schools to collect their scores of the four dimensions of ethical dilemmas. Then, data preprocessing is carried out to clean the collected data and transform non-numerical features into numerical features for subsequent analysis. In the model training stage, the initial model parameter ranges. Next, the cross-validation performance of each parameter on the training set is calculated through the grid search technique, and these parameters are continuously adjusted to optimize the model. Finally, the trained model is verified using the test set to determine whether the model can accurately predict the ethical dilemmas of AI for junior high school students. The experimental results show that the constructed model is highly accurate.

Lonely but Not Alone: How Anthropomorphic Virtual Learning Assistants Enhance College Students' Positive Emotions

Yuyang Tian, Jun Wang, Siti Farhana Zakaria, Ye Qiu

Presenter: Tian Yuyang, Universiti Teknologi Mara (Uitm), Malaysia

Abstract: Loneliness among college students has emerged as a growing concern in educational settings due to its detrimental effects on mental health and academic performance. Positive psychology suggests that addressing negative emotions like loneliness requires fostering positive emotional experiences to build psychological resilience, rather than focusing solely on mitigating loneliness itself. Although previous research has demonstrated that activities such as travel and video games can improve positive emotions among students, these interventions are often hindered by high costs and potential adverse effects. In this context, the aim of this study is to examine the effects of an anthropomorphic virtual learning assistant (VLA) on students' positive emotions. Drawing on anthropomorphism and empathy theories, the study introduces empathy as a mediating variable and loneliness as a moderating factor. The findings indicate that the anthropomorphic VLA, in contrast to nonanthropomorphic designs, significantly enhances positive emotions by promoting empathy, particularly among students with higher levels of loneliness. These results underscore the potential of anthropomorphic design to enhance the functionality of virtual agents and highlight the critical role of empathy in AI-driven emotional interactions. This study provides novel theoretical insights and practical implications for the integration of anthropomorphic AI in educational contexts, aiming to support students' emotional well-being.

T2111
11:45-12:00

► Online Sessions

► Session D: Generative AI and Language Model Applications

► Session Chair: **Chau Kien Tsong, Universiti Sains Malaysia, Malaysia**
Ahmad Yahya Dawod, Chiang Mia University, Thailand

► 10:00-12:00 | March 16, 2025

► Zoom Link: <https://us02web.zoom.us/j/85273066196> | Password: 031416

► T3224, T3265, T3243, T2104, T3165, T3261, T2110, T1029

Utilizing an AIGC-Supported Lesson Planning Approach to Enhance Teacher Education Students' Performance in Educational Practice Course

Shu Hong, Min Feng

Presenter: Min Feng, Shanghai Normal University Tianhua College, China

T3224
10:00-10:15

Abstract: This study investigates the effectiveness of an Artificial Intelligence Generated Content (AIGC)-supported lesson planning approach in enhancing teacher education students' performance in educational practice courses. A quasi-experimental pretest-posttest control group design was employed in this study, including 100 education majors divided into experimental and control groups. The experimental group utilized an AIGC-supported approach for lesson planning, while the control group followed traditional methods. Results revealed that the intervention significantly reduced test anxiety and improved test grades in the experimental group, while the control group showed no notable changes. These findings highlight the potential of AIGC technology to address the limitations of traditional instruction by providing personalized feedback, iterative refinement, and dynamic support, fostering creativity, critical thinking, and self-efficacy. This study underscores the transformative role of AIGC in bridging the gap between theory and practice, offering valuable insights for integrating AI-driven tools into teacher education.

Artificial Intelligence in Music Education: Exploring Applications, Benefits, and Challenges

Yuanyang Yue, Yunqi Jing

Presenter: Yuanyang Yue, Shanghai Normal University Tianhua College, China

T3265
10:15-10:30

Abstract: This research investigates the present scenario of developments in artificial intelligence in music education in general and in various methods used to improve pedagogical practice as well as approaches that have developed in this field. The analysis is on benefits of integrating AI on teaching music on adapted learning experience, automated processes of assessments, and greater accessibility. It also takes into consideration challenges of integrating AI on teaching music on technological limitations, issues of ethics, and how teaching professionals can remain professional through continuing educations on ongoing bases. The conclusion is on offering ideas on how to carry out its research on its future along with real life implementation within this new body of literature.

T3243 Analyzing the Landscape of Generative and Open AI in Education: A Text Analytics
10:30-10:45 Exploration of Scopus Publications

Jannie Fleur Orano, James Arnold Nogra and Geraldine Mangmang
 Presenter: Jannie Fleur Villar Orano, Southern Leyte State University, Philippines

Abstract: Generative artificial intelligence (GAI) fundamentally reshaped the educational landscape by introducing innovative tools that enhanced learning outcomes and experiences. In this paper, a thorough examination of key terms surrounding GAI in education was undertaken from Scopus literature through sophisticated text analytics techniques such as word cloud generation and semantic analysis. The most used terms in the findings were "learning," "ChatGPT," and "language models," representing the growing prominence of AI-driven educational solutions. Sentiment analysis revealed that authors had positive opinions about GAI and its potential benefits in developing individual learning paths and automating routines. However, concerns regarding ethics and job displacement were also highlighted. The study outlined important academic centers for GAI research, with significant contributions from Stanford University and publications in outlets such as "Lecture Notes in Computer Science." Geographically, countries like China and India emerged as relevant in GAI research. Further thematic exploration demonstrated a predominantly positive attitude toward GAI's capability to transform pedagogical methodologies. Therefore, this research underscored the importance of text analytics in understanding GAI's role in education and called for strategic partnerships to advance innovation and equity in the global educational landscape.

Design and Implementation of a Multi-level Personalized Teaching Framework Based on LLM

Min Huang, Jiarui Ma, Bo Sun

Presenter: Min Huang, South China University of Technology, China

Abstract: Personalized teaching is a key focus in modern education, aiming to meet individual student needs and improve learning efficiency. Traditional teaching methods struggle to address student differences in large-scale settings, leading to suboptimal personalized instruction. Recent advancements in generative artificial intelligence (GAI) and large language models (LLMs) offer significant support for the design and implementation of personalized teaching. This paper proposes a multilevel personalized teaching framework that integrates the core elements of the educational system, supporting personalized learning for students, optimizing teaching tasks for teachers, and enhancing resource management for higher education institutions. The framework operates from three perspectives: student, teacher, and institution, offering personalized services throughout the teaching process, including lesson planning, real-time adjustments, and post-class evaluations. The paper discusses the implementation approach based on technologies such as Mixture of Experts (MoE), Chain-of-Thought (CoT) reasoning, and dynamic prompting techniques, along with scenario examples and a validation scheme. The proposed framework provides theoretical support and practical guidance for universities to implement more effective personalized teaching based on AI technologies.

T2104
10:45-11:00

A Large Language Model-Based System for Socratic Inquiry: Fostering Deep Learning and Memory Consolidation

Xiaoli Yang, Rongyu Cui

Presenter: Xin Xie, Chengdu Neusoft University, China

T3165
11:00-11:15

Abstract: This paper introduces a novel Large Language Model (LLM)-based system designed to enhance learning effect through Socratic inquiry, thereby fostering deep understanding and long-term knowledge consolidation. Recognizing the challenges of implementing Socratic pedagogy and memory reinforcement principles (as highlighted by the Ebbinghaus forgetting curve) in traditional settings, this research explores a new framework that integrates the power of LLMs with established pedagogical approaches grounded in constructivist learning theory and cognitive load theory. This system, which includes carefully designed AI-driven questioning techniques informed by the Socratic method, dynamic note management, and memory reinforcement strategies guided by the testing effect, was evaluated through a quasi-experimental classroom intervention. The study revealed that students using the LLM-based framework demonstrated significantly better understanding of complex topics, and were also more engaged with the learning process, when compared to students using traditional methods. These results highlight the potential for LLMs to transform educational practices by creating new, more effective and personalized learning pathways that reduce cognitive load and facilitate long-term retention. This research offers practical insights for educators and researchers seeking to leverage AI to promote meaningful learning experiences and to help students internalize knowledge more effectively.

