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Editorial for EAIT issue 8, 2023

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Education and Information Technologies (EAIT) is a research journal that covers the complex relationships between Information and Communication Technologies and Education. EAIT is the official journal of the International Federation for Information Processing (IFIP), Technical Committee on Education (TC3).

The journal is embedded in the research and practice of professionals and is accepted into the Social Science Citation Index (SSCI) in the category 'Education & Educational Research', with an Impact Factor (2021) of 3.666. EAIT is now in the top quartile (Q1) of journals in Education & Educational Research.

To begin this issue is an article from Sergio Cored Bandrés, Sandra Vázquez Toledo and Marta Liesa Orús (University of Zaragoza, Huesca, Spain) dealing with students with Autism Spectrum Disorder (ASD). They point out that it is essential that these students are offered interventions that provide an answer to their needs. With the aim of analysing the impact a technology-based social skills programme has on students with ASD, a mixed study based on case studies was conducted by the authors. They used objective tests administered at three points in time, which measured the level of ability in identifying emotions and in emotion awareness.

In the next paper, by Vicente Gabarda Méndez and Diana Marín Suelves (University of Valencia, Spain), Cristina Gabarda Méndez (Valencian Internacional University, Valencia, Spain) and Jesús Adrian RamonLlin Mas (University of Valencia, Spain), the researchers write about the use of technology for inclusion by future teachers. They explore the main advantages of the use of technology for the attention to diversity, taking into consideration the level of digital competence of future teachers and their perceptions regarding its use for the implementation of inclusive strategies.

Few technology-based interventions have addressed mathematical and numeracy skills of individuals with autism spectrum disorder (ASD). Children and adolescents

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with ASD may experience difficulties in mathematical learning, and even be behind their peers at school. The following article, by Cécile Mazon, Benjamin Clément, Didier Roy, Pierre-Yves Oudeyer and Hélène Sauzéon (Université de Bordeaux, France) looks at Intelligent Tutoring System (ITS) as an innovative way for enhancing teaching programs through learning optimization algorithms coping interindividual differences in the educational curriculum progress. These have been used with success with typically developed students for levering on the linkage learning-motivation but remains at a theoretical stage for students with ASD and/or intellectual disability (ID).

Online learning has gained prominence in higher education institutions globally, write Samuel Amponsah (University of Ghana, Ghana) and Teklu Abate Bekele (The American University in Cairo, Egypt). Unfortunately, not much has been documented on how visually impaired students (VIS) have been included in online learning. Their study engages fourteen faculty and six administrators from two Ghanaian higher education institutions to explore challenges and possible strategies for the inclusion of VIS in online learning. Creation of strategic partnerships with civil society, intergovernmental and non-governmental organisations and the private sector generally is deemed vital for the mobilisation of resources to support VIS in online learning spaces.

Educational technology offers multiple opportunities for students with functional diversity, say Ernesto Colomo-Magaña (University of Málaga, Spain), Alejandro Colomo-Magaña (University of Córdoba, Andalusia, Spain), Lauren Basgall (University of Málaga, Spain) and Andrea Cívico-Ariza (Valencian International University, Valencia, Spain). The objective of their reported study was to analyse pre-service teachers' perceptions of the role of ICT in attending to diversity. Their results indicated that pre-service teachers' positive perceptions of the use of ICT with students with functional diversity, showed significant differences according to gender.

Next, Annie Sawyerr and Douglas Darko Agyei (University of Cape Coast, Ghana) write on Mathematics teachers and IT. This study models the essential factors for a teacher to effectively incorporate ICT into mathematics instruction. An attempt is made to understand how the parameters; will (positive attitudes), skill (ICT competence), tool (access to ICT tools) and pedagogy (teaching style and confidence in skill) (WSTP) vary among mathematics teachers and predict the impact on ICT integration.

Taking into account that 15% of the world population suffers from some type of disability, few investigations have been concerned with knowing the level of Digital Competence that students with functional diversity have, write Julio Cabero-Almenara, Juan Jesús Gutiérrez-Castillo and Antonio Palacios-Rodríguez (University of Seville, Spain) and Francisco D. Guillén-Gámez (University of Córdoba, Spain). This research is based on an initial sample of 17,301 newly enrolled university students from the Andrés Bello University (Chile), of which 650 are selected for having some type of disability. Its main objective is to know the level of self-perception in the Digital Competence of university students with disabilities and the variables that explain it.

