



## Editorial for EAIT issue 2, 2019

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Papers in this issue of EAIT come from researchers in the following countries: Fiji, India, Australia, Turkey, Nigeria, Colombia, Ireland, South Korea, Cyprus, Morocco, Ghana, Greece, Croatia, USA, France, South Africa, Malaysia, Oman, Saudi Arabia, China, Egypt, UK, Canada, Sweden, Kuwait, Germany and Iran. In order to reduce the number of papers waiting in Online First, this is another large issue with forty-three regular papers and an additional two in a Special Section on “*Creative Online Collaboration — a Special Challenge for Co-Creation*”.

“*ICT integration in Fiji schools: A case of in-service teachers*” by Sangeeta Nath (National University, Lautoka, Fiji Islands) begins this issue. The term ‘In-Service Teachers’ in this article refers to full-time teachers studying part-time in teacher training institutes. The study examined these teachers’ experiences in ICT integration in the school curriculum, and their perceptions of the barriers that prevent teachers from using ICT in the classroom. Findings indicated that the majority of the teachers do not have an ICT background but are able to use technology in their everyday lives and for mandatory record keeping purposes. Barriers such as limited access to computers, lack of funding, sporadic electricity and lack of ICT related policies and training often limit successful integration of ICT in the curriculum.

Next, Rakesh Patra and Sujana Kumar Saha (Birla Institute of Technology, India) offer: “*A hybrid approach for automatic generation of named entity distractors for multiple choice questions*”. They note that assessment plays an important role in learning and that Multiple Choice Questions (MCQs) are quite popular in large-scale evaluations. Automatic MCQ generation has become increasingly popular in the last two decades, but despite a large amount of research, system generated MCQs are not useful in real educational applications because of their inability to produce diverse and human-alike distractors. In this paper they present a method for automatic generation of named entity distractors using a combination of statistical and semantic similarities and an evaluation strategy along with a set of metrics.

The paper that follows: “*Design of a mobile-based learning management system for incorporating employment demands: Case context of an Australian University*” is

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offered by Harpreet Singh and Shah Jahan Miah (Victoria University, Australia). The authors point out that while mobile technologies have created enormous opportunities for improving information delivery and dissemination processes among individuals, and studies of these technologies in health and business have proliferated, research for educational use is still at an emergent stage. Formal methods in learning management systems (LMS) for supporting students and academics to achieve industry demands are yet to be developed for higher education institutes. The reported study develops and evaluates an innovative mobile-based technology for enhancing current approaches of LMS by linking relevant industry into learning and teaching procedures.

**“Views of teacher candidates about slowmation: Biology units sample”** by Murat Genç (Duzce University, Turkey), follows. Students from the Primary School Teaching Program took part in the study where some teacher candidates were surveyed using the Slowmation Opinion Scale and others were asked semi-structured questions during a focus group interview. The study found that the student teachers defined the slowmations as enjoyable, rewarding, educational, creative, informative and stimulating.

Factors that influence students’ academic achievement and retention of learning include the teacher’s mode of teaching, experiences, personality, workload and ability to make use of available resources for teaching and learning. **“Effects of reciprocal peer tutoring and direct learning environment on sophomores’ academic achievement in electronic and computer fundamentals”** by Jimoh Bakare and Chibueze Tobias Orji (University of Nigeria) looks at this. Research literature has shown that adopting a student-driven teaching approach, like reciprocal peer tutoring (RPT), has a strong positive impact on students’ achievement. This study aimed at determining effects of reciprocal peer tutoring and direct learning environment on sophomores’ academic achievement in electronic and computer fundamentals in Nigeria and found that it is more effective than direct learning in improving student achievement in computer fundamentals.

