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欢迎致辞
Welcome to ICET 2023

Welcome all of you to join the 3rd International Conference on Educational Technology (ICET 2023) which are co-sponsored by Northwestern Polytechnical University, China and IEEE and hosted by School of Foreign Studies, Northwestern Polytechnical University, China. It also gets the support of IEEE Xi'an Section. The aim of the conference is to focus on research and practice in the field of educational technology, exploring the use of the latest computer technologies in education to promote learning efficiency and enhance educational effectiveness. The scope of research covers multiple areas, including educational management information systems, online learning, blended learning, mobile technology applications, educational innovation, social media, and social networks.

The success of ICET 2023 would not be possible without the tireless efforts of the organizers. Special thanks go to Northwestern Polytechnical University, China for their leadership in bringing this event to life, as well as the technical support of School of Foreign Studies, Northwestern Polytechnical University, China for their invaluable contributions. The organizing committee's dedication to making this a successful event is greatly appreciated. Their hard work and attention to detail have ensured that the conference runs smoothly and meets the expectations of all participants. In addition, the contributions of the reviewers cannot be overstated. Their expert opinions and suggestions have helped to ensure the quality and relevance of the conference content.

Once again, thank you to all those who have been involved in making this conference a reality. We are confident that these keynote and invited speakers will provide valuable insights and thought-provoking discussions, and we hope that all attendees will have an enjoyable and productive experience.

ICET 2023

Conference Committee

Northwestern Polytechnical University

Xi'an, China

Located in the historic city of Xi'an, cradle of Chinese civilization and terminus of the ancient Silk Road, Northwestern Polytechnical University (NPU) is the only multidisciplinary and research-oriented in China that is simultaneously developing education and research programs in the fields of aeronautics, astronautics, and marine technology engineering. It is now affiliated to the Ministry of Industry and Information Technology (MIIT). Since the establishment of the People's Republic of China (PRC), NPU has always been one of the nation's key universities. In 1960 it was approved as a state key university by the State Council. It ranked among China's top 15 universities in the state's 7th and 8th Five-Year plans; and NPU is one of the first 22 universities to have established a graduate school. It was one of the first universities to enter into the 211 Project in 1995 and the 985 Project in 2001. NPU is a member of the "Outstanding University Alliance" program and is honored as a National Role Model Unit, a National Pioneer for Optimal Advanced Basic-level Party Organization and a Model University for Graduate Employment etc. NPU adheres to the motto "Loyalty, Integrity, Courage and Perseverance" while carrying forward the spirit of "Strong Preparation，Diligent Effort，Practical Attitude，and Creative Innovation". NPU has put its roots down in the west; dedicated itself to national defense and written several "firsts" into the history of the PRC. Now NPU will continue to pioneer new pathways into the future in the process of building a world first-class university and world first-class disciplines.

西北工业大学，中国西安

西北工业大学（简称西工大）坐落于陕西西安，是一所以发展航空、航天、航海等领域人才培养和科学研究为特色的多科性、研究型、开放式大学，是国家"双一流"建设高校，隶属于工业和信息化部。学校 1960 年被国务院确定为全国重点大学，"七五""八五"均被国务院列为国家重点建设高校之一，1995 年首批进入"211 工程"，2001 年进入"985 工程"，2017 年进入"一流大学"建设高校（A 类）行列，是"卓越大学联盟"成员高校，是"一带一路"航天创新联盟发起高校。建校以来，学校全面贯彻党的教育方针，秉承"公诚勇毅"校训，弘扬"三实一新"（基础扎实、工作踏实、作风朴实、开拓创新）校风，确定了"五个以"（以学生为根、以育人为本、以学者为要、以学术为魂、以责任为重）的办学理念。在扎根西部、献身国防的建设历程中，学校始终坚持立德树人、育领军人才，始终坚持科技创新、铸国之重器，始终坚持与时俱进、担时代大任，为党和国家事业发展做出了重要贡献，书写了新中国历史上的多个"第一"，为武器装备研制、国防领域关键核心技术自主安全可控和西部建设提供了有力支撑，是连续两次被中共中央、国务院、中央军委联合授予"重大贡献奖"的唯一高校。学校先后获得"全国文明单位""全国文明校园""全国毕业生就业典型经验高校""全国民族团结进步模范集体""全国创先争优先进基层党组织"等荣誉称号和表彰奖励。今天在加快建设中国特色世界一流大学和一流学科上续写新的辉煌。

西北工业大学宣传片

The School of Foreign Studies (NPU)
西北工业大学 外国语学院

The School of Foreign Studies at Northwestern Polytechnical University (NPU) has a long history, deep roots and leading subjects. As early as 1984, the university established its master's degree program in foreign linguistics and applied linguistics, the first of its kind among the science and engineering universities in northwest China. The Department of Foreign Languages was founded in 1985, and in 1993, it started to enroll four-year undergraduates majoring in English. At present, the school offers programs in English, Russian, Japanese, German, and French for students throughout the university. English is designated as a first-class undergraduate program at national level while German is designated as a first-class undergraduate program at provincial level. The school has been constantly deepening its educational and teaching reforms, achieving fruitful results. Since 2009, it has been awarded three national-level second prizes for excellent teaching achievements. The School of Foreign Studies is composed of the Department of Foreign Languages and Literature, the College English Teaching Section, the Foreign Language Non-Major Postgraduate Teaching Section, the "Belt & Road" Transcultural Studies Institute, and the Innovation & Practice Base for the Cultivation of Globally Competitive Talents. The school's facilities include a multimedia language laboratory, a simultaneous interpretation laboratory, a corpus laboratory, a foreign language reference room, and a center for BEC (Business English Certificate). The School of Foreign Studies currently has a staff of 119, among whom there are 14 professors and 66 associate professors including two members of the National Foreign Languages Teaching Advisory Board under the Ministry of Education and four Distinguished Teachers at provincial level. Each year, over 10 international teachers from the US, Germany, the UK, Sweden and other countries teach on part-time basis at the school.

西北工业大学外语学科有着悠久的历史，早在 1984 年就建立了外国语言学及应用语言学专业硕士点，是西北地区理工院校第一家拥有"外国语言学及应用语言学"二级学科授予权的硕士点。外语系成立于 1985 年，从 1993 年起招收四年制英语专业本科生。2000 年 12 月获准设立德语语言文学硕士点，2002 年起招收四年制德语专业本科生。目前为全校博士生、硕士生、本科生各个层次的同学提供了完备的英语、德语、俄语、日语、法语五个语种的教学。英语专业被评为国家级一流专业，德语专业被评为省级一流专业。学院不断深化教育教学改革，教学成果丰硕，2009 年以来主持荣获国家级优秀教学成果二等奖 3 项。外国语学院现设有外国语言文学系、大学英语教学部、研究生公共外语教学部、"一带一路"跨文化研究所、教育部高层次国际化人才培养创新实践基地，并建有多媒体语音教室、同声传译语音实验室、外文图书资料室，拥有剑桥商务英语证书（BEC）考点等。 外国语学院现有教职工 119 人，其中专任教师 98 人。教师队伍中教授 14 人，副教授 66 人，其中国家教学指导委员会委员 2 人，陕西省教学名师 4 人，每年有来自美国、德国、英国、瑞典等多个国家的 10 多位外籍教师在学院兼职任教。

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Conference Venue
会场信息

Northwestern Polytechnical University

International Conference Center

西北工业大学 国际会议中心

Address: 127 West Youyi Road, Beilin District, Xi'an Shaanxi, 710072, China

地址：中国陕西西安碑林区友谊西路127号（友谊校区内）邮编:710072

The International Conference Center is located on the Youyi Campus of Northwestern Polytechnical University, and is the preferred venue for major conferences and meetings with three types of conference rooms (large, medium and small). The International Conference Center is conveniently located about 800 meters away from Metro Line 5 and Line 6, with a beautiful surrounding environment close to the national 4A scenic spot Tang Dynasty West Market.

国际会议中心位于西北工业大学友谊校区内，是学校举办重大会议的首选会址，包含大、中、小型3种规模的会议室。国际会议中心地理位置便捷，距离地铁5号线及6号线步行约800米，周边环境优美紧邻国家4A级景区大唐西市。 西工大友谊西路校区靠近丰庆公园，对面是大唐西市文化景区，占地1200亩。校园内景色极好，绿树成荫，繁花似锦，其校歌墙在灯光下显得别有韵味。

Conference Schedule
会议日程

September 15-17th (UTC+8)
Xi'an, China

September 15th, 2023 (Friday) |UTC+8		
Time	**Event**	**Venue**
10:00-12:00	Registration 签到注册	Zhenghe Hotel, Northwestern Polytechnical University 西工大 正禾宾馆 1st Floor 一楼
14:00-16:00	Registration 签到注册	

September 16th, 2023 (Saturday) |UTC+8		
9:00-12:00	Opening Ceremony & Keynote/Invited Speeches 大会开幕式＆大会主旨/邀请报告	Room I 国一会议室
12:00-13:40	**Lunch (International Buffet) 自助**	Xi'an Guangcheng Hotel 广成大酒店
13:40-16:30	Invited Speeches 大会邀请报告	Room I 国一会议室 Room II 国二会议室
16:30-18:00	Technical Session 1 分会报告1	Room I 国一会议室
	Technical Session 2 分会报告2	Room II 国二会议室
18:30-20:00	**Banquet 晚宴**	Xi'an Guangcheng Hotel 广成大酒店

September 17th, 2023 (Sunday) |UTC+8		
9:00-10:30	Keynote Speeches 大会主旨报告	Room I 国一会议室
10:30-12:00	Technical Session 3 分会报告3	
12:00-14:00	**Lunch (International Buffet) 自助**	Xi'an Guangcheng Hotel 广成大酒店
14:00-16:00	Technical Session 4 分会报告4	Room I 国一会议室
	Technical Session 5 分会报告5	Room IV 国四会议室-2nd Floor
16:30-18:00	Technical Session 6 分会报告6	Room I 国一会议室
	Technical Session 7 分会报告7	Room IV 国四会议室-2nd Floor
18:30-20:00	**Dinner (International Buffet) 自助**	Xi'an Guangcheng Hotel 广成大酒店

Conference Schedule
会议日程

September 15-17th (UTC+8)
Xi'an, China

September 15th, 2023 (Friday) |UTC+8	
10:00-12:00	Zoom Testing 在线测试 （Only for online presentation 仅线上报告作者参与）

September 17th, 2023 (Sunday) |UTC+8	
14:30-16:40	Technical Session Online A 在线分会报告 A Education Informatization and Online Learning 教育信息化与在线学习 **Session Chair:** Assoc. Prof. Yang Chen Harbin Institute of Technology (Shenzhen), China

Zoom ID: 833 4452 8341
Password: Xian2023
Zoom link: https://us02web.zoom.us/j/83344528341

Technical Session Online A	**Paper ID:** CE5138, CE5048, CE5021, CE5089, CE5121, CE5068 CE5055, CE5145, CE5004, CE5133, CE5088, CE5118, CE5111	Zoom

PRESENTATION GUIDELINE

- Prior to the formal meeting, online presenters shall join the test room to ensure everything is on the right track.
  9月15日为线上作者报告测试日，为保证一切进行顺利，请准时参加.（线下报告者无需参加。）
- A maximum of **10 minutes** in total, including Q&A.
  在线报告时长为每人10分钟，包含提问时间。请您注意时长，请勿超时
- The Zoom will open all day during conference date from 15-17th for you can join us and listen speakers' speech online. We welcome you to share this zoom link with your colleagues.
  会议期间，线上会议室将全天开放，欢迎您在线听取报告，并和您的同事分享链接。

Detailed Technical Schedule

September 16th, 2023
Saturday UTC/GMT+8 | Beijing Local Time

Time	Room Ⅰ 国一会议室 **Chaired by:** Prof. Yi Zhang, Northwestern Polytechnical University, China 大会主持：张奕教授，西北工业大学，中国
9:00-9:05	**Opening Remarks** Northwestern Polytechnical University, China
9:05-9:10	**Welcoming Address** School of Foreign Studies Northwestern Polytechnical University, China
9:10-9:40	**Group Photo & Coffee Break**
9:40-10:20	**Keynote Speech 1** **Title:** The Application and Effect of a Math Intelligent Assessment and Tutoring System (MIATS) V2.0 in Math Education Prof. Jiyou Jia, Peking University, China
10:20-11:00	**Keynote Speech 2** **Title:** Enhancing programming education by adopting gamification and attractive environments Prof. Hironori Washizaki, Waseda University, Japan
11:00-11:30	**Invited Speech 1** **Title:** GPT AI for teaching and learning: issues and opportunities Assoc. Prof. Vincent C.S. Lee, Monash University, Australia
11:30-12:00	**Invited Speech 2** **Title:** A View on Digital Reading in International Education: Science and Engineering Students' Perspective Assoc. Prof. Sherif Welsen, University of Nottingham Ningbo China, China
12: 00-13:40	**Lunch**

