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Wisdom of Science, Technology, and Humanities: The 23rd Global Chinese Conference on Computers in Education

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Abstract

The 23rd Global Chinese Conference on Computers in Education (GCCCE) was held May 23–27, 2019, at Central China Normal University, Wuhan, China. With a theme of "Wisdom of Science, Technology, and Humanities," GCCCE hosted four keynote speeches, over 200 concurrent presentations facilitated by nine conference divisions, two expert symposiums, seven workshops, four teacher forums, one doctoral consortium, and two poster sessions. This report synthesizes its keynote speeches, award-winning presentations, and some highlights at GCCCE 2019.

Introduction

The Global Chinese Conference on Computers in Education (GCCCE) is an annual, international conference organized by the Global Chinese Society for Computers in Education. The 23rd GCCCE was held May 23–27, 2019, at Central China Normal University, Wuhan, China. It had more than 200 concurrent presentations from different countries and regions including Canada, Hong Kong, Malaysia, Mongolia, Singapore, Taiwan, and the United States of America. With the theme "Wisdom of Science, Technology, and Humanities," the 23rd GCCCE offered presentation topics in nine sections:

- Science of Learning, Computer Supported Collaborative Learning, and Smart Education
- Digital Classroom, Mobile and Ubiquitous Learning
- Game-Based Learning and Society

- Technology in Higher Education and Human Performance
- Teacher Professional Development and Educational Policy
- Technology Enhanced Language Learning
- Learning Analysis, Assessment, and Artificial Intelligence (AI) in Education
- Maker Education and Science, Technology, Engineering and Mathematics (STEM)
- Digital Technology, Innovation, and Education

The following describes its keynote speeches, award-winning presentations, and some highlights at GCCCE 2019.

Keynote Speeches

Four scholars presented the keynote speeches at GCCCE 2019. They are Dr. Yong Zhao from the University of Kansas, Dr. Tzu-Chien Liu from Taiwan Normal University, Dr. Ming-Ming Chiu from the Education University of Hong Kong, and Dr. Qingtang Liu from Central China Normal University.

In the first keynote speech, "Education in the Intelligent Machine Age: Why Do We Need the Paradigm Transformation," Dr. Zhao pointed out the traditional education had transformed individual differences, culture diversity, and passion into a prescribed outcome via schooling, but not paid enough attention on "cultivating" intelligence of human beings. As a result, he argued, the current education is not doing a good job in "cultivating" the intelligence of human beings but, "killing" curiosity, inspiration, creativity, and other naturally inherited nature or talents of human being. Based on the idea that we should never make humans do the

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job that a machine can complete, Dr. Zhao proposed a new paradigm of intelligence education that would focus on developing individuals into innovators and creators, and not prescribed employees.

In his Keynote, Dr. Tzu-Chien Liu introduced a series of empirical research on effectiveness of student learning in digital learning environments. One study was about students' learning effects of dictionary format on incidental acquisition of spelling knowledge and cognitive load during second language learning. In this study, the students were randomly divided into four groups to learn with the assistance of four dictionary formats, which were the Pop-up, the Type-in, the book and No-aid. The four groups showed no significant differences in reading skills measured by assessment scores. However, the eye tracking results revealed the students in the Type-in dictionary group had higher cognitive load than the other three groups. Another study was about the impact of QR code on students' performance in plants recognition. The results indicated when students were required to recognize less than 10 plants, their recognition performance in the manual condition was significantly higher than in that of QR code condition while student' cognitive load was higher in QR code condition. Dr. Liu shared his comments on these two studies: (1) the more convenience the dictionary could bring to the learners, shorter the learning time is, the lower the cognitive load is, all of which might deprive learners' learning opportunity; (2) the use of QR code decreases the learners' extraneous cognitive load, and shortens learning time, but might decrease their cognitive resources investment. For future research, Dr. Liu suggested that digital tools should be applied to increase learners' germane cognitive load, decrease their extraneous cognitive load, and increase their intrinsic cognitive load to certain extent.

The third keynote speech by Dr. Ming-Ming Chiu was "Automated Analysis of Classroom Dialogue: Applying Artificial Intelligence and Statistics to Big Data to Cultivate Talent." Automatic analysis of classroom conversations can lead to improvements of communication, assisted learning, and instruction. This automated analysis must overcome existing barriers to sound transcription, complex classification, and statistical analysis. Automated statistical analysis combined with artificial intelligence systems and statistical discourse analysis (SDA) were used to analyze big data. SDA models have two functions: (1) radically changing the key actions of the process in the future, and (2) explaining the impact of variables on the target actions at multiple levels (sequences of time/messages, individuals, groups, institutions, etc.). This artificial intelligence system transforms the theoretical model into a statistical model, using a data test modeling to interpret the results, rewrite the system to run the revised analysis when needed, and present the results in a table format. Dr. Chiu's research group used automated SDA to present the results of an analysis of 1330 messages (321,867 words)

provided by 17 student teachers in a classroom design discussion in 13 weeks .