The incorporation of ICT in teaching and learning processes has created new challenges for administrative and academic processes in educational institutions. Alejandro Valencia-Arias (Instituto Tecnológico Metropolitano ITM, Colombia), Salim Chalela-Naffah (Universidad Autónoma Latinoamericana UNAULA, Colombia) and Jonathan Bermúdez-Hernández (Instituto Tecnológico Metropolitano ITM, Colombia) address this in: **“A proposed model of e-learning tools acceptance among university students in developing countries”**. They propose an eLearning Tools Acceptance Model with the purpose of examining the level of acceptance and critical factors of virtual learning tools among university students in developing countries. Results showed a strong relation between the Perceived Usefulness factor and the variables of Instructor Preparation and Autonomy in Learning, as well as between the Ease of Use factor and the Perceived Self-Efficacy Perception variable.

**“Learning with digital video in second level schools in Ireland”** points out that research indicates that teenagers and young adults of second level school age in Ireland are increasingly immersed in the world of technology. The paper comes from Peter Tiernan and Jane O’Kelly (Dublin City University, Ireland) who show that while Irish government initiatives such as the Digital Strategy for Schools (2015–2020) aim to encourage integration of technology in the school system, exposure to technology continues to occur predominately outside the school setting. Their study examines this

context, paying attention to the growth of online video then discusses the value of educational video. Their findings suggest that second level students predominantly value the use of digital video as a learning tool due to its motivational value, ability to explain concepts and provision of examples and real world scenarios.

Following, Hakan Altinpulluk (Anadolu University, Turkey) presents: “***Determining the trends of using augmented reality in education between 2006-2016***”, examining academic publications containing ‘augmented reality’ in their title in order to determine the trends of using augmented reality (AR) in education by a content analysis technique. Results showed that there was a sudden increase in the number of publications since 2013, reaching its highest level in 2016. Change in AR related articles were analysed by years, usage methods and data collection tools, education field, educational advantages, type of applications used, technologies, assets used, physical environments in which research was carried out, sensory types that applications address, countries and continents in which the articles were published and keywords in these articles.

Next is a paper by: Geummi Wang (Institute of Eduin Art Therapy, South Korea), Youngsoon Kim and Youngsub Oh (Inha University, South Korea), titled: “***A case study on the collage art therapy for immigrant youths***”. Their study analysed how immigrant youths’ experiences of collage art therapy were shown in their emotional changes. Their results found that early work showed negative symbols and passive actions as an unconscious defence mechanism; mid-term work showed concentration on art activities and dynamics with interest and creativity in art medium; while late works showed positive symbols like achievement desire and adaptation to reality.

“***The effect of technology supported problem-based learning approach on adults’ self-efficacy perception for research-inquiry***” was contributed by Cigdem Hursen (Near East University, Cyprus). In this study the effect of technology supported problem-based learning activities on adults’ self-efficacy perception for research-inquiry was investigated as well as the advantages and limitations of using Facebook in adult education. The study reached the conclusion that adults are pleased with the activities. It also revealed that problem-based learning activities supported by Facebook did not significantly affect adults’ self-efficacy perceptions for research-inquiry avoidance and personal development, but that they provided a positive increase in perceptions of self-efficacy for sustaining research.

Following is a paper by Ronald F. DeMara, Tian Tian and Wendy Howard (University of Central Florida, USA) titled: “***Engineering assessment strata: A layered approach to evaluation spanning Bloom’s taxonomy of learning***”. They argue that fostering metacognition can be challenging within large enrolment settings, particularly within STEM fields concentrating on problem-solving skills and their underlying theories. Their research question was in realising more frequent, insightful and explicitly-rewarded metacognition activities at significant scale. It is investigated via a strategy utilizing a hierarchy of assessments. Referred to as the STEM-Optimal Digitized Assessment Strategy (SODAS), this targeted approach engages frequent assessment, instructor feedback and learner self-reflection across the hierarchy of learning mechanisms comprising Bloom’s Taxonomy of Learning Domains.

The following paper by Özlem Efiloğlu Kurt (Yalova University, Turkey) examines an e-learning system based on student perceptions through employing the Information Systems Success Model: “***Examining an e-learning system through the lens of the information systems success model: Empirical evidence from Italy***”. System quality

and information quality affect system use and user satisfaction, and in turn system success. The results, drawn from students' self-reported evaluations about the e-learning system, confirm that whereas system quality has significant impact on systems usage and user satisfaction, information quality has significant impact only on user satisfaction. Both user satisfaction and system usage have positive and significant impacts on system success.