Detailed Technical Schedule

September 16th, 2023
Saturday UTC/GMT+8 | Beijing Local Time

Time	Event	Venue
13:40-14:10	**Invited Speech 3** **Title:** Exploring the Benefits of Project-Based Learning: Insights from an Interdisciplinary University Senior Lecturer Qingqing Xing, The Hong Kong University of Science and Technology (Guangzhou), China	Room Ⅰ 国一会议室
14:10-14:40	**Invited Speech 4** **Title:** Modeling, computing and adaptation of group discussion learning processes Assoc. Prof. Zhi Liu, Central China Normal University, China	Room Ⅰ 国一会议室
15:20-15:50	**Invited Speech 5** **Title:** Dynamic Analysis of Engineering Structures Based on a Remote Laboratory Assoc. Prof. Wei-Hua Hu Harbin Institute of Technology (Shenzhen), China	
15:10-15:40	**Invited Speech 6** **Title:** Intelligently Extracting Information from Digital Ink Chinese Text by Junior International Students Prof. Xiwen Zhang, Beijing Language and Culture University, China	Room Ⅱ 国二会议室
15:40-16:00	**Coffee Break**	
16:00-16:30	**Invited Speech 7** **Title:** Understanding Chinese EFL Learners' Acceptance of Gamified Vocabulary Learning Apps Assoc. Prof. Yang Chen, Harbin Institute of Technology (Shenzhen), China	Room Ⅰ 国一会议室
	Invited Speech 8 **Title:** Opportunities 3rd threats - the ethical challenges of Generative AI for Education Reader Neil Gordon, University of Hull, UK	Room Ⅰ 国二会议室

Detailed Technical Schedule

September 16th, 2023
Saturday UTC/GMT+8 | Beijing Local Time

Time	Session	Venue
16:30-18:00	**Technical Session 1 分会报告1** Artificial Intelligence in Education and Educational Robotics 教育中的人工智能与教育机器人 Session Chair: Senior Lecturer Qingqing Xing, The Hong Kong University of Science and Technology (Guangzhou), China	Room Ⅰ 国一会议室
	Technical Session 2 分会报告2 Blended Learning, Blended Teaching, and Smart Classrooms 混合学习, 混合教学与智慧课堂 Session Chair: Prof. Baohui Zhang, Shanxi Normal University, China	Room Ⅱ 国二会议室
	Poster Session 海报展示 Innovative Teaching Methods and Teaching Evaluation 创新教学方法与教学评价 Poster Chair: Prof. Zhixue Sun, South China Normal University, China	1st Floor 一楼

Technical Session 1	**Paper ID:** CE5096, CE5040, CE5082, CE5047, CE5052, CE5045	Room Ⅰ 国一会议室
Technical Session 2	**Paper ID:** CE5039,CE5146, CE5023, CE5065, CE5091, CE5143	Room Ⅱ 国二会议室
Poster Session	**Paper ID:** CE5016, CE5026, CE5140, CE5080, CE5037	1st Floor 一楼

Detailed Technical Schedule

September 17th, 2023
Saturday UTC/GMT+8 | Beijing Local Time

Time	Room Ⅰ 国一会议室	
9:00-9:40	**Keynote Speech 1** **Title:** MEGA World – A Platform of Multiplayer Educational Game for All Prof. Maiga Chang, Athabasca University, Canada	
9:40-10:20	**Keynote Speech 2** **Title:** Time to Wake Up from Our Innovative Learning Dreams and Make Smarter Learning a Reality Prof. Curt Bonk, Indiana University, USA	
10:20-10:30	**Coffee Break**	
10:30-12:00	**Technical Session 3** Virtual Reality in Education, Virtual Learning Environment, and Mobile Learning 教育中的虚拟现实，虚拟学习环境与移动学习 **Session Chair:** Prof. Yunwu Wang, Jiangsu Normal University, China	
12: 00-14:00	**Lunch**	
14:00-16:00	**Technical Session 4** Development of Educational Information Platforms and Technology Supported Learning 教育信息平台开发与技术支持学习 **Session Chair:** Assoc. Prof. Wei-Hua Hu, Harbin Institute of Technology (Shenzhen), China	Room Ⅰ 国一会议室
	Technical Session 5 STEM Education and Innovative Teaching Methods STEM教育与创新教学方法 **Session Chair:** Assoc. Prof. Vincent C. S Lee Monash University, Australia	Room Ⅳ 国四会议室
16:00-16:30	**Coffee Break**	

Detailed Technical Schedule

September 17th, 2023
Saturday UTC/GMT+8 | Beijing Local Time

Time	Session	Venue
16:30-18:00	**Technical Session 6** Education Data Mining and Learning Analytics 教育数据挖掘与学习分析 **Session Chair:** Asst. Prof. Qi Cao, University of Glasgow, UK	Room Ⅰ 国一会议室
	Technical Session 7 Education Informatization and Online Teaching 教育信息化与在线教学 **Session Chair:** Prof. Jowati Juhary, Universiti Pertahanan Nasional Malaysia, Malaysia Assoc. Prof. Zhi Liu, Central China Normal University, China	Room Ⅳ 国四会议室

Technical Session 3	**Paper ID:** CE5038, CE5134, CE5001, CE5022, CE5020	Room Ⅰ 国一会议室
Technical Session 4	**Paper ID:** CE5033, CE5085, CE5049, CE5027, CE5087, CE5077, CE5086	Room Ⅰ 国一会议室
Technical Session 5	**Paper ID:** CE5054, CE5042, CE5050, CE5095, CE5106, CE5102, CE5025,	Room Ⅳ 国四会议室
Technical Session 6	**Paper ID:** CE5079, CE5142, CE5012, CE5024, CE5044	Room Ⅰ 国一会议室
Technical Session 7	**Paper ID:** CE5009-A, CE5010-A, CE5051, CE5062, CE5094	Room Ⅳ 国四会议室

Conference Guidelines
会议指南

Conference Date 会议日期

- **September 15th-17th, 2023**

  Sep **15th**: Registration

  Sep **16th**: Conference Speeches & Technical Sessions (Onsite)

  Sep **17th**: Conference Speeches & Technical Sessions (Onsite+Online)

  Sep **18th**: City Visit

Oral Presentation 报告指南

- The duration of a presentation slot is **15 minutes**. Please target your lecture for a duration of about 13 minutes for the presentation plus about 2 minutes for questions from the audience.
  每人报告时长总共不超过15分钟。作者报告约为13分钟加2分钟观众提问。

- Please copy your PPT on conference computer with USB flash disk before your own presentation.
  请您使用U盘等便携储存设备，在报告开始前将您的PPT拷贝到会议电脑上。

- Please take care of your belongings during the conference. The conference organizer does not assume any responsibility for the loss of personal belongings of the participants.
  会议期间请务必随身携带贵重物品，会议不对任何物品丢失负责。

- Accommodation is not provided. Delegates are suggested make early reservation. Registration fee only includes meals during conference date.
  参会者请提前自行预订酒店房间。注册费仅包含会议期间餐饮，详情请参考会议日程。

- Please show the badge and meal coupons when dining.
  就餐时请同时出示代表证与餐券。

- It takes about 25 minutes to walk to the dining place from the NPU International Conference Center. The organizing committee will arrange buses to pick you up and drop you off, so please abide by the staff's arrangement and take the bus on time. You can also choose to go to the dining place by yourself. The specific vehicle departure time will be announced on the day of the conference.
  用餐地点离西工大国际会议中心步行时间约25分钟，组委会将统一安排大巴接送，请您跟随工作人员安排，按时候车。您也可以选择自行前往用餐地点。具体车辆出发时间我们将在会议当天公布。

Transportation Arrangement 接送安排：

往返**Round Way**　　**Sep 16th-17th Lunch**　西工大NPU→广成Guangcheng hotel　　广成→西工大NPU

单程**One Way**　　　**Sep 16th-17th Dinner** 西工大NPU→广成Guangcheng hotel

GUEST OF HONOR

Prof. Jie Kong 孔杰

- Dean of School of Foreign Studies, Northwestern Polytechnical University, China

  外国语学院院长，西北工业大学，中国

Bio: Prof. Jie Kong is a full professor in polymer chemistry and physics at Northwestern Polytechnical University (NPU). He studied at Northwestern Polytechnical University in 1995-2004 and received his Ph.D. in Material Science in 2004. Prior to joining NPU, he worked at The Hong Kong Polytechnic University as Postdoctoral Fellow and at University of Bayreuth as Alexander von Humboldt Research Fellow.

His research interests include the design and synthesis of hyperbranched polymers, and their application in ceramic precursors and dielectronic materials. He has publicized more than 150 peer-reviewed SCI papers in archival journals as first or corresponding author, such as Nat. Commun. Adv. Funct. Mater. and Macromolecules, which include more the 30 ESI highly cited papers. He is the principal investigator of six projects granted by National Natural Science Foundation of China including National Science Fund for Distinguished Young Scholars.

Prof. Kong is the Clarivate Analytics' Highly-Cited Researcher in 2021 and 2022, and the Fellow of the Institute of Materials, Minerals and Mining of U.K. He is co-chair of Precursor-Derived Ceramics Session in the 6th International Congress on Ceramics (ICC6) in Dresden, Germany, Associate Editor of Engineered Science, and Editorial Board Member for Adv. Compos. Hybrid Mater. and IET Nanodielectrics.

GUEST OF HONOR

Prof. Gaozu Wang 王高祖

- Secretary of the Party Committee, School of Foreign Studies, Northwestern Polytechnical University, China
  外国语学院党委书记，西北工业大学，中国

Bio: Dr. Gaozu Wang received his PhD in Engineering from Northwestern Polytechnical University, China (NPU). He is currently an Associate Professor in School of Computer Science and the Secretary of the Party Committee of School of Foreign Languages in NPU. He is a member of China Computer Federation, and also a member of the Shaanxi Provincial Cryptography Expert Committee.

Dr. Wang is mainly engaged in research on network security, information system security, evaluation of security risks, industrial Internet security, and cryptographic applications. In recent years, he has been chiefly responsible for two projects involved in National High-tech R&D Program (863 Program) and one high-quality manufacturing development project sponsored by the Ministry of Industry and Information Technology. He has also conducted other scientific research projects supported by the National Natural Science Foundation and the National Ministries and Commissions Pre-Research Fund. Additionally, he has undertaken a number of projects of Shaanxi Provincial Network Security, Confidentiality Measurement and Risk Assessment. Dr. Wang has won the second prize of Shaanxi Provincial Science and Technology Award once, and third prize for twice. He also owns four software copyrights.

CONFERENCE HOST

Prof. Yi Zhang 张奕

- Deputy Dean, School of Foreign Studies, Northwestern Polytechnical University, China

  外国语学院副院长，西北工业大学，中国

Bio: Yi Zhang, Professor, Deputy Dean of School of Foreign Studies, Northwestern Polytechnical University. As the first and correspondent author, she has published 84 research articles in Chinese and International journals. She organized and accomplished 7 national projects and is the co-leader of an 8-year fund program sponsored by Linneau-Palm foundation, Sweden. In 2014, she obtained "National Award for Teaching Achievement" rewarded by Chinese Ministry of Education. Due to her achievements in teaching and research, she wins the governmental honor of the Provincial Distinguished Teacher. She is a member of Chinese Association of English for Academic Purposes, member of Shaanxi Advisory Board for Intercollegiate Programme Communities, the assessor and reviewer of Humanities and Social Science Foundation Projects of the Ministry of Education. Her research area includes Systemic Functional Linguistics, Academic Discourse Analysis and Teacher Education.

KEYNOTE SPEAKER

Prof. Jiyou Jia 贾积有

- Head of the Department of Educational Technology
- Peking University, China

北京大学，教育信息化国际研究中心主任

Bio: Dr. Jiyou Jia is a full professor and the Head of the Department of Educational Technology, Graduate School of Education, Peking University, China and is also the founding director of International Research Center for Education and Information at Peking University. His research interests include educational technology and artificial intelligence in education, especially in TELL (Technology Enhanced Language Learning), math education with ICT, and decision making support system. His research has won a number of national and international prizes including the First Class Award of the Fifth National Award for Outstanding Achievements in Educational Research, from Ministry of Education, China and IAAI (Innovative Application of Artificial Intelligence) Deployed Application Award by AAAI (Association of Advancement of Artificial Intelligence), USA, 2008.

The Application and Effect of a Math Intelligent Assessment and Tutoring System (MIATS) V2.0 in Math Education

Abstract: In order to demonstrate the effect of artificial intelligence on implementing the policy documents issued by the central government on the assessment reform of primary and secondary school students and reducing the burden and increasing the efficiency, this paper introduces an intelligent mathematical assessment and tutoring system MIATS V2.0, which can not only provide adaptive assessment for students, but also guide students individually to solve difficult questions step by step. Two quasi-experiments in two high schools were conducted to prove the effect of this system on students' performance. The analysis of the collected data demonstrates that the system can provide personalized assessment and tutoring and enhance the students' learning performance, and is an effective approach to realize the value-added evaluation, the integration of testing and learning, and the promotion of learning through testing. This study provides a valuable reference for utilizing intelligent assessment and tutoring systems to help implement the macro policies such as student assessment reform, reducing the students' burden and increasing the educational efficiency.

Room I 国一 | 10:20-11:00 | Sep 16th, 2023

KEYNOTE SPEAKER

Zoom ID: 833 4452 8341
https://zoom.us/j/83344528341

Prof. Hironori Washizaki 鹫崎弘宜

- Waseda University, Japan 日本早稻田大学
- IEEE Computer Society First Vice-President IEEE-CS第一副主席

Bio: Hironori Washizaki is a Professor and the Associate Dean of the Research Promotion Division at Waseda University in Tokyo, and a Visiting Professor at the National Institute of Informatics. Hironori currently serves as IEEE Computer Society First Vice-President. He was awarded Golden Core Member and Distinguished Contributor from IEEE CS. He is leading professional and educational activities, including development of the Guide to the Software Engineering Body of Knowledge (SWEBOK), educational courses, and certification programs. He serves as Associate Editor of IEEE TETC, Steering Committee Member of the IEEE CSEE&T, and Advisory Committee Member of the IEEE CS COMPSAC. He had been the Chair of IEEE CS Japan Chapter. Hironori's research interests include systems and software engineering. Recent achievements include IoT design patterns published in IoT-J 2020 and Machine Learning Design Patterns in Computer 2022. He is leading a professional IoT/AI education project called SmartSE. Since 2015, he has been the Convenor of ISO/IEC/JTC1/SC7/WG20 to standardize bodies of knowledge and certifications, and leading adoptions of CS products SWEBOK and Software Engineering Competency Model (SWECOM) into standards. He hosts IEEE CSEE&T 2023 and DSA 2023 at Waseda University.

