Editorial

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Welcome to the Vol. 14, No. 2 issue of *IJLT*. This issue consists of four papers. The first paper is 'Teachers' perceived roles and their constructivist engagement practices in blended learning environment courses in Tanzanian universities', by Haruni Machumu and Chang Zhu. In this paper, the authors examine the relationship between teachers' perceived roles and their constructivist engagement practices in constructivist-based blended learning environment (BLE) courses in Tanzanian universities. The study used a mixed-methods research design with multiple data collection techniques to collect data from 261 teachers across ten selected universities. Step-by-step statistical analyses and content analysis were used. According to the authors, the results show that teachers' main perceived role is one of support, followed by leadership and design roles in constructivist-based BLE courses. The results also suggest that collaboration was a preferable mode of engagement to motivation or facilitation in terms of teachers' constructivist engagement practices in constructivist-based BLE courses. The findings further reveal that there is a statistically significant correlation between teachers' perceived roles and constructivist engagement practices in constructivist-based BLE courses.

Although the results are promising, there are limitations. The sample consisted of only ten universities. A bigger sample would be necessary to validate the results. The study was limited to observation, survey and interviews. It would benefit from a focus group discussion, which can be used to generate open and clear information from a larger group of participants than individual interviews.

The study used content analysis as a response to the large amount of information gathered during interviews and observations. Use of qualitative analysis as well as quantitative data analysis would be useful. More empirical studies are needed to verify the results.

The second paper is 'An agent-based intelligent tutoring systems review', by Ines Šarić-Grgić, Ani Grubišić, Slavomir Stankov and Maja Štula. This paper presents the current state of research in the fields of intelligent tutoring systems and intelligent agents. The architecture of intelligent tutoring systems typically consists of four major components: the domain knowledge module, the learner diagnosis module, the tutoring module, and the communication module. An agent-based approach to intelligent tutoring systems research and development is applied as the set of agents that constitute the general architecture, and as animated characters – pedagogical agents.

These authors argue that intelligent tutoring systems in general and each of the system's components can be implemented using the agent-based architecture approach.

The idea of an intelligent tutoring system in which components can be added, removed, or replaced without consequences for the system, is recognised and already used in several implemented platforms.

The complex environment of intelligent tutoring systems includes connected heterogenic components, each one dealing with different (set of) data representations. There are multiple benefits of the planning of intelligent tutoring systems agents that can accomplish various tasks autonomously, on behalf of learner or other processes during the design of these systems. Except for the use of advanced technology, the important consequences include facilitated maintenance and system updates. The efforts of researchers and industry stakeholders to gain consensus on the standardisation questions are ongoing on and will be crucial for the significant improvements in the field of intelligent tutoring. To move from intelligent tutoring systems as standalone systems focused on a single instructional domain, the community recently proposed adaptive instructional systems that include learners, intelligent tutoring systems and external (non-adaptive) environment.

An exemplar of an adaptive instructional system and empirically-based framework of tools, methods, and standards is GIFT, also offered by the research community. In addition to this generalised framework, research endeavours are focused on the standardisation processes in the field of intelligent tutoring. During the 14th International Intelligent Tutoring Systems Conference, held in June 2018, the industry track workshop on systems' standards was organised. It has been revealed that the IEEE Learning Technologies Standards Committee approved the formation of a study group to examine the feasibility and efficacy of standards for adaptive instructional systems.

The third paper is 'Brain-computer interfaces and education: the state of technology and imperatives for the future', by Christopher Wegemer. According to this author, brain-computer interfaces (BCIs) are digital systems that allow direct communication between a brain and an external device. This requires technology capable of either:

1 accurately reading and interpreting neural signals in a way that preserves human meaning

2 stimulating appropriate neural pathways (and/or facilitating connections between neurons) to reliably and consistently transfer information.

These can be accomplished using devices that are invasive (directly inserted into the brain) or non-invasive. Nearly, all current BCI systems are based on unidirectional information flow between the brain and the device, while other biological systems may be used as feedback mechanisms (for instance, a person using a BCI to type on a computer transfers information to the computer through a direct neural connection, but then uses their eyes to read the output on the screen as feedback to adjust their typing). Bidirectional brain-computer communication systems must have the ability to both read neural signals and stimulate the brain. Progress in the field of BCIs has accelerated in recent years. While most of the research has focused on alleviating the burden of physical and psychological disabilities, use of BCI devices has expanded to a variety of applications. New educational platforms and assistive technologies have been developed to improve learning strategies and increase cognitive capabilities for both healthy and disabled individuals.

This paper reviews the BCI landscape by providing a general outline of current technology, then discusses research relevant to education. Although BCI technology is still in its early stages, applications for education are already being explored. The literature on educational technology is used to describe common patterns in implementation of innovations, which highlights the need for understanding complexities of educational settings and broader social contexts. In anticipation of emerging BCI technology, recommendations are made for researchers and policymakers to promote implementation.

Although progress has been made, major limitations and challenges remain especially about usability as well social and cultural issues. It is uncertain how BCI-based educational technology will differ from past innovations. Implementation of BCI must consider the social and cultural issues.

The last paper is 'Examining self-regulated learning through a social networking ePortfolio in higher education', by Aikaterini Alexiou and Fotini Paraskeva. This research is about the design and implementation of an ePortfolio system through a course in higher education for empowering students to manage their academic learning path. To this end, an ePortfolio, as a dynamic social networking tool, was developed and designed along the lines of self-regulated learning (SRL) with the aim of influencing student's self-regulatory capacity.

The aim of the paper is to investigate if the use of a self-regulated oriented ePortfolio system influences students' SRL. It also explores the relationship between the use of SRL processes and achievement in ePortfolio use. The authors used paired-samples t-test to explore statistical differences (pre and post-test) on the levels of SRL processes. The findings revealed that the experimental group appeared to have a significant increase on the means across all SRL processes. Furthermore, the Pearson r correlation revealed that correlation coefficients for all the items were significant, which meant that each item possessed adequate internal consistency.

The findings derived from the present study are consistent with prior studies that there is positive relationship between SRL processes and ePortfolio. Further research is needed to validate the use of SRL processes in ePortfolio.