Editorial for EAIT issue 9, 2023

Arthur Tatnall[1]

Education and Information Technologies (EAIT) is a research journal that covers the complex relationships between Information and Communication Technologies and all levels of 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 (2022) of 5.5. EAIT is now in the top quartile (Q1) of journals in Education & Educational Research.

The authors of this first article, Serkan Şendağ and İlker Yakin (Mersin University, Türkiye) and Nuray Gedik (Eskişehir Technical University, Türkiye) point out that teaching programming skills has attracted a great deal of attention for more than a decade. One potential reason behind this, they note, is that the explicit teaching of computer programming can improve higher-order thinking skills, such as creativity. Their study applied an experimental design with a sample of 34 preservice IT teachers to examine whether creative programming activities or explicit teaching of programming play a significant role in promoting creative thinking skills.

Kaan Dilmen, Serhat Bahadır Kert and Tuba Uğraş (Yildiz Technical University, Istanbul, Turkey) then point out that programming education is an important educational process that enables the development of children's problem solving and algorithmic thinking skills. It is known that children frequently encounter syntax problems in coding activities. Block-based programming software has been developed to eliminate this difficulty in the learning process. In this article the usability of code.org block-based coding environment was analysed.

The next study, from Leonard Nungu (University of Rwanda-College of Education, Rukara Campus, Kigali, Rwanda), Evode Mukama (University of Rwanda-College of Education, Rukara Campus, Kigali, Rwanda, and Commonwealth of Learning,

✉ Arthur Tatnall
Arthur.Tatnall@vu.edu.au

1   Victoria University, Melbourne, VIC, Australia

Vancouver, Canada) and Ezechiel Nsabayezu (University of Rwanda-College of Education, Rukara Campus, Kigali, Rwanda) investigates how online collaboration can support the learning of science, technology, engineering, and mathematics (STEM) in higher education.

Qiang Li, Zexue Liu, Peng Wang, Jingjing Wang and Tian Luo (Shenyang Aerospace University, China) then present a study that evaluates the impact of art programming education on college art students using computational thinking (CT) and design thinking (DT) methods of thinking to identify the relationship between these. They point out that CT is commonly used in science and technology fields such as computer science and mathematics, whereas DT is more commonly used in the design field. The findings of this study confirm the efficacy of programming in improving students' abilities in DT and CT.

In the twenty-first century, education is technology driven remark Daniella Maria Colaco (Goa University, India) and Delia Antao (Nirmala Institute of Education, Goa, India). Pre-service teachers are the future educators and lesson planning is an integral part of the curriculum of a pre-service teacher. Though at present everything is being digitalized and paperless, it has been seen that lesson plans are still being handwritten in the traditional way. This study aims at analysing the benefits of Google Docs in writing lesson plans.

Despite the growing interest in the use of Twitter in higher education, its effects on aspects such as student engagement and learning continue to yield unclear and even contradictory results, argues Albert Llausàs (University of Girona, Spain), and the combination of evaluative methodologies for these different impacts contributes to confusion and bias. The aim of this study was to analyse whether the use Twitter to share and discuss current news produces engagement and its effects on learning by university students.

Attila Kovari (Eszterházy Károly Catholic University, Eger, Hungary, Obuda University, Budapest, Hungary, and John Von Neumann University, Kecskemét, Hungary) and Jozsef Katona (University of Dunaujvaros, Hungary and Obuda University, Budapest, Hungary) point out that negative attitudes and perceptions on programming impair the effectiveness of learning programming skills. In their study the attitude related to programming, problem solving, and self-views on importance of IT/programming knowledge was assessed at the beginning and at the end of a software development course.

A paper by Mary Luz Mouronte-Lopez (Higher Polytechnic School of Universidad Francisco de Vitoria, Madrid, Spain), Juana Savall Ceres (Universidad Francisco de Vitoria, Madrid, Spain) and Aina Mora Columbrans (Higher Polytechnic School of Universidad Francisco de Vitoria, Madrid, Spain) applies Information and Communication Technologies as well as data analysis to gain a better understanding of the existing perception on the education system. Tweets were downloaded and processed, examining the most frequently used words, and estimating similarities between terms. They detected that a predominantly negative perception of the education system exists in most of the analysed countries.