Carmen Llorente-Cejudo, Raquel Barragán-Sánchez, María Puig-Gutiérrez and Rosalía Romero Tena (University of Seville, Spain) contributed the next article. Mak-

ing use of digital technologies and all the possibilities that benefit education is one of the objectives of the European Framework for the Digital Competence of Educators, as well as their potential for personal development and social inclusion, among other aspects. The aim of this study was to validate the «DigCompEdu Check-In» scale as an instrument for the self-refection of educators regarding their digital competence from the perspective of social inclusion.

A collective case study of three elementary-level special education teachers by Susan E. Anderson (Texas Christian University, USA) and Rebecca S. Putman (Tarleton State University, USA) investigated their knowledge, decision-making, reasoning, and actions while planning and implementing technology-integrated instruction in schools for students with learning differences. The results contribute to a strand of research that focuses on how teachers exhibit technological pedagogical and content knowledge (TPACK) in their thinking and practice and add to the scarce literature on the TPACK framework in special education contexts.

Language develops, is shaped, and transmitted through interaction, say Seda Özer Şanal (Fırat University, Turkey) and Mukaddes Erdem (Hacettepe University, Turkey). Similarly, reading cannot be learned entirely and accurately in isolation from people. Based on the assumption that reading is supported through interactions, this study included the development of a collaborative storybook. It examined its effects on reading performance of students' with learning disabilities (LD). The researchers constructed a collaborative storybook intervention (CSI) of 29 stories containing collaborative activities that support the reading skills of children with LD. Researchers wrote all 29 stories.

Increasing the well-being of the rural elderly in developing countries is one of the vital objectives of facilitating equality and security, people-centred, sustainable social development, and inclusive globalization, writes Yongqi Zhang (Sichuan Agricultural University, China). From the perspective of digital literacy, the direction and theoretical mechanism of the effect of basic and advanced digital literacy on the sense of access of the rural elderly are analysed in this study from a multi-dimensional and multi-level perspective based on the data of the 2018 China Elderly Social Tracking Survey (CLASS). The result of this study indicates that for the currently Internet-connected rural elderly in China, basic digital literacy is at a moderate to low level, and those with advanced digital literacy remain a minority, whereas basic and advanced digital literacy can enhance the sense of access of the above groups.

Deborah Anne Irwin, Ismahan Arslan-Ari and William Morris (University of South Carolina, USA) then point out that one-to-one devices provide the opportunity for students to develop 21st century skills, improve academic learning, access information, and increase student independence. This descriptive study explored the value beliefs held by middle school teachers at a school for students with dyslexia (SWD) following the implementation of one-to-one devices and the teachers' technology integration during the instruction of SWD.

Today, technology plays a fundamental role in the development of daily life activities, note Gonzalo G. Lorenzo (University of Alicante, Spain), Nigel N. Newbutt (University of Florida, USA) and Alejandro A. Lorenzo-Lledó (University of Alicante, Spain). Within education, there is a series of emerging technologies that are increasingly implemented in the classroom. Emerging technologies are also well

aligned to autistic students and their specific learning and cognitive preferences. The aim of this review was to carry out a systematic and thematic review on the application of Virtual Reality (VR) in teaching and learning environments for autistic students during the period 1996–2021.

Eye movement modelling (EMME) are novel types of video modelling examples that contain additional eye-movement recordings of the model to provide attentional guidance, point out Yeliz Tunga (Middle East Technical University, Turkey) and Kursat Cagiltay (Sabanci University, Turkey and University of Economics, Baku, Azerbaijan). Increasing demand in using instructional videos and interest in using eye-tracking in education makes EMME an appealing research subject. This study systematically reviewed empirical studies employed EMME to synthesize extant literature and reveal literature gaps for further studies.

