Editorial. Technologies as assessment change agents

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This is the second of two IJET special issues devoted to the relationship between technology and assessment. In the previous editorial (IJET, vol.26, n.3) we highlighted the relative lack of research investigating the relationship between assessment and technology. Hence, the aim of these two issues is to fill the gap by promoting reflection on the technology-assessment relationship and by fostering debate, discussion and sharing of ideas amongst researchers and practitioners.

As mentioned in the first editorial, the response to the call was significant in terms of both the number and the quality of submissions received. Hence, we have spread the accepted articles over two issues, allocating them on the basis of the topics addressed. The first issue focused on how technology is increasingly being used to support and improve traditional assessment practices. This second one, instead, focuses on how assessment is being reformulated as a result of technological developments. Its concern is with transformations in *what* is being assessed (what is worth assessing and possible to assess) and *how* that is being assessed. For example, this second issue presents some assessment practices and experiences that couldn't even exist without the use of digital technology.

The examination of assessment and technologies starts with a wide-ranging reflective article by Fawns and O'Shea. This explores how students develop their own evaluative judgement capability. It goes beyond earlier research in that its focus is on how to evaluate the *practices* involved in producing a piece of work, rather than just on how the quality of the finished work is evaluated. Drawing on socio-material research in educational and clinical settings, the article illustrates how these practices unfold, develop and are adapted in technologically-rich environments. The authors argue that the evaluative judgement of working practices is particularly crucial in the workplace, and that developing this capacity will help university students overcome some of the challenges they face when moving from university into professional settings. Understanding the socio-material nature of learning can also help educators to develop assessments that focus on student practices of engaging with and producing knowledge.

In the article by Sgrò, Coppola, Pignato, and Lipoma, the changing dimension of assessment transformed by technologies is evident. The study presents a systematic review of the literature on state-of-the-art use of digital technologies for assessment of learning in physical education in schools. State of the art technologies in this context can be divided into three categories: video, wearable sensors and *exergames*. While the authors concede that research in the area is still limited, the overall analysis suggests that these new

technologies provide valid, objective and reliable evaluation data about the development of sporting skills. Considering the emerging potential, the authors suggest that teachers should receive training in the effective integration of technologies for assessment of learning in physical education.

Marzano, Miranda and Sampson present a practical approach based on the use of *Microsoft Families* and artificial neural networks to analyse computer traces of students' lab activities. With learning analytics, researchers and teachers can track learner activities through log files, assess the outcomes of students' work on the fly and offer appropriate and timely support. In this way, students can be provided with timely feedback on their developing work, e.g. receiving suggestions about how to improve the quality of their work and how to adjust their approach. This can lead to improved engagement and can enrich the learning process.

Foschi, Cecchinato and Say present a study on peer-, self- and instructor-assessment during an in-service teacher training course. The authors used the Peergrade software application to compare the level of agreement of different results obtained from different assessors. From this comparison, they were able to investigate the development of students' assessment skills during the training course, as well as the validity of these different assessment methods. Peergrade use opened up new possibilities, in particular a dialogical dimension to assessment that would have been hard to implement without the software.

The issue ends with the article proposed by Petrucco, who presents a university teaching experience related to digital competence acquisition and assessment through the creation and editing of Wikipedia entries. The process of creating entries has been monitored in its various forms across formal and informal learning contexts. The aim was to create a knowledge building environment capable of generating authentic, situated and participatory evaluation through the regulatory interventions of the teacher and tutors, combined with feedback from Wikipedia users. In this experience, use of the technology itself has driven and stimulated the investigation, and has played a role in the development of students' competences and multi-perspective formative assessment.