Enhancing programming education by adopting gamification and attractive environments

Abstract: In this talk, Hironori introduces how programming education can be enhanced by adopting the concepts of gamification and an attractive environment to enrich learning experiences. Hironori introduces approaches for extending online programming judge systems to enhance educational effects in programming assignments by gamifying good code writing (ACM ITiCSE 2019) and providing similar program assignments (Applied System Innovation 2022). Furthermore, Hironori explains how attractive Virtual Reality (VR) environments can improve learners' programming and computational thinking skills (IEEE ISEC 2023).

Room I 国一 | 9:00-9:40 | Sep 17th, 2023

KEYNOTE SPEAKER

Zoom ID: 833 4452 8341
https://zoom.us/j/83344528341

Prof. Maiga Chang 张迈加

- Athabasca University, Canada 阿萨巴斯卡大学，加拿大
- Chair of IEEE Technical Committee of Learning Technology IEEE TCLT主席

Bio: Dr. Maiga Chang is a Full Professor in the School of Computing and Information Systems at Athabasca University, Canada. His research mainly focuses on game-based learning, training and assessment; learning behavior analysis; learning analytics and academic analytics; intelligent agent technology; health informatics; data mining; computational intelligence; natural language processing; artificial intelligence; museum education; mobile and ubiquitous learning; healthcare technology, etc.Dr. Chang is now Chair (2018~2023) of IEEE Technical Committee of Learning Technology (TCLT) and Chair (2021) of Educational Activities Committee, IEEE Northern Canada Section. Dr. Chang is editors-in-chief (2019~) of Journal of Educational Technology & Society (SSCI), editor-in-chief (2014~) of International Journal of Distance Education Technologies (ESCI, SCOPUS, EI), and editor-in-chief (2020~) of Bulletin of Technical Committee on Learning Technology (ESCI).(2018) of International Conference on Computers in Education.

MEGA World – A Platform of Multiplayer Educational Game for All

Abstract: In this talk I will present MEGA World, a platform that allows teachers to create their own virtual worlds for their course so their students can learn required knowledge and skills as well as be stealth assessed in a non-pressure environment. Students will walk through the learning and assessment activities by wondering and exploring the virtual world via interest driven. Various quest types will be introduced and their use cases will be explained with the content from four graduate level and undergraduate level courses in Athabasca University. At the end, users' preliminary perceptions and recommendations toward the use of MEGA World will be summarized.

Room I 国一 ┃ 9:40-10:20 | Sep 17th, 2023

KEYNOTE SPEAKER

Zoom ID: 833 4452 8341
https://zoom.us/j/83344528341

Prof. Curt Bonk 科特·邦克

- Indiana University, USA 印第安纳大学，美国
- Top 2% of scientists in the world 全球论文被引次数前2%科学家

Bio: Curtis J. Bonk is Professor in the School of Education at Indiana University (IU) teaching psychology and technology courses and Adjunct in the School of Informatics at IU. Curt is the author of over 400 publications including 20 books such as the Handbook of Blended Learning. In 2020, Curt was awarded the IU President's Award for Excellence in Teaching and Learning Technology and in 2021, he received the David H. Jonassen Excellence in Research Award. Recently, the American Educational Research Association (AERA) named him a 2022 AERA Fellow for his exceptional contributions to, and excellence in, education research, and the following week, he was honored with the International Engagement award from the IU School of Education. In 2022, he was also listed in the top 2% of scientists in the world based on publication citations for career. In 2023, AERA awarded Curt and his colleague Dr. Min Young Doo from Kangwon National University in Korea with the Outstanding International Research Collaboration Award and the US Distance Learning Association honored him with a USDLA Excellence in Distance Learning Research Award in Higher Education.

Time to Wake Up from Our Innovative Learning Dreams and Make Smarter Learning a Reality

Abstract: For a half century, educators, psychologists, and researchers have been predicting that highly intensive, innovative, and individualized learning formats are only a few years away. Learners of all ages would enter enticing microworlds, highly engaging learning experience holodecks, fully immersive hands-on scenarios, high fidelity simulations and games, AI-based adaptive microlearning snippets, and completely free and open educational resources and courses on any topic. Massive open online classes were promised one day and then on demand microlearning snippets were delivered in the next. The learning related dreams we had in past decades were quickly forgotten as the next wave of learning technology came along. But all those dreams will prove pointless if they fail to address true problems or issues that some aspect of society is struggling with. It is time to wake up from such dreams of a glistening technological future and have our dream machines help us envision a world filled with open, informal, adaptive, nontraditional, and self-directed learning opportunities. When that happens, we will truly have arrived in the age of smarter and more innovative forms of learning where the learner is finally in charge of the dreams.

INVITED SPEAKER

Assoc. Prof. Vincent CS 李清松

- Monash University, Australia 莫纳什大学，澳大利亚
- IEEE Senior Member IEEE高级会员

Bio: Vincent CS Lee is currently an Associate Professor with the Faculty of IT, Monash University and a Senior Member of IEEE. He is an active researcher and educator (with Graduate Certificate in Higher Education Teaching from Monash University) with 30 years as academicians for four universities including Monash University and Swinburne University, both in Melbourne, joint Monash-South East University in Suzhou, Nanyang Technological University in Singapore. He was visiting Professors with School of Economics and Management, and School of Computing and Technology, Tsinghua University in Beijing. Lee's research and higher education teaching (developed and delivered undergraduate and postgraduate courses) span multi-disciplinary domains across IT, Digital Health, Signal and Information Processing, Financial Engineering (FinTech), Educational Data Mining (with learner-centric education technology tools), Explainable AI, Deep ML, Computer Vision for dynamic objects tracking, and Multi-agent Autonomous Systems. Lee has published 200+ papers in IEEE/ACM SCImago ranked Q1 High Impact factors of Journals, and in CORE A/A* Peer-review International Conferences proceedings (AAAI, IJCAI, ICDM, ICWS, ICDE, PAKDD, CIKM, WWW, IEEE IC Signal Processing, IC-EDM).

GPT AI for teaching and learning: issues and opportunities

Abstract: The body of education literature asserts that GPT AI, in particular Chat GPT version 3.5 is an effective education tool. It can be used to overcome three barriers to teaching and learning (including blended mode) in the face-to-face classroom: improving transfer, breaking the illusion of explanatory depth, and training learners to critically evaluate explanations. This talk provides background information and techniques on how GPT AI can be used to overcome the three barriers and includes prompts and assignment tasks design that teachers can incorporate into their teaching and evaluation of assignments.

Room I 国一 | 11:30-12:00 | Sep 16th, 2023

INVITED SPEAKER

Assoc. Prof. Sherif Welsen谢里夫·韦尔森

- University of Nottingham Ningbo China, China
  宁波诺丁汉大学，中国

Bio: Dr. Sherif Welsen is an accomplished associate professor in the Department of Electrical and Electronic Engineering at the University of Nottingham Ningbo China (UNNC). Since joining the faculty of science and engineering in November 2013, Dr. Welsen has been dedicated to student success and academic excellence, currently serving as Campus Lead Senior Tutor and Faculty Senior Tutor since 2022 and 2017, respectively. Dr. Welsen is a distinguished researcher and academic leader, having founded and headed the Science and Engineering research group. He has also led the teaching and learning initiatives within the Faculty of Science and Engineering from 2017 to 2021, during which he served as both the Faculty Deputy Director of Teaching and Learning and the Director of Teaching and Learning. These roles allowed him to make significant contributions to curriculum development, course design, and student engagement. Dr. Welsen's research interests are diverse and innovative, focusing on emerging wireless technologies, coding techniques, location estimation, digital chip design, and future engineering education. He has also explored blended learning, digital reading, and pedagogies for digital transformation, highlighting his forward-thinking approach to teaching and learning.

A View on Digital Reading in International Education: Science and Engineering Students' Perspective

Abstract: As remote education and e-learning have taken center stage, the role of digital reading in shaping the learning experiences of students has grown substantially. This speech will present a groundbreaking study, building upon previous research to delve into digital reading amidst the pandemic. The study casts its net wide, encompassing science and engineering students from Leeds Joint School and Southwest Jiaotong University (SWJTU) in China. Specifically, the research explores the reading habits of undergraduate students hailing from diverse engineering disciplines such as Civil Engineering, Electronic and Electrical Engineering, Mechanical Engineering, and Computer Science. The findings of this study reveal a fascinating transformation in the reading strategy of engineering students. It becomes evident that their approach to reading has undergone a profound shift towards an "e-centric" paradigm. This evolution stands in stark contrast to previously published studies, which often examined reading practices either during or post-pandemic times. The speech, will shed light on these transformative findings, providing valuable insights for policymakers and education authorities, particularly in the context of engineering higher education

Room I 国一 | 13:40-14:10 | Sep 16th, 2023

INVITED SPEAKER

Senior Lecturer. Qingqing Xing 邢清清

- The Hong Kong University of Science and Technology (Guangzhou) 香港科技大学（广州）
- PM in the Bureau of International Cooperation at the NFSC 中国国家自然基金委员会 国际合作项目前项目经理

Bio: Dr. Qingqing Xing is a Senior Lecturer at the University of Education Sciences, the Hong Kong University of Science and Technology (Guangzhou). She holds a PhD in Education from Peking University and has more than 23 years of teaching experience in science and technology-oriented universities. She is committed to promoting research ideas and interdisciplinary collaboration, including as a Project Manager in the Bureau of International Cooperation at the National Science Foundation of China and as the Associate Director of the International Office at the Beijing Institute of Technology. In addition to her efforts to teach Interdisciplinary Design Thinking and Effective Academic Communication, she collaborates with interdisciplinary research teams in computational media and arts, metaverse research, and health care. As part of this collaboration, it uses educational technologies and artificial intelligence generated content tools to help students present their research ideas in engaging ways to facilitate their "niche" exploration process, with a focus on developing Self-Organized Maker Education. Within just one year of its inception, HKUST(GZ) research students have actively contributed insights and examples of project-based learning in higher education.

Exploring the Benefits of Project-Based Learning: Insights from an Interdisciplinary University

Abstract: This invited talk is about project-based learning (PBL) at an interdisciplinary university with features of self-organized maker education. The speaker will present how the university differs from other universities in its academic structure and learning and teaching mode.

A Design Thinking course will be discussed as an example of how PBL is implemented in the classroom. Exemplary student projects are presented to illustrate this approach. The first project is a virtual bicycle that combines elements of virtual reality and exercise physiology. The second project is an RFID asset management system that streamlines inventory tracking and management. These projects demonstrate how PBL fosters creativity, critical thinking, and collaboration among students.

Room I 国一 ｜ 14:10-14:40 | Sep 16th, 2023

INVITED SPEAKER

Assoc. Prof. Zhi Liu 刘智

- Central China Normal University, China 华中师范大学，中国
- Guest associate editor of《Frontiers in Artificial Intelligence》ESCI 索引期刊客座副主编

Bio: Zhi Liu is the PI of affective computing research group, associate researcher and doctoral supervisor at the National Engineering Research Center for Big Data in Education, Central China Normal University. He was a guest researcher at the Institute of Computer Science of Humboldt University of Berlin from 2017 to 2018.He is the guest associate editor of the international journal "Frontiers in Artificial Intelligence", the editorial board member of "Frontiers in Psychology", and the chair of the special Conference on Learning Analytics of the Learning Science Research Branch of the Chinese Association of Higher Education. At the International EITT, AMMCS, GCCCE and other well-known international conferences, he works as committee members. He has been engaged in the research and development of education data mining, learning analysis, intelligent tutoring systems, etc.In the top journals such as Knowledge-Based Systems, Computers & Education, IEEE Transactions on Learning Technologies, Journal of Educational Computing Research and other leading journals in the interdisciplinary field of computer and educational technology, he have published more than 40 full papers. He won the 11th Annual Research Excellence Award in the education filed of IGI Global Publishing house in 2019.

Modeling, computing and adaptation of group discussion learning processes

Abstract: As an important learning paradigm in large-scale online scenarios, group learning discussion plays an important role in promoting learning motivation and effectiveness. However, the behavior-emotion-cognitive dynamic correlation and its internal mechanism remain unclear. Centering on relevant theories and methods of group learning, the research carries out the data-driven relational modeling of discussion learning behaviors, calculation of learning subjects and adaptation of group learning process, builds a closed-loop research framework of theory, technology and application demonstration, and forms an intelligent learning technology system with "modeling, calculation and adaptation" as the core. It provides theoretical and technical support for revealing the interaction law of behavior, emotion and cognition in discussion learning, and promoting higher-order cognition and knowledge construction.