**“MOOCAT: A visual authoring tool in the cMOOC context”** by Aicha Bakki (Le Mans Université, France and Ibn Zohr University, Morocco), Lahcen Oubahssi and Sébastien George (Le Mans Université, France) and Chihab Cherkaoui (Ibn Zohr University, Morocco) presents an authoring tool in the cMOOC context called MOOCAT (MOOC Authoring Tool), a visual authoring tool that helps teachers to design cMOOC-oriented pedagogical scenarios. The paper presents the model underlying MOOCAT and describes the cMOOC scenario-building process. MOOCAT has two main innovative features: it offers a tool for conceiving pedagogical scenarios in a simple way through graphical representation, and it has a capacity to bridge the gap between the conception phase and its execution into different Learning Management Systems.

Felix Nti Koranteng (Ghana Institute of Management and Public Administration) and Isaac Wiafe (University of Ghana) then present: **“Factors that Promote Knowledge Sharing on Academic Social Networking Sites: An Empirical Study”**. They begin by stating that studies into Knowledge Sharing continue to attract attention because this has been identified as an effective learning and research approach. Their paper seeks to validate the relationship between the use of social networking sites, academic engagement and knowledge sharing using websites solely designed for academic activities. A modified version of the Social Capital Theory was used to design a questionnaire. Findings provided evidence that Academic Social Networking Sites support all the indicators of the Social Capital dimensions: Social Interaction Ties, Trust, Reciprocity, Identification, Shared Language and Shared Vision.

**“A blended learning course for playfully teaching programming concepts to school teachers”** by Fotis Lazarinis, Christoforos V. Karachristos, Elias C. Stavropoulos and Vassilios S. Verykios (Hellenic Open University, Greece), reports on the authors' experiences from a university outreach program with primary and secondary education teachers of various specialties. The goal was to improve the coding abilities of teachers through Scratch activities so that they could then teach their students. To increase the participation and the completion percentage, the activities were designed as a course in Moodle realised in discrete runs with manageable groups in a blended learning approach.

The next article: **“Misconceptions about variables at the K-12 level”** describes research by Žana Žanko (Elementary school Mejaši, Croatia), Monika Mladenović and Ivica Boljat (The University of Split, Croatia). They note that there are known misconceptions about variables which are mostly the same since the first studies since more than 30 years ago. There is a lack of studies about variable misconceptions at the K-12 level as most have related to the undergraduate or graduate level. The paper questions: Do K-12 students have the same misconceptions as undergraduates? Does the use of different programming languages affect misconceptions? In the study students were learning to programme in text-based programming languages Logo, and Python with graphical (Logo) and procedural (Python) approaches.

Berdousis Ioannis and Kordaki Maria (University of the Aegean, Greece) next present: “***Gender and student course preferences and course performance in Computer Science departments: A case study***”, beginning by stating that study of gender differences in Computer Science has captured the attention of many researchers around the world and has revealed that negative stereotypes and ‘myths’ about the cognitive skills, academic abilities and interests of females in CS do exist, deterring females from entering the field. This study aimed to shed light on these stereotypes and ‘myths’ by investigating gender differences in terms of student preferences and performance in undergraduate courses included in the entire curriculum of a Computer Science department.

Health Informatics is an emerging interdisciplinary subject of Health Sciences and Information Systems, which aims to cater for both the educational and professional needs within the Health and Informatics fields, and the next article by Irja Shaanika and Tiko Iyamu (Cape Peninsula University of Technology, South Africa) addresses this. “***Health informatics curriculum development for teaching and learning***” examines how health informatics curriculum is developed at institutions of higher learning, to offer insight on the influencing factors. Even though there has been increasing interest in the health informatics discipline, challenges continue to exist, particularly in developing countries such as Namibia.