The next study, by Mona Mohammad and Heyam Reda Boushehry (Kuwait University, Kuwait) aimed to measure the effects of video media on kindergarten children basic movement skills. They note that educators use many strategies to assist their children in acquiring basic movement skills in kindergartens. The style of teaching encompasses the style of guided discovery, with a component and entire method approach supported by visual medias.

Predicting student performance is crucial in higher education, say Ashima Kukkar (Chitkara University, Punjab, India), Rajni Mohana and Aman Sharma (Jaypee University of Information Technology, India) and Anand Nayyar (Duy Tan University, Vietnam), as it facilitates course selection and the development of appropriate future study plans. Therefore, analysis of students' performance on various academic tests is critical for future skill development. This research proposed a novel Student Academic Performance Predicting (SAPP) system to address these issues and enhance prediction accuracy.

Higher education institutions are essential generators and disseminators of knowledge; however, they must create conditions to lay the foundations supported by knowledge enablers and manage knowledge efficiently, point out Manuel Alejandro IbarraCisneros and Juan Benito Vela Reyna (Autonomous University of Baja California, Mexico) and Felipe HernándezPerlines (University of Castilla-La Mancha, Spain). In addition, intellectual capital and innovation are elements that help this process; if everything is correctly articulated, the academic staff and institution will promote better performance. This article analyses how three knowledge enablers (leadership, culture, and organizational incentives) influence the knowledge management process.

Digital learning, and MOOCs specifically, increasingly benefit from learning-science-based design. In this study, Nana Ariel, Maaian Millikovsky-Ayalon and Omri Kimchi-Feldhorn (Tel Aviv University, Israel) present the redesign process that produces a new academic version (in Hebrew and Arabic) of the successful MOOC Learning How to Learn. During the design-based research they examined practices that implement evidence-based principles from the learning sciences in real-life digital learning, and created a course that not only teaches about learning but also practices what it preaches in its learning experience.

The following paper, by Patricia Marybelle Davies, Reem Muteb T. Alotaishan, Hayat Khalid A. Alabdulwahed, Ali M. Fahim Khan, Rawan Mohammad Ateya,

Thamer Saleh Alkhamis and Abdulaziz Abdullah A. Alodhieb (Prince Mohammad bin Fahd University, Al Khobar, Saudi Arabia) reports on a study conducted by college students at a private university in Saudi Arabia. The research examined the online learning experiences of their peers during the first wave of the coronavirus COVID-19 pandemic. Many assumptions exist about online learning and its impact in higher education, they say, but these are mainly based on the views of instructors and leaders of institutions. Hitherto, the perspectives of those meant to be beneficiaries of digital technologies have been given little consideration even though students use cyberspace for academic work and beyond. To address this silence, a group of student-researchers conducted a case study to examine students' views of cyberlearning.

Asynchronous online learning has gained great popularity in higher education, especially due to the recent COVID-19 pandemic, point out Kaili Lu (Nanjing University of Posts and Telecommunications, China), Feng Pang (Nanjing Forestry University, China) and Rustam Shadiev (Zhejiang University, Hangzhou, China). They note that, however, few studies have investigated how to maintain students' continuous usage intention of asynchronous online courses in the context of higher education. This study incorporated four key factors (intrinsic motivation, extrinsic motivation, perception of multiple sources, and cognitive engagement) associated with students' continuous usage intention of asynchronous online courses into the technology acceptance model (TAM) to identify the influencing factors on students' continuous usage intention.

A study by Gladys H. Krause (William & Mary School of Education, Williamsburg, USA), Maggie Vanderberg and Eping E. Hung (Southern Oregon University, Ashland, USA) and Eva Skuratowicz (Southern Oregon University, Ashland, USA) documents how a Spanish-English bilingual elementary teacher learned computational thinking while working to incorporate it into mathematics and language arts lessons in a bilingual classroom. The researchers classified the elements of the teacher's process into two practices: intentional and unintentional use of computational thinking. They point out that intentional use of computational thinking included the teacher's explicit incorporation of any of the four computational thinking elements (abstraction, algorithms, decomposition, and patterns) into her teaching practice. The unintentional use of computational thinking included those instances where the teacher used computational thinking as a means for teaching content not specifically oriented toward computational thinking.