Exploring the Utilization of Large Language Models in Translation Teaching

Yi Li, Xiuzhen Xiang

Presenter: Yi Li, Wuhan Business University, China

T3261
11:15-11:30

Abstract: With the advancement of generative artificial intelligence, the deployment of large language models in education has become a fast-growing research hotspot. The extensive application and innovative prospects of large language models also yielded vigorous discussions in translation research and teaching. Being one of the pivotal drivers in the development of translation technology, large language models bring a significant change in translation teaching. This paper first employed a questionnaire to gather feedback for the views towards large language models from undergraduates majoring in translation in China, and then explored the application of large language models in teaching translation courses, aiming to devise the approach of using emerging generative artificial intelligence tools within translation teaching.

Bibliometric Mapping of Artificial Intelligence in Education Research: Trends and Future Directions

Ran Wang, Shuangqi Li, Meiquan Zhang

Presenter: Ran Wang, Shanghai Normal University Tianhua College, China

T2110
11:30-11:45

Abstract: In this article, we use bibliometric techniques to conduct a comprehensive analysis of academic research on artificial intelligence in education. From 393 academic

articles extracted from the Web of Science database, we identified emerging trends. We highlighted key publications, mapped the knowledge framework of the field, and predicted future research directions through co-citation analysis and co-word analysis. The co-citation evaluation revealed four distinct clusters, while the co-word analysis displayed five clusters. Despite the widespread attention to AI education research in recent years, more academic efforts are still needed to achieve an in-depth exploration of its application innovations.

The Research Status and Hotspot Analysis of the Effect of Generative Artificial Intelligence Technology on Education at Home and Abroad -- Visual Analysis Based on Cite Space

Yizhuo Guo

Presenter: Yizhuo Guo, Yunnan Normal University, China

T1029
11:45-12:00

Abstract: With the theme of "the role of generative artificial intelligence technology in education", this paper applied Cite Space software to visually analyze 231 Chinese literatures in CNKI and 197 English literatures in WOS. From the analysis of four dimensions, the results show that: the foreign research in this field is four years earlier than that in China, but in general, the domestic research results are far more than those in foreign countries; the large-scale cooperation network has not yet been formed among domestic authors, while the cooperation network formed in foreign countries is closer to that in China; the domestic and foreign publishing institutions are mostly concentrated among universities and research institutes, and the universities with high number of publications are concentrated in economically developed areas; through the cluster analysis of keywords, the domestic research hotspots focus more on localized research problems and application scenarios, while foreign countries pay more attention to the application of generative models in natural language processing, audio and video processing and other fields.

► Online Sessions

► Session E: Engineering Curriculum Development and Industry Collaboration

► Session Chair: Jiang Jingang, Harbin University of Science and Technology, China

► 13:30-15:15 | March 16, 2025

► Zoom Link: <https://us02web.zoom.us/j/85826758613> | Password: 031416

► T3266, T3251, T1018, T2073, T3259, E11, T3230

Research on the Reform of the Modern Educational Technology Practical Training Course Based on PBL

Zhuang Peng, Zhuang Kejun

Presenter: Peng Zhuang, China West Normal University, China

T3266

13:30-13:45

Abstract: The Modern Educational Technology Practical Training Course is a crucial foundational course for cultivating the digital teaching abilities of pre-service teachers. The Project-Based Learning (PBL) approach offers a novel and effective solution to address the key challenges currently faced in the teaching of this practical training course. This study begins by analyzing the existing problems in the teaching of the Modern Educational Technology Practical Training Course. It then elaborates on the value implications of the PBL concept in transforming the teaching system of this course. Finally, it proposes reform measures for the teaching system of the Modern Educational Technology Practical Training Course based on the PBL concept.

Construction of a General Education Curriculum for EEE Undergraduate Programmes from the Perspective of UK IET Accreditation

Hong Ye, Shizhong Xu, Jing Wen

Presenter: Hong Ye, University of Electronic Science and Technology of China, China

T3251

13:45-14:00

Abstract: This paper explores the path to achieving international engineering professional competency development based on the AHEP4 standards adopted by UK Institution of Engineering and Technology (IET). Through an in-depth analysis of the IET accreditation standards(AHEP4) and a review of current trends in international engineering education, this paper highlights the importance of general education in cultivating engineering professionals. The analysis indicates that establishing a general education curriculum guided by AHEP4 learning outcomes can effectively align graduation requirements with educational goals, thereby promoting the balanced development of multidimensional competencies in students from EEE majors and ensuring graduates' ability to solve complex problems. Taking the undergraduate programme in Information Engineering at University of Electronic Science and Technology of China(UESTC) as an example, this paper discusses the path and implementation of an internationalized, innovative talent general education system based on the AHEP4 standards, and proposes a series of strategies for conducting general education in Joint Educational Programs in EEE majors.

T1018

14:00-14:15

Course Development for "Semiconductor Device Physics" in New Engineering Education

Xia Wu, Wanling Deng, Shancheng Zhao, Meixiu Zhou

Presenter: Xia Wu, Jinan University, China

Abstract: "Semiconductor Device Physics" is an important foundational course for undergraduates in electronic information majors. In order to meet the demands of talent development in New Engineering Education, based on the research and practice in the "Semiconductor Device Physics" course, the teaching content through a "multidimensional modular theoretical teaching system" is restructured in this paper, which emphasizes self-learning. Additionally, the teaching methods are expanded through the construction of a "multiscale integrated virtual simulation teaching resource platform" to facilitate interactive teaching. Furthermore, the practical model of the course is reformed through a "multilevel systematic practical teaching system" to foster innovative capabilities. Implementing this multidimensional integrated teaching reform and development strengthens students' autonomy in learning "Semiconductor Device Physics," enhances the teaching quality and educational effectiveness of the course, and cultivates new engineering talents who meet the expectations of the industry

Construction of Industry-Teaching-Innovation Cases for Robot Training under the Integration of Virtuality and Reality

Jiang Jin-gang, Xiong Jiang-long, Wang Ya-ping, Wang Kai-rui, Shen Tao, Bao Yudong
Presenter: Jiang Jingang, Harbin University of Science and Technology, China

T2073
14:15-14:30

Abstract: Aiming to address the current problems in robot training teaching, this paper focuses on the construction of industry-teaching-innovation cases for robot training under the integration of virtuality and reality, such as the disconnection between training content and industry practice, delays in digital transformation, and the lack of training resources. Relying on the intelligent manufacturing industry academy (IMIA), the teaching model integrates virtual simulation training with practical operation to enhance students' practical skills and innovative abilities. The study introduces complex technical challenges faced by enterprises in production, combining a dual-mentor system and a collaborative resource-sharing mechanism between school and enterprises. This ensures that students can master key skills required by enterprises during training, while innovation and entrepreneurship education is integrated throughout the whole training process to stimulate students' creative thinking and entrepreneurial mindset.