“***E-learning system of UCOM for improving student assessment feedback in Oman higher education***” follows. Ragad M. Tawafak (University Malaysia Pahang and AlBuraimi University College, Oman), Awanis BT Romli (University Malaysia Pahang) and Maryam Alsinani (AlBuraimi University College, Oman) focus on improvement of student’s assessment feedback and learning satisfaction in the higher education institutions in Oman using the E-Learning system: University Communication Model (UCOM). Their model was conceptualised using coursework program instruction, testing academic performance, faculty experience and assessment method as the determinants to develop a ‘University Communication (UCOM) model for improving the students’ assessment method and evaluating their academic performance.

The next paper compares flipped and non-flipped college-level mathematics classrooms. Raoul Amstelveen (Johnson & Wales University, USA) writes on: “***Flipping a college mathematics classroom: An action research project***”. Participants in the flipped classroom watched video lessons outside of class and engaged in classwork problems during class, while those in the non-flipped classroom received a lecture then assigned classwork problems during class. Results showed that learners preferred a flipped to a non-flipped classroom and the video lectures helped them learn the course material.

“***Exploring relationships between Kolb’s learning styles and mobile learning readiness of pre-service teachers: A mixed study***”. Ridvan Ata (Mugla Sitki Kocman University, Turkey) and Mustafa Cevik (Karamanoglu Mehmet Bey University, Turkey) aimed to reveal relations between Kolb’s learning styles and mobile learning readiness of pre-service teachers in regard to different variables and mobile learning perspectives. The ‘Learning Styles Inventory - Version III’ as well as the ‘Mobile Learning Readiness Scale’ were administered to participants. It was observed that there was a statistically significant relationship between the learning styles of the pre-service teachers and their m-learning readiness.

An educational recommendation system to provide support for academic guidance and adaptive learning has always been an important research issue for smart education, and Mohamed Mimis, Youssef Es-saady, Abdellah Oued Guejdi, Hassan Douzi (Driss Mammas (Ibn Zohr University, Morocco) and Mohamed El Hajji (Ibn Zohr University, Morocco and Regional Center for Careers Education and Training, Morocco) address this in: “***A framework for smart academic guidance using educational data mining***”. They explore the potential of Educational Data Mining for academic guidance recommendation in predicting students’ performance. This involves analysing of students’ records data, socio-economic data and student motivation. They claim that performance results indicate that their framework can make more accurate predictions of students’ performance.

Asma Ali Mosa Al-araibi, Mohd Naz’ri bin Mahrin, Rasimah Che Mohd Yusoff, and Suriayati Binti Chuprat (Universiti Teknologi Malaysia) present: “***A model for technological aspect of e-learning readiness in higher education***”. They begin by asserting that the rate of adoption of e-learning has increased significantly in most higher education institutions in the world. The successful implementation of e-learning relies on readiness to be able to initiate this system because, without proper readiness, the project will probably fail. The focus of their study was on the technological aspect of e-learning readiness and a model is proposed including eight technological factors: Software, Hardware, Connectivity, Security, Flexibility of the system, Technical Skills and Support, Cloud Computing and Data Centre.

Next comes: “***Analysis of the essential factors affecting intention to use of mobile learning applications: A comparison between universities adopters and non-adopters***” by Mohammed Amin Almaiah and Ahmed Al Mulhem (Faisal University, Saudi Arabia). They indicate that although mobile learning systems offer several benefits for students, academic staff and universities, including easily access and learning anywhere and anytime, the use and acceptance of this new technology in Jordan is still very low. The factors that affect use and user acceptance of mobile learning are still controversial and this paper proposes an integrated model to identify the most influential factors that may encourage or impede students and universities in Jordan in moving towards acceptance and adoption of mobile learning applications.

“***Prediction of educational institution using predictive analytic techniques***” by Muhammad Shahid Iqba and Bin Luo (Anhui University and Foshan University, China and Kafrelsheikh University, Egypt) points out that in Pakistan, educational institution offer people of different ages an education including primary, middle, high schools, inter-colleges, technical and vocational institutions, degree colleges and universities. These institutions provide a large variety of learning environments and learning spaces. The paper suggests a need of further development of educational institutions at every level as well as male and female.

