E-assessment: how can we support tutors with their marking of electronically submitted assignments?

Journal Item

e-ASSESSMENT: HOW CAN WE SUPPORT TUTORS WITH THEIR MARKING OF ELECTRONICALLY SUBMITTED ASSIGNMENTS?

Strategic drivers for e-Assessment
Assessment is one of the major challenges for higher education today. This is partly because it traditionally squares the desire for improved constructivist learning against the demand for institutional reliability and accountability. The result is that assessment is often the 'wolf in sheep's clothing' – doing little to support individual learners, and in reality, principally there for institutional quality assurance. Technology can help enhance assessment – but only if it is used with an awareness of this problem, and designed to improve the effectiveness of assessment from the learner's point of view.

The principal facilitators which have been identified by Whitelock & Brasher (2006) for effective implementation of e-Assessment are active institutional support from senior management with strong staff development together with pedagogical and technical support for tutors from central services. The call for a pedagogically driven model for e-Assessment was acknowledged as part of a vision for teaching and learning in 2014 (ibid.) Experts believe that such a model will allow students in Higher Education to take more control of their learning and hence become more reflective. These are indeed laudable aims but how can they be implemented in practice?

One of the problems with tutor feedback to students is that a balanced combination of socio emotive and cognitive support is required from the teaching staff, and the feedback needs to be relevant to the assigned grade. Is it possible to capitalise on technology to build training systems for tutors in Higher Education, that will support them with their feedback to students, and which will encourage their students to become more reflective learners?

Solving the problem
One approach to this question is to build tools to support tutors in the feedback process. Our work (see Whitelock *et al.*, 2004) has involved building an open-

source mentoring tool for tutors, known as Open Mentor (http://www.openmentor.org.uk/). This tool analyses and displays the different types of comments provided by the tutor as feedback to the student. It then provides reflective comments to the tutor about their use of feedback.

This work followed a pedagogically-driven development process, beginning by developing scenarios of use, then storyboards, and then putting in place an implementation which would follow closely the pattern of these storyboards. Open Mentor was not designed for use at institutional level, but to give teaching staff a tool that can be used in training and also later as personal support that will enable individual tutors to track their use of feedback to students.

We found that students both expect and receive feedback that is appropriate to the assigned grade. This feedback provides them with the supportive comments they need to feel confident about their level of work. Our studies and trials revealed that tutors believed that a final mark can speak for itself. Therefore socio-emotive comments of support are not seen as necessary for these high achieving students. However when the students gaining high marks were questioned, they did not always believe that their work was of a good quality even though they had received an excellent mark because they were not aware of the mean score for a given assignment. In other words, they still felt they could be bottom of the class even with a high scoring assignment. Open Mentor therefore guides tutors into providing clearer positive reinforcement for high achievers and prompts tutors to advise all students about how to improve their grades.

The idea behind the design of Open Mentor is fairly straightforward: it goes through marked assignments, extracting tutor comments and classifying them. We used pre-determined benchmarks (from Whitelock et al., 2004, although these can be adapted to different institutions) to estimate 'ideal' distributions of comments for each category, and then display the difference between the actual and the ideal. Although there are 'normal' bands of comments of each type, these vary (significantly) depending on the quality of the individual submissions and the number of submissions involved. A large proportion of positive comments in one context may be inappropriate in a second, and coincidental in a third.

How does Open Mentor work?

To provide an appropriate mentoring framework, Open Mentor is based on Bales' (1970) interactional categories, which provide four main categories of interaction: positive reactions, negative reactions, questions, and answers. These interactional categories illustrate the balance of socio-emotional comments that support the student. We found that tutors use different types of questions in different ways, both to stimulate reflection, and to point out, in a supportive way, that there are problems with parts of an essay. These results showed that about half of Bales's interaction categories strongly correlated with grade of assessment in different ways, while others were rarely used in feedback to learners. This evidence of systematic connections between different types of tutor comments and level of attainment in assessment was the platform for the current work.

The advantage of the Bales model is that the classes used are domain-independent – we used this model to classify feedback in a range of different academic disciplines, and it has proven successful in all of them. An automatic classification system, therefore, can be used in all fields, without needing a new set of example comments and training for each different discipline. Others (e.g., Brown & Glover, 2006) have looked at a range of different classification systems, including Bales, and from these developed their own to bring out additional aspects of the tutor feedback, bringing back elements of the domain. In practice, no (useful) classification system can incorporate all comments. We selected, and still prefer, Bales because of its relative simplicity, its intuitive grasp by both students and tutors, and because it brings out the socio-emotive aspects of the dialogue, which is the one aspect tutors are often unaware of.