Research on the Construction of the Course Knowledge System of the Introduction to E-Commerce Based on the Knowledge Graph

Xiaojing Lin

Presenter: Xiaojing Lin, Guangdong Peizheng University, China

T3259
14:30-14:45

Abstract: Artificial Intelligence (AI) is driving the transition of "Internet + Education" into the new era of "Intelligent Education," becoming a key force in promoting educational innovation. Knowledge graph technology provides new opportunities for the development of higher education and the reconstruction of the educational ecosystem. This study, starting from the perspective of institutional assessment in higher education and integrating the OBE (Outcomes-Based Education) teaching philosophy, combines the advantages of online courses with the characteristics of knowledge graphs. It

constructs the knowledge system of the course "Introduction to E-commerce" using the Chaoxing Learning Platform. The study visualizes the knowledge graph and implements it in a semester-long teaching practice, then analyzes the teaching outcomes using platform data. The goal is to create a collaborative teaching paradigm that combines human and technological elements, enhancing teaching interactivity and learning experience, thereby promoting the digital transformation of higher education.

Integrative and Innovative Project-based Teaching Methods for Fundamentals of Mechanical Manufacturing Technology Course

Wang Shuqi, Hu Yahui, Liu Jie, Liu Qingjian, Wang Guilian

Presenter: Shuqi Wang, Tianjin University of Technology, China

E11
14:45-15:00

Abstract: In order to accelerate the comprehensive reform and promote the high-quality development of higher education, this paper proposes a new type of integrated teaching reform method based on the characteristics of Fundamentals of Mechanical Manufacturing Technology course. Based on the OBE teaching concept, taking the course objectives, graduation requirements, project results, student competence, and course ideological and political objectives as the main goal orientation, with project-based teaching as the main line and task carrier, integrating online and offline blended teaching means, an innovative project-based teaching method is constructed. The actual progressive teaching practice cases were used to demonstrate the specific implementation process and the implementation effect of the new teaching method. Practice has proved that the proposed integrated innovative project-based teaching reform model can guarantee the efficient and high-quality implementation of the course teaching process, promote the cultivation of high-quality research-oriented innovative talents with solid professional skills, and provide new energy for the cultivation and development of new productivity in the manufacturing industry.

Design and Application of Personalized Learning for Integrated English Course Based on Online Platforms

Xin Cheng

Presenter: Xin Cheng, Tianjin Ren'ai College, China

T3230
15:00-15:15

Abstract: With the rapid development of information technology, online platforms have provided new opportunities for the teaching reform of college English courses. This study focuses on how to make use of online platforms to achieve personalized learning of the Integrated English Course for English major students. By analyzing the status quo of students' learning in the Integrated English Course, the advantages of online platforms are elaborated, personalized learning plans are designed and implemented, and practical data is collected for effectiveness evaluation. The results indicate that the personalized learning model based on online platforms can effectively arouse students' interest, enlarge vocabulary, provide tailored contents and promote self-learning ability. All of these together provide useful references for innovation in college English teaching. This paper focuses on the application of personalized learning in the Integrated English Course and elaborates on how it promotes personalized teaching practices. Through detailed exploration of various teaching platforms and analysis of problems and practical

achievements, the aim of the paper is to provide useful references for the innovation and improvement of teaching for English majors, promote the enhancement of teaching quality and the effective development of students' overall proficiency in the English language.

► Online Sessions

► Session F: Blended Learning and Multimodal Instructional Design

► Session Chair: Ling Luo, Thammasat University, Thailand & Guangxi University of Foreign Languages, China

► 13:30-15:15 | March 16, 2025

► Zoom Link: <https://us02web.zoom.us/j/83557158212> | Password: 031416

► T3183, T3308, T3309, E15, T3189, T3190, T1050

Fostering Higher-Order Thinking Skills of Undergraduate Students: The Integration of Blended Learning in College English Teaching

Ling Luo

Presenter: Ling Luo, Thammasat University, Thailand & Guangxi University of Foreign Languages, China

Abstract: This thesis probes into the essential role of higher-order thinking skills (HOTS) in English language learning, particularly in nurturing independent, innovative, and critical thinkers who are prepared for the challenges of the contemporary world. The study provides a thorough evaluation of how blended teaching methods impact the cultivation of these skills among undergraduate students. The research involves 127 students and 3 college English teachers at a private university of Guangxi, focusing on undergraduates enrolled in a general compulsory course called College English for non-English majors. The proficiency level of these students is generally below the average of Chinese undergraduates, as most have not passed the College English Test Band-4 (CET-4) in China. By using a mixed-method approach with surveys and interviews, this research provides insights into the effectiveness of blended learning in fostering critical thinking, creativity, and problem-solving. The findings show that blended teaching boosts student participation and creates a collaborative environment, enhancing their higher-order thinking skills. The study also proposes strategies to optimize blended learning, fostering critical thinking and innovation for student success. These strategies include integrating technology tools, using problem-based learning, and creating an interactive classroom to better nurture students' HOTS and enhance their academic success. This research underscores the importance of adapting teaching methodologies to meet the evolving demands of education, ensuring that students are not only receivers of knowledge but also active, innovative contributors to society.

T3183
13:30-13:45

The Influence of Teaching Logic Design Based on BOPPPS Teaching Model on Teaching Effect--Taking Data and Information in High School Information Technology Course as an Example

Hong Wei, Ying Wei, PengDeng

Presenter: Hong Wei, Yunnan Normal University, China

T3308
13:45-14:00

Abstract: BOPPPS Teaching mode is an effective teaching mode with a complete structure and pays attention to students' participation and teaching feedback, including six links: bridge building, learning output, Pre-Assessment, participatory learning, Post-Assessment and summary. What is the difference between the logic of the whole

BOPPPS teaching mode and the traditional teaching mode? This article is based on the teaching logic design of BOPPPS teaching mode, combined with the case video, personal experience and analysis of high school information technology course of Data and network's literature resources, and the influence of the teaching logic design of BOPPPS teaching mode on the teaching effect in this class.

A Study on the Blended Learning Model of Understanding Contemporary China: A Public Speaking Course Based on POA in the Era Of Educational Informatization
Qi Zhang

Presenter: Qi Zhang, Tianjin Ren'ai College, China

T3309
14:00-14:15

Abstract: With increasing international exchange, China urgently needs foreign language talents to convey its voice to the global community. However, in actual English public speaking courses, limited class hours often lead instructors to prioritize theoretical knowledge, resulting in a disconnect between input and production tasks, and preventing some students from successfully completing oral presentations. Meanwhile, the rapid development of information technology has posed challenges to traditional education, giving rise to the blended learning model, which combines the strengths of both online and offline education. This paper explores the blended learning model of Understanding Contemporary China: A Public Speaking Course based on the Production-oriented Approach (POA) in the era of educational informatization. After one semester of practice, POA helped students complete production tasks more effectively. The blended learning model overcame the limitations of traditional face-to-face learning, enriched learning forms, and significantly improved teaching quality and efficiency. This model aids students in telling China's stories well and spreading excellent Chinese culture.

A Practical Study of Blended Learning from a Deep Learning Perspective—Take the National first-class course "Early Reading and Instruction" as an example

Teng Wei, Li Li

Presenter: Li Li, Shanghai Normal University Tianhua College, China

E15
14:15-14:30

Abstract: To address the challenges of blended teaching, this study focuses on deep learning, taking "Early Reading and Guidance" as an example, to conduct research on blended teaching practice. First, from the perspective of deep learning, the course was systematically designed in terms of learning objectives, learning tasks, learning resources, learning activities, and learning evaluation. Second, the study to some extent presents the effects of the course teaching reform. Finally, the research insights of deep blended teaching were summarized, with the expectation that deep blended teaching could more effectively promote the systemic transformation of classroom teaching.