“***An adaptable and personalised E-learning system applied to computer science programmes design***” comes from Eiman Aeiad and Farid Meziane (University of Salford, UK). With rapid advances in E-learning systems, personalisation and adaptability have now become important features in education technology and this paper describes development of an architecture for ‘A Personalised and Adaptable eLearning System’ (APELS) that attempts to contribute to advancements in this field. APELS aims to provide a personalised and adaptable learning environment using natural language processing techniques to evaluate the content extracted from relevant resources.

Nomawethu Tungela and Tiko Iyamu (Cape Peninsula University of Technology, South Africa) then look at a free Wi-Fi project for peri-urban communities, of which Nyanga in the Western Cape was a benefactor. **“Free doesn’t mean access to the Wi-Fi facility: The south African experience”** describes the South African government’s attempt to increase citizens’ participation in economic, political, social and trade activities through online connectivity by providing free Wi-Fi for previously disadvantaged, peri-urban communities. However, even though the Wi-Fi was free, its accessibility was significantly low. The objective of the described study was to examine how accessibility influences usage of free facility such the Wi-Fi in the Nyanga community, and five factors: security, proximity, technical know-how and awareness were found to be of primary influence.

The academic performance of a student in a university is determined by a number of factors, both academic and non-academic. As a means of exploring this, Aderibigbe Israel Adekitan and Etinosa Noma-Osaghae (Covenant University, Nigeria) offer: **“Data mining approach to predicting the performance of first year students in a university using the admission requirements”**. University admission in Nigeria is typically based on cognitive entry characteristics of a student which are mostly academic and may not necessarily translate to excellence once in the university. In this study, the relationship between the cognitive admission entry requirements and the academic performance of students in their first year, using their CGPA and class of degree, was examined using six data mining algorithms in KNIME and Orange platforms.

**“Social networking and academic performance: A longitudinal perspective”** by Tenzin Doleck, Susanne P. Lajoie and Paul Bazalais (McGill University, Canada) argues that social networking sites (SNS) represent one of the most consequential technological developments in recent history and much research has been done on their importance in students’ lives. The paper describes a longitudinal study to overcome a shortcoming in current research, so helping to provide a way to better understand the temporal association between SNS use and academic performance. Their findings suggest that there is no statistically significant relationship between SNS use and academic performance over time.

In the next article: **“Digital writing tools from the student perspective Access, affordances, and agency”**, Helene Dahlström (Mid-Sweden University) discusses new digital possibilities for communicating. In order to utilise opportunities offered by digital tools when writing, access to them is essential and schools need to develop a writing education that meets students’ contemporary writing needs. The purpose of this study was to understand and discuss the relation between students’ digital access, students’ perceived affordances with digital writing, and student agency. The results indicate that the most common condition concerning students’ digital access was that students shared digital tools for writing with their families.

Following is another article from Nigeria: **“Securing the information systems of libraries and the influence of tech-skills of librarians and users”**. It comes from Benedict O. I. Okike (University of Agriculture, Nigeria) and ‘Niran Adetoro (Tai Solarin University of Education, Nigeria). Advances in ICT have significantly affected the way information is acquired, processed, stored, retrieved, communicated and secured and this has changed the way Librarians handle and secure information systems. Users are expected to have some level of information and communication

technology skills to access and utilize information systems to their full benefits. This study investigated the influence of tech-skills of librarians and users in securing the information systems of selected Nigerian University libraries. It established that most librarians have basic information technology skills but are poor at advanced skills.

**“Research on development and application of remote control system for multimedia classroom based on cloud computing”** describes research by Fei Jiao (Zhaoqing University, China) and Tianwen Huang (Zhaoqing Meteorological Bureau, China) in which a remote control system for a multimedia classroom based on cloud computing was developed. It uses VMware desktop virtualization technology to deploy virtual machine templates of different courses in each classroom through the campus network and controls all multimedia equipment in each classroom by single-chip microcomputer remote control. Compared with traditional systems, this system has the advantages of rapid deployment and unified management.