A paper by Shijiao Jia and Madhubala Bava Harji (SEGI University, Selangor, Malaysia) then presents a scientometric analysis of task-based teaching and learning using CiteSpace based on the research literature retrieved from the Web of Science core collection between 2013 and 2022. CiteSpace is employed to analyse the data, as it minimizes subjectiveness and increases credibility. Bibliographic records related to task-based teaching and learning were systematically visualized and examined to identify the themes, knowledge evolution, and emerging trends in this field. The results show that five major themes can be identified: task-based language teaching, instruction, computer-mediated communication, design, and working memory and self-efficacy.

It has long been recognized that students' experience within an online learning space is mediated by many factors, one of which is teachers' behaviour and practices, and Jessie S. Barrot and Alexa Ray R. Fernando (National University, Manila, Philippines) write on this in the next article. This study sought to unpack the challenges students experienced in fully online engineering courses and the strategies they used to overcome these challenges. To further advance this line of research, the study also examined how teachers supported students during online learning.

The next study, by Keunjae Kim, Kyungbin Kwon, Anne Ottenbreit-Leftwich, Haesol Bae and Krista Glazewski (Indiana University, Bloomington, USA), explores the middle schoolers' common naive conceptions of AI and the evolution of these conceptions during an AI summer camp. Data were collected from 14 middle school students (12 boys and 2 girls) from video observations and learning artifacts. The findings revealed aeveral naive conceptions about AI concepts: (1) AI was the same as automation and robotics; (2) AI was a cure-all solution; (3) AI was created to be smart; (4) All data can be used by AI; and (5) AI had nothing to do with ethical considerations.

Mehmet Demir and Yılmaz Zengin (Dicle University, Türkiye) then examine the effect of a technology-enhanced collaborative learning environment on secondary school students' mathematical reasoning in the concept of triangle. The participants of the study are 30 secondary school students. While an experimental group received training in a technology-enhanced collaborative learning environment, the control group students continued their education in a traditional informal-collaborative learning environment. The data of the research comprised students' audio and video recordings, screenshots, dynamic mathematics software GeoGebra files, and written products.

Even though there is an abundance of research on computer supported education (CSE), digital literacy (DL), technological literacy (TL), and internet literacy (IL), the correlation between them and their effect on each other have not been analysed in the literature, point out Etem Yeşilyurt and Rabia Vezne (Akdeniz University, Turkey). Their study analysed the effect levels among the latent variables of DL, TL, and IL, and the attitude toward applying CSE and these latent variables' ratios to each other.

Lanqin Zheng, Lu Zhong and Yunchao Fan (Beijing Normal University, China) next look at online collaborative learning (OCL), which has become a mainstream pedagogy in the field of higher education. Learners, however, often produce of-topic information and engage less during online collaborative learning compared to other approaches, and often cannot converge in knowledge, and they often do not know how to coregulate with peers, they note. This study conducted an immediate analysis of interaction topics (IAIT) approach through deep learning technologies to examine the effects of the IAIT approach on group performance, knowledge convergence, coregulation, and cognitive engagement in online collaborative learning.

A pilot study by Julian Chen and Tatiana Bogachenko (Curtin University, WA, Australia) explores and documents online students' and their lecturer's debut experiences of utilising VoiceThread (VT), a digital multimodal platform, as an alternative discussion space via Open Universities Australia (OUA). Feedback from the lecturer's teaching log and interview was corroborated with OUA students' survey

responses and analysed in relation to student online learning experiences with VT and Discussion Board, as well as technological and affective aspects of both platforms. Findings indicate that VT has a stronger potential in boosting stakeholders' online engagement and enjoyment of distance learning, thus fostering online community building.

J. Patrick Biddix (University of Tennessee, USA), Hyejin Park (Korea Institute of Science and Technology Information, South Korea), Gresham D. Collom (University of Tennessee, USA)· Misty R. Bailey (University of Tennessee, USA) and Han Woo Park (YeungNam University, South Korea) write that the emergence of the COVID-19 pandemic brought changes and efforts for adaption to the new environment in every industry, including higher education. Their study, drawing on crisis management theory as a framework, aimed to understand information and communication sharing behaviours of the higher education community during the pandemic by exploring patterns and discourse on social media.