Exploration and practice of online and offline blended teaching mode for chemical reaction engineering based on goal problem orientation

T3189
14:30-14:45

Shufeng Shan, Jie Chen, Haolong Li, Zhuolin Tang, Zhiyuan Deng, Li Wang, Feifei Chen, Jin Sun, Rujin Zhou

Presenter: Shufeng Shan, Guangdong university of petrochemical technology, China

Abstract: In view of problems existing in the teaching process of Chemical reaction engineering, i.e., low level of knowledge on reaction kinetics and reactors, weak ability to solve complex reaction engineering problems and design reactors considering safety and energy saving, the course adopts an online and offline blended teaching mode based on "goal problem orientation", introduces petrochemical production cases, and reconstructs the teaching content with "five types of goal problems". Based on the national digital "process simulation + virtual simulation + engineering training" platform, the intelligent practical teaching with the penetration and integration of production and education is implemented after class, and thus students' awareness of safety and energy conservation is cultivated, finally improving their engineering practice ability and comprehensive application ability. Build a flipped classroom through "Rain classroom" + "Chaoxing Learning" and Internet+ big data feedback. Ideological and political education is implemented through well-designed goal problems and the "Quality extension project". The results of questionnaire feedback showed that 80% of students believed that their "engineering consciousness" had been enhanced, and their "critical thinking ability" and ability to connect theory with practice had been improved. Moreover, their participation in classroom increases, and the excellent rate of the latest "Chemical reaction engineering" final exam paper score has increased to 25%.

Application on Project-Based learning mode based on CDIO concept in the course of International Trade Theory and Practice

Weina HU, Xueping Tan

Presenter: Weina Hu, Guangxi University of Finance and Economics, China

T3190
14:45-15:00

Abstract: This study integrates the concept of CDIO (conception-design-implement-operate) and project-based learning mode into the course design of "International Trade Theory and Practice", aiming to enhance students' practical ability and innovative thinking. Through the reconstruction of the teaching contents, the practice of international trade as an essential teaching background, combined with case analysis, simulation of trading environment and other practical methods, can enable students to understand the basic knowledge of international trade. The reformed course uses project-based learning mode as teaching methods, guiding students to complete projects within groups to develop teamwork spirit and problem-solving skills. At the same time, the implementation of teaching reform can be finally ensured through guarantee measures such as school-enterprise cooperation and the improving of teachers' level. The research shows that the curriculum design based on the CDIO concept can effectively improve students' practical ability and provide new ideas for curriculum reform. This mode not only strengthens students' theoretical knowledge but also pays more attention to practical operation, which helps to cultivate high-quality talents who meet the needs of international trade development.

A Study of GenAI Enabled Blended Collaborative Learning Model

Mengyuan He, Tao Wu

Presenter: Mengyuan He, Yunnan University, China

T1050
15:00-15:15

Abstract: The rapid iteration of GenAI has attracted attention, and its impact on

education has been studied by many scholars, but most of them focus on the changes, challenges, and crises in the education ecosystem, with less attention paid to how it can be applied to a particular discipline. In this study, we analyze the actual teaching cases of high school history, and carefully design the teaching with the concept of student-centeredness. Based on this, the study elaborates on the integration of GenAI tools into the collaborative learning process of students in different stages, and proposes implementation strategies covering technology preparation, instructional design, and learning support, so as to provide reference for educators in related teaching research and practice.

► Online Sessions

► Session G: Cross-Cultural Language Learning and Digital Inclusion

► Session Chair: Liqiao Nong, Guangxi Polytechnic of Construction, China

Haiping Wei, Southwest Minzu University, China

► 13:30-15:30 | March 16, 2025

► Zoom Link: <https://us02web.zoom.us/j/86326664147> | Password: 031416

► T3257, T3150, T3162, T3185, T3219, T3142, T2101

Unveiling the Tapestry of Individual Variability: Shaping Language Trajectories in Bilingual Acquisition

Zhang Suyan, Goh Ying Soon

Presenter: Zhang Suyan, Shandong Jianzhu University, China

Abstract: The dynamic and multifaceted process of bilingual language acquisition is influenced by a myriad of individual factors that interact in complex ways. This article delves into the current trends and future directions in bilingual language acquisition research, with a particular focus on the impact of individual differences on language trajectories. By examining a range of variables, including cognitive abilities, linguistic exposure, effective factors, and sociocultural contexts, we aim to provide a comprehensive understanding of how these variables intertwine to shape unique language learning paths. Through a critical review of empirical studies and theoretical frameworks, this article highlights the importance of personalized approaches to bilingual education that consider the nuanced interplay of individual factors. We discuss the implications for educational practices, policy-making, and future research directions, emphasizing the need for longitudinal studies and multidisciplinary collaborations to unravel the intricate patterns of bilingual language development. Ultimately, this work seeks to contribute to the advancement of bilingual acquisition theories and the enhancement of language learning experiences for diverse bilingual communities.

T3257

13:30-13:45

Application and Practical Exploration of Knowledge Graphs in Inquiry-based Foreign Language Teaching

Xing Jin, Chaofeng Zhang, Yanli Wang, Guozheng Fang

Presenter: Xing Jin, Mudanjiang Normal University, China

Abstract: With the continuous development and application of artificial intelligence (AI) technology, knowledge graphs, as an effective tool for knowledge organization and representation, have brought new opportunities and challenges for inquiry-based foreign language teaching. With Korean as a case study, this paper discusses the application of knowledge graphs in inquiry-based foreign language teaching. Through an analysis of their specific use in each teaching stage, the study evaluates their effectiveness. The findings indicate that knowledge graphs can effectively stimulate learning engagement and academic performance. However, challenges such as construction accuracy, teacher proficiency, and student adaptability remain. In response, this study proposes corresponding solutions, offering implications for improving foreign language teaching quality and educational intelligence.

T3150

13:45-14:00

Foreign Language Learners' Perceptions of Chatbot-assisted Speech-giving Tasks

Shu Huang, Wenpu Wang

Presenter: Huang Shu, Chengdu University of Information Technology, China

T3162
14:00-14:15

Abstract: With the development of generative artificial intelligence (GenAI) technology, many studies advocate for the incorporation of AI technology into traditional teaching. Effective AI integration requires a comprehensive understanding of students' perceptions of innovative learning experiences in specific educational contexts. The study, therefore, examines students' perceptions of a novel task design, the chatbot-assisted speech-giving tasks (CaST), in an English as a Foreign Language (EFL) course among Chinese undergraduates. Data of the study include questionnaire responses from 124 students and 6 semi-structured interviews. Analysis of the quantitative data found that students held very positive views about CaST. The qualitative data triangulated the quantitative data and further revealed specific benefits students perceived in CaST. The contribution of this study is two-fold. First, it advances an in-depth understanding of students' perceptions related to the integration of AI chatbots in authentic classroom contexts, offering insights into the effective integration of generative artificial intelligence technology in foreign language teaching. Second, it suggests potential problems of AI integration in educational contexts that require further attention.

Research on Investor Education in China Based on Large Language Models

Xiaoli Yang, Rongyu Cui

Presenter: Xin Xie, Chengdu Neusoft University, China

T3185
14:15-14:30

Abstract: This paper introduces a novel Large Language Model (LLM)-based system designed to enhance learning effect through Socratic inquiry, thereby fostering deep understanding and long-term knowledge consolidation. Recognizing the challenges of implementing Socratic pedagogy and memory reinforcement principles (as highlighted by the Ebbinghaus forgetting curve) in traditional settings, this research explores a new framework that integrates the power of LLMs with established pedagogical approaches grounded in constructivist learning theory and cognitive load theory. This system, which includes carefully designed AI-driven questioning techniques informed by the Socratic method, dynamic note management, and memory reinforcement strategies guided by the testing effect, was evaluated through a quasi-experimental classroom intervention. The study revealed that students using the LLM-based framework demonstrated significantly better understanding of complex topics, and were also more engaged with the learning process, when compared to students using traditional methods. These results highlight the potential for LLMs to transform educational practices by creating new, more effective and personalized learning pathways that reduce cognitive load and facilitate long-term retention. This research offers practical insights for educators and researchers seeking to leverage AI to promote meaningful learning experiences and to help students internalize knowledge more effectively.

