2024 6th International Conference on Computer Science and **Technologies in Education** (CSTE 2024)

19-21 April 2024 Xi'an, China



IEEE Catalog Number: CFP24AZ1-POD ISBN:

979-8-3503-5181-1

Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP24AZ1-POD

 ISBN (Print-On-Demand):
 979-8-3503-5181-1

 ISBN (Online):
 979-8-3503-5180-4

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



2024 6th International Conference on Computer Science and Technologies in Education (CSTE) CSTE 2024

Table of Contents

Preface xiii Organizing Committee xv	
Fechnology-Enhanced Learning and Mobile Learning	
Technical Support for the Ethical Teaching of AI: A Contextualized Virtual Reality-Based Instructional Design	
CodeQuest App: A Gamified OOP Education for Dynamic Online Learning Engagement	
Impact of Mobile Coding Apps on Student Autonomous Learning in Tertiary Education: A Case Study	
Virtual Reality Technology in Teaching and Students' Intention to Use: A Survey of Chinese University Students Majoring in Management	
The Framework of Using Mobile-Learning in Higher Vocational Colleges with Extended UTAUT Model	
Weike Tang (King Mongkut's Institute of Technology Ladkrabang, Thailand), Singha Chaveesuk (King Mongkut's Institute of Technology Ladkrabang, Thailand), and Wornchanok Chaiyasoonthorn (King Mongkut's Institute of Technology Ladkrabang, Thailand)	

Integration of PBL and FET: An Innovative Model for Mechanics Courses Aimed at Stimulating
Students' Discussion
Shang Wang (Beijing Polytechnic, China) and Xiangyun Kong (University of Science and Technology Beijing, China)
of Selence und Technology Delfing, China,
Multimedia Based Learning and Computer-Supported Learning
An Experimental Study on the Effects of Inspirational Digital Reading on Academic Performance and Career Aspirations of Chinese University Students
Investigating the Relationship Between Self-Efficacy and Performance in Computer-Supported Collaborative Interpreting Learning Moderated by Field (In)Dependence
A Systematic Review on Student-Facing Learning Analytics Dashboards: Reference Frames and Indicators
Research on Visual Cue Labeling Strategy to Promote Deep Learning of College Students
Analysis of the Current Research Status of Intelligent Education in China Based on
Knowledge Graph
Revolutionizing Learning: E-Learning Modules for Systems Administration and Maintenance Laboratory (ELMSAM-Lab)
William P. Rey (Mapua University, Philippines)
The Impact of ICT Resources on Chinese Middle School Students' CT Skills: The Mediating Role of ICT Literacy
Yu Zhou (Shaanxi Normal University, China), Junmei Sun (Shaanxi Normal University, China), Jing Zhang (Shaanxi Normal University, China), Bin Jing (Shaanxi Normal University, China), Hongliang Ma (Shaanxi Normal University, China), Xiaofei Li (Shaanxi Normal University, China), and Yifei Han (Shaanxi Normal University, China)
Preferences and Expectations of Gesture Combination in Touch Screen Learning for College Students from an Ergonomic Perspective

Artificial Intelligence Integrated Education and Personalized Learning

Research Topics and Future Trends on Human-Machine Collaboration Empowering Education in China Based on Bibliometric Analysis	78
Application and Challenges of Multi-Modal Data Fusion in Adaptive Learning System	82
The Study of Collaborative Writing Supported by Smart Paper and Pen on the Writing Achievement of Senior Primary School Students	88
An Empirical Study on Designing STEM+AI Teaching to Cultivate Primary School Students' Computational Thinking Perspective and Identity Xing Li (Jianghan University, China), Xiang Hui (Jianghan University, China), Ming Yue Zhao (Jianghan University, China), XiaoChun Zhou (Jianghan University, China), and Jing Huang (Wuhan Economic and Technological Development Zone Experimental Primary School, China)	93
The Application of AI Generation Tools in the Graduation Projects (Theses) of Animation-Related Majors	99
Research on Teaching Reform for Python Programming Curriculum Based on AIGC-CDIO-OBE Model	. 106
Erchong Liao (North China Electric Power University, China)	
Exploring the Integration of Artificial Intelligence in Research Processes of Graduate Students	. 110
Sen Xiang (Wuhan University of Science and Technology, China), Huiping Deng (Wuhan University of Science and Technology, China), Jin Wu (Wuhan University of Science and Technology, China), and Jin Liu (Wuhan University of Science and Technology, China)	
An Inquiry Into AI-Supported Classroom Transformation	. 114
Design of Personalized AI Examination System Based on Reinforcement Learning	. 119