A quantitative study by Erik Kormos and Kendra Wisdom (Ashland University, USA) aimed to better understand how teachers implement technology in a variety of teaching modalities to enhance content delivery and student engagement. Their study aimed to investigate the digital divide of technology usage based upon school setting and usage frequency. The findings uncovered significant differences in usage frequency of rural, urban, and suburban teachers utilizing technology dependent upon modality (ex. cooperative learning, small group instruction, student-led research, problem-solving).

A study by Veera Kallunki, Nina Katajavuori, Päivi Kinnunen, Henrika Anttila, Tarja Tuononen, Anne Haarala-Muhonen, Eeva Pyörälä and Liisa Myyry (University of Helsinki, Finland) examines the benefits of digital tools in teaching and learning as experienced by university teachers in two different time periods: (1) during the controlled digital leap before the COVID-19 pandemic (2017–2019) and (2) during the emergency imposition of remote teaching in response to the lockdown aimed at containing the COVID-19 pandemic (2020). Teachers in different academic fields at a large multidisciplinary Finnish university responded to two open-ended questions as part of a broader questionnaire.

Educational speaking technology is a digital expertise used to enhance speaking performance write Mekuriaw Genanew Asratie, Bantalem Derseh Wale and Yibeltal Tadele Aylet (Injibara University, Ethiopia). Their research examined the effects of using educational speaking technology tools: FORVO, YouGlish, and OALD 8th ed. to enhance students' speaking performance. Test, questionnaire, interview, and teacher-log were used to gather the data from 82 first-year Information Communication and Technology students selected through comprehensive sampling.

Despite the growing attention towards gamification in learning context, challenge-based gamification application has rarely been subjected to testing in education, say Omer Sami Kaya (Near East University, Nicosia, Turkey) and Erinc Ercag (University of Kyrenia, Turkey). They developed Educhall web-based program. Drawing on self-determination theory, and flow theory this study aimed to explore how the application of this challenge-based gamified program in learning process of students can increase students' motivation, flow, and academic success through the generated competition and challenge.

A study by Gerasimos Linardatos and Dimitris Apostolou (University of Piraeus, Greece) focuses on high school students' acceptance of digital comics creation (DCC) in classroom learning and aims at identifying the factors that affect it. The DCC is a modern ICT activity, which combines the popular and familiar to students medium of comics with the computers. The research model used to explain the students' preference for DCC is based on the technology acceptance model.

School dropout is a structural problem which permanently penalizes students and society in areas such as low qualification jobs, higher poverty levels and lower life expectancy, lower pensions, and higher economic burden for governments point out Patricio Rodríguez and Alexis Villanueva (Universidad de Chile, Santiago, Chile), Lioubov Dombrovskaia (Universidad Técnica Federico Santa María, Santiago, Chile) and Juan Pablo Valenzuela (Universidad de Chile, Santiago, Chile). Given these high consequences and the surge of the problem due to COVID-19 pandemic, in this paper they propose a methodology to design, develop, and evaluate a machine learning model for predicting dropout in school systems.

Memet Üçgül and Serhat Altıok (Kırıkkale University, Turkey) then point out that 3D printing technology has an influence on a variety of industries such as automotive, engineering, medical, aerospace, sports, fashion, education, and more. In education, 3D printing is used in many different fields including pharmacy, mathematics, biology, chemistry, art education, graphic design, engineering, and even in early childhood and special education. The adoption of 3D printing technology in education is still at a low level, and the lack of adequate technology education is considered a major obstacle to the adoption of this technology. This case study explored prospective information and communication technologies teachers' perceptions on the integration of 3D printing into teaching and learning as well as their evaluation of offered 3D modelling and printing courses.

Due to increased need of professionals on the future labour market with competence in programming, many countries have integrated programming in kindergarten to grade 12 (K-12) education say Niklas Humble (Mid Sweden University, Östersund, Sweden). In 2017, programming was integrated in Swedish primary and secondary school curriculum and the courses of Mathematics and Technology. Research has highlighted challenges in integrating programming and other new technologies, and the need for better teacher support. The aim of the study was to examine what programming assists secondary school courses in Mathematics and Technology according to teachers that use programming in these two courses.