**“STEM teaching intention and computational thinking skills of pre-service teachers”**. Mustafa Serkan Günbatar and Hasan Bakırcı (Van Yüzüncü Yıl University, Turkey) write on a study to examine the Science, Technology, Engineering and Mathematics (STEM) teaching intention of science and primary school pre-service teachers in terms of Computational Thinking (CT) skill, gender, grade level, daily computer usage, internet usage, smartphone usage, and the department variables. The STEM teaching intention scale and the CT skill scale were used for data collection. Their results showed that CT has the most significant effect in terms of STEM teaching intentions.

Following is an article by Recep Cakir and Ozgen Korkmaz (Amasya University, Turkey) titled: **“The effectiveness of augmented reality environments on individuals with special education needs”**. Augmented Reality (AR) teaching materials are thought to be useful in terms of allowing children with special education needs to meet their own basic needs, with their own efforts and without being dependent on others. They found that AR teaching material is appropriate and helpful in terms of contributing to the development of children with special education needs by bringing them real-life experiences. It was also observed that students were more eager and enthusiastic about the lessons, their level of readiness increased, their interest in the subjects increased and they were relatively more active and more likely to respond correctly to questions.

Kawthar M. Habeeb and Ali H. Ebrahim (Kuwait University) next write on: **“Impact of e-portfolios on teacher assessment and student performance on learning science concepts in kindergarten”**. Their study examines existing literature on ICT and establishes that although there is a strong potential for these resources to generate improved student science concept outcomes, many teachers fail to recognize that potential. Their findings suggest that the existing institutional pressures for e-portfolio adoption are well-justified and could result in improved student outcomes, as well as a higher instance of self-directed learning both at school and at home. They conclude that ongoing implementation of these resources in early childhood education, together with relevant teacher training and parent engagement, may overcome lingering resistance to adoption of these technologies.

Self-regulated learning (SRL) has elicited considerable interest as a factor that affects the learning performance in MOOCs. **“The role of quality factors in supporting self-regulated learning (SRL) skills in MOOC environment”** from Nour Awani Albelbisi (University of Malaya) notes that self-regulated learners can manage their



learning activities efficiently, but research indicates that MOOC learners do not do so. Providing support to facilitate self-regulated learning skill is important and this study examines the quality factors that affect self-regulated learning in a MOOC environment. Findings suggest that service quality factors influence self-regulated learning positively in MOOC.

***“Exploring the role of Facebook adoption and virtual environment loneliness on knowledge sharing behaviours in a Facebook learning community”*** contributed by Fatma Gizem Karaoglan Yilmaz (Bartın University, Turkey) describes research to investigate the structural relationships among knowledge sharing behaviour, adoption of Facebook and virtual loneliness behaviour. Facebook is one of the most popular social networking sites to create virtual communities and the impact of adoption of Facebook by community members and the feeling of virtual loneliness arising as a result of using Facebook are examined.

Abbas Pourhosein Gilakjani and Ramin Rahimy (Islamic Azad University, Iran) then look at: ***“Factors influencing Iranian teachers’ use of computer assisted pronunciation teaching (CAPT)”***. This study examined factors that influenced Iranian teachers’ use of computer-assisted pronunciation teaching (CAPT) of English pronunciation. Iranian teachers have serious problems in teaching pronunciation including lack of time, knowledge, experience, training, and suitable pronunciation materials. This study examined how the use of CAPT with ‘Pronunciation Power 2 (PP2)’ helped teachers to overcome these problems and improve their pronunciation instruction. Findings indicated that teachers showed tremendous support and much enthusiasm for using the software in teaching pronunciation.