Room I 国一 | 14:40-15:10 | Sep 16th, 2023

INVITED SPEAKER

Assoc. Prof. Wei-Hua Hu 胡卫华

- Harbin Institute of Technology (Shenzhen), China
  哈尔滨工业大学（深圳），中国

Bio: Weihua Hu is currently an associate professor of Civil Engineering in the Harbin Institute of Technology (Shenzhen). Dr. Hu obtained his PhD degree from the University of Porto in Portugal in 2011, and he continued his postdoc research work in the Federal Institute for Material Research and Testing (Bundesanstalt für Materialforschung und -prüfung,BAM) in Berlin, Germany. Since 2016, he started his education and research work in Harbin Institute of Technology (Shenzhen). He is dedicated to specialized basic courses in high-rise buildings and seismic resistance, earthquake engineering and structural seismic design and experimental modal analysis. In recent years, he has mainly focused on the innovation of traditional civil engineering education by integrating the remote monitoring technology based on Internet of Things (IOT) with lecture-based teaching method. Under his guidance, students won the bronze prize in the 7th China International "Internet plus" Undergraduate Innovation and Entrepreneurship Competition for their intelligent building technology. In the past years, he was awarded with Teaching Achievement Prize (2020) in the Harbin Institute of Technology (Shenzhen) and Teaching Competition for Young Teachers (2018) in the Harbin Institute of Technology.

Dynamic Analysis of Engineering Structures Based on a Remote Laboratory

Abstract: This paper proposes an efficient and low-cost on-line experimental platform for a dynamic analysis course in civil engineering. A remote laboratory is constructed on a real bridge consisting of real-time signal acquisition, transmission and processing. Learning the complex theory of dynamic analysis becomes easier by analyzing the real-time vibration signals acquired from the bridge, which has been confirmed by positive feedbacks from students. Nowadays, novel education method is more popular in college because of its effectiveness in attracting students' interest and decreasing education budget.A.B. Gavali [1] presents technology-based learning system in the logic controller education to improve the quality of learning. C.K. Pereira [2] applied linked data in education and Yassine [3] introduced an open virtual cloud lab in the education of networks and security to reduce the cost.

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Room Ⅱ 国二 ｜ 15:10-15:40 | Sep 16th, 2023

INVITED SPEAKER

Zoom ID: 833 4452 8341

https://zoom.us/j/83344528341

Prof. Xiwen Zhang 张习文

• Beijing Language and Culture University, China
北京语言大学，中国

Bio: Xiwen Zhang is currently a Professor of Digital Media Department, School of Information Science, in the Beijing Language and Culture University. From 2005 to 2006 he was a Postdoctor advised by Prof. Michael R. Lyu in the Department of Computer Science and Engineering, the Chinese University of Hong Kong. From February to April in 2001 he was a Research Assistant by Dr. KeZhang Chen in the Department of Mechanical Engineering, the University of Hong Kong. From 2000 to 2002 he was a Postdoctor advised by Prof. Shijie Cai in the Computer Science and Technology Department, Nanjing University.Prof. Zhang 's research interests include pattern recognition, computer vision, and human-computer interaction, as well as their applications in digital image, digital video, and digital ink. Prof. Zhang has published over 60 refereed journal and conference papers in his research areas. His SCI paper are published in Pattern Recognition, IEEE Transactions on Systems, Man, and Cybernetics - Part B: Cybernetics, Computer-Aided Design. He has published more than twenty EI papers..

Intelligently Extracting Information from Digital Ink Chinese Text by Junior International Students

Abstract: Chinese characters have complex structures. Their writing plays an import role in learning Chinese. Junior international students can use digital pen to record their handwriting as digital ink. Various information can be extracted from the digital ink text, such as text line, Chinese characters, stroke errors, shape normalization. Digital ink Chinese texts written by junior international students contain many information including errors and unnormal issues. It is difficult to recognize them. We proposed some intelligent methods to extract information, such as adaptive segmentation based on statistics analysis, classification using machine learning, stroke matching using Genetic Algorithm, evaluating the normalization for entire characters and their components using knowledge bases. With developing new intelligent methods and collecting more data, more valued information can be extracted.

Room I 国一 ｜ 16:00-16:30 | Sep 16th, 2023

INVITED SPEAKER

Zoom ID: 833 4452 8341
https://zoom.us/j/83344528341

Assoc. Prof. Yang Chen 陈阳

- Harbin Institute of Technology (Shenzhen), China
  哈尔滨工业大学（深圳），中国

Bio: Yang Chen is currently an associate professor in the college of humanity and social sciences of Harbin Institute of Technology (Shenzhen), China. She received her bachelor's degree in mass communication from Communication University of China, master's degree in digital media from Harbin Institute of Technology, China, and doctoral degree in computer graphics technology with a concentration in human-computer interaction from Purdue University, USA. Her research interests include social media, user experience, environmental communication, and educational gamification. As principal investigator, she has undertaken funded research projects on gamified pro-environmental communication, gamification in second language acquisition, and big data and education resources, which were funded by national/provincial social science foundations. She has publications in international journals including International Journal of Human-Computer Interaction, sustainability, and International Journal of Language, Literature and Linguistics. She also published in international conferences such as ICBDE, ICESS, ICIET, WCEEE, and ELEARN. In addition, she serves as a reviewer for several prestigious international journals (such as Information, Communication & Society, Information Processing and Management, Social Media and Society, Behaviour & information Technology, and Interacting with Computers) and international conferences in the fields of social media, technology, and education.

Understanding Chinese EFL Learners' Acceptance of Gamified Vocabulary Learning Apps

Abstract: Implementing the idea of gamification in mobile-assisted language learning has recently been gaining increasing attention from academia and industry. I will introduce three studies about this topic. The first one is about investigating students' perception, motivation to use, and acceptance of popular gamified English vocabulary learning apps. The second is a longitudinal study on students' foreign language anxiety and cognitive load in gamified classes of higher education. The third is understanding Chinese EFL learners' acceptance of gamified vocabulary learning Apps: An integration of self-determination theory and technology acceptance model.

Room Ⅱ 国二 ｜ 16:00-16:30 | Sep 16th, 2023

INVITED SPEAKER

Zoom ID: 833 4452 8341
https://zoom.us/j/83344528341

Reader Dr. Neil Gordon 尼尔·戈登

- University of Hull, UK 赫尔大学，英国
- Chair of the British Computer Society Ethics in IT specialist group 英国计算机学会IT伦理主席

Bio: Neil Gordon is a Reader in Computer Science at the University of Hull in England. Neil is a National Teaching Fellow, and a Principal Fellow of the UK Higher Education Academy. He has produced a number of reports for AdvanceHE, with major ones on the way that technology enhanced learning can enable flexible pedagogy, on the role of assessment in education, and on ways to address issues in retention and attainment in computing education. His awards include University Teaching Fellowships and awards for scholarship in teaching and learning. His research interests include applications of computer science to enable true technology enhanced learning, issues around sustainable development, as well as more discipline specific work on applications of computer algebra and formal methods. He has published over 50 journal articles, a similar number of refereed conference proceedings, along with a variety of book chapters, reports and other publications.

Opportunities and threats - the ethical challenges of Generative AI for Education

Abstract: Generative AI systems such as ChatGPT, Bard and Llama, alongside software focused tools such as Copilot are creating a challenge for how we educate and practice in education. This is especially the case in computing education, but effects other disciplines too. In this talk, I consider some of opportunities and challenges from this emerging tech, especially from an ethical perspective, and where this is taking us.

16:30-18:00
UTC/GMT+8
September 16th, 2023
Room I 国一

Technical Session 1: Artificial Intelligence in Education and Educational Robotics 教育中的人工智能与教育机器人

Session Chair:

Senior Lecturer. Qingqing Xing, The Hong Kong University of Science and Technology (Guangzhou), China

Time	Paper ID	Paper Information
16:30-16:45	CE5096	**Title:** AI-Generated Content for Academic Visualization and Communication in Maker Education **Presenter:** Chenghong Zheng **Affiliation:** The Hong Kong University of Science and Technology, China
16:45-17:00	CE5040	**Title:** Research of Educational Robot Application Scenarios Based on Learning System Elements information on submission 28 **Presenter:** XinMei Kong **Affiliation:** Capital Normal University, China
17:00-17:15	CE5082	**Title:** Identifying the impact of Human-AI co-creation on students' creativity development: a conceptual framework **Presenter:** Jinping Zhong **Affiliation:** South China Normal University, China
17:15-17:30	CE5047	**Title:** Application of Generative Artificial Intelligence in English Education: Taking ChatGPT System as An Example **Presenter:** Zezong Tang **Affiliation:** Northwestern Polytechnical University, China
17:30-17:45	CE5052	**Title:** Research on performance evaluation of robot-assisted teaching classroom application **Presenter:** Xu Zhang **Affiliation:** Capital Normal University, China
17:45-18:00	CE5045	**Title:** A Novel Link Prediction Approach for MOOC Forum Thread Recommendation Using Personalized PageRank and Machine Learning **Presenter:** Junfu He **Affiliation:** Central China Normal University, China

16:30-18:00
UTC/GMT+8
September 16th, 2023
Room II 国二

Technical Session 2: Blended Learning, Blended Teaching, and Smart Classrooms 混合学习，混合教学与智慧课堂

Session Chair:

Prof. Baohui Zhang, Shanxi Normal University, China

Time	Paper ID	Paper Information
16:30-16:45	**CE5039**	**Title:** Quality Assessment of Machine Translation from Translation Criticism Perspective—The Chinese Translation of a Speech by Neural Machine Translator DeepL as an Example **Presenter:** Yue Bao **Affiliation:** Northwestern Polytechnical University, China
16:45-17:00	**CE5146**	**Title:** SwiftQuiz - An interactive module to help teachers swiftly create questions and get rich feedback **Presenter:** Yiming Li **Affiliation:** Xi'an Jiaotong-Liverpool University, China
17:00-17:15	**CE5023**	**Title:** Research on Establishment and Application of Blended Mobile Teaching Model Based on UMU **Presenter:** Zhang Xiaohua **Affiliation:** Wenzhou Business College, China
17:15-17:30	**CE5065**	**Title:** Research on Permeable Teaching Design of Business Intelligent Classroom：conception, planning and tactics **Presenter:** Nong Wan-Bin **Affiliation:** Nanning University, China
17:30-17:45	**CE5091**	**Title:** Exploration on the Construction of Smart Classrooms in Vocational Colleges **Presenter:** Chenggong Zhai **Affiliation:** Department of Quartermaster Procurement Army Logistics Academy of PLA, China
17:45-18:00	**CE5143**	**Title:** Critical Discourse Analysis Based on the Technology of Corpus **Presenter:** Yayin Wu **Affiliation:** Northwestern Polytechnical University, China

Technical Session 3: Virtual Reality in Education, Virtual Learning Environment, and Mobile Learning
教育中的虚拟现实，虚拟学习环境与移动学习

Session Chair:

Prof. Yunwu Wang, Jiangsu Normal University, China

Time	Paper ID	Paper Information
10:30-10:45	CE5038	**Title:** Understanding the Needs of Virtual Reality for Learning and Teaching: A User-Centered Approach **Presenter:** Yue Li **Affiliation:** Xi'an Jiaotong-Liverpool University, China
10:45-11:00	CE5134	**Title:** VR Serious Game for Learning the Computer Organisation and Architecture Course **Presenter:** Kai Hwee Alvin Tan **Affiliation:** Singapore University of Social Sciences, Singapore
11:00-11:15	CE5001	**Title:** Teaching situation design based on Kolb's Learning Theory from the perspective of embodied cognition **Presenter:** Chunmei Fan **Affiliation:** Beijing University of Posts and Telecommunications, China
11:15-11:30	CE5022	**Title:** Mobile learning based Teaching language skill training mode for normal college students **Presenter:** Haixi Wang **Affiliation:** Shaanxi Normal University, China
11:30-11:45	CE5020	**Title:** Research on Olympic Education Teacher Training Based on Internet Technology **Presenter:** Zhe Kong **Affiliation:** Capital University of Physical Education And Sports, China

Technical Session 4: Development of Educational Information Platforms and Technology Supported Learning
教育信息平台开发与技术支持学习

Session Chair:

Assoc. Prof. Wei-Hua Hu, Harbin Institute of Technology (Shenzhen), China

Time	Paper ID	Paper Information
14:00-14:15	CE5033	**Title:** Organizations Investment in the Business Oriented LMS and Employees' Learning Support **Presenter:** Ivana Ogrizek Biskupic **Affiliation:** ALGEBRA University College, Croatia
14:15-14:30	CE5085	**Title:** An experimental teaching platform for machine vision-based real-time detection taking quality inspection of paper cups as instance **Presenter:** Zhe Yan **Affiliation:** Wuhan University of Technology, China
14:30-14:45	CE5049	**Title:** A Learning Platform for Children and Youth's Soft Skills Education: A Conceptual Design **Presenter:** Samuel Herzog **Affiliation:** Constaff GmbH, German
14:45-15:00	CE5027	**Title:** Analysis of Vocabulary Learning Strategies in Vocabulary Learning Software from the Perspective of Psycholinguistics **Presenter:** Yaru Zhou **Affiliation:** Northwestern Polytechnical University, China
15:00-15:15	CE5087	**Title:** Research and Development of Assembly Line Balance Simulation Experimental Teaching Platform **Presenter:** Xiangyu Zhou **Affiliation:** Wuhan University of Technology, China
15:15-15:30	CE5077	**Title:** Privacy-Preserving Lecture Sharing in Metaverse **Presenter:** Sida Huanga **Affiliation:** Xi'an Jiaotong-Liverpool University, China
15:30-15:45	CE5086	**Title:** Development of Teaching System of Genetic Algorithm Applications in Fleet Scheduling **Presenter:** Xinyu Liang **Affiliation:** Wuhan University of Technology, China

Technical Session 5: STEM Education and Innovative Teaching Methods STEM教育与创新教学方法