Ezechiel Nsabayezu, Aloys Iyamuremye and Agnes Mbonyiryivuze, Francois Niyongabo Niyonzima and Janvier Mukiza (University of Rwanda-College of Education, Rwanda) write about students' learning of organic chemistry. Their study

examines the impact of digital-based formative assessment on students' learning of organic chemistry. In this study, students in senior year five secondary school level, or advanced secondary level who study in a combination with chemistry as one of the major subjects were targeted. A slow internet connection and a lack of computers were among the difficulties noted.

Theatrical performance constitutes a complicated way for students to express and to communicate with each other, since it targets both various artistic and educational goals point out Konstantinos Mastrothanasis (University of the Aegean, Greece), Konstantinos Zervoudakis (Technical University of Crete, Greece), Maria Kladaki (University of the Aegean, Greece) and Stelios Tsafarakis (Technical University of Crete, Greece). They note that even though it constitutes a top moment of students' expression, several students do not feel comfortable when participating in such cultural activities, as performance anxiety, a negative emotional experience stemming from the public audience exposure, affects them. Their research aimed to apply and evaluate a student segmentation technique with the help of bio-inspired computational intelligence, for identifying high levels of performance anxiety in schoolchildren.

Embodied Learning (EL) technologies are now used in educational research as an emerging technology that has the potential to influence the function of the brain to drive learning, especially by integrating the physical body into the learning process. This reported research, by Panagiotis Kosmas (Center for the Advancement of Research and Development in Educational Technology, Nicosia, Cyprus, and Cyprus University of Technology, Limassol, Cyprus and University of Nicosia, Cyprus) and Panayiotis Zaphiris (Cyprus University of Technology, Limassol, Cyprus) examines EL in different learning contexts and circumstances to see how it can improve the overall performance of students in real classroom settings.

Despite the extensive coverage in the literature, limited attention has been paid to the investigation of technostress among academicians who work under special occupational circumstances, and might have different psychological states due to those conditions, say Zuheir N. Khlaif, Fakher Khalili and Saida Afouneh (AN-Najah National University, Nablus, West Bank, Palestine) and Ahmed Tlili (AN-Najah National University, Nablus, West Bank, Palestine, and Beijing Normal University, China) in their article. Their study examined the level and factorial structure of technostress among 573 Palestinian academicians who worked in an occupied country, and with the addition of the COVID-19 pandemic.

Emmanuel Fokides and Eugenia Kilintari (University of the Aegean, Rhodes, Greece) point out that holography is an emerging technology with interesting educational potential. Although the cost of devices able to display holograms is significant, there are alternative methods for producing pseudo-holograms with far less cost, such as 3D LED fan displays. They implemented a project in which they contrasted the learning outcomes produced by their use with that of 3D models presented using computers. Their data analyses demonstrated that students' performance was better in the pseudo-holograms group.

The involvement of Augmented Reality (AR) in science learning has marked a significant change by transforming science learning into an exciting activity write Valarmathie Gopalan (Xiamen University Malaysia), Juliana Aida Abu Bakar and Abdul Nasir Zulkifi (Universiti Utara Malaysia) in the next article. As the extent to

which AR is being implemented in science learning and its critical success factors is unclear, their reported study aimed to determine to what extent AR has been implemented, and to identify critical success factors of AR for science learning.

Flexible education is considered the primary function of e-learning, however, empirical evidence during the COVID-19 pandemic has also demonstrated that students may seek emotional comforts in e-learning to alleviate their negative emotions note Shuang He and Shouwen Jiang (Chongqing University, China), Ruilin Zhu (Lancaster University Management School, UK) and Xuan Hu (Chongqing University, China). Their study aims to provide a holistic view of the antecedents of college students' e-learning acceptance by integrating social support theory with the technology acceptance model.

Julio Cesar Ramos and Alexandre L'Erario (UTFPR- Federal University of Technology – Parana, Brazil), Marcio Mendonc (Federal University of Technology – Parana, Brazil), Jose Augusto Fabri and Rodrigo Henrique Cunha Palacios (UTFPR- Federal University of Technology – Parana, Brazil) contributed the next article. They note that freshman student's perspective on the activities performed in a data centre by the network analyst is complex and intricate, with activities that include the configuration of equipment and the connection between network devices. They write how they applied an abstraction set to mitigate these issues for first-year students and created the Network Analyst Board Game.

In the education sector, there is a rapid increase in using online teaching and learning scenarios, and making these scenarios more effective is the main purpose of a study by Jaiteg Singh and Resham Arya (Chitkara University, Rajpura, Punjab, India). Their primary focus was to find out the relationship between a teacher's personality and their liking for online teaching. To conduct the study, a framework was proposed with a mixed design of self-reported data (emotions and personality) and physiological responses of a teacher. The results showed that teachers with a high level of agreeableness, conscientiousness, and openness personality traits are more comfortable with online teaching as compared to extraversion and neuroticism traits.