T3219
14:30-14:45

Determinant Factors Analysis of Behavior Intention using Massive Open Online Course (MOOC) as a Learning Platforms for Generation Z

Kevin Tanaka, Avril Angelin, Yakob Utama Chandra
 Presenter: Kevin Tanaka, Bina Nusantara University, Indonesia

Abstract: The Massive Open Online Courses (MOOC) has gained traction as a widely utilized online education platform among higher education institutions globally. MOOCs are digital courses accessible to a wide audience, typically offered for free or at a low cost. It can also be a type of online distance learning platform that attracts numerous learners globally by offering exceptional educational resources from esteemed academic experts. In this study, the researchers aim to know factors that affect the Behavioral Intention in MOOC. The data for this research were collected through a questionnaire completed by 521 respondents to address the research question: "What are the factors that determine Behavioral Intention in MOOCs?". This research was conducted using quantitative methods. The result of the research below shows that 3 factors have a significant impact on Behavioral Intention. There are Perceived Ease of Use, Perceived Usefulness, and Satisfaction. In addition, there are factors such as Course Content Quality, Course Instructor Quality, Course Design Quality, Course Relevance, Learner-Learner Interaction, and MOOC Performance that also influence the other factors (Perceived Ease of Use, Perceived Usefulness, and Satisfaction) which also affect behavioral intentions. However, Learner-Instructor Interaction does not have a significant impact, so further research is needed to ensure the influence on the usefulness and ease of use of MOOC. This study also includes PLSpredict to identify the most influential factors affecting learners' behavioral intention.

Why Don't They Feel Included? A Study of ICT Elderly Education in China
 Dai Jinglin

Presenter: Daijinglin, Lanzhou Jiaotong University, China & Universiti Sains Malaysia, Malaysia

Abstract: In the post-COVID era, ICT education has become a crucial strategy for addressing the digital divide in an ageing society. As the final stage of lifelong learning, elderly education has garnered increasing attention from both academia and society. However, participation in ICT learning remains limited, and has yet to gain significant traction within the broader educational landscape. This study explores two key questions: (1) What factors underlie older adults' reluctance to engage in ICT education? (2) What challenges or pressures lead to feelings of exclusion or withdrawal from such programmes? Between October 2022 and May 2023, I conducted field research at a Third Age University in Lanzhou, China. Through qualitative analysis of semi-structured interviews and policy documents, three key themes emerged—early learning experiences, teaching methods, and performance evaluation—which act as significant barriers to learning participation. Thus, this study argues that ICT elderly education should move beyond an expert-driven or performance-oriented approach and instead be shaped by the perspectives and needs of elderly learners. By adopting a more inclusive and learner-centred model, these programmes can better address participation barriers and foster a more supportive and engaging learning environment for older adults.

T3142
14:45-15:00

SeeMusic: XR-Enhanced Musical Language Training Application for Hearing-impaired Children

Linshi Li, Xianjinghua Chen, Yutian Qin, Hanlin Cai

Presenter: Linshi Li, University of London, UK

T2101
15:00-15:15

Abstract: Augmented Reality (AR) and Virtual Reality (VR) are technologies that achieve auditory compensation by providing visualization of auditory information, making them increasingly used to enhance the language learning experience of hearing-impaired children. However, a limitation of current applications is the failure to follow hearing recovery principles in designing VR and AR experiences, resulting in a lack of specificity. This paper proposes an innovative mobile application, SeeMusic, which integrates music therapy methods with AR and VR visualization techniques based on a listening skill hierarchy to enhance auditory rehabilitation and language learning for hearing-impaired children. By applying Erber's Hierarchy as hearing recovery principles, this method provides a self-directed learning process, enabling children to practice auditory skills and develop speech production through an AR textbook, singing practices, and a VR game. Usability was assessed through teacher evaluation, with an average score of 4.67 to 5.00 across most categories. The WIPI test with hearing-impaired children showed a significant improvement, with an average increase of 18 points.

▶ Online Sessions

▶ Session H: Gamification and Immersive Learning Technologies

▶ Session Chair: Yousef Farhaoui, Moulay Ismail University, Morocco
Siti Hajar Binti Halili, University of Malaya, Malaysia

▶ 13:30-15:15 | March 16, 2025

▶ Zoom Link: <https://us02web.zoom.us/j/85273066196> | Password: 031416

▶ T1002, T3301, T3248, T3304, T3272, T2067, T3273

A Data Glove-Based Table Tennis Posture Reproduction Method

Xiaohong Liu, Mingjin Luo, Qin Zhao

Presenter: Xiaohong Liu, Guangxi University Nanning, China

T1002
13:30-13:45

Abstract: Table tennis is a kind of sport that requires a high level of motor skill, adopting an appropriate table tennis posture can aid players in mastering technique and enhancing their skill level. Conducting comprehensive research into the effects of various postures on stroke power, stability and accuracy allows players to modify and improve their approach according to their individual characteristics and requirements. For a thorough analysis of table tennis stance, which can enhance athletes' abilities and performance in the game. This paper presents a novel data glove-based method for tracking the attitude of table tennis. Hand and arm motion data are collected using a complete set of data glove equipment, and a joint-based arm motion position calculation method is used to accurately track the positioning and motion of three commonly used classical table tennis dribbling postures. The Blender software was employed to construct a 3D model of the human body and visualize three postures, results show good perform

T3301
13:45-14:00

The Design, Implementation and Analysis of the Digital-Cloud Intangible Cultural Heritage System

Yansha Guo, Zihan Chen, Yuanbo Wang, Jingjing Meng, Zhengyi Zhong, Linran Zhang

Presenter: Yansha Guo, Tianjin University of Technology and Education, China

Abstract: Intangible cultural heritage is a remarkable treasure passed down by the Chinese nation over thousands of years, with a long-standing history and profound cultural legacy. In recent years, with the rapid development of technology and the advent of the digital age, some intangible cultural heritage is facing difficulties in inheritance and development due to low production efficiency, high costs, and imperfect management. Moreover, traditional methods of recording and preserving intangible cultural heritage, such as oral transmission and written records in books, can hardly meet the inheritance needs of the digital age. In response, our research team designed and implemented the Digital-Cloud Intangible Heritage System by taking advantage of the Android operating system (OS) and the WeChat Cloud Development server, using WeChat developer tools as the development environment, and adopting WXML, JavaScript, and a cloud database. The development, debugging, and operation of the Chinese-version system have been successfully completed. This system aims to establish an intelligent platform for the online display, introduction, learning, and communication of intangible cultural

heritage. By enabling two-way communication between online and offline channels, it encourages more people to participate in the protection and inheritance of intangible cultural heritage.