The next article, contributed by Azlan Ismail, Sofianita Mutalib and Haryani Haron (Universiti Teknologi MARA, Selangor, Malaysia) discusses the key elements of the Data Science Technology course offered to postgraduate students enrolled in the Master of Data Science program. This course complements the existing curriculum by providing the skills to handle the Big Data platform and tools, in addition to data science activities. They discuss this course based on three main requirements, which are related to the need to exploit the key skills from two dimensions, namely, Data Science and Big Data, and the need for a cluster-based computing platform and its accessibility.

Previous scientific research on the use of mobile applications to increase physical activity level and improve health among adolescents does not provide conclusive

results, one of the main reasons being the lack of adherence to the intervention after the first weeks, write Adrián MateoOrcajada, Lucía Abenza-Cano, Mario Demóflo Albaladejo-Saura and Raquel Vaquero-Cristóbal (Universidad Católica de Murcia, Spain). The main objectives of their research were to determine the changes produced by a compulsory ten-week period of after-school intervention with mobile step-tracking applications on adolescents' health; and to compare the benefits obtained by each of the mobile applications.

Zhihong Xu and Xuan Zhou (Texas A&M University, USA), John Watts (Cisco Systems, Inc., San Jose, USA) and Ashlynn Kogut (Texas A&M University, USA) then point out that evaluating the effectiveness of teaching methods for synchronous online instruction is integral to fostering student engagement and maximizing student learning, particularly in one-time workshops or seminars. Using the lens of social constructivism theory, this study investigated the effect of different approaches of synchronous online instruction on the development of graduate students' research data management (RDM) skills during the post-pandemic era.

The COVID-19 outbreak caused transition from face-to-face teaching to Emergency Remote Teaching (ERT), and due to the hastily and disorganized implementation of ERT considerable difficulties were caused for all the students. Spyridon Tzimiris, Stefanos Nikiforos and Katia Lida Kermanidis (Ionian University, Corfu, Greece) present a study to investigate (i) parents' views of students with functional diversity regarding ERT during the COVID-19 pandemic and (ii) how their children's functional diversity affected participation in ERT.

A study by Zainab Mohammad Gafas (Umm Al-Qura University, Makkah, Saudi Arabia) compared students' perceptions of their e-learning experiences in virtual and blended English for specific purposes (ESP) classes in an English as a foreign language (EFL) context. The study was conducted during an academic semester. The participants were two groups of Saudi ESP undergraduate students who took the same ESP course but in different environments, namely virtual and blended modes.

The importance of developing computational thinking (CT) skills has created many practices and research, note Kiraz Bilgic (Adana Bahcesehir College, Turkey) and Berrin Dogusoy (Mersin University, Turkey). Their action research focused on the impact of block-based programming activities used to improve the CT skills of 5th and 6th grade students over a 14-week period. The quantitative findings showed that learning processes enriched with block-based programming significantly affected the students' CT scores, while the qualitative findings showed that block-based programming activities not only increased the students' motivation toward the lesson, but also increased their active participation during these lessons.

In recent years, the rapid growth of Massive Open Online Courses (MOOCs) has attracted much attention for related research note Fatemeh Khoushehgir (Azarbaijan Shahid Madani University, Tabriz, Iran) and Sadegh Sulaimany (University of Kurdistan, Sanandaj, Iran). One of the main challenges in MOOCs is the high dropout or low completion rate. Early dropout prediction algorithms aim the educational institutes to retain the students for the related course. This paper proposes a novel method with low complexity, negative link prediction algorithm, utilizing only network topological data for dropout prediction.

The next study, by Xiaodong Zhang (Beijing Foreign Studies University, China), explores whether and how peer pressure influences students' participation in web-based peer learning (WPL). Fifteen students enrolled in a university reading course were followed over one semester, and interviews with them along with the researcher's observational notes on their learning activities were qualitatively analysed. The study concludes that students' experiences of peer pressure in relation to WPL involved a gradual process, had multiple causes, and ultimately positively impacted the students, although in the process, peer pressure exerted either negative or positive power on the students.