Learning analytics (LA) is a significant field of study to examine and identify difficulties the novice programmers face while learning how to program, say Uzma Omer (University of Education, Lahore, Pakistan), Rabia Tehseen (University of Central Punjab, Lahore, Pakistan), Muhammad Shoaib Farooq (University of Management and Technology, Lahore, Pakistan), Adnan Abid (University of Management and Technology, Lahore, Pakistan, and Virtual University of Pakistan, Lahore, Pakistan). Their work reviews learning analytics research for initial level programming courses by exploring different types and sources of data used for LA, and evaluating some pertinent facets of reporting, prediction, intervention, and refinements exhibited in literature.

Cansel Kadıoğlu-Akbulut (Tokat Gaziosmanpasa University, Türkiye), Ayla Cetin-Dindar (Bartin University, Türkiye), Burçin Acar-Şeşen (Istanbul University-Cerrahpasa, Türkiye) and Sevda Küçük (Ataturk University, Türkiye) write that designing effective and efficient learning environments by integrating recent educational technologies into the teaching process has become an important goal of education for nearly two decades, but that a higher level of technology knowledge does not

guarantee the development of TPACK. Their study investigated to what extent ICT usage categories predict preservice science teachers' TPACK.

Due to the inherently dangerous environment in the maritime industry, it is an essential aspect for people in the industry to have a high level of knowledge, skill and competence, point out Ismail Kandemir and Kadir Cicek (Istanbul Technical University, Turkey). Maritime education and training should be structured as a unique instructional design model that will ensure the acquisition of the required knowledge, skills, and competencies at the highest level. They develop a new approach using an axiomatic design methodology extended with fuzzy set theory to define the suitable instructional design model for maritime education and training.

Learners in asynchronous discussion forums are inundated with diverse options when it comes to interaction say Ömer Demir (Hakkari University, Turkey), Murat Cinar (Borsa Istanbul Vocational and Technical Anatolian High School Republic of Turkey Ministry of National Education, Turkey) and Sinan Keskin (Van Yuzuncu Yil University, Turkey) in their article. The modelling of discussion activities based on both cognitive and affective indicators constitutes this study's unique aspect. In the study, the impact of social anxiety and participation styles on active participation in discussions were investigated using three-factor social anxiety and four-factor participation style models. In addition, the impact of active participation on academic achievement was also examined.

Innovations in higher music education are a way of reasonable use of information and communication technologies that increase interactivity and facilitate classroom learning, and the next study, by Xiaomin Yin (Xinjiang Normal University, Wulumuqi, China) evaluates the effectiveness of introducing an application aimed at improving the skill of sheet music reading. Using a mobile app to enhance the perception of music education is a relevant innovation in many educational institutions. The research hypothesis was that a three-month premium subscription to Complete Music Reading Trainer would improve student performance in the Multiple-Choice Questions test from AP Music Theory Practice Exam.

Students with disabilities suffer from various problems in entering the labour market and need to receive career guidance services argue Sadaf Khalijian (Ferdowsi University of Mashhad, Iran), Nooshin Pordelan (Islamic Azad University, Tehran, Iran), Shekoofeh Khamsehzadeh (Islamic Azad University, Tehran, Iran), Azadeh Askari (Shahid Beheshti University, Tehran, Iran) and Hamid Heydari (University of Isfahan, Iran). This study was carried out in two parts. In the qualitative part challenges and problems of students in receiving career guidance and counselling were investigated, and in the quantitative part, the effect of online career counselling on decreasing the challenges in receiving career counselling services by students with disabilities was studied.

The next article comes from a large group of researchers from Rwanda: Pascasie Nyirahabimana (University of Rwanda College of Education, and Rwanda Quality Basic Education for Human Capital Development Project), and African Center of Excellence for Innovative Teaching and Learning Mathematics and Science, Rwanda), Jean Baptiste Nkurunziza, Concilie Mukamwambali and Jean Claude Dushimimana (University of RwandaCollege of Education, and Rwanda Quality Basic Education for Human Capital Development Project), Eugenie Uwamariya (Rwanda Quality Basic