Session Chair:

Assoc. Prof. Vincent C. S Lee, Monash University, Australia

Time	Paper ID	Paper Information
14:00-14:15	CE5054	**Title:** Dialectical Thinking Education in Life Science Related Courses **Presenter:** Xiaofei Wang **Affiliation:** Harbin Institute of Technology at Weihai, China
14:15-14:30	CE5042	**Title:** Investigating the relationships among students' motivational beliefs, behavioural engagement and problem-solving ability in STEM education **Presenter:** Jiajing Li **Affiliation:** Central China Normal University, China
14:30-14:45	CE5050	**Title:** Research on teaching design framework and evaluation using graphical programming towards cultivating students' digital competence **Presenter:** Yingwenhui Huang **Affiliation:** Capital Normal University, China
14:45-15:00	CE5095	**Title:** Teaching Practice of Industrial Design Major Based on STEAM Concept **Presenter:** Zhixue Sun **Affiliation:** South China Normal University, China
15:00-15:15	CE5106	**Title:** Applying Visual Mnemonics Enhances Chinese Characters Learning for Chinese as Second Language Learners: A Mixed-Method Study **Presenter:** Shurui Bai **Affiliation:** The Education University of Hong Kong, China
15:15-15:30	CE5102	**Title:** Teamwork Improvement in Group Projects of Professional Software Development **Presenter:** Qi Cao **Affiliation:** University of Glasgow, Singapore
15:30-15:45	CE5025	**Title:** Influencing Factors Analysis of Occupational Values of Undergraduates in IT Major and Countermeasures **Presenter:** Haowen Chen **Affiliation:** South China University of Technology, China

Technical Session 6: Education Data Mining and Learning Analytics 教育数据挖掘与学习分析

Session Chair:

Asst. Prof. Qi Cao, University of Glasgow, UK

Time	Paper ID	Paper Information
16:30-16:45	**CE5079**	**Title:** Characteristics Analysis of Subject Knowledge Networks of Textbooks Based on Complex Networks **Presenter:** YiMin Hong **Affiliation:** Central China Normal University, China
16:45-17:00	**CE5142**	**Title:** Analysis of classroom behavior in laboratory work supported by smartphones **Presenter:** Yuze He **Affiliation:** Beijing Normal University, China
17:00-17:15	**CE5012**	**Title:** Dynamic Analysis of Engineering Structures Based on a Remote Laboratory **Presenter:** Weihua Hu **Affiliation:** Harbin Institute of Technology(Shenzhen), China
17:15-17:30	**CE5024**	**Title:** Supporting Military Pedagogy with the Work-the- Walk (WTW) and Digital WTW (D-WTW) Approach to Teaching and Learning **Presenter:** Jowati binti Juhary **Affiliation:** Universiti Pertahanan Nasional Malaysia, Malaysia
17:30-17:45	**CE5044**	**Title:** A Study on the Effects of Different Intensity Musical Stimulation on Learners' Attention and Meditation **Presenter:** Zhiwen Xia **Affiliation:** Beijing Normal University, China

Technical Session 7: Education Informatization and Online Teaching 教育信息化与在线教学

Session Chair:

Prof. Jowati Juhary, Universiti Pertahanan Nasional Malaysia, Malaysia

Assoc. Prof. Zhi Liu, Central China Normal University, China

Time	Paper ID	Paper Information
16:30-16:45	CE5009-A	**Title:** Supporting Scholarship of Teaching and Learning through Emerging Technologies **Presenter:** Yu Wang **Affiliation:** Xi'an Jiaotong-Liverpool University, China
16:45-17:00	CE5010-A	**Title:** Online assessment in higher education: A mapping review and narrative synthesis **Presenter:** Qian Liu **Affiliation:** University of Otago, New Zealand
17:00-17:15	CE5051	**Title:** Research on the cross-media integration process of educational digital resources based on xAPI data **Presenter:** Wenqi Man **Affiliation:** Capital Normal University, China
17:15-17:30	CE5062	**Title:** University Students' Learning Satisfaction in Live-streaming Tutoring for NEEP **Presenter:** Lei Huang **Affiliation:** Hangzhou Normal University, China
17:30-17:45	CE5094	**Title:** Research on the Features of Physiological Data Effectively Representing Cognitive Engagement **Presenter:** Zihan Guo **Affiliation:** Beijing Normal University, China

Technical Session Online A: Education Informatization and Online Learning 教育信息化与在线学习

Session Chair:

Assoc. Prof. Yang Chen, Harbin Institute of Technology (Shenzhen), China

Time	Paper ID	Paper Information
14:30-14:40	CE5138	**Title:** Research on interactive live teaching model design based on virtual learning community **Presenter:** Chenyu Wang **Affiliation:** Hubei Normal University, China
14:40-14:50	CE5048	**Title:** A Technology-Enhanced Multi-source Feedback Model for L2 Writing Classes **Presenter:** Danping Wen **Affiliation:** Shantou University Medical College, China
14:50-15:00	CE5021	**Title:** A Production-Oriented Evaluation (POE) Model to Cultivate Students' Self-Learning Ability **Presenter:** Jia Chen **Affiliation:** South China Business College, China
15:00-15:10	CE5062	**Title:** University Students' Learning Satisfaction in Live-streaming Tutoring for NEEP **Presenter:** Lei Huang **Affiliation:** Hangzhou Normal University, China
15:10-15:20	CE5089	**Title:** Determinants of Student Burnout in Blended Learning Environments: A Comparative Approach Using PLS-SEM and Machine Learning Models **Presenter:** Yaxin Tu **Affiliation:** Zhejiang Normal University, China
15:20-15:30	CE5121	**Title:** Visualizing Abstract Concepts: The Role of Finite Element Technology in Creating Engaging Learning Experiences in Mechanics Courses **Presenter:** Shang Wang **Affiliation:** Beijing Polytechnic, China

14:30-16:40
UTC/GMT+8
September 17th, 2023

Technical Session Online A: Education Informatization and Online Learning 教育信息化与在线学习

Zoom ID: 833 4452 8341
Password: Xian2023
https://zoom.us/j/83344528341

Session Chair:

Assoc. Prof. Yang Chen, Harbin Institute of Technology (Shenzhen), China

Time	Paper ID	Paper Information
15:20-15:30	**CE5068**	**Title:** The Utilization Of ICT In Learning By Level Of Education, Gender, And Teacher Employment Status **Presenter:** Bambang Budi Wiyono **Affiliation:** Universitas Negeri Malang, Indonesia
15:30-15:40	**CE5055**	**Title:** Exploration and Practice of Software Curriculum Reform based on the Integration of Industry and Education **Presenter:** Deqing Zhang **Affiliation:** Anhui SanLian University, China
15:40-15:50	**CE5145**	**Title:** Analysis of Hot Topics in Teaching and Research of University Discipline Competitions Based on Co-occurrence Analysis **Presenter:** Wei Xiaoxu **Affiliation:** Wuhan University of Technology, China
15:50-16:00	**CE5004**	**Title:** Construction and Empirical Study of Regional Teacher Research and Training Mechanism Based on Network Teaching and Research Platform **Presenter:** Jinxian Cai **Affiliation:** Guangdong Construction Polytechnic, China
16:00-16:10	**CE5133**	**Title:** Integrating online platforms and offline classrooms to promote English learning efficiency **Presenter:** Xiaoke Zhang **Affiliation:** Xi'an Jiaotong Liverpool University, China
16:10-16:20	**CE5088**	**Title:** Gamification and Virtual Reality in Programming Education **Presenter:** Mario Konecki **Affiliation:** University of Zagreb, Hrvatska
16:20-16:30	**CE5118**	**Title:** Data-Driven Student performance Modeling in Distance Learning Time: COVID-19 Era **Presenter:** Iman Megdadi **Affiliation:** UAE University, UAE
16:30-16:40	**CE5111**	**Title:** The Impact of the TOCFL Reading Mobile Application on the Reading Ability of Chinese Language Learners **Presenter:** VINCENTIUS VALIANDY JIUANGGA **Affiliation:** Bina Nusantara University, Indonesia

Abstract-Session 1

Chenghong ZHENG

The Hong Kong University of Science and Technology, China

CE5096

AI-Generated Content for Academic Visualization and Communication in Maker Education

Abstract: Collaborative learning in higher education, such as the emerging makerspaces, has contributed to research on innovation and participant expertise. However, there is little research on knowledge management in makerspaces or how learners transfer their individual tacit knowledge in the collaborative space. In addition, the functionality of maker education to promote individualized and personalized learning still needs to be explored. This study is based on Chinese STEM graduate students' experiences with project-based learning in a Maker Education environment to test how AIGC tools help to acquire and transfer students' individual tacit knowledge. The sample was formed from 266 MPhil students taking the "Design Thinking and Effective Academic Communication" course in their first academic year at the world's first interdisciplinary university in southern China. The AIGC teaching intervention was based on the four-phase knowledge management model. In a cycle of socialization-externalization-combination-internalization, learners first explore expertise in a research area in project teams and formulate their research interest. Then, storytelling, analogy, and metaphor data were first used to assess students' abilities to communicate their research topic in text and images on an A4 paper. The subsequent AIGC-supported instructional intervention consisted of 20-minute instructional Sprints with two instructors from Computational Media Arts and Academic Communication over two consecutive weeks. The students' work shows that combining AIGC tools allows for a higher quality of visualization of tacit knowledge in the combination phase .

Keywords— AIGC, tacit knowledge, knowledge management, Maker education

Abstract-Session 1

XinMei Kong
Capital Normal University, China

CE5040

Research of Educational Robot Application Scenarios Based on Learning System Elements information on submission 28

Abstract: Educational robots, whether they are physical service robots or virtual intelligent robots, are excellent examples of how Artificial Intelligence (AI) can be applied to educational scenarios. AI education that aims to foster comprehensive intelligence must focus on the practical application of educational robots and how they are designed and operated. This study has developed a system architecture for educational robots that includes three layers: the foundation support layer, the technology support layer, and the application scenario layer. The application of educational robots is emphasized in various settings such as individuals, families, schools, and society. Furthermore, the study proposes a framework for analyzing the application scenarios of educational robots. To validate the findings of the study, an educational robot was utilized to teach English in a junior high school classroom in Beijing under the supervision of a qualified teacher.

Keywords— educational robots, application scenarios, system elements, artificial intelligence education

Abstract-Session 1

Jinping Zhong
South China Normal University, China

CE5082

Identifying the impact of Human-AI co-creation on students' creativity development: a conceptual framework

Abstract: The amazing progress in conversational AI such as ChatGPT seems to be driving people into an era where human-AI co-creation is prevalent. Efforts need to focus on the new context of creativity development, as AI is more to creativity than simplifying creative tasks. The current study aims to explore the possible impact of AI on creativity and how students co-create with it in a way that optimizes its benefits. Whereas AI may challenge the position of humans in certain creative tasks, we argue that it provides multiple supports to the creative process. Accordingly, we proposed a conceptual framework of the impact of human-AI co-creation on creativity based on creativity theories and the SAMR model. Then we concluded with four principles of student-AI co-creation.

Keywords— creativity, artificial intelligence, human-AI co-creation, impact

Abstract-Session 1

Zezong Tang

Northwestern Polytechnical University, China

CE5047

Application of Generative Artificial Intelligence in English Education: Taking ChatGPT System as An Example

Abstract: Aiming at the generation of multimodal data with the assistance of artificial intelligence technology, Generative Artificial Intelligence has received significant attention in the education field. Among them, ChatGPT reflects the high potential for applications due to its smooth dialogue, accurate understanding of requirements, and high practical textual generation. To achieve the educational goals of comprehensive improvement of students' English proficiency in listening, speaking, reading, and writing, the current study explores the potential application of ChatGPT in the field of English education based on its core competency including the outstanding text content generation ability, situational dialogue understanding ability, sequential task execution ability and program language parsing ability of generative artificial intelligence. The purpose of this study is to explore the feasibility of the application of generative artificial intelligence in the field of English education and to provide a reference for future related research.

Keywords— Generative Artificial Intelligence, ChatGPT, Artificial Intelligence Application in Education

Abstract-Session 1

Zhang Xu
Capital Normal University, China

CE5052

Research on performance evaluation of robot-assisted teaching classroom application

Abstract: With the continuous development of AI education, AI robots participate in classroom teaching and form a new teaching mode, which has an important impact on the field of education. At present, the domestic and foreign related literature mainly focuses on the application research of robot-assisted teaching, and the research on application performance evaluation is relatively seldem. Combining Kirkpatrick's evaluation model and Bloom's classification theory of teaching objectives, this study establish a multi-level and diversified application performance evaluation framework, and evaluation design research from four levels of perceptual expression, cognitive transfer, information processing and reflection summary. The focus of data analysis is mainly on the experience and effectiveness of teachers and students using robots to classroom teaching, The performance evaluation model and scale are constructed, and the questionnaire is designed to systematically collect the data of teachers and students using robots to assist classroom teaching, and then evaluate the change of performance development level.

Keywords— artificial intelligence robot, robot-assisted teaching, application performance, evaluation model, evaluation metric

Abstract-Session 1

Junfu He
Central China Normal University, China

CE5045

A Novel Link Prediction Approach for MOOC Forum Thread Recommendation Using Personalized PageRank and Machine Learning

Abstract: MOOCs are online learning platforms that offer free and open educational resources for global learners. Its online forums enable learners to interact with instructors and peers and thus improve their learning outcomes and social presence. However, learners may struggle to find posts that match their goals and preferences due to the large scale and diversity of MOOCs. A well-designed MOOC forum thread recommendation system can help learners overcome information overload and improve their learning experience. In this paper, we consider the recommendation of forum threads as a link prediction problem and propose a novel link prediction approach based on various Heterogeneous graph feature extraction methods with LightGBM. We conduct experiments on real-world data from a MOOC platform to evaluate the effectiveness of our model. Results show that our approach outperforms various baselines in terms of precision and recall. Our findings demonstrate the effectiveness of combining PageRank with machine learning and our model's potential to increase student engagement in learning discussion and foster socio-collaborative learning.