The next article is by Aysha Meshaal Alshamsi (College of Information Technology, UAEU, Al-Ain, UAE), Hadeel ElKassabi (Concordia University, Montreal, Canada), Mohamed Adel Serhani (College of Information Technology, UAEU, Al-Ain, UAE, and Sharjah University, UAE) and Chafk Bouhaddioui (Sharjah University, UAE). Distance learning has been adopted as an alternative learning strategy to face-to-face teaching methodology, largely implemented by many governments worldwide due to the spread of the COVID-19 pandemic and the implication in enforcing lockdown and social distancing. This paper analyses the alternatives of distance learning and discuss how these alternatives reflect on student academic performance and retention in distance learning education.

A group of researchers: Ameer Alhasan (Dijlah University College, Baghdad, Iraq), Mahmood H. Hussein (University of Malaya, Kuala Lumpur, Malaysia). Lukman Audah (Engineering University Tun Hussein Onn Malaysia, Johor, Malaysia), Ammar AlSharaa (University of Malaya, Kuala Lumpur, Malaysia), Ishaq Ibrahim (University Sains Islam Malaysia, Nilai, Malaysia) and Moamin A. Mahmoud (University Tenaga Nasional, Kajang, Malaysia), write about the increased interest of adoption of Internet of things (IoT) services for learning activities. Their study examines students' intention to use IoT services in the smart classroom.

A study by Xuemei Bai (Ningxia University, Yinchuan, China), Xiaoqing Gu (East China Normal University, Shanghai, China) and Rifa Guo (Tsinghua University, Beijing, China) aimed to verify the applicability of the community of inquiry (CoI) survey instrument in MOOC involving 1,186 college students from 11 different disciplines in China. Exploratory factor analysis was used to explore potential factor structure models, and confirmatory factor analysis was utilized to verify the four-factor structure obtained from exploratory factor analysis.

Networked computers can potentially support classrooms to be more interactive argue Rafkh Rashid Shaikh, Nagarjuna G and Ayush Gupta (Tata Institute of Fundamental Research, Mumbai, India). This can help students share representations amongst themselves and work together on a shared virtual activity space. In research on the role of shared screens or shared virtual workspace in learning settings, there has been less attention paid to contexts where learners are co-located. This paper looks at the impact of the shared screen in a computational game environment on mathematics learning and practices and the construction of learners' emotions and social status in classroom interactions.

Xi-Xi Qu and Xiao-Nan Liu (Harbin Normal University, China) and Zheng Yang (Harbin University of Science and Technology, China) then write that facing the new demand of equitable and quality education balance, the balanced development of

teachers' IT application ability has become an important element at the quality level. The balanced development of teachers' IT application ability has a two-dimensional connotation structure, that is, the development problem in the time dimension and the balance problem in spatial dimension.

A study by Simon. C.H. Chan and Hazel Lee (The Hong Kong Polytechnic University, Kowloon, Hong Kong) examines how new ways of learning (NWL) affect students' study engagement and learning satisfaction with online teaching, and whether subject lecturer support moderates the effect of NWL and study engagement on learning satisfaction.

The next article, by Jie He, Tingjuan Ma and Yongliang Zhang (Baoji Vocational & Technical College, Shaanxi Province, China) describes a study implementing a blended learning mode with the aid of an artificial intelligence teaching platform in the English language course. In this study, 110 students majoring in computer network were randomly selected as subjects, 55 of whom was the experimental group, the rest the control group. Traditional classroom teaching was adopted in the control group, and the blended learning mode based on the intelligent cloud teaching platform was used in the experimental group.

The use of video lectures has become a core feature of digital learning, but how the media diversity carried in videos affects learning experience has been rarely studied point out Xuefen Lin, Wei Tang, Weifeng Ma, Yang Liu and Feng Ding (Zhejiang University of Science and Technology, Hangzhou, China). This study used cognitive style questionnaires, brain wave detection, cognitive load scale, and post-test to explore the impacts of three commonly used algorithm-based video lectures on the sustained attention, learning engagement, cognitive load, and learning outcomes of verbal and visual style learners. The results show that cognitive style and video lecture type had a small effect on learners' sustained attention and learning engagement levels; and visual learners demonstrated significantly higher attention and learning engagement levels in the animation group than in the Tablet drawing and PPT groups.