EcoWave: A Mobile Arcade Game Promoting Waste Management

Jeshcee Jay Tabuno, J-Vie Nogodula, Ronal Ian Onella and Christopher Josh L. Dellosa
 Presenter: Christopher Josh Dellosa, Mapúa Malayan Colleges Mindanao, Philippines

T3248
14:00-14:15

Abstract: The Project, EcoWave, is an innovative initiative that leverages the interactive power of 3D mobile arcade games to instill essential principles of environmental stewardship in today's youth. By engaging players in captivating gameplay and storylines, it immerses them in real-world issues of waste management and ecological preservation. This project also serves as a collaborative platform with the Department of Environment and Natural Resources (DENR) and its Environmental Management Bureau (EMB), merging traditional advocacy with modern digital engagement. Through alignment with Sustainable Development Goals like SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action), EcoWave aims to cultivate a generation of environmentally aware citizens. By making eco-conscious decisions within the game's virtual world, players contribute to addressing climate change and promoting environmental resilience, supporting a sustainable future.

Research on the Construction and Application of Virtual Simulation Experiment Teaching Environment for Vehicle Engineering Specialty

Presenter: Zheng Bin, Panzhuhua University, China

T3304
14:15-14:30

Abstract: According to the actual needs of students majoring in vehicle engineering, this paper focuses on the application of virtual simulation experimental environment in their professional learning and ability training. Through the experimental courses such as automobile CAD/CAE/CAM, automobile engine parts design and modeling, and automobile chassis parts design and modeling, students can simulate the real automobile design, analysis and manufacturing process in the virtual environment. This teaching method can effectively make up for the lack of resources and security risks in traditional experimental teaching, and can also improve their learning effect. The characteristics and requirements of vehicle engineering major are deeply analyzed, especially for the core experimental courses. The subject will discuss the talent demand of vehicle engineering specialty, and compare the matching degree between the industry demand and the existing experimental course system of vehicle engineering. On this basis, the subject will propose an automobile virtual simulation experimental platform architecture, which will use advanced virtual simulation technology to simulate the real automobile design, and provide an immersive and interactive learning experience. This topic will adopt a variety of teaching methods to stimulate students' initiative. These methods will be integrated into the automobile virtual simulation experimental platform, providing students with diversified learning paths and rich experimental opportunities. The teaching mode will provide students with a brand-new learning experience and help to cultivate their experimental ability and innovative spirit.

Effect of Constructive 3D Virtual Simulation on Students' Creativity and Computational Thinking in Interdisciplinary Education

Pei Zhou, Xiaoting Chen, Zehui Zhan

Presenter: Pei Zhou, South China Normal University, China

T3272
14:30-14:45

Abstract: Based on the C-POTE instructional design model, this study developed an interdisciplinary project-based learning curriculum on traditional archway culture using three-dimensional immersive virtual simulation to examine its effects on students' creativity and computational thinking. A total of 98 seventh-grade students participated in an 8-week controlled experiment (with one class each week). The experimental group (N=49) used the virtual simulation platform, while the control group (N=49) created projects using traditional WPS documents. The results indicate that virtual simulation technology positively influences students' creativity and computational thinking. However, no statistically significant differences were observed in the sub-dimensions of critical thinking, algorithmic thinking, and curiosity. The findings suggest that integrating three-dimensional immersive virtual simulation can effectively enhance creativity and computational thinking in interdisciplinary teaching. The study highlights the importance of adapting teaching strategies to individual student needs, offering valuable insights for future educational practices and innovative talent development.

infraCrackNet: Automated Crack Detection in Infrastructure Using U-Net with Dataset Preparation, Manual Labeling, and Segmentation Performance

Imon Mahbub, Sk. Faiyaz Sabik, Syed Tamim Rezwana, Ashraful Islam Mahi, Md. Mehedi Hasan Shawon

Presenter: Imon Mahbub, BRAC University, Bangladesh

T2067
14:45-15:00

Abstract: Early detection of structural failure provides safeguards and protection to buildings and infrastructures. However, crack inspection on structures is labor-intensive and time-consuming. To address this issue, an annotated dataset is proposed to perform concrete surface crack detection using deep learning techniques. The dataset comprises 4,174 high-resolution images, both cracked and intact, that were hand-labeled at pixel-level accuracy with segmentation masks to segment each area into cracked and non-cracked. We show the effectiveness of our dataset by training a U-Net model that achieved an accuracy of 98%. Both the trained model (with weights) and the labeled dataset are made freely available for enhancing further research and practical applications of the system, such as automated surveillance and maintenance processes. This open release has the potential to contribute to accelerating progress in concrete surface crack detection toward more efficient and effective structural health monitoring systems.

Responsibilities and Cooperation Paths of Art Design in Interdisciplinary Education of Innovation and Entrepreneurship

Xiaoxuan Yin, Ke Li

T3273
15:00-15:15

Presenter: Xiaoxuan Yin, Hainan University, China

Abstract: In today's higher education, interdisciplinary integration and all-round talent

cultivation have become important trends in innovation and entrepreneurship education. To enable the art design major to better define its position and responsibilities in interdisciplinary projects, it is urgent to explore effective cooperation paths. This paper, through literature review, interdisciplinary research methods and empirical research methods, analyzes the current situation and problems of art design in innovation and entrepreneurship interdisciplinary projects. Based on the author's participation in interdisciplinary team innovation and entrepreneurship projects, it explores the responsibilities and cooperation paths of art design in them, and on this basis, proposes new role positioning and cooperation methods, providing a new model and new ideas for collaborative innovation in the cultivation of new talents in colleges and universities. The research finds that art design plays a very important role in innovation and entrepreneurship interdisciplinary projects. It not only needs to jointly formulate project goals, manage teams, participate in research and development and results evaluation, but also provide innovative methods for projects, realize creative practices, optimize user experience, and participate in brand and market promotion. It runs through the entire project cooperation process, indicating that art design plays a significant role in the project.

► Online Sessions

► Session I: Sustainable Education and Industry-Academia Synergy

► **Session Chair: Lingfei Xiao, Nanjing University of Aeronautics and Astronautics, China**

► 15:30-17:15 | March 16, 2025

► Zoom Link: <https://us02web.zoom.us/j/85826758613> | Password: 031416

► T2106, T1055, T3181, T2109, T3193, T3293, T3299

Exploration of Sustainable Excellent Engineer Cultivation Path Based on Intelligent Augmentation

Lingfei Xiao, Zirui Han, Ye Wei, Zhifeng Ye

Presenter: Lingfei Xiao, Nanjing University of Aeronautics and Astronautics, China

T2106
15:30-15:45

Abstract: Regarding the problems in the training of engineers in Chinese universities, such as insufficient personalized training methods for different students, the effectiveness of student training needs to be pursued for excellence, sustainable personnel training path needs to be continuously improved, an original path for sustainable excellent engineer cultivation is proposed on the basis of intelligent augmentation (IA) in this paper. Firstly, in order to achieve friendly "human-machine coexistence", a novel excellent engineer cultivation IA interaction framework is designed. Then, the modelling of IA-based engineers training is expressed by fitting with three methods based on Matlab software. Next, IA-based excellent engineer cultivation strategy is obtained by different optimization algorithms, such as sparrow search algorithm (SSA), particle swarm optimization algorithm (PSO), and human evolutionary optimization algorithm (HEOA), so to provide users with personalized training strategies based on their individual needs. After that, an IA-based sustainable excellent engineer cultivation measure is given. Finally, by the case analysis on students from Nanjing University of Aeronautics and Astronautics, the feasibility and effect of the proposed path for sustainable excellent engineer cultivation is verified effectively.