Keywords— Personalized PageRank, recommender system, light gradient boosting machine

Abstract-Session 2

Yue Bao

Northwestern Polytechnical University, China

CE5039

Quality Assessment of Machine Translation from Translation Criticism Perspective—The Chinese Translation of a Speech by Neural Machine Translator DeepL as an Example

Abstract: Speech discourse, as one of the most important forms of discourse in human society, has dialogical features and is essential for understanding the viewpoints and positions. Meanwhile, the technology of machine translation (MT) has developed unprecedentedly, and the quality of MT has been continuously improved, which may facilitate the translation performance of speech discourse. At present, a paucity of systematic discussions converges on the performance of MT in the translation of speech discourse. To this end, from the perspective of translation criticism, this study adopts a translation quality assessment model to analyze the translation results of "Gettysburg Address" by the neural machine translator DeepL. The findings detect two ideational deviations and two interpersonal deviations without any negative equivalence. Hence, it can be safely concluded that the translation quality of DeepL is satisfactory, and it is feasible to be applied in the practice of English to Chinese translation of speech discourse although it still depends on certain context management and pre- and post-translation editing. The results of this study are enlightening for both English learning and teaching.

Keywords—machine translation; DeepL; translation quality assessment model; translation criticism

Abstract-Session 2

Yiming Li

Xi'an Jiaotong-Liverpool University, China

CE5146

SwiftQuiz - An interactive module to help teachers swiftly create questions and get rich feedback

Abstract: Student Response System (SRS) has been used to support teachers engaging students live in the classroom. Prominent learning management system such as Moodle has implemented such SRS. How-ever, the current tools are too limited to support the blended learning model effectively, in particular, to re-tain students' attention. Through comprehensive data analysis, we identified existing issues in the current SRS, primarily related to the feedback mechanism for students' answers, limited question types, non-intuitive feedback report, and lack of flexibility in impromptu question creation. To address these challenges, we have developed SwiftQuiz which can offer instructors the ability to create instantaneous questions to improve teaching efficiency and eliminate unnecessary complexities. Additionally, SwiftQuiz enables the creation of short-answer questions with two visual response options: Word Cloud and bar graph. Furthermore, for multiple-choice question and other question types, SwiftQuiz provides detailed data visualization of student an-swers, empowering educators with valuable insights into live classroom management and student engage-ment. By incorporating SwiftQuiz into blended classes, ed-ucators can significantly improve classroom flexibility and engage students more interactively in the learn-ing process. The comprehensive and user-friendly features of SwiftQuiz make it a valuable tool for sup-porting modern teaching methodologies in the digital learning environment.

Keywords—blended learning, data visualiza-tion, learning management system, moodle, formative feedback, student response system

Abstract-Session 2

Zhang Xiaohua
Wenzhou Business College, China

CE5023

Research on Establishment and Application of Blended Mobile Teaching Model Based on UMU

Abstract: This paper introduces the establishment and application of blended mobile teaching model based on UMU platform. Firstly, the background as well as the theorical basis including the UMU platform and the mobile problem-based learning are introduced. Secondly, the blended mobile teaching mode by UMU platform is established and presented. Thirdly, the design and application of the teaching experiment are described and analyzed by using descriptive statistics solution. Lastly, the result is summarized and the conclusion is given.

Keywords—UMU, Blended Mobile Teaching, Teaching Design

Abstract-Session 2

Nong Wan-Bin
Nanning University, , China

CE5065

Research on Permeable Teaching Design of Business Intelligent Classroom: conception, planning and tactics

Abstract: Higher education adopts teaching environment of intelligent classroom gradually in era of digital economy. At the same time, higher education needs to adopt flexible teaching method with characteristics of talent demand in new era. This paper starts from of business intelligent classroom permeable teaching conception including connotation and characteristics, discusses its teaching design including tasks and objectives in detail, and puts forward teaching tactics finally which should be adopted, that is guidance learning plan, data support, independent learning and practice strengthening. Research of this paper is expected to provide reference for development of business intelligent classroom permeable teaching, which can improve talent training level of business.

Keywords—business, intelligent classroom, permeable teaching, conception, planning, teaching tactics

Abstract-Session 2

Chenggong Zhai

Department of Quartermaster Procurement
Army Logistics Academy of PLA, China

CE5091

Exploration on the Construction of Smart Classrooms in Vocational Colleges

Abstract: Against the backdrop of the national promotion of smart education construction, National Open University actively explores new models and paths for smart campus construction, and smart classrooms are one of the most representative demonstration projects. Promoting the deep integration of information technology with education and teaching is currently the main goal of university informatization. This article introduces the concept of smart teaching mode in vocational colleges, analyzes the theoretical basis of smart classrooms in vocational colleges, proposes the concept of the composition structure of smart classrooms in vocational colleges, and studies and designs a software platform for smart classrooms in vocational colleges. Finally, it looks forward to the future of smart classrooms in vocational colleges.

Keywords—information technology, internet of things, smart classroom, smart teaching

Abstract-Session 2

Yayin Wu

Northwestern Polytechnical University, China

CE5143

Critical Discourse Analysis Based on the Technology of Corpus

Abstract: With the advancement of computer science, the technologies of corpus evolve continuously and are usually used in discourse studies. As one of the key points of critical discourse analysis, linguistic information in texts often needs to be explored by means of the technologies of corpus. This paper aims to explore how researchers use word lists, keywords, concordances, collocations, semantic preferences and semantic prosodies to conduct critical discourse analysis in the dimension of text, and analyses how the latent information behind language is revealed, so that people's ability to think critically about discourse will be enhanced.

Keywords—Critical Discourse Analysis, Word List, Keyword, Concordance, Collocation, Semantic Prosody

Yue Li
Xi'an Jiaotong-Liverpool University , China

CE5038

Understanding the Needs of Virtual Reality for Learning and Teaching: A User-Centered Approach

Abstract: The emergence of COVID-19 has had a significant impact on the education field, leading to a surge in the adoption of online learning and teaching. The recent development in Virtual Reality (VR) and metaverse has witnessed an increasing number of online platforms being utilized in online education. In this study, we took a user-centered approach and conducted a series of survey and interview studies with students and teachers to understand their needs of VR for learning and teaching. Additionally, we evaluated existing online platforms that can serve as virtual classrooms to host teaching materials and support students in online learning. The comparison results together with the requirements we summarized offer valuable takeaways and guides for the future adoption and creation of virtual classrooms for VR-enhanced learning and teaching.

Keywords—Virtual Reality, online education, virtual class-room, virtual learning environment, metaverse

Abstract-Session 3

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CE5134

VR Serious Game for Learning the Computer Organisation and Architecture Course

Abstract: Computer Organisation and Architecture is a core subject in Computing Science (CS) in Higher Education. Some topics in this subject are thought to be dry by students through traditional teaching, such as computer functions and interrupts, as students are unable to visualize these multiple-step procedures of how the CPU performs. This research aims to utilize the virtual reality (VR) serious game to help students learn better these topics and absorb abstract concepts or comprehend scenarios that would be difficult in a typical classroom setting. It also enables an engaging and motivating platform, achieving successful learning for CS students. The effectiveness of the designed VR serious game is evaluated with two groups of participants: control group and experiment group. The results reveal that the serious game is able to provide students with positive learning efficiency as well as an engaging and self-motivated experience. The research provides an effective way of teaching and learning modality of the Computer Organisation and Architecture subject for CS students.

Keywords—Virtual reality, serious game, learning efficiency, Computer Organisation and Architecture,

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CE5001

Teaching situation design based on Kolb's Learning Theory from the perspective of embodied cognition

Abstract: Embodied cognition advocates learning behavior based on body perception, and the created teaching situation should encourage students to participate in teaching activities and produce real experience. Based on the theory of embodied cognition, combined with the four adaptive learning stages of Kolb's Learning Cycle, this research designs and develops the Beijing open science practice course "Lighting up Aladdin's magic lamp". Through two spiral learning cycles, and using virtual experiment technology, it carries out the embodied teaching practice, so that students can grasp the energy conservation law and design Solar thermal power station.

Keywords—embodied cognition, practice course, teaching situation, Kolb's Learning Cycle

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CE5022

Mobile learning based Teaching language skill training mode for normal college students

Abstract: On the basis of grasping the essential characteristics of teaching language, constantly improving teachers' language skill is conducive to the effective transmission of teaching content and guarantee teaching performance, and then speed up the professional development of teachers. Targeting to the existing problems of teaching language skill training, combined with the advantages of mobile learning and WeChat applet, this paper proposed a teaching language skill training mode with six core modules, i.e. theoretical knowledge, situational training, self-test training, mutual evaluation, classroom interaction and after-class expansion, and introduced the evaluation and practice efficiency of the training mode. The application results have shown that the mobile learning based training method provides teachers with progressive learning process, flexible training method, rich training resources and training opportunities, which gives a new way for effectively improving the teaching language skill of normal college students.

Keywords—teaching language, teaching skill training, normal college students, mobile learning, WeChat applet

Abstract-Session 3

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CE5020

Research on Olympic Education Teacher Training Based on Internet Technology

Abstract: The combination of Olympic education teacher training and Internet tech-nology enhances the ability of teachers to carry out Olympic education ac-tivities and also points out the direction for the development of Olympic teacher training. Internet technology can provide teachers with a variety of teaching resources and a convenient online education platform, making it possible for teachers to receive more diverse channels and methods of Olym-pic education teacher training, which not only effectively improves teachers' theoretical level, professional skills, and quality in Olympic education, but also further promoting the integration of Olympic education into the regular teaching in schools. This paper investigates the teachers (n=400) of the Bei-jing Olympic model School participating in the online Olympic teacher training and finds that teachers have a high degree of recognition for the online training of Olympic education teachers, and the application of Inter-net technology also helps teachers to master the Olympics sports basic knowledge and innovative educational methods that give teachers a clear understanding of how to carry out Olympic education activities and promote the sustainable development of Olympic education in primary and secondary schools.

Keywords—Olympic Education, Teacher training, Online training, Internet technology application

Abstract-Session 4

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CE5033

Organizations Investment in the Business Oriented LMS and Employees' Learning Support

Abstract: The aim of this paper is to analyse scope and reach of large number of different lifelong learning programmes in the private higher education institution which predominantly performs programmes in the field of ICT for various companies' employees throughout the Republic of Croatia. With an aim to better understand our clients' needs due to the education and training programmes, a questionnaire was conducted and distributed to a large sample of companies' employees - our trainees N: 386. The subject of the research and distributed questionnaire was to analyse in what extent companies' investment in their own e-learning systems and institutional support for their employees or they, rather outsource e-learning training and support at other educational service providers. It was noticeable that large companies prefer rather to send their employees on the programmes and training at external institution rather than invest in development of their own e-learning system. Authors were interested to seek out whether this practice has statistical significance, and if so, whether this was related to the fact that they should invest more to ensure mentors/teachers to guide the employees/participants throughout the e-learning process or can these e-courses be performed without mentoring. The paper presents statistical interpretation of the data with concrete hypotheses confirmation and/or rejection.

Keywords—lifelong learning, LMS, companies, employees

Abstract-Session 4

Yanzhe

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CE5085

An experimental teaching platform for machine vision-based real-time detection taking quality inspection of paper cups as instance

Abstract: In order to improve the quality of students' practical training, a real-time detection system experimental platform based on machine vision has been designed. The system has functions of real-time sampling, detection, defective product removal, result display and data storage, and its structure covers three parts: hardware platform, detection algorithm, and software function implementation. The hardware platform includes image acquisition module, material transportation module and defective product removal module, and the control circuit is based on the development of Arduino and STM32. The detection algorithm is developed based on OPENCV, and it is designed to detect three types of defects: cup rim concavity, cracking, and out-of-roundness. The software system is jointly developed using Visual Studio 2019 and Qt Creator 4.9.1, and it has good interactivity. With this experimental platform, teaching work such as image acquisition system construction, dynamic sampling problem analysis, image detection algorithm development, and interactive interface implementation can be carried out, so as to improve students' engineering design ability in many aspects.

Keywords—machine vision, defect detection, system design, teaching experiment

Abstract-Session 4

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Constaff GmbH, German

CE5049

A Learning Platform for Children and Youth's Soft Skills Education: A Conceptual Design

Abstract: The significance of soft skills in determining an individual's future success has been increasingly recognized by educators. Although there have been growing calls to bring soft skills education into the school curriculum, only a few soft skills curricula are found in elementary and secondary mainstream education. To address this gap, this study conceptually designs an online platform - Edu-Shine for children and youth's soft skills education. Edu-Shine is a high-resolution online platform that offers a unique and engaging learning experience. This study presents the learning platform's detailed design, including the architecture modules such as the Public Area, Learning Area, Course Creator, and API modules, facilitating more interactive and effective learning experiences between teachers and students. As a result, this research project aims to develop Edu-Shine as a conceptual online platform that promotes soft skills education to cater to children and youth development needs in the 21st century.