Alma Gloria Barrera Yañez (Complutense University of Madrid, Spain), Cristina Alonso-Fernández (Universidad Autónoma de Madrid, Spain) and Baltasar Fernández-Manjón (Complutense University of Madrid, Spain) then point out that violence and discrimination against women are serious problems that affect today's society regardless of culture or social environment, and that educational and government programs addressing these gender issues are difficult to scale up, insufficient or, in some cases, non-existent. Digital resources can contribute, they argue, to address discrimination against women and different technological initiatives and are being carried out around the world. This article presents a systematic literature review of digital resources such as videogames, apps and simulations that address gender issues including violence and stereotypes.

Low student engagement and motivation in online classes are well-known issues many universities face, especially with distance education during the COVID-19 pandemic note Jamil Jasin, He Tong Ng, Indriyati Atmosukarto, Prasad Iyer, Faiezin Osman, Peng Yu Kelly Wong, Ching Yee Pua and Wean Sin Cheow (Singapore Institute of Technology, Singapore) in the following article. This paper details an automated Question-Answering chatbot system trained in synchronous communication

and instructor immediacy techniques to determine its suitability and effectiveness in attending to students undergoing an online Chemistry course.

The next paper is by Hua Tian and Jie Chen (Xinyang Normal University, China). The importance of university students' electronic health (eHealth) literacy has been established in the literature, yet the association with computer skills is absent. In this study, a total of 5,672 university students were recruited from Xinyang University. Data were collected from an online questionnaire, including the Chinese eHealth Literacy Scale (C-eHEALS), online health information and a computer skills questionnaire.

Hind Alotaibi and Dania Salamah (King Saud University, Riyadh, Saudi Arabia) then point out that utilizing translation technologies, such as computer-aided translation tools, online dictionaries, and parallel corpora, has become integral to the professional practice of translation, but that further research is necessary to investigate the effect of these technologies on translation quality and translator performance. Their study was to assess the impact of mobile translation apps on the performance of trainee translators. The results highlight the importance of integrating translation apps in translation training classrooms to enhance students' translation competence.

The under-utilization of e-learning among university lecturers is an important issue that needs to be resolved, say Puong Koh Hii (UCSI University – Sarawak Campus, Malaysia), Chin Fei Goh and Owee Kowang Tan (Universiti Teknologi Malaysia, Johor Bahru, Malaysia), Rasli Amran (INTI International University, Nilai, Malaysia) and Choon Hee Ong (Universiti Teknologi Malaysia, Johor Bahru, Malaysia). Their study aimed to formulate an e-learning post-adoption model for Malaysian universities. This study extends the information systems success model into the e-learning post-adoption context. In particular, it offers insights concerning the dependencies among the factors in the model within the Malaysian university context.

Sunghwan Hwang (Chuncheon National University of Education, South Korea), Eunhye Flavin (Stonehill College, North Easton, USA) and Ji-Eun Lee (Oakland University, Rochester, USA) then present a study that performed a scoping review of the literature concerning the use of technology in mathematics education published between January 1981 and March 2022 to explore research trends. After the defined filtering process, they retrieved 2,433 articles from Web of Science, ERIC, and PsycInfo databases and employed Latent Dirichlet Allocation (LDA) topic modelling to extract key terms and topics from the selected articles.

The last article for this issue is from Donggil Song (Texas A&M University, USA) and Krista Glazewski (Indiana University, USA). Focusing on the sustainability and affordability when using information technology, the mechanism of student-generated questioning (SGQ) and scaffolding for SGQ in reading comprehension tasks were explored within the self-regulated learning framework using mobile phones in this study. Seventy- four 7th graders from a primary school in Kenya participated.

Articles in this month's issue came from researchers in: Australia, Azerbaijan, Canada, Chile, China, Egypt, Ethiopia, Finland, France, Ghana, Greece, Hong Kong, India, Iran, Iraq, Israel, Kuwait, Malaysia, Mexico, Philippines, Saudi Arabia, Singapore, Spain, Sweden, Türkiye, UAE, USA, Vietnam.

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