TechTrends (2021) 65:2–4
https://doi.org/10.1007/s11528-020-00564-7

COLUMN: ICT INTERNATIONAL

Innovation and Reform on Technology Empowered Education: The 24th Global Chinese Conference on Computers in Education

Jianjiang Hao[1] · Jiong Guo[1] · Charles Xiaoxue Wang[2]

Accepted: 6 November 2020 / Published online: 11 November 2020

Abstract
The 24th Global Chinese Conference on Computers in Education (GCCCE) was held September 12–16, 2020 at Northwest Normal University, Lanzhou, China. The GCCCE adopted a hybrid conference format for the first time, combining traditional face-to-face sessions and online live streaming to reduce the impact from the Covid-19 pandemic. The GCCCE hosted over 300 current presentations, roundtables, and poster sessions in its nine sub-conferences and one English paper session. With a theme of "Innovation and Reform on Technology Empowered Education," the GCCCE organized four keynote speeches, two expert symposiums, six workshops, one teacher forum, and one doctoral consortium. Over 300 attendees were at the GCCCE site in Lanzhou, China. The presentations, roundtables, and posters were live steaming during the conference. The live streaming conference sessions and their video recordings achieved a total of accumulative views over 330,000 times by the end of October 2020 with their viewers from different countries and regions. This report synthesizes the keynote speeches and award-winning presentations at GCCCE to share some highlights with readers.

Keywords Innovation for education · Artificial intelligence · GCCCE 2020

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 24th annual GCCCE was held on Sep 12–16, 2020, at Northwest Normal University, Lanzhou, China. It hosted scholarly presentations and discussions around its conference theme: "Innovation and Reform on Technology Empowered Education" in the following nine program categories in addition to one English paper track program:

C1: Learning Sciences and Computer-Supported Collaborative Learning (CSCL).
C2: Mobile, Ubiquitous and Contextualized Learning.
C3: Joyful Learning, Educational Games and Digital Toys.
C4: ICT in Higher Education and Adult Learning, and Teachers' Professional Development.
C5: Technology-Enhanced Language Learning and Learning of Humanities Subjects.
C6: Artificial Intelligence in Education, and Smart Learning Environments.
C7: Learning Analytics and Assessment.
C8: STEM and Maker Education.
C9: Educational Technologies: Innovations, Policies and Practices.

The following detail the keynote speeches and award-winning presentations at GCCCE 2020.

Keynote Speeches

Four well-established professors presented the keynote speeches at GCCCE 2020. They were Dr. Fu-Yun Yu from

✉ Jianjiang Hao
jianjianghao@163.com

Jiong Guo
guoj72@163.com

Charles Xiaoxue Wang
xxwang@fgcu.edu

[1] Northwest Normal University, Lanzhou, China

[2] Florida Gulf Coast University, Fort Myers, FL, USA

Cheng Kung University, Dr. Jiong Guo from Northwest Normal University, Dr. Patricia Augustin Jacques Maillard from the University of Vale do Rio dos Sinos (UNISINOS), and Dr. Jan Van Aalst from the University of Hong Kong.

In the first keynote speech, entitled *Networked Student Problem Posing 2.0 – Advancing Teaching and Learning*, Dr. Yu demonstrated the development and current state of the Online Student Questioning 2.0 Project from three aspects: Design of multiple scaffolding and instructional models, development of integrated learning systems, and establishment of empirical basis and its effect on re-improvement of teaching and learning. The principles and methods of how students can use questions for online learning were introduced in detail. For example, students should pay attention to the coverage, relative importance, and order arrangement of knowledge points involved in online learning. In the design of students' feedback process, attention should be paid to the application of scaffold, personalized support, appropriate variability and multimedia application. In addition, Dr. Yu delved into the development of the learning system which effectively engaged students in the process of questioning and in the processes of learning through questioning.

The second keynote speech, *Abilities Teachers Should Attain in an Era of Artificial Intelligence,* was presented by Dr. Guo. Dr. Guo introduced the theoretical basis for diffusing artificial intelligence to empower teachers, then discussed the essential attributes of teachers and artificial intelligence and its relationship for empowering teachers. Guo proposed a series of competencies such as those related to ontology knowledge, consciousness and emotion, application ability, social ethics, and privacy and security that our teachers should and must obtain to apply appropriately and effectively artificial intelligence in education.

Dr. Maillard delivered her keynote speech virtually, introducing her research entitled *Responding to Students' Emotions in Intelligent Learning Environments,* which is based on using an intelligent learning system to implement real-time monitoring of student emotions for timely assistance through physiological signals, observable behavior, voice, body language, text, facial expressions. She then demonstrated the PAT2Math system developed by her research team. For future research on the emotional intelligence, Dr. Mailard encouraged researchers to apply what we have learned to explore how to guide students from external emotional regulation to internal self-regulation.