Dr. Qingtang Liu's keynote speech was on analysis and evaluation models from a perspective of learning analytics. He pointed out the future of intelligent technologies would provide adaptive learning content, personalized learning service, automatic organization of learning resources, interactive information analysis, and literature content analysis. Dr. Liu introduced the research by his team on learning analytics to enhance the diagnosis, adjustment, and assessment of digital learning, and to realize personalized learning. He demonstrated the design, development, and application of a big data and learning analytics used in the regional teachers' professional development program. Dr. Liu also shared the discourse and content analysis on teachers' reflection journals, with the facilitation of ROST content mining, a free content analysis tool, and how teachers' individual differences (gender, teaching performance, and performance in professional development) affected their reflecting levels.

Award Winning Presentation

Wan-Chen Chang, Chang-Yen Liao, and Tak-Wai Chan from Central University in Taiwan received the Best Research Paper Award. They shared their research of a peer discussion activity on primary school students' writing performance. The peer discussion activity aimed at providing peer response scaffolding to assist 2nd grade students learn how to give suggestions in writing. The results revealed that the students in the peer discussion activity group performed significantly better than the ones in the control group in terms of the average length and the quality of their writing assignments.

Yaqiao Wang, Wenyu Li, and Baichuan Lin from Changhua University of Education received the Best Technical Paper Award at GCCCE 2019. They presented the use of a modeling-based computer simulation system they designed, its impact on 11th grade students' modeling performance, and students' understanding of scientific models and modeling. The results demonstrated that students had significant gains in "model types" and "constructed nature of models."

The Best Teacher Forum Paper Award went to Yanjie Song, Ka Man Lung, Hiroaki Ogata, Yin Yang, Nehal Hasnine, and Kosuke Mouri from Kyoto University. They reported a study on using a mobile learner-generated content tool, m-LGC tool, to bridge in-class and real-life vocabulary learning. Their analysis results showed that students using this APP could not only apply the words learned in real-life, but also learn the culture related with vocabulary with their peers.

The Best Student Paper Award went to Xiaotong Zhang, Nianheng Zheng, and Jianwen Sun from Washington University in St. Louis. They developed a negotiated online

reading assessment system based on negotiated learner mode, which enabled students to negotiate with the system for achieving agreement while providing the opportunities for self-evaluation and self-reflection. The study showed that the students with high self-regulated learning (SRL) ability tended to view state transitions between classmates' questions, review scores, and reassessment, followed by self-reflection, while the students with low SRL ability tended to make decisions about their own abilities, view performance, and retest. They concluded that students with high SRL ability could reflect on learning through negotiation actions and improve learning strategy planning.

Spotlights

Presentations of various topics at the 23rd GCCCE attracted conference participants. Yanqin Li and Juan Wu reported the prototype design of APP for primary school students' natural observation handbook. The study results indicated that this APP could not only provide guidance for primary school students' natural observation activities, improve their natural observation ability, but also had the potential to be applied to developing student's ability of scientific inquiry and literacy. Leyuan Liu, Junmin Zhao, Liangying Chen, Guangshuai Wang, and Mengdi Zhang designed and implemented an Avatar-based intervention system for children with autism spectrum disorder. They used technology to simulate appearance and behaviors of autistic children and their social peers in real world, with the purpose of helping these children to establish a link between virtual worlds and real life to enhance their social skills. Yan Peng developed a question answering system to support college students in solving the mental health problems. These presentations reflect seamless integration of innovative technologies into the field of teaching and learning with unique pedagogies and the goals of improving learners' subject literacy, creativity, and other life skills. They also well reflect the theme of GCCCE 2019: *Wisdom of Science, Technology and Humanities*.

Conclusion

The 23rd GCCCE has well demonstrated efforts of educational researchers and practitioners in exploring innovative practices in education and cultivating talents for the future. Topics such as machine learning, artificial intelligence, virtual reality, analytics, creativity, STEM, scientific and technical humanities, and new dynamic forms of instructional design, were discussed with explorations of new roles of teachers in the era of information and AI technologies. The Conference was of great success signified by its theme: "The Wisdom of Science, Technology, and Humanities." The 24th GCCCE will be held at Northwestern Normal University, Lanzhou, China, in June 4–8, 2020. You could find the relevant information in details at https://gccce2020.nwnu.edu.cn/.

References

GCCCE. (2019). The mentioned speeches and presentations are available online at the GCCCE website http://it.ccnu.edu.cn/GCCCE2019/home.html and in its published proceeding papers at http://it.ccnu.edu.cn/GCCCE2019/file/conference.pdf.