Generative Artificial Intelligence and Large Language Models in Education

Generative AI Research of Education from 2013 to 2023 Guimin Huang (South China Normal University, China) and Xinxian Liang (South China Normal University, China)	125
Large Language Models in Education: A Systematic Review	131
Generative AI in Higher Art Education	135
ChatGPT-Aided Education Teaching	141
Is ChatGPT Reliable in Scoring Learner's Translation Quality?	146
Investigation of the Effectiveness of Applying ChatGPT in Dialogic Teaching of Electronic Information Using Electroencephalography Jiayue Zhang (Shaanxi Normal University, China), Yiheng Liu (Shaanxi Normal University, China), Wenqi Cai (Shaanxi Normal University, China), Senqing Qi (Shaanxi Normal University, China), Taotao Long (Central China Normal University, China), and Bao Ge (Shaanxi Normal University, China)	150
The Impact of Role Strategy on ChatGPT-Assisted Asynchronous Online Discussions: An Experimental Study	155
Combating ChatGPT-Based Programming Test Cheating – An Evaluation Using Public Problems . Tran Tri Dang (RMIT University, Vietnam), Huo-Chong Ling (RMIT University, Vietnam), and Ngoc Quang Tran (RMIT University, Vietnam)	161
The Practice of Enhancing Learning and Scientific Innovative Abilities Using LLM-Based AI Tools Bingshu Wang (Northwestern Polytechnical University, China), Xin Zhang (Northwestern Polytechnical University, China), Shuyi Li (Beijing University of Technology, China), and Yimeng Wang (Northwestern Polytechnical University, China)	166
Exploring A LLM-Based Ubiquitous Learning Model for Elementary and Middle School Teachers . Huimin Lyu (South China Normal University, China), Yujiao Cheng (South China Normal University, China), Yuyan Fu (South China Normal University, China), and Yinjie Yang (South China Normal University, China)	171

Educational Data Mining and Learning Analytics

A CNN-Transformer Knowledge Tracking Model Combining with Forgotten Factors
An Intelligent Classification Method for Online Teaching Student Performance Data Based on Improved Decision Trees
Scheduling Optimization of Experimental Courses Based on Improved Genetic Algorithm
BNU-CMHE: A Chinese Multi-Modal Heuristic Education Dataset from Beijing Normal University 190 B. G. (B. ::: No. 144 i. :: it (Chine) Niv. V. (B. ::: No. 144 i. ::
Bo Sun (Beijing Normal University, China), Xin Xu (Beijing Normal University, China), Hang Li (Beijing Normal University, China), Jun He (Beijing Normal University, China), and Lejun Yu (Beijing Normal University, China)
Modeling Sentiment Analysis for Educational Texts by Combining BERT and FastText
An Effective Teacher Behavior Recognition Method Based on Teaching-Focused Regions Extraction and TeacherMask Data Augmentation
A Deep Knowledge Tracing Model Based on Double Attention Coding of Exercises and Concepts . 207
Towards Learning the Correlation Between Virtual Simulation Training and the Employment of Undergraduates in Marketing Using Random Forest
Research on Online Learning Behavior of College Students Based on Learning Analytics Technology