Dr. Aalst delivered his keynote speech titled *Collaborative Knowledge Building: Exploring the Potential for Student Agency, Collaboration, and Inquiry-based Learning in Chinese Schools* via a video recording. Dr. Aalst introduced several cases on knowledge building in Chinese middle schools and higher education institutions with a focus on science education. Using the recent 5G conspiracy theories, European immigration, climate change, and globalization as examples, Aalst pointed out an urgent need in education to deal with new knowledge that is constantly being generated in complex fields. In addition, Dr. Aalst discussed parents' views on knowledge building, and discussed the trend of the future development of knowledge building.

Award Winning Presentation

Twenty-eight papers were nominated for the best paper awards in five categories: Best Chinese Paper, Best English Paper, Best Student Paper, Best Technical Design Paper, and Best K-12 Teachers' Paper Awards.

Shaoxi Yu, Shuhan Yang, Zhenhan Wang, Yuling Huang, and Guodong Chen received the award for the Best Chinese Paper. They proposed an innovative approach for learners to enter the augmented reality and to learn spoken and body language. The results of their study showed a significant improvement in student's learning. They suggested that the digital reality provided a unique learning environment in which learners can perform as if they were in real-world contexts. With the digital reality, learners can also obtain instant feedback and reflect upon it immediately for learning. Digital reality, they argued, was a powerful technology in language and social science learning.

Wenli Chen, Zhongling Pi, Chai Aileen S.C., Jesmine S. H. Tan and Xinghua Wang received the award for the Best English Paper. They examined students' characteristics in argumentation skill improvement via online collaboration. The study demonstrated that explicit instructions in argumentation skills via online collaboration had positive effects on students' learning gains. Their study found that students' extrinsic goal orientation was a negative predictor of their argumentation skills, whereas students' task value and preference for group work were positive predictors in their argumentation skills.

This year GCCCE presented the award for the Best Student Paper to two teams: One team was Zhichen Guo, Haoyun Xu, Huize Hou, and the other was Fei Wang, Chengyuan Jia, Shurui Bai and Khe Foon Hew. The first team developed a board game with an augmented reality (AR) technology to investigate the student's Technology Acceptance Model (TAM) and gender difference, and this board game content is mainly for learning a combat game based on the binary linear equations of mathematics. The findings suggested that this AR board game was not only easy to use but also useful for either gender to learn math concepts. The second team shared their research that examined the effect of gamification on Chinese preschool children's English as Second Language (ESL) learning and classroom behaviors. The results showed that the use of digital points and a leaderboard, significantly improved the preschoolers' ESL learning. The gamified preschool class exhibited more positive reactions towards ESL learning tasks than the classes using traditional instructional methods.

Haoqiang Lin, Yujun Ma, Jiachen Gao, Mengxuan Li, and Shiqun Zhang received the award for the Best Technical Design Paper. They proposed STEM 6E teaching methods that included Engaging, Exploring, Explaining, Engineering, Enriching, and Evaluating of STEM learning. Their research showed that students had significantly enhanced performance in creativity, problem solving and critical thinking with implementation of STEM 6E.

The award for the Best K-12 Teachers' Paper went to Lingfang Ye from Dongguan Seventh Senior High School in China. Ye reported results from a study that analyzed the relationship between Small Private Online Course (SPOC) and self-efficacy, and explored the effects of combining SPOC and teaching methods in high school information technology classes. The results demonstrated that the use of SPOC in high school information technology classes can significantly improve students' sense of self-efficacy, and students' learning abilities in multiple aspects.

Conclusion

The 24th GCCCE effectively presented efforts of educational researchers and practitioners in exploring innovative ways and scientific practices in technology empowered education, and in cultivating human talents for the future. Topics such as Learning Sciences, CSCL, Mobile Learning, Contextualized Learning, STEM, Artificial Intelligence in Education, and Smart Learning Environments were extensively discussed with futuristic perspectives on their developments and challenges in technology-enabling education. The 24th GCCCE was a great success in showcasing presentations supporting its theme: "Innovation and Reform on Technology Empowered Education." The 25th GCCCE is tentatively scheduled from September 13 to 15, 2021, collaboratively hosted by the Education University of Hong Kong, National Taiwan Normal University, Nanyang Technological University, and Beijing Normal University.

Further Reading

Wong, L., Zheng, H., Lin, Q., Huang, R., Guo, S., & Guo, J. (2020). *Proceedings of the 24th global Chinese conference on computers in education*. Lanzhou: Northwest Normal University. https://gccce2020.nwnu.edu.cn/Uploads/Web/gccce2020/ueditor/20200916/1600216620966054.pdf.