Education for Human Capital Development Project, and Rwanda Basic Education Board), Jane Batamuliza, Celine Byukusenge, Ezechiel Nsabayezu, Jean Nepomuscene Twahirwa, Aloys Iyamuremye, Agnes Mbonyiryivuze and Fidele Ukobizaba (University of Rwanda College of Education, and Rwanda Quality Basic Education for Human Capital Development Project, and African Center of Excellence for Innovative Teaching and Learning Mathematics and Science, Rwanda) and Kizito Ndihokubwayo (University of RwandaCollege of Education, and Rwanda Quality Basic Education for Human Capital Development Project). They point out that students understand maths and science lessons better when innovative teaching resources are used, and to implement a variety of teaching strategies and methods, teachers must be aware of and familiar with various innovative and effective pedagogical knowledge and skills. The purpose of the study was to assess the extent to which upper primary and lower secondary school mathematics and science teachers use modernized and innovative teaching tools after nine months of professional development.

A deep understanding of the learning level of online learners is a critical factor in promoting the success of online learning point out Xiuling He and Jing Fang (Central China Normal University, Wuhan City, China), Hercy N. H. Cheng (Taipei Medical University, Taiwan), Qibin Men and Yangyang Li Central China Normal University, Wuhan City, China). They note that using knowledge structures as a way to understand learning can help analyse online students' learning levels, and their study used concept maps and clustering analysis to investigate online learners' knowledge structures in a flipped classroom's online learning environment.

The study of robotics has become a popular course among many educational programs, especially as a technical elective writes Fernando Gonzalez (Florida Gulf Coast University, USA). A significant part of this sort of course involves having the students learn how to program the movement of a robotic arm by controlling the velocity of its individual joint motors, a topic referred to as joint programming. They must learn how to develop algorithms to move the end effector of the arm by controlling the instantaneous velocity or some similar aspect, of each joint motor. This study found that by simulating the process of spray painting on a virtual canvas, the correctness of a differential movement algorithm may be accessed by observing the resulting paint on the canvas as opposed to observing the movement of the arm.

Computational thinking (CT) skills of pre-service teachers have been explored extensively, but the effectiveness of CT training has yielded mixed results in previous studies. A study by Hao-Yue Jin and Maria Cutumisu (University of Alberta, Canada) developed an online CT training environment as well as comparing and contrasting the predictive capacity of four supervised machine learning algorithms in classifying the CT skills of pre-service teachers using log data and survey data.

Siti Nazleen Abdul Rabu and Siti Khadijah Mohamad (Universiti Sains Malaysia), Samer A. B. Awwad (Abdulrahman Bin Faisal University, Kingdom of Saudi Arabia), Nurul Halimatul Asmak Ismail (Princess Nourah Bint Abdulrahman University, Kingdom of Saudi Arabia) and Kang Seua Yeen (Universiti Sains Malaysia) then write on inquiry-based learning, which is a learning-and-teaching approach that allows students to gather and build knowledge of scientific facts by asking questions. To understand the impact of such an instruction, this study examines the effectiveness of Video Inquiry-based Cooperative Learning (VICL) and Video Inquiry-based

Learning (VIL) on students' performance and motivation in learning physics, particularly the "Forces and Angles" topic.

Zheng Zhong, Jun Wang, Yaxin Deng, Shuaizhen Jin, Sijia Feng and Ruining Li (Central China Normal University (CCNU), Wuhan, China) then point out that many studies have explored the effect of grouping and task distribution strategies in collaborative learning in the conventional way, for example, grouping based on student's learning style, gender diversity, and motivation, but few studies have investigated the impact of heterogeneous grouping with mixed gender and ability factors and the distribution of roles and tasks on members' engagement and collaboration in the IVE environment. Their study proposed external scripts that were composed of grouping strategies and distribution strategies.

A study by Saliha Toscu (Çankaya University, Ankara, Turkey) explores the nature and extent of classroom interaction in online English as a Foreign Language classes (EFL) at the university level. Based on an exploratory research design, the study involved the analysis of recordings of seven visits to online EFL classes given by different instructors with approximately 30 language learners in each class. Findings provided an understanding of the interaction patterns in the online classes, by showing that there was more teacher-student interaction in online classes compared to student-student interaction, and the classes involved more sustained teacher speech, whereas the students' speech mostly encompassed ultra-minimal utterance patterns.

Although there has been a growing interest in the use and adoption of augmented reality (AR) technology in educational institutions recently, there is limited research dealing with on pre-service teachers' technical and pedagogical preparation for AR technology say Mustafa Sat, Fatih Ilhan and Erman Yukselturk (Kirikkale University, Turkey). This study investigated teacher candidates' perceptions concerning their learning and immersive experiences of different AR tools and compared these tools on seven dimensions: intention to use, multimedia, satisfaction, usefulness, self-efficacy, effectiveness, and system quality.

