1. Background: Setting the stage

Since EDUsummiT 2011, where the call to action (see: goo.gl/QSNt6) emphasised that to align 21st century curricula and learning environments assessment models must be revised, there have been a number of important changes in the assessment landscape. We have seen a stronger recognition among teachers and policymakers that assessments serve a range of formative and summative purposes and of the opportunities for IT-based assessments to serve 21st century learning goals including higher order thinking skills and deep knowledge. The importance of assessment as a learning context has come to the fore and is particularly evident in virtual performance assessment where the experience of the assessment can be a learning engagement. There are now a number of projects working on developing a new generation of assessments including some major projects (e.g. http://www.smarterbalanced.org/ and http://www.parcconline.org/ ) and many smaller initiatives including projects developing software tools to support assessment especially those enabling visualisation and analysis of ‘big data’ (e.g. http://www.solaresearch.org/ ).

One initiative, which represents a major step forward from the position identified in EDUsummiT 2011, is that the OECD PISA Project is planning to assess collaborative problem-solving skills in 2015 through computer-based assessment (see: http://atc21s.org/index.php/oecd-conceptual-framework-for-2015-pisa-assessment-of-problem-solving/ ).

Some challenges, identified in 2011, remain, including whether the following four perspectives on assessment: feedback information, improvement decisions, degree of engagement and understanding, and value judgments, can co-exist to the benefit of learners (Webb et al. 2013). Even with the increased possibilities that IT provides we have not yet found a way to say confidently that the multiple purposes for which some assessments have been used (Mansell et al. 2009) can or should be supported through the same assessment systems. This is because the impacts of some purposes interact with the validation processes for others. Therefore in considering assessment design for multiple purposes, users need to examine impact factors carefully in order to minimize negative impacts on learning and learners. Thus significant challenges remain for developing validation approaches that can take account of the complexity of learning experiences especially for group tasks in simulations, games and other problem solving environments. Furthermore, with the emergence of “big data” - defined as data that has very large numbers of records, of widely differing data types, and is rapidly collected for immediate action - the need to develop assessment literacy...
(Stiggins 1995) in teachers and other users has become even more important so that they understand the advantages and limitations of assessment types and processes and are confident in developing and analysing arguments from evidence based on current understanding of validation (Black et al. 2010).

We also identified a number of new and evolving challenges associated with recent developments including:

1. Assessing collaborative learning with analytic and visualization support.
2. Increased time taken for performance assessment which comes out of teaching time thus making it crucial that assessment supports learning (assessment as learning).
3. The importance of a "data culture" in which stakeholders understand how to interpret data.
4. Establishing a policy approach that aligns summative and formative assessment perhaps involving using a sampling approach rather than testing all students when the aggregation level needed is at the organisation level.

2. Recommendations

Discussions of TWG5 at EDUsummIT 2013 led to three main recommendations:

- Focus on the development of assessments of collaborative learning in problem solving environments.
- Develop theory for big data being used by educational researchers.
- Engage teachers in the design of learning analytic tools for instructional practices and involve teachers and students in interpreting and using results.

A focus on the assessment of collaborative learning is pertinent, partly because the decision by the OECD PISA Project to assess collaborative problem-solving skills in 2015 means that a spotlight will be on this important aspect of 21st century learning but also because it is a complex problem that would entail and entrain a great many other issues relevant to the use of IT in assessment. In particular this focus enables consideration of the importance of the context of assessment, the role of assessment in promoting higher levels of knowledge and performance, and the role of assessment in determining what someone knows and can do. Some questions that emerged in discussion were:

- Is an idea substantial if it helped shape the final product by eliminating competing ideas and is not mentioned in the final? Is someone’s role in collaborative work completely documented in the final product. What if there is no final product? Are we interested in the impact of someone’s collaborative skills, or is it sufficient that we can know something about which skills they used during the collaboration? These issues have implications for policy-makers, practitioners and researchers.

Developing theory for big data use in educational research is a major recommendation for two primary reasons. First, assessment of digital performances presents major challenges to traditional psychometrics. Secondly, working with ‘big data’ needs to be included in educational research preparation and practice. Indicators of progress on this action item would be expansion beyond statistics in educational research, to include data mining, machine learning, and other topics and methods of data science.

The third recommendation, including teachers and students in the design of tools and the interpretation and use of results, is important to ensure a balance in the assessment purposes to include the impacts of the contexts of assessments (‘as’) and their usefulness for promoting learning
and performance (‘for’) in addition to their role in determining the extent and quality for external audiences (‘of’).

3. Action plans

To realize the recommendations made by our group, the following actions will be undertaken:

- The group plans to work together to create a document for policy makers explaining the recommendations and identifying state of the art examples and next steps.
- A paper for the EDUsummiT 2013 special journal issue is being planned and will focus on approaches and challenges for assessing collaborative learning.
- The group plans to share research progress in these areas over the next two years.
- Some members of the group are planning a paper reviewing technical developments in relation to these recommendations.

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References