***“Identifying priority antecedents of educational data mining acceptance using importance-performance matrix analysis”*** is from Muslihah Wook, Suhaila Ismail, Nurhafizah Moziyana Mohd Yusop, Siti Rohaidah Ahmad and Arniyati Ahmad (Faculty of Defence Science and Technology, Kem Perdana Sungai Besi, Malaysia). Their study aimed to identify the priority antecedents of educational data mining (EDM) acceptance, particularly among undergraduate students since they are the most affected by this technology. Findings revealed that perceived usefulness (PU) is the most important antecedent, followed by perceived ease of use (PEOU) and optimism (OPT).

***“High school learners’ continuance intention to use electronic textbooks: A usability study”*** by Helene Gelderblom, Machdel Mathee, Marié Hattingh and Lizette Weillbach (University of Pretoria, South Africa) begins by pointing out that e-textbooks are often considered to have several advantages over printed textbooks. Research, however, shows conflicting results regarding school learners’ satisfaction with e-textbooks. In South Africa the EduBook platform is currently used in 170 schools across the country. This study considered the satisfaction and continuance intention of learners from a South African high school where cross subject implementation of the EduBook platform was piloted. Findings confirm the influence of usability, expectations and perceived usefulness on satisfaction and continuance intention to use the e-textbook platform.

Children with Learning Disabilities (LD) show some emotional difficulties and behavioural problems in classrooms compared with their peers without LDs. Nihal Ouherrou, Oussama Elhammoumi, Fatimaezzahra Benmarrakchi and Jamal El Kafi (Chouaib Doukkali University, Morocco) note that emotions constitute an important part of the learning process and examine this in: ***“Comparative study on emotions***

**analysis from facial expressions in children with and without learning disabilities in virtual learning environment**". This study explored the benefits of using ICT to identify the ways in which emotions are involved during the learning process in Virtual Learning Environments (VLE). It used advances in Artificial Intelligence to detect children's emotions through analysing seven basic facial emotion expressions: angry, disgust, fear, happy, sad, surprise and neutral, while playing an educational game. Initial results indicate that emotions are present in VLE and they appear to suggest that children with LDs experience the same emotions as their peers without LDs.

The next paper describes use of a modified version of the Unified Theory of Acceptance and Use of Technology2 (UTAUT2) as a theoretical foundation to investigate students' initial perceptions of Google Classroom as a mobile learning platform. "**Google Classroom for mobile learning in higher education: Modelling the initial perceptions of students**" describes research by Jeya Amantha Kumar (Universiti Sains Malaysia, Malaysia) and Brandford Bervell (Universiti Sains Malaysia, Malaysia and University of Cape Coast, Ghana). By including six non-linear relationships within the modified model, the study examined the nuances in interaction terms between Habit and Hedonic Motivation, in relation to the other constructs in the original UTAUT2 model towards Google Classroom intention formation and use behaviour. Students' positive intentions to accept Google Classroom were anchored on Habit, Hedonic Motivation and Performance Expectancy.

The final regular paper in this issue: "**Usability heuristics for mobile learning applications**" comes from Bimal Aklesh Kumar and Munil Shiva Goundar (Fiji National University). They note that heuristic evaluation is a fast and easy way to detect usability problems. Nielsen (1994) proposed ten heuristics that are being widely used to conduct heuristic evaluation. Utilizing heuristics for mobile learning applications is not very effective because they are generic and were not developed taking mobile devices into consideration. In the reported research new heuristics were developed to extend those of Nielsen to support heuristic evaluation of mobile learning applications.

That is the final paper in the regular section of this issue, but it is followed by a Special Section on "**Creative Online Collaboration – a Special Challenge for Co-Creation**", guest edited by Joachim K. Rennstich. This section has two papers: "**One for all and all for one – towards a framework for collaboration support systems**" by Dominik Siemon, Felix Becker, Linda Eckardt and Susanne Robra-Bissantz (Technische Universität Braunschweig, Germany) and "**Professional development learning environments (PDLEs) embedded in a collaborative online learning environment (COLE): Moving towards a new conception of online professional learning**" by Roland vanOostveen (University of Ontario Institute of Technology, Canada), François Desjardins (Alexandria, Canada) and Shawn Bullock (University of Cambridge, UK). Details are found in Joachim's Guest Editorial.

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