Together with the developments in the online learning field, Massive Open Online Courses (MOOCs) have attracted significant attention both in developed and developing countries in recent years, and Berkan Celik (Van Yuzuncu Yil University, Turkey) and Kursat Cagiltay (Sabanci University, Istanbul, Turkey and Azerbaijan State University of Economics (UNEC), Baku, Azerbaijan) write on this in the next article. Although online learning readiness (OLR) of learners has been investigated comprehensively in online learning contexts, and several instruments have been developed to measure OLR, this variable has been undervalued in MOOC contexts, and little is known about OLR in MOOCs. The purpose of their reported study was to investigate and conceptualize OLR in MOOCs.

The aim of the next study, by Jingxuan Bi (Dalian Medical University, China) and Hossein Bigdeli and Siros Izadpanah (Islamic Azad University, Zanjan, Iran) was to investigate the effect of the flipped classroom (FL) on reflective thinking (RT), academic self-efficacy (ASE), and achievement motivation (AM) in language learners at the intermediate level. They recruited 429 participants through multiple-stage cluster sampling. Participants were randomly divided into a control group and an experimental group, and three questionnaires were used to collect data. Question-

naires were the Reflective Thinking Scale, the Foreign Language self-efficacy scale, and the Hermans (1970) Achievement Motivation Scale.

Computer Supported Collaborative Learning (CSCL) is a learning strategy that emphasizes the importance of interpersonal relationships in knowledge building and the use of technology to improve the interaction between members and the work in groups. Conflicts play an important role to improve group CSCL effectiveness say Jose Torres-Jimenez (UNIDAD TAMAULIPAS, CINVESTAV, Mexico), German Lescano (National University of Santiago del Estero, Argentina), Carlos Lara-Alvarez and Hugo Mitre-Hernandez (Parque Quantum: Ciudad del Conocimiento, Zacatecas, Mexico) who note that they can be decreased, increased, or ignored.

Artificially intelligent robots as teachers (AI teachers) have attracted extensive attention due to their potential to relieve the challenge of global teacher shortage and realise universal elementary education by 2030, point out Siyu Chen (South China Normal University, Guangzhou, China), Shiying Qiu (Yuelanshan Experimental Primary School, Shenzhen, China), Haoran Li (Longhua Guanlan Second Primary School, Shenzhen, Guangdong Province, China), Junhua Zhang (Futian No.2 Experimental School, Shenzhen, Guangdong Province, China), Xiaoqi Wu (Longhua Central Primary School, Shenzhen, China), Wenjie Zeng (South China Normal University, Guangzhou, China) and Fuquan Huang (South China Normal University, Guangzhou, China). Despite mass production of service robots and discussions about their educational applications, the study of full-fledged AI teachers and children's attitudes towards them is quite preliminary, and they report a new AI teacher and an integrated model to assess how pupils accept and use it.

The purpose of the next reported research was to investigate students' behavioural intentions toward a digital learning platform. The authors were Noawanit Songkram (University, Bangkok, Thailand, and Chulalongkorn University, Bangkok, Thailand), Suparoek Chootongchai and Hathaiphat Osuwan (University, Bangkok, Thailand), Yootthana Chuppunnarat (Chulalongkorn University, Bangkok, Thailand) and Nutthakorn Songkram (King Mongkut's Institute of Technology Lakrabang, Bangkok, Thailand). In the framework of Thai education, an empirical study evaluated and applied the adoption model. According to the findings, the best facilitator for students' recognition of using digital learning platforms is attitude (ATT), followed by internal factors such as perceived usefulness (PU) and perceived ease of use (PEU).

Playing games can be one of the most important activities for children to improve their social problem-solving (SPS) skills note Eyüp Yılmaz (Aydın Adnan Menderes University, Turkey) and Mark D. Griffiths (Nottingham Trent University, UK). They point out that studies that have examined the empirical evidence of playing games concerning children's SPS skills have tended to focus on the function of a single game. An overview study was needed to generalize the data by the game content and production purpose. The results showed that experimental designs were the most utilized, and more studies using active control groups are needed to compare the effectiveness of the game playing.

Research by Xiaoli He and Yanfang Li (Beijing Normal University, People's Republic of China) aimed to explore the online English learning effects among preschoolers with different cognitive characteristics influenced by different learning methods and the interaction between cognitive characteristics and learning methods.

