2023 5th International Workshop on Artificial Intelligence and **Education (WAIE 2023)**

Tokyo, Japan 28 – 30 September 2023



IEEE Catalog Number: CFP23BF3-POD ISBN:

979-8-3503-0707-8

Copyright © 2023 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:
 CFP23BF3-POD

 ISBN (Print-On-Demand):
 979-8-3503-0707-8

 ISBN (Online):
 979-8-3503-0706-1

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-040

Phone: (845) 758-0400 Fax: (845) 758-2633

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



2023 5th International Workshop on Artificial Intelligence and Education (WAIE)

WAIE 2023

Table of Contents

Preface ix Conference Committee x Reviewers xii
Educational Robotics and Metaverse in Education
Co-Teaching with Humanoid Robots to Develop Complex Thinking: Appreciation of ICT Usage in Higher Education Students
Fostering Growth: A Micro-Learning Chatbot for Classroom Research Knowledge Acquisition Among In-Service Teachers
Teaching Chatbot Prompt Strategies in EFL Essay Writing Instruction
Research on the Integration of Multimodal Teaching Resources Based on Metaverse
Developing a C-UMC Model for SW Education Program Using Metaverse

AI Integrated Education and AI-Driven Education Transformation

Engaging with Artificial Intelligence in Graphic Design Education	Ĺ
Exploration of Education Transformation and Teacher Literacy in the Age of Artificial Intelligence	3
Analyzing Elementary Teachers' Perception of ChatGPT	3
Harnessing the Potential of Chat GPT in Education: Unveiling its Value, Navigating Challenges, and Crafting Mitigation Pathways	3
Artificial Intelligence Practices in Higher Education using Bloom's Digital Taxonomy	}
Application and Exploration of Artificial Intelligence Technology in Student Learning in Higher Education)
ChatGPT in Education: Angel or Evil? -A Conceptual Model to Explore Educator's Attitude Change Toward ChatGPT	5
Effective ChatGPT Prompts to Learn Tourist Psychology: Interview with ChatGPT)
Educational Data Mining and the Related AI Models	
Research on Evaluation Algorithm of Foreign Language Online Teaching Index Based on Artificial Intelligence	5
Emo-BERT: A Multi-Modal Teacher Speech Emotion Recognition Method)
Predictions About Academic Performance and Relevant Practice Based on Multidimensional Learning and Behavioral Data	5

A Method for Assigning Weight to the Assessment Indicators of Computational Thinking with XGBoost	90
Xinyao Zeng (Central China Normal University, China), Wei Zhang	. 70
(Central China Normal University, China), Yi Chen (Central China Normal University, China), and Hao Chen (Wuhan Polytechnic, China)	
Construction and Application of a Computational Thinking Assessment Framework from the Perspective of the Iceberg Model	96
China) Exploring the Relationship between Computational Thinking and Personality Traits	, 101
Digital Education and E-Learning	
Research on Development and Application of Digital Resources for Mechanics Course	, 106
Experiment and Effect of SPOC Teaching Design in Higher Vocational Colleges	113
An Investigation into the Use of Educational Apps in EFL Courses	119
Developing and Implementing Effective E-Learning Software for Mechanics: A Study of FET and C# Shang Wang (Beijing Polytechnic, China)	125
Identifying the Roles of English Teachers in Blended Learning Courses: A Story from a Vocational School	131
Empowering Database Manipulation Skills: A Holistic Approach Integrating User-Friendly Database Tools and Spreadsheet Software Somchai Chatvichienchai (University of Nagasaki, Japan)	. 136
Internet+ Technology Empowering C-STEAM Educational Collaboration in the Greater Bay Area: A Cross-Regional Project of "Chinese Ancient Hollowed Windows"* Tingting Li (South China Normal University, China), Xiuxiang Zhang (Foshan Tongji Primary School, China), Richard Lai (Pooi To Primary School, China), Mingwei Zhang (South China Normal University, China), Chaocheng Zhong (South China Normal University, China), and Zehui Zhan (South China Normal University, China)	. 141

Virtual Chip Design for the Digital Circuit Course
Service-Based Artificial Intelligence and Natural Language Processing
Generation Z and Artificial Intelligence Tools on Their Investment Decisions
Taiwan Legal Longformer: A Longformer-LSTM Model for Effective Legal Case Retrieval
Personlised Course Recommender (PCR)
Author Index