Huiping Deng (Wuhan University of Science and Technology, China), Jin Liu (Wuhan University of Science and Technology, China), Sen Xiang (Wuhan University of Science and Technology, China), and Jin Wu (Wuhan University of Science and Technology, China)	224
University Enrollment Plan Configuration Optimization Model: A Big Data-Driven Approach Keqin Wang (Northwestern Polytechnical University, China), Ting Wang (Northwestern Polytechnical University, China), Wei Liu (Northwestern Polytechnical University, China), and Zhiqiang Cai (Northwestern Polytechnical University, China)	. 228
Analysis of Postgraduate Entrance Examination Performance Based on Gray Correlation Degree Jin Liu (Wuhan University of Science and Technology, China), Bin Liu (Wuhan University of Science and Technology, China), Lei Zhu (Wuhan University of Science and Technology, China), and Jiaoyan Chen (Wuhan University of Science and Technology, China)	233
Teaching Assistant: A Classroom Teaching Effectiveness Evaluation System	.238
Based on FAHP-EWM Fuzzy Comprehensive Evaluation of Professional Master Industry Cluster Training Platform Construction	246
Plandad Lagraina and Online Lagraina	
Blended Learning and Online Learning	
Exploration on BOPPS-Based Blend Learning in Program Development Foundation with New Finance and Economics	. 251
Exploration on BOPPS-Based Blend Learning in Program Development Foundation with New Finance and Economics Yali Wu (Hebei University of Economics and Business, China), Xiaojuan Li (Hebei University of Economics and Business, China), Xiaoran Lin (Hebei University of Economics and Business, China), and Xiaoshuang Liu (Tianjin University of Technology and Education, China) Research on the Practice of Online and Offline Blended Teaching Mode Based on the Platform Teaching Data Fengnian Zhu (Wuhan Technology and Business University, China) and	. 251
Exploration on BOPPS-Based Blend Learning in Program Development Foundation with New Finance and Economics Yali Wu (Hebei University of Economics and Business, China), Xiaojuan Li (Hebei University of Economics and Business, China), Xiaoran Lin (Hebei University of Economics and Business, China), and Xiaoshuang Liu (Tianjin University of Technology and Education, China) Research on the Practice of Online and Offline Blended Teaching Mode Based on the Platform Teaching Data	. 257
Exploration on BOPPS-Based Blend Learning in Program Development Foundation with New Finance and Economics Yali Wu (Hebei University of Economics and Business, China), Xiaojuan Li (Hebei University of Economics and Business, China), Xiaoran Lin (Hebei University of Economics and Business, China), and Xiaoshuang Liu (Tianjin University of Technology and Education, China) Research on the Practice of Online and Offline Blended Teaching Mode Based on the Platform Teaching Data Fengnian Zhu (Wuhan Technology and Business University, China) and Shiya Zhou (Wuhan Technology and Business University, China) The Influence Factors of Learning Engagement in a Blended Learning Environment Fang Wang (Nantong Health College of Jiangsu Province, China) and	. 257

Analysis of Massive Open Online Public Art Courses: Based on Data from the Smart Education of China Higher Education
Sentiment Analysis and Epistemic Network Analysis Related to Education
Using Epistemic Network Analysis to Explore Pre-Service Science Teachers' Cognitive and Emotional Changes in a Collective Reflection Integrated with Classroom Teaching Video Multimodal Analysis Technology 288
Multimodal Analysis Technology
A Study on the Emotions and Learning Outcomes of Learner Peer Evaluation Feedback in
Online
An Epistemic Network Analysis of Different Scripted Roles in Online Discussions
Sentiment Analysis of Patriotic Education Based on WoBERT Language Model
How Does Feedback Type Influence the Cognitive Engagement of Students with Varying Levels of Readiness for Online Learning? A Network Analytic Approach
Analysis of Blended Learning Behaviour Based on K-Means Clustering Algorithm
STEM Education and Computer Science Education
A Study of Measuring Student Classroom Engagement in a STEAM Curriculum 319 Qiuju Huang (China West Normal University, China), Wei Song (China West Normal University, China), Jiaocan Li (China West Normal University, China), and Guan Huang (China West Normal University, China), China)

Frontier Oriented Teaching Design for Advanced Engineering Mathematics Course	324
Research on the Instructional Design of Computer Foundation Course of University Oriented by Computational Thinking Xiao Jing Li (Aviation University of Air Force, China), Si Qi Liu (Aviation University of Air Force, China), Tong Pan (Aviation University of Air Force, China), Bin Ru Chen (Aviation University of Air Force, China), Lei Zhao (Aviation University of Air Force, China), and Ming Mang (Aviation University of Air Force, China)	328
Database System Course Teaching Based on Goal Achievement Evaluation Under Emerging Engineering Education	332
The Impact of STEM Teacher Competence on Job Performance in the Era of Artificial Intelligence Lin He (Shaanxi Normal University, Shaanxi)	337
Artificial Neural Network Course Designing Based on Large-Unit Teaching Mode	342
Using Jigsaw Pedagogy to Promote Learning in Unplugged Information Technology Class: An Experimental Study	347
A Study on Interdisciplinary Teaching of Elementary School Science Based on Graphical Programming: An Example of "A Journey to Explore the Solar System"	352
Author Indox	257