Exploration of Practical Teaching on Intelligent Systems Based on Industry-Education Integration

Min Dong, Sheng Bi

Presenter: Min Dong, South China University of Technology, China

T1055
15:45-16:00

Abstract: With the rapid development of Artificial Intelligence (AI) technology, AI-enabled intelligent systems are widely used across various industries. Under the new engineering education framework, integrating industry and education has become a key direction for university teaching reform to enhance students' practical application skills in intelligent systems. As part of the Huawei "Intelligent Base" industry-education collaboration curriculum, this paper explores the framework for practical teaching reform in AI-empowered intelligent systems. The paper discusses updating practical teaching cases, reforming teaching methods, and assessment approaches in the context of industry-education integration for the Compiler Principles course. Finally, the paper summarizes the outcomes of these teaching reforms.

Exploring the Application of Artificial Intelligence to the Blended Teaching Mode: A Case Study of "Teaching Elementary School Children English"

Binbin Wu

Presenter: Binbin Wu, Shanghai Normal University Tianhua College, China

T3181
16:00-16:15

Abstract: Artificial Intelligence (AI), particularly Generative AI, has recently gained widespread attention in various fields. Generative AI has demonstrated tremendous potential in the education, providing new teaching methods and driving innovations. AI can assist teachers in classrooms, academic counseling, and educational assessment. This study explores AI application in education from the perspective of curriculum development. "Teaching Elementary School Children English" is a core course for English-major students in the elementary education program, aimed at developing students' abilities in elementary school English teaching and research. The course adopts a blended teaching mode with AI technologies. This study uses this course as a case study to demonstrate the blended teaching model with AI technologies from four aspects: innovation in teaching methods, AI technologies in online course development, the combination of online and offline teaching, and the assessment design. This research provides practical insights and research recommendations for the future application of AI in education.

Innovative Teaching Design for International Trade Practice Course Based on Diversified Learning Goals

Xianying Xu, Yuexin Li, Kexin Fu

Presenter: Xianying Xu, Shenyang Aerospace University, China

T2109
16:15-16:30

Abstract: As a compulsory core course of international economics and trade, "International Trade Practice" is a practical course for employment. Starting from the teaching background of curriculum innovation and based on diversified learning objectives, this paper carries out innovative teaching design schemes for courses based on the learning objectives of passing exams, taking research findings as learning objectives, and taking work practice as learning objectives. Different materials promotion and learning plans are given for different learning objectives to maximize the learning effect of courses.

Development and Validation of the Online Course User Experience Scale: A Multidimensional Assessment Framework

Mei Wang, Siva Shankar Ramasamy, Ahmad Yahya Dawod, Shuai Wang and Haoyu Zhang

Presenter: Mei Wang, Chiang Mai University, Thailand

T3193
16:30-16:45

Abstract: This study, grounded in the theoretical framework of online course user experience(UX), developed and validated a comprehensive scale to evaluate learners' experiences in online courses and their influencing factors. Through a systematic review of the literature and expert consultations, the dimensions of the scale were determined. Subsequently, exploratory factor analysis (EFA) was conducted on 157 pilot survey samples to establish the structure of the scale. Confirmatory factor analysis (CFA) was

then performed on 457 formal survey samples using AMOS to construct a second-order structural equation model, assessing the reliability and validity of the scale. The final scale comprises six primary dimensions, 13 secondary factors, and 45 measurement items. The findings indicate that the scale demonstrates good reliability, validity, and discriminant validity, confirming the multidimensional nature of online course UX and the theoretical soundness of the proposed framework. This study provides a valuable tool for evaluating online course UX and offers a reference for optimizing course design and improving learning outcomes.

Advancing Mathematical Skills of Primary Learners in the Philippines: The Impact of Technology-driven Interactive Differentiated Games

Gwen Boyles, Cheriss C. Esnardo, Lloyd R. Rebito, Jereco F. Cultura
 Presenter: Jereco Flores Cultura, Caraga State University, Philippines

T3293
16:45-17:00

Abstract: This study explores the impact of technology-enhanced interactive differentiated games, based on the 4A's instructional model, on improving Grade 3 pupils' ability to solve mathematical word problems. The study involved 20 pupils from Grade 3 Mabini, employing a quantitative approach with a pre-test and post-test design. Statistical analysis using a paired t-test was conducted to compare pre-test and post-test results. Findings revealed a significant improvement in students' problem-solving skills, with pupils initially classified as Low Mastery advancing to Mastered after the intervention. These results highlight the effectiveness of differentiated interactive games in increasing engagement and enhancing mathematical proficiency. The novelty of this research lies in its use of adaptive, technology-driven games that cater to individual proficiency levels, providing an innovative approach to bridging learning gaps. Beyond mathematics, this study supports the broader impact of game-based learning in fostering engagement, personalization, and effectiveness across various subjects, demonstrating its potential to transform traditional educational practices.

Development and Validation of Strategic Intervention Materials (Sims) for Teaching Grade 7 Biology

Rissa L. Mercado, Apple Jane S. Lima, Camille M. Galela, Karen Kieth M. Galendez, Hana Riza C. Galua
 Presenter: Rissa Lintao Mercado, Caraga State University, Philippines

T3299
17:00-17:15

Abstract: Least Learned Competencies are learning areas that need to be addressed to not hinder students' learning at higher levels, and this can be approached by developing and utilizing Strategic Intervention Materials (SIMs). Using quantitative research design employing a developmental method, this study developed an interactive non-print resource in the form of e-module created in Kotobee software and evaluated using an Evaluation Rating Sheet for Non-Print Resources adopted from the Department of Education's Learning Resource Management and Development System (LRMDS). The evaluators of the developed Strategic Intervention Materials (SIMs) are 3 public secondary Science teachers and one Information Technology specialist. With the gathered data, it was analyzed that the two developed Strategic Intervention Materials (SIMs) targeting two different Least Learned Competencies attained a total mean with

the rating of “Very Satisfactory” for all factors of content quality, instructional quality, technical quality, and other findings (conceptual errors, factual errors, grammatical and/or typographical errors, and other errors). Individual indicators that attained a rating lower than “Very Satisfactory” are suggested to be modified and revised to further improve the developed Strategic Intervention Materials (SIMs) and contribute to their effectiveness and success in addressing the learning gaps to be targeted.

► Online Sessions

► Session J: Teacher Training and Academic Integrity Systems

► Session Chair: Rajan Kadel, Melbourne Institute of Technology, Australia

Deepani B. Guruge, Melbourne Institute of Technology, Australia

► 15:30-17:15 | March 16, 2025

► Zoom Link: <https://us02web.zoom.us/j/83557158212> | Password: 031416

► T3268, T3223, T2131, T3314, T3250, T1027, T2126

Analysis of Implementation and Material From the Teacher Pedagogical Module
Adhika Ganendra, Soetarno Joyoatmojo, Trisno Martono, Dewi Kusuma Wardani
Presenter: Adhika Ganendra, Sebelas Maret University, Indonesia

Abstract: Pedagogical competence has a important role in the success of education because it includes the teacher's ability to understand student needs, and design, implement, and evaluate learning effectively. This study aims to analyze the implementation of the pedagogical competency module on the SIM PKB platform used by teachers, especially economics teachers. Using a survey method and questionnaire instrument, this study focused on high school economics teachers in the DKI Jakarta area. This descriptive qualitative research found that the pedagogical module in the SIM PKB platform has not fully met the needs of economics teachers in the 21st-century era. The results show that the available modules tend to lack relevance, especially in terms of the integration of learning technology and the development of 21st-century skills such as creativity, collaboration, communication, and critical thinking. These abilities are essential to prepare students to face increasingly complex future challenges. In addition, most of the modules are still oriented towards conventional approaches that are less adaptive to the demands of the times. Therefore, there is a need to develop a new, higher-quality module to support the improvement of high school economics teachers' pedagogical competence in the 21st-century era.

