Editorial

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Welcome to V13 N1 of *IJLT*. There are four papers in this issue. The first paper is 'MathSpeak: a non-ambiguous language for audio rendering of MathML' by Waseem Sheikh, Dave Schleppenbach and Dennis Leas. According to these authors, students with disabilities, such as partial to total visual impairment and learning disabilities, face significant challenges in accessing STEM material. These students rely heavily on speech for information input. Mathematical expressions spoken through typical spoken language are rife with ambiguities.

The authors in this paper present a tool known as 'MathSpeak' a non-ambiguous language for spoken mathematics. Different aspects of the MathSpeak technology, such as formal language specification, software modules for efficient conversion of MathML into MathSpeak for audio rendering, and efficacy studies are presented. These authors argue that using MathSpeak resulted in the correct interpretation of a significantly large number of mathematical expressions as compared to the common terminology.

More empirical studies are required to evaluate the claim of this tool. It would be useful to have theoretical underpinnings to support the design of this tool as well as its evaluations.

The second paper is 'Forecasting students' success in an open university' by George Kostopoulos, Sotiris Kotsiantis, Christos Pierrakeas, Giannis Koutsonikos and George A. Gravvanis. According to these authors, students' performance prediction has been identified as one of the most essential and challenging research topics for educational institutions. The necessity for exploitation and analysis of data originating from several educational contexts has led to a widespread implementation of familiar machine learning methods trying to effectively analyse students' academic behaviour and predict their performance. The early detection of low performers is of major importance for open universities seeking to decrease dropout ratios, improve educational outcomes and provide high quality education.

This paper introduces an ensemble of classification and regression algorithms for predicting students' performance in a distance web-based course. Several state-of-the-art machine learning methods have also been applied to compare the efficiency of our method. A plethora of experiments have been conducted for this purpose, using data provided by the Hellenic Open University.

The proposed ensemble combines classification and regression rules. These authors argue that the proposed ensemble is as accurate as the powerful ensembles, while the produced model remains comprehensive. A prototype software support tool has been

designed. It simulates the presented ensemble. A good idea for future work would be the implementation of semi-supervised learning (SSL) and active learning (AL) techniques for predicting students' performance and dropout rates in educational institutions

The third paper is 'The effect of technology supported teaching on students' academic achievement: a combined meta-analytic and thematic study' by Veli Batdi, Aydın Aslan and Chang Zhu. According to these authors, this study aimed to enlighten the ambiguous relationship between technology supported teaching (TST) and students' achievement. A meta-analysis was conducted incorporating the quantitative findings of 11 scientific studies derived from 245 theses and 386 articles. These addressed the effect of technology on students' academic achievement nationally and internationally between 2005 and 2016.

The results indicate that TST has a positive effect on students' academic achievement. Furthermore, participants' perceptions of this issue were thematically derived from 12 academic studies and these corroborated the quantitative findings. Learners should therefore be exposed to innovative technologies such as Web 2.0 and augmented reality technologies to effectively and adequately benefit from them as learning strategies. In addition to the meta-analysis, a thematic analysis was conducted to provide a more comprehensive understanding of TST and to triangulate with the quantitative findings. More empirical studies are needed to verify the results.

The final paper is 'Social recommender approach for technology-enhanced learning' by Mohammed Tadlaoui, Karim Sehaba, Sebastien George, Azeddine Chikh and Karim Bouamrane. The authors of this paper present a recommendation approach that can address the information overload problem observed on social learning platforms. This approach is designed to improve the accuracy of recommendations as well as to decrease sparsity, which is a common problem of educational recommender systems.

These authors developed a formal model for calculating similarity between users and for generating three types of recommendation. They have also developed a learning environment, called Icraa, which implements the proposed approach. A live user experiment with real users and an offline analysis for evaluating the approach was conducted.

According to these authors, the live user experiment yields positive results. The offline analysis using the Icraa dataset shows that the presented approach outperforms the four selected baseline algorithms used as a comparative basis. It would be useful to create a recommender system, based on the approach that can be used by multiple learning platforms.