Data are collected by using two 3×3 between-subject experiments. Wherein, 248 participants based on Embedded Figure Test were divided into Field Independence (FID), Field Mixed (FM), and Field Dependence (FM) in Study 1, while 247 participants based on the Go-No-Go task were divided into Higher self-control (HSC), Middle self-control (MSC), Lower self-control (LSC) in Study 2.

Educational communities have expanded 3D printing in education, emphasizing the educational value of "creation" to develop the competencies required in the future comment Dongkuk Lee (Cheongun Middle School, Republic of Korea) and Hyuksoo Kwon (Kongju National University, Republic of Korea) in their article. Their study was conducted to identify the importance of this by synthesizing prior studies on the effect of 3D printing in education.

Tyler Balon (University of New Haven, USA) and Ibrahim (Abe) Baggili (Louisiana State University, USA) then write on cybercompetitions. They comment that over the last decade, industry and academia have worked towards raising students' interests in cybersecurity through game-like competitions to fill a shortfall of cybersecurity professionals. Rising interest in video games in combination with gamification techniques make learning fun, easy, and addictive. It is crucial that cybersecurity curricula enhance and expose cybersecurity education to a diversified student body to meet workforce demands. Their research aimed to systematize cybersecurity, access control, and programming competitions by surveying the history of these events.

The Online Periodic Table of Elements (Ptable) is a Wikipedia-linked periodic table that displays a list of chemical elements organised by atomic number, electronic configuration, and recurring chemical properties, write Ezechiel Nsabayezu, Aloys Iyamuremye and Leonard Nungu and Janvier Mukiza (University of Rwanda-College of Education, Kayonza, Rwanda), Evode Mukama (University of Rwanda-College of Education, Kayonza, Rwanda, and Commonwealth of Learning, Vancouver, Canada) and Francois Niyongabo Niyonzima (University of Rwanda-College of Education, Kayonza, Rwanda). Elements are listed in reading order, increasing in atomic number, in their most basic form. Their study sought to assess the impact of Ptable on students' understanding of trends in the properties of chemical elements.

The next study, by Fareed AL-Sayid and Gokhan Kirkil (Kadir Has University, Istanbul, Turkey) was in developing a conceptual model for predicting the non-linear relationships between human–computer interaction factors and ease of use and usefulness of collaborative web-based learning or e-learning. Ten models (logarithmic, inverse, quadratic, cubic, compound, power, s-curve, growth, exponential, and logistic) were examined as functions of effects compared to linear relationships to see which was the most appropriate, based on R^2, adjusted R^2 and SEE values.

During the COVID-19 pandemic, video materials have played crucial roles in supporting learning among children with autism spectrum disorder (ASD). The following study, by Rujing Zhang and Guifang Cheng (Liaocheng University, People's Republic of China) and Lei Wu (Shandong Normal University, Jinan, People's Republic of China), aimed to explore the effects of the instructor's facial expressions in video lectures on attention and motor learning in children with ASD versus typically developing (TD) children. Results revealed that greater attention to video lectures predicted better performance in children with ASD, and an instructor should be encouraged to show a happy expression to promote learning.

Pınar Dinçer and Handan Yavuz (Anadolu University, Eskişehir, Turkey) note that as educational activities have been moved to an online setting due to restrictions to control the spread of the Corona Virus, the realm of education has been subject to unprecedented changes. This research aimed to investigate the perspectives of freshman students in English as a Foreign Language (EFL), and their instructors at Anadolu University regarding the Emergency Remote Teaching (ERT) practice.

The use of social media in higher education has been demonstrated in a number of studies to be an attractive and contemporary method of teaching and learning, say Eva Perez (Trinity College Dublin, Dublin, Ireland), Stefania Manca (National Research Council of Italy, Genova, Italy), Rosaura FernándezPascual (University of Granada, Spain) and Conor Mc Guckin (Trinity College Dublin, Dublin, Ireland). This study provides a systematic literature review using bibliometric analysis techniques and content analysis to provide a map of research produced between 2009 and 2021. According to the content analysis, technology acceptance theories and learning theories are the most commonly used reference theories.

Caini Song (Hunan Normal University, Changsha, China), Libo Yao (Minimally Invasive Surgery Center of The First Hospital of Changsha, China), Huisu Chen and Lihua Liu (Hunan Normal University, Changsha, China) set out to analyse the research hotspots and trends of nursing scenario simulation teaching at home and abroad, and to provide reference for future nursing talent education. The research focus on China was the application of nursing scenario simulation teaching. Their research highlighted the quality evaluation, reliability and influence of nursing scenario simulation teaching.

With the development of synchronous videoconferencing technology, research on the professional practices of synchronous online teaching has been growing at an exponential rate remark, but little is known about synchronous online teachers' use of motivational strategies, despite the important role of teachers in fostering student motivation, say Jaeho Jeon (Indiana University Bloomington, USA) and Seongyong Lee (Hannam University, Republic of Korea). This study examined how synchronous online teachers utilized motivational strategies and explored the influence of the synchronous online environment on the use of motivational strategies.

The next study, by Muhamadu Awal Kindzeka Wirajing and Tii N. Nchofoung (University of Dschang, Cameroon), investigates the role of education in modulating the effect of ICT on governance in 53 African countries between 2002 and 2020. The Two-Step System Generalized Method of Moment (GMM) strategy is adopted to address the potential endogeneity problem. Governance is computed as a composite index that encompasses the six indicators of the Worldwide Governance Indicators (Control of corruption, rule of law, political stability, regulatory quality, government effectiveness, and voice and accountability).

Students become more actively involved in their studies when teachers integrate ICT into their lessons argue Ernest Afari and Fuad Ali Ahmed Eksail (University of Bahrain, Kingdom of Bahrain), Myint Swe Khine Curtin University, Perth, Australia) and Shaima Ali Alaam (University of Bahrain, Kingdom of Bahrain). Since computer self-efficacy is positively related to the integration of technology in education, improving pre-service teachers' computer self-efficacy could increase their intention to use technology, and their study explores the association between computer

self-efficacy (basic technology skills, advanced technology skills, and technology for pedagogy) and pre-service teachers' intentions to use technology (traditional use of technology and constructivist use of technology).

Accompanied with the development of storage and processing capacity of modern technology, educational data increases sharply, but it is difficult for educational researchers to derive useful information from much educational data, write Yawen Chen and Linbo Zhai (Shandong Normal University, China). Therefore, educational data mining techniques are important for development of the modern education field. In this paper, three different types of task-oriented educational data are employed to investigate the performance of machine learning methods in different application scenarios.

Distance learning frees the learning process from spatial constraints point out Hei-Chia Wang (National Cheng Kung University, Tainan City, Taiwan) Martinus Maslim (National Cheng Kung University, Tainan City, Taiwan, and Universitas Atma Jaya Yogyakarta, Indonesia) and Chia-Hao Kan (National Cheng Kung University, Tainan City, Taiwan). Each mode of distance learning, including synchronous and asynchronous learning, has disadvantages. In synchronous learning, students have network bandwidth and noise concerns, but in asynchronous learning, they have fewer opportunities for engagement, such as asking questions. As an aid to distance education in their study they generate multiple-choice questions for students to answer and teachers to easily correct based on asynchronous learning content.

Ibrahim Arpaci (Bandirma Onyedi Eylul University, Turkey), Mohamad Noorman Masrek (Universiti Teknologi MARA, Selangor, Malaysia), Mohammed A. Al-Sharafi (Universiti Teknologi Malaysia, Johor, Malaysia, and Sunway University, Selangor, Malaysia) and Mostafa Al-Emran (The British University in Dubai, UAE, and Dijlah University College, Baghdad, Iraq) next write on cloud computing. They say that the association between information management and cloud computing has been supported substantially in the existing literature, but that little is known about the role of national culture in this relationship. Their study aimed to investigate the role of national culture in the relationship between information management and the adoption of cloud computing.

Recent technologies have extended opportunities for online dance learning by overcoming the limitations of space and time, say Jiwon Kang and Chaewon Kang (Sungkyunkwan University, Seoul, Korea), Jeewoo Yoon, Houggeun Ji and Taihu Li (Sungkyunkwan University, Seoul, Korea, and Raon Data, Seoul, Korea), Hyunmi Moon (BESIS, Seoul, Korea), Minsam Ko (Hanyang University ERICA, Ansan, Korea), and Jinyoung Han (Sungkyunkwan University, Seoul, Korea). Dance teachers, however, report that student–teacher interaction is more likely to be challenging in a distant and asynchronous learning environment than in a conventional dance class, such as a dance studio. To address this issue, they introduce DancingInside, an online dance learning system that encourages a beginner to learn dance by providing timely and sufficient feedback based on Teacher-AI cooperation.