Keywords—soft skills, software platform development, learning platform, children, youth

Abstract-Session 4

Yaru Zhou

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CE5027

Analysis of Vocabulary Learning Strategies in Vocabulary Learning Software from the Perspective of Psycholinguistics

Abstract: The present paper selects four mainstream vocabulary learning software in the market, namely, BaiCiZhan, BuBeiDanCi, Maimemo, and Shanbay words. Based on the psycholinguistic framework, and adopting the classification of vocabulary learning strategies by O'Malley & Chamot, the current study discusses the learning strategies in vocabulary learning software from three aspects: vocabulary understanding, memorizing and reviewing. Hope to help learners better understand the learning strategies in various software and help learners choose more suitable vocabulary learning software, to improve learners' vocabulary learning efficiency.The results show that in terms of the number of strategies achieved, Maimemo uses the most vocabulary learning strategies, so the software can better meet the learning needs of most learners based on different learning strategies. BuBeiDanCi uses the least learning strategies and the learning mode is relatively flexible, which is more suitable for learners who use fragmented time for vocabulary learning. In terms of the implementation form of the strategy, BaiCiZhan is illustrated with pictures and texts, and BuBeiDanCi has diverse audio, these two are more suitable for interest learning. Maimemo pays more attention to the actual use of vocabulary, so it is more suitable for the learning needs of improving skills. Shanbay word is mainly based on the memory of English and Chinese definitions of words, which is closer to traditional book learning and more suitable for learners who tend to traditional learning mode.

Keywords—vocabulary learning strategies, vocabulary learning software, psycholinguistics

Abstract-Session 4

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CE5087

Research and Development of Assembly Line Balance Simulation Experimental Teaching Platform

Abstract: The assembly line balancing problem is a complex combinatorial optimization problem, which belongs to a branch of scheduling problems, and plays an important role in the course of industrial engineering. However, due to resource and location constraints, the teaching of assembly line balancing lacks an intuitive and interactive teaching platform, as well as tools for conducting algorithm experiments, resulting in poor teaching effectiveness. This paper designs and develops a simulation-experimental teaching platform for assembly line balancing problems, and analyzes the whole system design process in terms of teaching needs. Then, an example was used to demonstrate the interactive simulation teaching process using this system, which demonstrated the feasibility and superiority of the simulation teaching platform in assembly line balancing teaching.

Keywords—simulation system, production system modeling and simulation, assembly line balancing, algorithm learning, interaction platform

Abstract-Session 4

Sida Huang

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CE5077

Privacy-Preserving Lecture Sharing in Metaverse

Abstract: In recent years, the concept of the metaverse has received significant attention as more individuals have shown interest in developing virtual environments for the purpose of exploring new digital worlds and interacting with others. The educational metaverse has attracted particular interest, as it offers the potential for highly immersive and interactive learn-ing experiences. Nevertheless, developing educational metaverses comes with several challenges, such as system robustness, latency, and student data privacy and security. Blockchain technology provides a decentralized and secure approach to data manage-ment and storage, making it a suitable solution for educational metaverses. Accordingly, this article presents an educational plat-form that leverages the metaverse and blockchain technologies to enhance lecture sharing, with a focus on attribute-based encryption to improve access control efficiency. Our approach ensures that only authorized students can access lecture materials while maintaining data privacy and security. Furthermore, we implemented a prototype of this platform on the Ethereum test network, illustrating the effectiveness of our solution in improving the efficiency of lecture sharing while guaranteeing data privacy.

Keywords—Lecture Sharing, Privacy Preservation, Access Control, Blockchain, Metaverse, Attribute-Based Encryption

Abstract-Session 4

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CE5086

Development of Teaching System of Genetic Algorithm Applications in Fleet Scheduling

Abstract: Genetic Algorithm (GA), as one of the classic meta-heuristic algorithms, is widely used in engineering problems and has high practical significance and teaching value. However, because it breaks through the thinking of traditional algorithms, it has been the difficulty and focus of algorithms teaching. In this paper, a teaching system of genetic algorithm applications in fleet scheduling is developed. Taking the flight scheduling problem as an example, the operation process and results of the genetic algorithm are displayed interactively to guide students to take the initiative to study the genetic algorithm deeply and exercise the ability to solve practical problems.

Keywords—teaching system, genetic algorithm, flight scheduling

Abstract-Session 5

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CE5054

Dialectical Thinking Education in Life Science Related Courses

Abstract: Life Science is a science to understand the phenomena of life and reveal the essence of life, which contains abundant philosophical elements, especially the elements of dialectical materialism thinking. Putting dialectical thinking into teaching can help to improve students' ability to analyze and solve problems, and develop students' innovative thinking. However, how to integrate dialectical thinking into life science-related courses is a problem worthy of teachers' consideration. Taking the course of molecular biology as an example, this paper analyzes in detail the materialist dialectic elements contained in the course, and expounds the specific teaching paths of integrating dialectical materialism thinking into the teaching of the course. The aim is to guide and train students to interpret the laws of life phenomena using dialectical thinking, explore students' potential for philosophical speculation, and achieve students' all-round development.

Keywords—dialectical thinking, life Science, molecular biology

Abstract-Session 5

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CE5042

Investigating the relationships among students' motivational beliefs, behavioural engagement and problem-solving ability in STEM education

Abstract: Problem-solving ability is one of the essential skills for students in the 21st century, thus it is necessary to explore the factors that influence students' problem-solving ability . This study explored the predictive role of students' STEM self-efficacy, STEM perceived task value and STEM behavioural engagement on problem-solving ability based on Expectancy Value theory and the 3P model. 515 secondary school students from China were involved in this survey. The results showed that both students' STEM self-efficacy and STEM perceived task value positively predicted students' problem-solving ability; and students' STEM behavioural engagement mediated the relationship between students' STEM perceived task value and problem-solving ability. Therefore, it was suggested to enhance students' self-efficacy, post them valuable task and provide more opportunities for practice in STEM education to develop problem-solving ability. Finally, the limitations and the future research directions were discussed.

Keywords—STEM education; problem solving ability; expectancy value theory; behavioural engagement; 3P model

Abstract-Session 5

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CE5050

Research on teaching design framework and evaluation using graphical programming towards cultivating students' digital competence

Abstract: With the development of digitalization, it is very important to have digitalization capability. Improve the digital competence of the whole people is an important part of Chinese current development. Students are the key to the future society. Many scholars and teachers are also explore how to improve the digital competence. Improve digital competence can help students realize the importance of information and make better use of information for exploration and research. In addition, digital competence can also improve students' creativity and innovation awareness, and make students realize that digital technology can be used to solve real problems. Take the teaching of graphic programming as an example, this paper studies the teaching design and teaching evaluation to improve students' digital competence. Through the analysis and determination of teaching objectives, the teaching design framework is clarified, students are encouraged to explore by themselves, and their ability to operate and solve problems is improved. At the same time, based on the goal, the evaluation system is designed to evaluate the teaching effect after the implementation of classroom teaching, provide a reference for the research of graphic programming instructional design.

Keywords—Digital Competence; graphic programming; teaching design; teaching evaluation

Abstract-Session 5

Zhixue Sun

South China Normal University, China

CE5095

Teaching Practice of Industrial Design Major Based on STEAM Concept

Abstract: The teaching concept of STEAM is the comprehensive application of interdisciplinary knowledge, which is very consistent with the training objectives and requirements of industrial design professionals. Guided by STEAM concept, on the basis of industrial design students 'innovation ability training, for the purpose of building a reasonable knowledge structure, to product design course training project, with intelligent product design, through the experiment training project training, carried out the STEAM teaching practice, realize the science and aesthetics, technology and art, engineering and science and technology closely, comprehensively improve the students' new product development ability, to industrial design professional talent training has certain reference role.

Keywords—STEAM，Intelligent Products，Industrial Design

Abstract-Session 5

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CE5106

Applying Visual Mnemonics Enhances Chinese Characters Learning for Chinese as Second Language Learners: A Mixed-Method Study

Abstract: This study examines the effectiveness of two distinct methods for learning Chinese characters: one that incorporates visual mnemonics, hierarchical approach, and writing, and another that utilizes a hierarchical approach combined with writing. Utilizing a crossover trial design, the research investigates the impact of these strategies on memory retention and learner satisfaction among 30 participants with little or no prior experience in Chinese studies. The evaluation parameters included the accuracy of written strokes, the completion of entirely correct characters, and participants' perceptions of each learning method. The outcomes revealed a significant improvement in memory retention and learning ease when the learning method incorporated visual mnemonics. This finding suggests a novel pedagogical strategy in Chinese character learning, offering a promising alternative for educators in Chinese language.

Keywords—visual mnemonics, hierarchical approach, Chinese as second language learners

Abstract-Session 5

Qi Cao

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CE5102

Teamwork Improvement in Group Projects of Professional Software Development

Abstract: Software engineering (SE) is an essential subject taught in the curriculum of Computing Science (CS) in Higher Education. It trains students in the knowledge of software development life cycle (SDLC), and develops them practical skills on how to efficiently develop software projects. Team-based learning is widely adopted in SE subjects to emulate the real world SDLC scenarios. It provides perceived benefits in teaching students to overcome the challenges that come with teamwork. This paper critiques the current methods of teamwork adopted by two SE modules, Project Software Development (PSD) and Team Project (TP) offered to CS cohorts in our university. Several limitations have been identified in the current framework, including a lack of diverse personalities within teams, lack of a comprehensive peer evaluation scheme and lack of a close relationship with academic supervisors of group projects. We explore alternative learning frameworks to better cultivate teamwork abilities in students. Three proposed ideas aim to address these limitations in teamwork, that are inspired by prior works for similar problems. Experiment and surveys regarding teamwork are conducted among the CS students in these two SE modules. Experiment results approve our three hypotheses on the improvement of teamwork in the learning of PSD and TP.

Keywords—Teamwork, software engineering, personality types, team-based learning, team dynamic

Abstract-Session 5

Haowen Chen

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CE5025

Influencing Factors Analysis of Occupational Values of Undergraduates in IT Major and Countermeasures

Abstract: Establishing morality and educating people is the fundamental task of higher education in China. Cultivating undergraduate' correct occupational values is an important part of colleges and universities. In order to better understand the occupational values of IT undergraduates and their influencing factors, by using Ning Weiwei's initially revised Chinese version of the Occupational Values Scale to conduct a questionnaire survey on IT undergraduates in a university in Guangzhou, we draw the following conclusions. First, in terms of the gender, there are significant differences between IT majors' occupational values in terms of intellectual development and colleague relationship. Second, in terms of the place of the origin, IT college students have significant differences in their occupational values in the dimensions of altruism, reputation, supervision and creativity due to the convenience of society, family, interpersonal relationship, etc. Third, in terms of grades, IT majors' professional values have significant differences in the dimension of colleague relationship. Fourth, there is a significant difference in the understanding of the IT industry development in the two dimensions of occupational values management and creativity. Fifth, there are significant differences in the clarity of self-planning in the three dimensions of the occupational values, namely, economic remuneration, management and creativity. In view of these influences, we made targeted analysis and proposed corresponding countermeasures to better help undergraduates in IT major establish correct occupational values.

Keywords—IT; major; occupational values; factor analysis; undergraduate

Abstract-Session 6

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CE5079

Characteristics Analysis of Subject Knowledge Networks of Textbooks Based on Complex Networks

Abstract: This paper focuses on the analysis of textbooks using complex networks theory. The structure features of subject knowledge networks are examined by extracting knowledge points from the text and representing them as nodes, while the co-occurrence relationships between the knowledge points are represented as edges. Gephi and Networkx are utilized to visualize and analyze the network topology characteristics, providing objective technical support for textbook analysis. As a case study, this paper selects Chinese high school information technology subject textbooks to construct subject knowledge networks. Through a comparison and comprehensive analysis of different versions of textbooks networks, this study uncovers the differences and characteristics of various textbook versions, as well as the deep structure and internal logic of textbooks. The results demonstrate that textbook analysis based on complex networks offers many advantages, including interpretability, expressiveness, generalization, and flexibility.

Keywords—complex networks; textbooks; subject knowledge networks; information technology subject; comparative analysis

Abstract-Session 6

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CE5142

Analysis of classroom behavior in laboratory work supported by smartphones

Abstract: Laboratory work plays a crucial role in science education, and the integration of smartphones has further expanded its possibilities. While previous research has primarily focused on the effectiveness of smartphones in enhancing students' learning outcomes in laboratory work, this study aims to explore the specific classroom behaviors that emerge in smartphone-enabled laboratory settings. To achieve this, the study employs the One-to-One Techno-Based Interaction Analysis System to analyze classroom videos, utilizing descriptive statistics and lagged series analysis to examine the coding results. The findings indicate several key points. Firstly, smartphones facilitate the demonstration of experimental data, making it easier for teachers to present and explain to students. Secondly, students can utilize smartphones to collect data before conducting experiments, enhancing their engagement and preparation. Lastly, the use of smartphones for data collection during experiments may present some challenges, requiring teachers to possess both technological proficiency and familiarity with the experiment itself.

Keywords—Laboratory work, smartphones, classroom behaviors

Abstract-Session 6

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CE5012

Dynamic Analysis of Engineering Structures Based on a Remote Laboratory

Abstract: This paper proposes an efficient and low-cost on-line experimental platform for a dynamic analysis course in civil engineering. A remote laboratory is constructed on a real bridge consisting of real-time signal acquisition, transmission and processing. Learning the complex theory of dynamic analysis becomes easier by analyzing the real-time vibration signals acquired from the bridge, which has been confirmed by positive feedbacks from students.