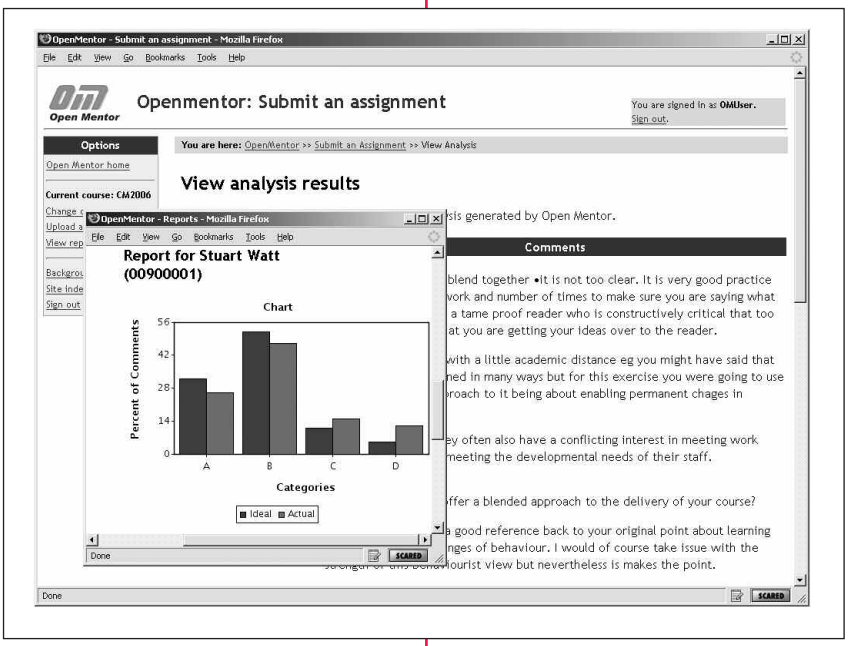

Figure 1: Screen dump of Open Mentor

Open Mentor sets this framework on an open source foundation, to enable anyone to take these results and build on them. It is built using Java and an underlying database — the choice of technology designed to enable the software to be freely used without licensing costs. Open Mentor reads and opens assignments written in Microsoft Word, to extract the tutor comments – although it does not use Word itself. A standard charting component is used to provide interactive 'bar chart' views onto the tutors' comments, showing the difference between actual and ideal comment distributions.

Advantages

In today's educational climate, with the continued pressure on staff resources, making individual learning work is always going to be a challenge. But it is achievable, so long as we manage to maintain our empathy with the learner. Tools can help us achieve this by giving us frameworks where we can reflect on our social interaction, and

ensure that it provides the emotional support as well as the conceptual guidance that our learners need. Tutors are provided with simple visual displays of their use of feedback, like that shown in Figure 1 above. Finally, using open source software makes the tool easier to adapt to different institutions' and individuals' needs than any off the shelf product.

Future Work

Assessment is a far more widespread issue than we had realised, and since starting work in this area, we found many other potential applications for this technology. These include:

- Providing students with formative feedback on their assessments, with feedback properly adjusted to the students' needs
- Supporting the review process in academic conferences and competitive project proposals
- Automated generation of high quality reports (both in content and in presentation) based on complex data

Technology to enhance assessment is still in its early days, but the problems are not technical: assessment raises far wider social issues, and technologists have struggled in the past to resolve these issues with the respect they deserve. E-Assessment is starting to deliver potential improvements; but there is still much work to be done.

Dr Denise Whitelock
Institute of Educational Technology
The Open University, Walton Hall,
Milton Keynes MK7 6AA
d.m.whitelock@open.ac.uk

Dr Stuart Watt
The School of Computing
The Robert Gordon University
Aberdeen
s.n.k.watt@rgu.ac.uk

References

Bales, R.F (1950) *A set of categories for the analysis of small group interaction.* American Sociological Review, 15:257-63

Brown, E., & Glover, C. (2006). *Evaluating written feedback*. In Innovative Assessment in Higher Education, (eds., Bryan, C., & Clegg, K.), Routledge, pp. 81-91.

Whitelock, D. and Brasher, A. (2006). *Developing a Roadmap for e-assessment: which way now?* CAA Conference 2006, Loughborough University, 4/5 July 2006.

Whitelock, D., Watt, S. N. K., Raw, Y., & