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Education and Information Technologies (EAIT) is a research journal that covers the complex relationships between Information and Communication Technologies at 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 first study, reported by Elba Gutiérrez-Santiuste and Maximiliano Ritacco-Real (University of Granada, Spain) analyses intercultural communicative competence. This is understood as the individual's ability to effectively, and appropriately develop communication and behaviour when interacting in an intercultural context. In this study, the Behavioural, Affective and Cognitive Dimensions, and their sub–dimensions, are considered by using videoconferencing as a tool for telecollaboration in Higher Education.

The purpose of the next study was to deploy digital technology in ways that would help mathematics teachers in a remote rural Taiwanese middle school to construct a differentiated classroom aligned with students' needs. It comes from Chung-Kai Huang (National Taipei University of Business, Taiwan). The research developed 7th grade mathematics course modules that could meet quality educational requirements and equal opportunities for customised learning by empowering teachers through instructional coaching. Analysis of the findings revealed that instructional coaching contributes to teacher engagement and transformation for implementing differentiated strategies.

ChatGPT is getting lots of interest, and Da Yan (Xinyang Agriculture and Forestry University, Xinyang, China) writes on learners in a L2 writing practicum. The

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researcher claims that technology-enhanced language learning has exerted positive effects on the performance and engagement of L2 learners, and since the advent of tools based on artificial intelligence, educators have made major strides in applying state-of-the-art technologies to writing classrooms. This study applied ChatGPT's text generation feature in a one-week L2 writing practicum.

The next reported study, from Fethi A. Inan and Doris U. Bolliger (Texas Tech University, Lubbock, USA) aimed to group instructors based on their patterns of implementing activities in their online courses, to examine factors that influenced differences within clusters, and to explore whether cluster membership affected instructor satisfaction. Of the covariates examined, constructivist pedagogical beliefs and gender were the significant predictors of cluster membership.

Betül Tonbuloğlu and İsmail Tonbuloğlu (Yildiz Technical University, Istanbul, Turkey) next offer discussion of blended learning research over the last sixty years. Although blended learning applications have attracted increasing attention particularly in recent years with the effect of the pandemic, they have been in use for quite a long time. This article presents a systematic analysis of blended learning studies around the world and reveal general research trends by bibliometric method. It involved investigation of 4,059 publications searched in the Scopus database between the years 1965—2022.

The aim of the next study, by Maria Baltzaki and Elissavet Chlapana (University of Crete, Greece) was to compare the impact of two different didactic techniques: blended teaching and teaching by the exclusive use of ICT, on preschool children's vocabulary development. The study suggests that appropriate scaffolding provided in practices using ICT is a teaching recommendation that needs to be adopted to reach the goal of effective vocabulary instruction.

Peter Bryant (University of Sydney Business School, Australia) then notes that designing strategic pedagogical change through the lens of a student experience that is yet to be experienced, offers a critical frame for embedding the impacts of transition, uncertainty, belonging and the complexity of the student journey into the code-sign of teaching and learning. A digital storytelling approach extends the notion of the student experience beyond the singular and metricised descriptions common in online student satisfaction survey instruments into a rhizomatic, resonant living community that resides in the intersecting spaces of work, life, play and learning. The paper describes an ethnographic-like model of collecting and evaluating the student experience through a semi-structured digital storytelling methodology that supports both co-design and co-generative dialogue as a form of curriculum enhancement.

Knowledge and abilities with social media technologies are perceived as critical premises for human development, argue Meishu Wang, Rushi Yu and Jie Hu (Zhejiang University, Hangzhou City, China), and familiarity with different types of social media technologies has become pivotal for collaborative learning and successfully solving problems. This study examined the impact of social media technologies, compartmentalized into social media usage and students' attitudes towards social media usage, on their collaborative problem-solving (CPS) achievement by adopting the sample from the PISA 2015 dataset across 37 countries/regions.

The implementation of online teaching and assessments prompted by the current COVID-19 pandemic resulted in universities adopting the distance learning method

as the only choice to continue education delivery, say Hiruni Thathsarani, Dinushika Kaushalya Ariyananda, Chalani Jayakody, Kerthiga Manoharan, A.A.S.N Munasinghe and Nilmini Rathnayake (Sri Lanka Institute of Information Technology, Malabe, Sri Lanka). Their study's main objective was to understand the effectiveness of assessment techniques followed through distance learning in Sri Lankan management undergraduates during COVID-19.

ERP courses have been running for decades and are used in various university courses, ranging from those in business schools, information systems, and computer science and industrial engineering, points out Mahaning Indrawaty Wijaya (Bina Nusantara University, Jakarta, Indonesia) in this article's literature review of ERP teaching practice. This systematic literature review research aimed to present trend and emerging themes, and comprehensively analyses the practice of current ERP learning from all relevant publications in this decade.

The next study, from Fatmanur Ekinci and Oktay Bektaş (Erciyes University, Kayseri, Turkey), Melek Karaca (İzmir, Turkey) and Kübra Nur Yiğit (Ministry of National Education, Kayseri, Turkey), develops a scale to determine preservice science teachers' perceptions of flipped learning. The study used the survey design, a quantitative research method. For content validity, the authors created an item pool of 144 items based on the literature.

Amirmohammad Parhizkar, Golnaz Tejeddin and Toktam Khatibi (Tarbiat Modares University, Tehran, Iran) then look at prediction of student performance. Researchers are keen to predict the academic performance of students to enhance the overall productivity of educational system by effectively identifying students whose performance is below average. One of the recent issues which has been addressed by researchers is training generalisable models from different aspects such as gender, major, and geography. This universal concern has been combined with data science leading to the creation of an interdisciplinary research area called Educational Data Mining.

Whilst the use of various blended learning models preceded the COVID-19 pandemic, the abrupt shift to remote delivery served as catalyst within the sector in enhancing digital solutions to meet immediate student needs say Athanasios Hassoulas, Andreia de Almeida, Hannah West, Mohamed Abdelrazek, and Marcus J. Cofey (Cardif University, Heath Park, Cardif, UK) in the next article. In evaluating students' experiences of the various tools and approaches applied by academic staff, a survey was developed by a multidisciplinary team of educators at Cardiff University's School of Medicine exploring student perceptions of e-learning resources (ELRs), as well as student experiences of various blended learning approaches.

Next comes an article from India and is by Reena Cheruvalath (BITS Pilani- K.K. Birla Goa Campus, Sancoale, Goa, India). Universities invest in Telepresence (TP) classroom methods to ensure quality teaching and learning while reaching as many students as possible at one time. Presence in a classroom is the product of the unification of many factors, such as the organization of course content and structure, teaching content and pedagogy, the approachability of instructors, and the evaluation processes. The existing tools to measure presence focus on either one or two components or interactions and miss out on the other components of presence. This article examined 'presence' in 'telepresence' in terms of the four factors mentioned above.

Recent developments in teaching English as a Foreign Language have intensified the need for computer games, say Fengyan Gao (Shandong University, Jinaa, China) and Siros Izadpanah (Islamic Azad University, Zanjan, Iran). They note that too little attention has been paid to this issue. The results of their study showed a significant relationship between computer games experience, computer self-efficacy, creativity, and academic engagement.

Muhammad Kamarul Kabilan (Universiti Sains Malaysia, Penang, Malaysia, and Universitas Negeri Malang, East Jawa, Indonesia), Nagaletchimee Annamalai (Universiti Sains Malaysia, Penang, Malaysia) and KeeMan Chuah (Universiti Sains Malaysia, Penang, Malaysia, and Universiti Malaysia Sarawak, Samarahan, Malaysia) then write on technology for integrating gaming. They argue that literature emphasizes that gamification significantly enhances students' engagement in learning and their motivation level. The article describes a mixed-methods study that was conducted at a Malaysian public university with the aim of uncovering the practices, purposes, and challenges of integrating gamification via technology from the academics' perspective.

Technology creates various learning experiences which are context specific, say Zohre Mohammadi Zenouzagh (Islamic Azad University, Karaj, Iran, and Leiden University, Netherlands), Wilfried Admiraal (Oslo Metropolitan University, Norway) and Nadira Saab (Leiden University, Netherlands) in the next article. Their study examined the comparative potential of multimodal and text-based Computer Mediated Communication (CMC) in fostering learner autonomy, learner engagement and learner e-satisfaction as well as learner writing quality.

Peter Wulff (Heidelberg University of Education, Germany) then writes on analysis of terms. He notes that scientists use specific terms to denote concepts, objects, and phenomena, and that the terms are then connected with each other in sentences that are used in science-specific language. The reported study utilized natural language processing and network analysis to analyse linguistic properties of terms in the natural science disciplines (biology, chemistry, and physics), and computational means such as natural language processing and network analysis provide tools to analyse term networks in a principled way.

Sunanthiny Krishnan (Monash University Malaysia, Selangor, Malaysia), Ali Qais Blebil (Monash University Malaysia, Selangor, Malaysia and Al-Rafidain University College, Baghdad, Iraq), Juman Abdulelah Dujaili (Monash University Malaysia, Selangor, Malaysia and Al-Rafidain University College, Baghdad, Iraq, and Swansea University, Wales, UK), Sara Chuang and Angelina Lim (Monash University, Parkville, Australia) then write about pharmacy education. They point out that escape room games have gained considerable traction in medical and pharmacy education to promote learning, critical thinking and teamwork. They describe a pilot study in the implementation of a 60-minute, web-based hepatitis-themed escape room game within a Year 3 Pharmacotherapy unit.

How people write and create stories has been transformed in recent years by artificial intelligence (AI) in language education, and Xiaoxuan Fang (The Education University of Hong Kong, China), Davy Tsz Kit Ng (The University of Hong Kong, China), Jac Ka Lok Leung (The Hong Kong University of Science and Technology, China) and Samuel Kai Wah Chu (The University of Hong Kong, China) write about

this. Although recent studies have started to examine the roles of AI in literacy, there is a lack of systematic review to inform how it has been applied and what has been achieved in story writing, and this paper reviews the literature on the use of AI in story-writing during the last five years.

Today, with digital technologies being in every aspect of our lives, cyberbullying, digital ethics and digital security violations are emerging as concepts that threaten our digital world, point out Muhammed Murat Gümüş, Recep Çakır and Özgen Korkmaz (Amasya University, Turkey), and it is thought that displaying ethical behaviour and providing digital security in digital environments can increase sensitivity to cyberbullying. Here, it is necessary to learn and apply the concepts of digital ethics and security correctly. We can say that the places where we can learn and apply these concepts in the best way are educational environments. Therefore, the adoption of digital ethics and digital security concepts by pre-service teachers, both for themselves and for their future students, will raise awareness about the sensitivity to cyberbullying. This study revealed that the concepts of digital ethics and security should be considered to increase the sensitivity of pre-service teachers to cyberbullying.

Social media has significantly impacted students' academic success in recent years points out Abeer S Almogren (King Saud University, Riyadh, Saudi Arabia), and these networks offer chances and dangers for students from a range of backgrounds. To investigate the link between the mediation roles of social contact, social engagement, and collaborative learning on the academic performance of students from Saudi Arabia, this reported research develops a new framework based on social cognition and constructivism theories. The study's findings demonstrated how social connection and engagement have always had a significant impact on social impact, support networks, social identity, social presence, and social space.

Since schools increasingly use digital platforms that provide educational data in digital formats, teacher data use, and data literacy have become a focus of educational research, and Konstantinos Michos, Maria-Luisa Schmitz and Dominik Petko (University of Zurich, Switzerland) write on this in the next article. One main challenge is whether teachers use digital data for pedagogical purposes such as informing their teaching. The authors describe a survey study they conducted with teachers in upper secondary schools in Switzerland to investigate teacher digital data use and related factors such as the available technologies in schools.

The purpose of the following study was to understand the factors behind university teachers' ability to implement instructional changes during the COVID-19 pandemic. It comes from: Tahani Z. Aldahdouh (University of Tampere, Finland), Mari Murtonen (University of Turku, Finland), Jere Riekkinen (University of Tampere, Finland), Henna Vilppu (University of Turku, Finland), Trang Nguyen (University of Turku, Finland) and Petri Nokelainen (University of Tampere, Finland). An online questionnaire at a Finnish university sampled 378 university teachers who were categorised into four groups based on their digital innovativeness and the extent to which they implemented changes to adapt their teaching practices to COVID-19 restrictions: Avoider Survival Adapters, Avoider Ambitious Adapters, Embracer Survival Adapters, and Embracer Ambitious Adapters.

Lihui Sun (Minzu University of China, Beijing, China), Xinxin You (Tianjin University, Tianjin, China) and Danhua Zhou (Beijing Normal University, Beijing,

China) then offer an article on STEAM teachers' skills in computational thinking (CT). There were two sub-studies here. One was to develop a specialised scale for the evaluation of teachers' CT skills and the other to take K-12 STEAM teachers as sample to measure their CT levels and analyse the impact of the influential factors of personal attributes, occupational attributes, and environmental support on teachers' CT skills.

The aim of the next reported study, by Menşure Alkış Küçükaydın and Hakan Ulum (Necmettin Erbakan University Konya, Turkey), was to determine the effects of Web 2.0 supported environmental education on self-efficacy belief regarding environmental education and environmental awareness of teacher candidates studying in the primary school teacher program. The study was carried out with teacher candidates studying in their first year and enrolled in the Environmental Education course. Environmental education was carried out in the Web 2.0 environment with students in an experimental group, while environmental subjects were covered in the school environment in a control group.

The study that follows aims to assess the impact of metacognitive awareness of the Technological Pedagogical and Content Knowledge (TPACK) among preservice teachers. It was contributed by T. Joshpine and A. Pio Albina (Alagappa University, Karaikudi, Tamil Nadu, India). To identify the metacognitive awareness of Technological Pedagogical and Content Knowledge among the preservice teachers, a self-made tool was constructed on the Metacognitive Awareness Scale (MAS) and Technological Pedagogical and Content Knowledge Assessment Scale (TPACK- AS) were used.

Jeffrey Keese, Deana J. Ford, Sara E. Luke, and S. Michelle Vaughn (Mercer University, Atlanta, USA) next investigate individualised professional development. They write that as university faculty must continually grow in their instructional skills and proficiencies with new tools to remain relevant to the educational needs of their students, effective models of professional learning and development are important areas of need and topics for research, but many outdated professional development models do not create the desired results of technology integration into university teaching. More responsive and innovative models of faculty learning could be the answer. The purpose of their research study was to explore the impact individualized professional development had on faculty's understanding, experience, and use of a technological tool.

Music education is aimed at the development of musical abilities, emotionality during the performance of musical compositions, and all-round development, note Bing Yao and Weiwei Li (Xingtai University, Hebei Province, China). The aim of their research was to determine the possibilities of schoolchildren obtaining musical knowledge with the help of modernised online technologies, as well as to determine the importance of a teacher in modern music education. They ask whether a student can learn music without a human teacher.

Prediction of students' academic performance is one of the most important applications of Educational Data Mining that helps to improve the quality of the education process, say Padmalaya Nayak (Gokaraju Lailavathi Womens Engineering College, Hyderabad, India), Sk. Vaheed (Gokaraju Lailavathi Womens Engineering College, Hyderabad, India and Gokaraju Rangaraju Institute of Engineering and Technology,

Hyderabad, India), Surbhi Gupta (Punjab Agricultural University, Ludhiana, Punjab, India) and Neeraj Mohan (I.K. Gujral Punjab Technical University, Kapurthala, Punjab, India). In their research they have selected a few machine learning algorithms such as Decision Tree (J48), Naïve Bayes (NB), Random Forest (RF), and Multilayer Perceptron (MLP) to classify the students, along with a few filter-based feature selection methods like Info gain, gain ratio, and correlation features have been applied to select the key attributes.

Children aged 3–15 frequently use internet-enabled technologies for leisure and educational purposes, yet they have limited knowledge about how the internet works, point out Cyril Brom, Anna Yaghobová and Anna Drobná (Charles University, Prague, Czech Republic) and Marek Urban (Czech Academy of Sciences, Prague, Czech Republic). Literature also indicates that children possess varied and often contradictory internet-related ideas, which have not yet been systematised. This systematic review, drawing from 27 mixed-methods and qualitative studies from the last two decades (2002–2022), and organises these ideas through a thematic analysis with a specific focus on the age when individual child conceptions start to appear at the earliest.

Meng Xiao, Zeyang Tian and Wei Xu (Shenyang University of Technology, China) then write on teacher-student interaction. To implement online education effectively in colleges and universities, based on person-context interaction theory, this study investigates a theoretical model of the impact of teacher-student interaction, sound richness, sound pleasure, perceived ease of use and perceived usefulness on students' classroom well-being. Research results show that: teacher-student interaction, sound richness, sound pleasure, perceived ease of use and perceived usefulness appreciably improve students' classroom well-being, the sound richness and the students' perceived ease of use can moderate the effect of teacher-student interaction on students' classroom wellbeing.

The article that follows investigates the professional development needs of lecturers who are transiting to a technology-mediated environment following advancements in technology. It was contributed by Afam Uzorka, Shiellah Namara, and Ademola Olatide Olaniyan (Kampala International University, Uganda). Their research was conducted to address the increasing use of digital tools and platforms in education, shed light on the challenges that lecturers face when adopting modern technology in their teaching, and provide insights on how to design compelling professional development opportunities that address their needs.

Serious games (SGs) about Chemistry have the potential to cope with challenges, such as students' low performance and lack of motivation for the subject, discuss Alexandros Filippas and Stelios Xinogalos (University of Macedonia, Thessaloniki, Greece) in the next article. The aim of their study was to design and evaluate a new SG with rich game mechanics for Chemistry. The game is called Elementium and revolves around basic topics of Chemistry, such as chemical elements and compound terminology, creation, and everyday usage of such elements. The main goal of the game is to familiarise junior high school students with these subjects.

Computational thinking (CT), write Hongyu Gao (Capital Normal University, Beijing, China), Weipeng Yang (The Education University of Hong Kong, China) and Yunxiao Jiang (Capital Normal University, Beijing, China), is a new 21st cen-

tury literacy that can be transferred to and applied in different real-world situations, although being derived from the discipline of computer science. Tangible robots or child-friendly digital apps are used to implement coding education with the goal of promoting young children's CT. The reported cross-sectional study examined the associations among sequencing ability, self-regulation and CT among Chinese preschoolers.

Wei Han (Jimei University, Xiamen, China) then writes on using an online platform in learning to play the Saxophone. Chinese musical instruments, both traditional and borrowed, play a pivotal role in the traditional music revival, and help musicians to communicate the message, and express the national rhythm and rich musical texture. The purpose of this study was to conduct a comparative analysis of the learning effectiveness regarding courses via online platforms and traditional teaching approaches. The learning program aims at the creation of music in the sonata genre and focuses on performance and composing quality.

A study by Wang Qiao (Waseda University, Tokyo, Japan) and Chen Yijun (Kyoto University, Kyoto, Japan) explores the role of live transcripts in online synchronous academic English classrooms by focusing on how automatically generated live transcripts influence the learning outcomes of lower-proficiency and higher-proficiency learners and on their perceptions towards live transcripts.

The millennials, who are the first people to be considered digital natives, have now entered the teaching profession, and as a result, we are faced with a remarkable generational diversity. A reported survey, by Juan José Marrero Galván and Miguel Ángel Negrín Medina (University of La Laguna, Spain), Abraham Bernárdez-Gómez and Antonio Portela Pruaño (University of Murcia, Spain) aimed to explore the generational change in teachers and the beginning of the incorporation of the first millennials into teaching. The main results found establish a generational clash between 'migrants' and digital natives.

The next study, by Chi-Cheng Chang (National Taiwan Normal University, Taipei, Taiwan) and TsengChuan Chen (National Taipei University of Business, Taiwan) aimed to examine how emotional design and digitalization/mobilisation of textbooks influence students' emotion, cognitive load, and cognitive performance. Research samples were undergraduate students enrolling in the "Introduction to Internet" course at a university. They were randomly divided into three groups: students using traditional paper textbooks, students using e-textbooks with emotional design, and students using e-textbooks without emotional design.

There is widespread agreement, that today's students must develop competencies in the efficient use of information and communication technology to cope with the demands of the 21st century, say Lars Jenßen, Katja Eilerts, and Frederik Grave-Gierlinger (Humboldt-Universität zu Berlin, Berlin, Germany), and to meet this requirement, teachers must integrate ICT into their classroom activities on a regular basis. Studies have shown that the use of ICT in the classroom correlates with the level of professional knowledge and with affective-motivational dispositions (such as emotions and self-efficacy) of teachers. Their study examines the dispositions of 148 German pre-service and 132 German in-service primary school teachers to use ICT in geometry classes and tests for differences between these groups.

Virtual Reality (VR) has gained popularity in educational fields enabling new learning possibilities argue Dadan Sumardani (National Chiayi University, Taiwan, and National Taiwan Normal University, Taiwan) Chih-Hung Lin (National Chiayi University, Taiwan). In the implementation process, while VR could improve learning by increasing positive affective and cognitive processing, VR also could hurt learning by increasing distraction and leading to poorer learning outcomes. Their research aimed to determine cognitive processes through brain waves when participants perform VR learning and reading activity.

The article following is from: Chanjuan Fu, Xiaoxin Hao, and Donglin Shi (Zhejiang University, Hangzhou, China), Lin Wang (Early Childhood Education Group of Zhejiang Normal University, Hangzhou, China) and Fengji Geng (Zhejiang University, Hangzhou, China, and Children's Hospital, Zhejiang University School of Medicine, National Clinical Research Center for Child Health, Hangzhou, China). They write on computational thinking of Chinese children and the effect of coding learning. Coding learning can promote the development of computational thinking (CT) in young children, they report, but it may vary between different cultures. They conclude that coding learning positively influences the ability to apply coding concepts to solve problems in practice and the perspectives about themselves and the world around them.

Learning environments are undergoing a dynamic alteration with the robust impact of technological transformation, claim Ufuk Tugtekin (İnönü University, Malatya, Türkiye) and Hatice Ferhan Odabasi (Anadolu University, Eskişehir, Türkiye) in the next article. Adapting to dynamic learning settings has now become a key criterion for academic performance they point out. The factors that we know have a detrimental effect on learners' academic performance and cognitive capacity are related to today's traditional learning settings, but the circumstances in interactive learning environments such as virtual reality learning environments remains uncertain. To address this gap, they aimed to investigate the circumstances in virtual reality learning environments by considering both task characteristics and multitasking, both of which have been shown to have controversial effects on cognitive load and academic performance.

Harshali Patil and Swapnil Undale (Dr. Vishwanath Karad MIT World Peace University, Pune, India) then write on whether university students will continue to use e-learning platforms after the pandemic. They point out that the COVID-19 pandemic prompted adoption of an e-Learning pedagogy and forced teachers and students to shift to online learning. Educational institutes have been facing challenges like insufficient infrastructure and a shortage of quality teachers, and online learning can help to address these challenges as online classes can accommodate more students. The reported study aimed to unveil which factors are important to adopt new technology if implemented mandatorily. They used the UTAUT technology acceptance model to understand students' intentions to continue using the e-Learning system in a mandatory environment.

A person cultivates their creative skills influenced by various types of activities remarks Siyu Le (Federal State Budgetary Educational Institution of Higher Education Lomonosov Moscow State University, Russian Federation). The purpose of the work described in this article was to study the peculiarities of the development

of students' creative thinking skills, which are interrelated with the development of appropriate stages of team teaching, as well as to determine the impact of creative thinking on the indicators of academic performance and motivation to learn. The results of the survey showed that the students had developed their creative skills significantly after training.

Nurassyl Kerimbayev, Nurdaulet Nurym, Aliya Akramova and Saule Abdykarimova (Al-Farabi Kazakh National University, Almaty, Kazakhstan) write that in their previous study, work experience on organisation of teaching Robotics to secondary school students at school lessons and in study groups was introduced. This current study, which was conducted within 2019 and 2021, covered the period of distance learning caused by the COVID-19 pandemic and, also the post-pandemic period, when some school students continued learning online. The study deals with the problem of developing school students' computational thinking in online learning.

Online teacher professional development (OTPD) opportunities are made available to teachers and draw increasing research attention write Min Chen and Yanqiu Liu (Central China Normal University, Wuhan, China), Harrison Hao Yang (State University of New York at Oswego, USA), Yating Li and Chi Zhou (Central China Normal University, Wuhan, China) in this article. As the key characteristics of teachers' participation in OTPD, the frequency and quality of participation are increasingly concerned, but the relationship between teacher participation frequency and participation quality is still unclear. To identify teachers' participation patterns and the relationship between participation frequency and participation quality in OTPD, this study analysed log records of teachers.

Drawing on social cognitive theory, the next study, by Hamdan Alamri (King Saud University, Saudi Arabia), investigated instructors' online teaching self-efficacy during the sudden, COVID-19-induced transition to online teaching. This study examined instructors' online teaching self-efficacy, perceived benefits, intention to implement online teaching strategies in their future teaching, and the challenges encountered during this transition.

Fatih Gurcan (Karadeniz Technical University, Trabzon, Turkey), Fatih Erdogdu (Zonguldak Bülent Ecevit University, Zonguldak, Turkey), Nergiz Ercil Cagiltay (Atilim University, Ankara, Turkey) and Kursat Cagiltay (Sabanci University, Istanbul, Turkey) next address student engagement. They point out that this is critical for both academic achievement and learner satisfaction because it promotes successful learning outcomes. This study aimed to analyse student engagement research using a topic modelling approach and to reveal research interests and trends with their temporal development, thereby addressing a lack of research in this area.

Esteban Vázquez-Cano and María-Pilar Quicios-García (Universidad Nacional de Educación a Distancia, Madrid, Spain), Javier Fombona (Universidad de Oviedo, Spain) and Jorge RodríguezArce (Universidad Autónoma del Estado de México, Toluca, México) then offer research to determine the perception of teachers about the elements that increases the educational effectiveness of gamified apps in primary education.

Virtual reality (VR) has been one of the most widely developed forms of an alternate reality for use in education over the past few decades, say Wang Jiawei and Nur Azlina Mohamed Mokmin (Universiti Sains Malaysia, Penang, Malaysia). Educators

in many subject areas are experimenting with incorporating this technology into their teaching processes, with the intention of creating a learning environment that their students can interact with to increase their interest in learning. This study focuses on students at art colleges and explores the trends in the development of immersive learning with VR technology in art and design education.

In asynchronous online video-based learning, learners experience various affective states, which may make them disengaged and negatively influence learning outcomes note Seunghye Ha and Hyo-Jeong So (Ewha Womans University, Seoul, Korea). This reported study aimed to examine the effect of the utility value (UV) intervention to help learners emotionally and behaviourally engage in online learning. The UV intervention includes pre-learning writing activity and UV feedback messages to help learners perceive the relevance between the lecture topic and their lives. They examined the effects of the UV intervention on learners' negative emotions (confusion, frustration, and boredom) and conceptual understanding.

In addition to the resumption of the educational process after the COVID-19 pandemic, it was necessary to preserve the academic performance of students of higher educational institutions, including engineering ones. In the next article, Larisa Mamedova, and Alexander Rukovich (Technical Institute (branch) of the State Autonomous Educational Institution of Higher Professional Education NorthEastern Federal Institute of MK Ammosova in Neryungri, Neryungri, Russia), Tetiana Likhouzova (National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine) and Lubov Vorona-Slivinskaya (Saint Petersburg State University of Architecture and Civil Engineering, Saint Petersburg, Russia) address this topic. Their study aimed to develop a curriculum for engineering students to increase their level of success.

Digital resources have begun to be used frequently by both children and parents and have entered our lives more and more with the pandemic with the development of technology point out Nuray Kurtdede Fidan and Burak Olur (Afyon Kocatepe University, Afyonkarahisar, Turkey). Children are now regular users of smartphones and tablets, so children's early digital interactions have brought new concepts into parent-child relationships and the role of the parent. It is important to re-examine the self-efficacy and attitudes of digital parents and the factors affecting the family-child relationship. Digital parenting is explained as parental efforts and practices aiming at understanding, supporting, and regulating children's activities in digital environments. This study aimed to examine the correlation between parents' digital parenting self-efficacy and digital parenting attitudes.

The next article shares research investigating the consequence of textual enhancement and input processing on developing EFL university learners' linguistic development. It comes from Abbas H. Al-Shammari (Kuwait University, Kuwait City, Kuwait) and Ahmad Ali Sahiouni (Kuwait International Law School, Kuwait City, Kuwait). They aimed to examine the extent to which these two techniques are useful for learning and teaching the passive voice. Their research used an apparent experimental flow with a pre-test, post-test, and treatment, and the students were split up into three categories, one trained using textual enhancement, one trained using input processing, and the third using the traditional method.

Chatbots have shown great potential for language learning, but previous studies have reported mixed results on the efficiency of chatbot-assisted language learning (CALL). The following study, by Shunan Zhang (Sungkyunkwan University, Seoul, Korea), Cheng Shan (Huzhou University, Huzhou, China), John Sie Yuen Lee (City University of Hong Kong, China), ShaoPeng Che (Tsinghua University, Beijing, China), and Jang Hyun Kim (Sungkyunkwan University, Seoul, Korea) integrated the results of previous experimental studies on CALL by using meta-analysis to explore its effectiveness. In addition, nine potential moderating variables (educational level, target language, language domain, learning outcome, instruction duration, chatbot interface, chatbot development, task dominance, and interaction way) were identified and discussed.

Technology drives innovation and reform in hospitality education, and Facebook has become a popular educational tool to facilitate students' classroom interactions argue Sheng-Fang Chou (Ming Chuan University, Taoyuan, Taiwan), Jeou-Shyan Horng (Shih Chien University, Taipei City, Taiwan), Chih-Hsing Liu (National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan), Jun-You Lin (National Open University, New Taipei City, Taiwan), and Lu Chen (Tourism College of Zhejiang, Hangzhou, China). Understanding hospitality students' attitudes toward Facebook teaching interventions is important. Based on a survey of undergraduate hospitality students, they expand the scope of the technology acceptance model (TAM) which integrates the two factors of social interaction and information exchange into the research structure. They also propose a new moderated mediation model to account for the internal mechanism underlying Taiwanese undergraduate hospitality students' acceptance of Facebook teaching interventions in terms of perceived usefulness and ease of use.

The next article is by Kerem Ay (Lokman Hekim University, Ankara, Turkey) and Gökhan Dağhan (Hacettepe University, Ankara, Turkey). Considering the lack of interaction and feedback processes of the pre-class component of the flipped learning approach, in this research this component was designed with the community of inquiry model and an e-learning environment was developed in line with the model's theoretical framework. By exposing its impacts on students' development of critical thinking skills and social, teaching, and cognitive presences, this study aimed to determine the working and failing aspects of this learning approach.

Hua Zhen (Lishui University, Lishui, China) then points out that it is essential to develop and research new teaching methods in the era of online education. One of the promising methods could be the flipped classroom model built on artificial intelligence (AI). The study aimed to determine the impact of flipped classroom teaching using a stylus-driven intelligent learning system on students' level of knowledge in the piano course and the degree of their involvement in the musical education process.

Emotional contagion is an intriguing subject in many academic fields, and it is also relevant in collaborative learning where learners share a physical or virtual space, write Amir Dirin (Metropolia University of Applied Sciences, Helsinki, Finland), Marko Nieminen (Aalto University, Helsinki, Finland), Teemu H. Laine (Ajou University, Suwon, Republic of Korea), Lassi Nieminen (Tampere University, Tampere, Finland) and Leila Ghalebani (Karolinska Institute, Stockholm, Sweden). They aimed

at exploring the possibilities of motivating, fascinating, and experiential elements of virtual reality (VR) in a collaborative learning context, with a focus on emotional contagion. They adopted the eSports mode as a competency development strategy in collaborative learning, using VR to evaluate emotional contagion that is invoked between the presenters and spectators.

Vasiliki Matzavela and Efthimios Alepis (University of Piraeus, Greece) then point out that during the last decade an eruptive increase in the demand for intelligent m-learning environments has been observed since instructors in the online academic procedures need to ensure reliability. Research for decision systems seemed inevitable for flexible and effective learning in all levels of education, but prediction of the performance of students during their final exams is considered a difficult task. In this paper, an application is presented, contributing to an accurate prediction which would assist educators and learning experts in the extraction of useful knowledge for designing learning interventions with enhanced outcomes.

In the final article in this issue, Ahmad Samed Al-Adwan (Amman University, Amman, Jordan), Na Li (Xi'an JiaotongLiverpool University, Suzhou, China), Amer Al-Adwan (Hamad Bin Khalifa University, Doha, Qatar), Ghazanfar Ali Abbasi (King Fahd University of Petroleum and Menerals, Dhahran, Saudi Arabia), Nour Awni Albelbisi (University of Malaya, Kuala Lumpur, Malaysia) and Akhmad Habibi (Universitas Jambi, Jambi City, Indonesia) then write on prediction of the use of Metaverse Based Learning Platforms by university students. Metaverse, which combines several information technologies, is the Internet of the future they argue. The aim of their study was to explore the main factors that affect higher education students' behavioural intentions to adopt metaverse technology for education.

Mention must now be made of an article published in the February issue of EAIT, that unfortunately did not get mentioned in that month's editorial. This article, from Sangdong Tak (Rutgers University, New Brunswick, USA) and Sophia Catsambis (City University of New York, USA) examines popular concerns over screen time activities distracting students' academic pursuits. The researchers examine gender differences in the types of screen time use, expecting the skill-based activity of video gaming to be more common among boys and the socially oriented activity of chatting online to be more common among girls.

In this month's issue, research articles came from authors in: Australia, China, Czech Republic, Finland, Germany, Greece, India, Indonesia, Iraq, Japan, Kazakhstan, Korea, Kuwait, Malaysia, México, The Netherlands, Qatar, Russia, Saudi Arabia, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Turkey, Uganda, UK, Ukraine, and USA.

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