Keywords—remote laboratory; civil engineering; dynamic analysis

Abstract-Session 6

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CE5024

Supporting Military Pedagogy with the Work-the- Walk (WTW) and Digital WTW (D-WTW) Approach to Teaching and Learning

Abstract: This paper answers the question of how a transformative approach to teaching and learning, the Work-the-Walk (WTW) approach and its digital counterpart, Digital WTW (D-WTW) support military pedagogy. Military pedagogy is a term used to explain a learning environment relevant to military cadets and military institutions. It has a long history in European military institutions and can be considered at its infancy in the Asian region. Research on military pedagogy is limited in this region, and in Malaysia perhaps the educational institutions to employ military pedagogy include the National Defense University of Malaysia (NDUM), Kuala Lumpur, and the military training centers in the country. The aims of this paper include investigating how the WTW approach, together with its digital form D-WTW, enhance military pedagogy and providing solutions or alternatives to adopt both WTW and D-WTW during teaching and learning post the COVID-19 pandemic. This paper adopts a qualitative approach to research, where observations of classes were performed for a total of 40 hours. The classes involved the students that the author was teaching for two semesters of 28 weeks. Given the observation list used by the author, it can be preliminarily concluded that the WTW approach to teaching and learning and its digital counterpart complement military pedagogy in their activities and assessments. Further, there are two main solutions on how academics can use WTW and D-WTW post pandemic. In short, the transformative approaches to teaching and learning, WTW and D-WTW, can enrich the implementation of military pedagogy; ultimately both physical and online approaches can help shape the desired character of Malaysian military personnel

.**Keywords—defense university, Digital Work-the-Walk, military pedagogy, teaching and learning, Work-the-Walk**

Abstract-Session 6

Zhiwen Xia

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CE5044

A Study on the Effects of Different Intensity Musical Stimulation on Learners' Attention and Meditation

Abstract: Having good concentration can help people acquire more knowledge and information in a limited time, therefore, how to use music to enhance the concentration level of online learning to improve learning efficiency has been paid attention to by the majority of educators. Electroencephalogram(EEG) is a comprehensive representation of neuronal activity in the human brain and contains rich physiological neural information. This paper studies the effects of musical stimulation on learners' attention and meditation in online learning environment based on EEG and explores the differences between different types of learners. In this experiment, it's found that: 1) learners' attention reaches the highest value of 58.3 when the music intensity is 56 dB $\pm$ 3 dB, while meditation reaches the best value of 64.8 when the intensity is 56 dB $\pm$ 3 dB. 2) the optimal intensity for active learners' attention is 5 dB lower than that of passive learners, but the attention is 8.2 higher than that of passive learners. The mean and maximum of attention for female learners and male learners are approximately the same, but the optimal value of music intensity of attention for male is higher than that of female by 6 dB, indicating that the optimal attention that can be achieved by male and female is not related to gender, but to music intensity. 3) Meanwhile, this paper finds that the meditation of active learners is 4.8 lower than that of passive learners when the music intensity is 56 dB $\pm$ 3 dB, which indicates that active learners are more tense and their attention is not easy to keep stable; while on the whole, the meditation of female learners is higher than that of male learners by 4.2 on average, which indicates that women are more relaxed and easier to stay focused in soft music.

Keywords—attention; meditation; musical stimulation; EEG; music intensity; online learning

Abstract-Session 7

Yu Wang and Charlie Reis
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CE5009-A

Supporting Scholarship of Teaching and Learning through Emerging Technologies

Abstract: Scholarship of Teaching and Learning (SoTL) encompasses a range of learning and teaching activities aimed at improving the quality and enhancement of learning, achieving excellence and recognition, conducting pedagogical research, and addressing work-related problems in education (Fanghanel et al. 2016). At Xi'an Jiaotong-Liverpool University, we offer layered support for our educators in their SoTL endeavours, including raising awareness, developing research ideas, designing pedagogical research and assisting with publication. We utilized our Virtual Learning Environment (VLE), Moodle, to provide access to SoTL resources at the individual, departmental, and university-wide levels. As a departure from the traditional Web 1.0 model of e-learning, which primarily focuses on providing passive access to information, we incorporated H5P technology to make our materials interactive, adaptive and engaging and support self-directed learning and active learning. H5P is an open-source web-based tool that enables the creation and sharing of interactive learning materials using HTML5. One example of how we use H5P is through the creation of Interactive Presentations and Interactive Books, allowing teachers to easily access relevant resources and design their own learning paths. This presentation will discuss the extensive support we offer to promote SoTL and in our context, including the incorporation of self-direction in professional learning as outlined by King (2019) as an important factor in impactful educational and professional development. Additionally, we will highlight the use of emerging technologies such as H5P to create self-directed, dynamic, adaptive, and engaging learning experiences for our teachers.

Keywords—Scholarship of Teaching and Learning, Self-directed Learning, Active Learning, Professional Development, Virtual Learning Environment, H5P

Abstract-Session 7

Qian Liu
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CE5010-A

Online assessment in higher education: A mapping review and narrative synthesis

Abstract: Online assessment is prevalent in higher education, but existing reviews have been restricted in scope, focusing on one assessment approach. Little attempt has been made to synthesize online assessment research as a whole, considering different assessment approaches and different roles technologies serve. However, establishing an understanding of online assessment that recognizes assessment approaches and the role of technologies is important, as it helps researchers and educators navigate the heterogenous body of research and incorporate online technologies to transform assessment practices. In this review, we sought to establish the current understanding of online assessment in higher education. We analyzed 235 articles from 5 databases following a mapping review and a narrative synthesis method. The review showed that knowledge test, assignment and skills assessment are major approaches to online assessment. While research in knowledge test used online technologies mainly to substitute or augment the existing assessment, research in assignment and skills assessment used online technologies to modify or redefine assessment. We identified disparity in research relating to academic misconduct, and assessment validity and reliability. We further identified a dearth of comparative research and a reliance on overall satisfaction, and self-reported short-term impact measures. Finally, we discuss implications for institutions and educators that seek to engage in online assessment practices.

Keywords—online assessment, SAMR, higher education, mapping review, narrative synthesis

Abstract-Session 7

Lei Huang

Hangzhou Normal University, China

CE5062

University Students' Learning Satisfaction in Live-streaming Tutoring for NEEP

Abstract: The COVID-19 pandemic has caused sharp increase in social employment pressure, which pushes university students to strengthen their core competitiveness by continuing their studies. In China, to pass The National Entrance Examination for Postgraduate (NEEP), university students choose to receive tutoring. With offline tutoring limited, live-streaming tutoring has become an important choice due to its high interactivity and cost savings. Live streaming has been extensively utilized in education, but its appropriateness for tutoring students preparing for NEEP requires further investigation. The study collected and analyzed questionnaires of learning satisfaction from 258 university students. it was found that university students generally had strong learning satisfaction when receiving live-streaming tutoring. While relatively speaking, students were not satisfied with the information security of live-streaming platform and interaction opportunities in class. There was no significant difference in satisfaction between different genders and majors. However, the results showed that students with greater self-confidence in learning reported significantly higher levels of satisfaction on all items. Students at higher-level universities reported significant higher levels of satisfaction with "Content quality", "Interaction opportunities" and "Usefulness".

Keywords—Live-streaming tutoring; The National Entrance Examination for Postgraduate; Satisfaction; Self-confidence in learning

Abstract-Session 7

Zihan Guo

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CE5094

Research on the Features of Physiological Data Effectively Representing Cognitive Engagement

Abstract: Cognitive engagement is a crucial factor that affects the effectiveness of learners' acquisition of knowledge. However, as cognitive engagement implicitly reflects learners' mental processes, it is challenging for teachers to intuitively understand the depth of their students' engagement, let alone identify problems on time. Previous studies have mostly relied on self-report methods such as questionnaires, which often yield subjective results with limited accuracy. To address this issue, our study collects physiological data generated during collaborative learning activities to capture learners' cognitive engagement. We extract four efficient feature variables through feature engineering screening to build a final feature set. Subsequently, we utilize eight machine learning algorithms to predict learning outcomes. The findings reveal that the random forest algorithm performs better than the other seven algorithms in predicting learning outcomes. Moreover, the feature set demonstrates a prediction accuracy rate of 68.97%. By shifting the approach to analyzing cognitive engagement to the perspective of learning analysis, our study represents an innovative exploration of learning engagement research. Our findings could support further characterization and intervention efforts in cognitive engagement research.

Keywords—cognitive engagement, learning analytics, feature engineering, collaborative learning

Abstract-Poster

Mingchi Jiang
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CE5016

Teaching Evaluation Index of College Students Basedon Random Forest

Abstract: In order to solve the problem of unscientific setting of evaluation indicators due to the non-standardized evaluation scale of college students, we propose to use random forest algorithm to model and analyze the evaluation indicators of students. Taking the course "Programming Fundamentals" as an example, the teaching evaluation questionnaire is designed, and the random forest algorithm is used to model, compare the measured value and predicted value of the comprehensive scores, and obtain the importance ranking of the teaching evaluation indicators. The experimental results show that teaching effect, Language expression and other teaching evaluation indicators occupy an important position in the scale of university students' evaluation, and have important reference value for the design of the scale.

Keywords—random forest algorithm, student evaluation of teaching, questionnaire investigation, teaching evaluation index, evaluation scale

Abstract-Poster

Xinxin Cui

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CE5140

PBL teaching method of "biology experiment" based on the OBE concept

Abstract: The biology experiment course is a professional introductory course and a compulsory experimental course for ecology majors in colleges and universities. Improving the quality of classroom teaching and stimulating students' ability to innovate and practice is the crucial problem to be solved in the biology experiment course. Deeply integrate the Problem-Based-Learning and Project-Based-Learning teaching methods based on problem-based inquiry and project-based cooperation with the concept of Outcome-Based Education to teach the "Biology" course reform to form a student-centered, results-oriented teaching model that is conducive to stimulating students' interest in learning can effectively improve students' learning ability and sense of learning acquisition, and promote the improvement of their overall quality.

Keywords—OBE; biology experiment; PBL; course teaching

Abstract-Poster

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CE5080

Design and Practice of Blended Teaching Model of Engineering Professional Courses based on Outcome-based Education

Abstract: In the context of engineering education, to improve the practical engineering skills of engineering students, the teaching ideas and implementation methods of the curriculum are designed based on Outcome-based Education. A blended teaching approach was used to design the implementation process to achieve the curriculum objectives. In this paper, we explain the process of blended teaching from the two aspects of basic knowledge and competency training. Active learning of basic knowledge is implemented based on a three-step blended teaching model before, after, and during classes. It adopts the project-driven learning approach of the flipped classroom model and cultivates students' ability to solve complex engineering problems through collaborative group and intra-group mutual assessment. Based on the original objective assessment of the curriculum and under the current teaching model, we design a diversified evaluation approach to comprehensively assess the effectiveness of student competence achievement. Practice has shown that project-based inquiry-based teaching methods based on the flipped classroom model can promote learning outcomes for students and increase their interest in learning. It avoids the blind and aimless theoretical learning process of the student and improves the practical ability of the student. The methods and means of instruction of teachers have been further extended, and the ability of students to learn independently has been improved.

Keywords—Curriculum Teaching Reform, Blended Learning, Project-based inquiry learning, Outcome-based Education, Flipped classroom

Abstract-Poster

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CE5078

Analzing attention streams to enhance knowledge transmission on MOOC-based learning platforms: A Case Study of XuetangX's Photojournalism Course

Abstract: The popularity of MOOC-based learning platforms has led to a surge in the number of students enrolling in online courses. However, the effectiveness of knowledge transmission on these platforms varies greatly due to the heterogeneity of online learning behavior. To help teachers and learning platforms design better courses, analyzing the knowledge transmission of online learning is crucial. This study adopts a "stream" perspective to visualize the concept of knowledge, and uses clickstream data to build an open stream network of students' collective attention streams. By studying attention streams, knowledge streams were simulated and quantified. The study focused on XuetangX's boutique course, Photojournalism (Fall 2016), and classified students as dropouts and non-dropouts based on whether they could stay in the course for the whole duration. Comparative learning analysis and social network analysis techniques were used to study the three processes of attention flow. The results showed that courseware resources and course announcement information played a crucial role in guiding the direction of students' attention flow and acted as gateways for attention accumulation. MOOC-embedded tests played a scaffolding role in the flow process, strengthenings the supervision of online students' learning and helping them receive knowledge better. This also promoted the flow of knowledge in the network and reduced dissipation. In conclusion, this study highlights the importance of analyzing attention streams to understand the effectiveness of knowledge transmission on MOOC-based learning platforms. The findings suggest that optimizing courseware resources, course announcement information, and MOOC-embedded tests can help to enhance the overall learning experience of online students.

Keywords—MOOC, Learning behaviour, Attention, Knowledge dissemination, Streaming Network

Abstract-Poster

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CE5037

Research on the mixed teaching mode of "online and offline + flipped classroom"

Abstract: The course of Database Principles is the core course of computer science in our university, and it is also a professional and practical course and applied courses. According to the characteristics of the course "Database Principles", the author has been exploring new teaching methods and educational concepts in the teaching process for many years.

With the help of the intelligent teaching platform - Rain Classroom, this paper constructs a hybrid teaching mode that organically combines "online and offline" and "flipped classroom" from three links: before class, in class and after class. It can not only effectively combine the advantages of traditional offline learning and emerging online learning, but also fully stimulate and mobilize the enthusiasm and initiative of students in the whole learning process, so as to improve teaching efficiency and obtain the best teaching effect.

Keywords—database principle, online and offline, flipped classroom, rain classroom

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