Technology integration in second language acquisition (SLA) has become prevalent and prominent today, remark Long Quoc Nguyen and Ha Van Le (FPT University, Ho Chi Minh City, Vietnam), and Quizlet has emerged as a vocabulary learning tool integrated not only into computers (CALL) but also into mobile phones (MALL).

Over the years its effectiveness has been proved by several quasi-experimental studies, but such research is still limited. Whether learners' individual differences have any impact on Quizlet effectiveness in promoting lexical gains remains unknown, and their study was conducted with 68 Vietnamese undergraduates, following a pretest-post-test design together with semi-structured interviews.

Early dropout of students is one of the bigger problems that universities face currently argue Juan Andrés Talamás-Carvajal and Héctor G. Ceballos (Tecnológico de Monterrey, Mexico). Several machine learning techniques have been used for detecting students at risk of dropout. By using sociodemographic data and qualifications of the previous level, the accuracy of these predictive models is good enough for implementing retention programs. To provide more accurate models, they propose use of a stacking ensemble technique to obtain an improved combined dropout model, while using relatively few variables.

Yao Lu, Ke-Ru Li, Zhuo Sun, Ning Ma and Yi-Fan Sun (Beijing Normal University, People's Republic of China) then point out that collaborative problem-solving (CPS) learning is increasingly valued for its role in promoting higher-order thinking of learners. But despite the widespread application of role scripts in CPS, little is known about the mechanisms by which roles influence learners' cognition and the impact of goal orientation on roles. In this study, they designed role scripts and goal-orientation scripts to facilitate CPS.

Children inevitably start using smart devices from the first year of their lives, say Gülcan Öztürk (Balıkesir University, Turkey) and Feyza Şahin Sarıtaş (Edremit Uğur Schools, Balıkesir, Turkey), and parents should have knowledge and awareness of the conscious use of applications on smart devices. For this reason, a scale to measure parents' knowledge and awareness of the conscious use of applications on smart devices has become necessary. In their research they explored how parents' knowledge and awareness of the conscious use of applications on smart devices could be measured using a valid and reliable scale.

While Massive Online Open Courses (MOOCs) have seen a surge in enrolments in higher education around the world especially during the COVID-19 pandemic, it is unclear if learners from economically disadvantaged regions (EDR) are also able to capitalize on them, point out Long Ma (Zhejiang Gongshang University, Hangzhou, China) and Chei Sian Lee (Nanyang Technological University, Singapore). The objective of their research was to address the pedagogical challenge by investigating approaches to leverage MOOCs for learners in EDR.

Menglin Jiang, Apple H. C. Lam and Dickson K. W. Chiu (The University of Hong Kong, Pokfulam, Hong Kong) and Kevin K. W. Ho (University of Tsukuba, Tokyo, Japan) next write about social media and business education. Considering the potential of social media to revolutionize the whole spectrum of teaching and learning, their study examines social media usage of business school students of different majors and their perception of social media as learning aids through a quantitative online survey guided by the 5E instructional model, with 423 valid responses from students majoring in accounting, finance, and economics.

Different instructional strategies have been used to assist elementary school students in improving computational thinking (CT) skills and student engagement (SE) in unplugged programming activities write Qi Li and Qiang Jiang (Northeast Normal

University, Jilin, China), Jyh-Chong Liang (National Taiwan Normal University, Taipei, Taiwan), Weiyan Xiong (Lingnan University, Hong Kong, China) Yu Liang and Wei Zhao (Northeast Normal University, Jilin, China). Their paper explores how the interactive strategies of unplugged programming affect CT skills and SE.

The last article, contributed by Rakha Ramadhana A.B. and Hsiu-Ling Chen (National Taiwan University of Science and Technology, Taipei, Taiwan) discusses the effect of using a commercial off-the-shelf immersive virtual reality game on engineering students' reaction time, hand-eye coordination, and spatial skills. Participants were tasked to play the game for 30 min during the intervention in one day. After the intervention, they were interviewed to explore more about their experiences.

Articles in this month's issue came from researchers in: Australia, Azerbaijan, Brazil, Cameroon, Canada, China, Cyprus, Greece, Hong Kong, Hungary, India, Indonesia, Iran, Iraq, Ireland, Italy, Japan, Kingdom of Bahrain, Kingdom of Saudi Arabia, Malaysia, Mexico, Palestine, Republic of Korea, Rwanda, Singapore, Spain, Taiwan, Thailand, Turkey, UK, USA, Vietnam.

Arthur Tatnall
Editor-in-Chief