T3268
15:30-15:45

Exploring Educators' Multidimensional Perspectives on Generative AI's Impact in Education: A Study Using Q Methodology
Guoan Zhao, Mengting Pan, Shaobo Wang
Presenter: Guoan Zhao, Beijing University of Posts and Telecommunications, China

T3223
15:45-16:00

Abstract: The rapid development of generative AI has attracted significant attention in education. This study uses Q methodology to explore educators' views on AI's impact across five key dimensions: educational theory, learning outcomes, educational technology, educational ethics, and pedagogy. The analysis identifies three educator groups: (1) Education Stalwarts Emphasizing Humanistic Care (F1), who prioritize values like critical thinking, self-motivation, and social responsibility; (2) Education Reformers Advocating Technological Integration (F2), who support AI-driven innovations; and (3) Education Explorers Focused on Learning Experiences (F3), who emphasize personalized, technology-enhanced learning. Although perspectives on AI integration vary, there is agreement that education should promote human progress and personal growth. This study contributes to the ongoing discourse by advocating for a

balanced approach that integrates tradition with innovation to enhance educational outcomes.

Enhancing Contextual Understanding in AI-Powered Tutoring: Evaluating the Oliver System for Effective Learning Support

Haoran Zhu, Michael Cooper-Stachowsky, Zille Huma Kamal

Presenter: Haoran Zhu, University of Waterloo, Canada

T2131
16:00-16:15

Abstract: In recent years, advancements in conversational AI have led to the development of intelligent tutoring systems to enhance learning experiences through interactive conversation. This paper presents Oliver, an innovative virtual teaching assistant and course management system that leverages contextual memory and response strategies designed to promote active learning and critical thinking. Unlike traditional models that frequently offer direct answers, Oliver encourages exploration and comprehension. We also evaluated Oliver against ChatGPT4o mini in a controlled environment with over 100 real class interactions by using Bloom's Taxonomy as a framework. Results indicate that Oliver retains lecture-related context and promotes learning more effectively, with 90% of responses fostering higherorder thinking and critical engagement, compared to 60% from ChatGPT-4o mini. These findings underscore Oliver's potential to serve as a powerful tool in education, supporting learners in developing deeper cognitive skills rather than relying on rote memorization

Implementation and Effectiveness of Student Services in Higher Education Institutions

Hassanal P. Abusama, Florlyn Mae C. Remegio

Presenter: Florlyn Mae C. Remegio, Sultan Kudarat State University, Philippines

T3314
16:15-16:30

Abstract: This study evaluates the extent of implementation and effectiveness of Student Programs and Services (SPS) and Student Welfare and Development Services (SWDS) at Sultan Kudarat State University (SKSU). The study utilized descriptive statistical methods, including weighted mean and the Wilcoxon signed-rank test, to assess student feedback on these services across various campuses. Findings revealed that both SPS and SWDS are perceived positively, with significant differences in implementation and effectiveness noted across campuses. The results underscore the necessity for continuous development of student services to enhance student experience and welfare.

Filipino Undergraduate Students' Perceptions on Acts of Academic Dishonesty in Online Learning

Ben Oliver D. Tutor, Gladys P. Bustos, Molina G. Rizo, Maryan Joy Lopez-Tutor

Presenter: Maryan Joy Lopez-Tutor, National University, Philippines

T3250
16:30-16:45

Abstract: The primary objective of this study was to determine Filipino undergraduate students' perceptions of acts of academic dishonesty within the context of online learning. Additionally, the study aimed to assess whether there are sig-nificant differences in their responses when grouped by demographic factors. Following Waltzer and Dahl's Situated Decision-Making Framework, this study assumed that perceptions of academic dishonesty are positively related to stu-dent engagement. Students who do not view an act as cheating are more likely to engage in it. A total of 1,547

undergraduate students from a private higher education institution in Laguna, Philippines, were surveyed. The sample size was determined using the Raosoft Sample Calculator. Descriptive statistics, the Mann-Whitney U Test, and the Kruskal-Wallis Test were employed to analyze the collected data. Results indicated certainty among respondents regarding acts of academic dishonesty in online learning. Significant differences were found in students' perceptions of cheating and plagiarism based on sex and school demographics. Serious attention should be given to providing consistent information across different schools and departments. Effective mechanisms to raise awareness of academic dishonesty and enhance the level of academic integrity should be implemented uniformly in all schools, departments, and colleges within the university.

Research Hotspots and Trends in the Internationalization of Chinese Higher Vocational Education — A Visual Analysis Based on CiteSpace

Chun Yang, Yingyan Zhu

Presenter: Suyuan Liu, Guangdong Industry Polytechnic University, China

T1027
16:45-17:00

Abstract: This paper uses CiteSpace software to conduct a visual knowledge graph analysis of 867 documents related to the internationalization of higher vocational education from 2001 to 2024, sourced from the China National Knowledge Infrastructure (CNKI) database. The research identifies three stages in the development of the field: the incubation stage, the growth stage, and the stabilization stage. The research hotspots are closely aligned with national policies. However, the field currently faces significant challenges, including superficial integration with national strategies, weak collaboration among research entities, and limited diversity in research methods. To advance the internationalization of higher vocational education research, it is recommended that future research focus on in-depth empirical analysis of the application effects and impact mechanisms of national policies. Furthermore, it is suggested that collaboration among research entities be strengthened, and the use of empirical methods be enhanced.

Research and Practice of Individualized Intelligent Teaching Based on the Analysis of Individual and Group Learning Behavior: A Case Study of Mobile Communication System Course

Ning Ye, Rong Geng, Xiaoshi Song

Presenter: Ning Ye, Northeastern University, China

T3175
17:00-17:15

Abstract: Individualized intelligent teaching is the inevitable requirement of the development of higher education. With the gradual maturity of online and off-line intelligent teaching platforms and online open courses, learning approaches and learning resources are becoming more and more diversified. The acquisition of learning behavior data is also more convenient, timely and accurate, which brings new opportunities for personalized teaching. Under this background, in order to realize individualized intelligent teaching for specific courses, a teaching mode based on the analysis of individual and group learning behavior characteristics is proposed. Moreover, this paper takes the course "Mobile Communication System" as an example to explore and practice. Using the rain classroom and Blackboard (BB) teaching platform to obtain

data, we make teaching adjustment and content recommendation according to students' learning behavior. The effectiveness of the proposed model was verified through a teaching implementation case.

T2126
17:15-17:30 Generative AI-Driven A/R/Tography Teaching Innovation: Exploring the Integration of Art Education and Tourism Cultural Creativity Based on Sanxingdui Patterns
Xi Zhu, Yue Tan, Bili Duan, Judit Onses Segarra, Melissa Lima Caminha
Presenter: Xi Zhu, University of Girona, Spain

Abstract: This study explores the integration of generative AI and A/R/Tography as an innovative pedagogical framework to enhance art education and cultural creativity, focusing on Sanxingdui motifs. Using generative AI tools such as DALL-E and Midjourney models, the research develops an AIART teaching model that merges traditional cultural symbols with modern educational practices. Through qualitative and quantitative methods, including case studies and experimental teaching designs, the study reveals that generative AI enhances the diversity and modernity of Sanxingdui motifs, facilitating their application in cultural products like fashion and tourism souvenirs. The A/R/Tography framework fosters students' creative growth by promoting dynamic roles as artists, researchers, and teachers, deepening cultural understanding and critical thinking. This study highlights the dual potential of Sanxingdui motifs in education and cultural industries, contributing to cultural preservation and innovation. It provides a practical AIART model bridging traditional culture and digital innovation, with implications for interdisciplinary learning, cultural sustainability, and global cultural dissemination.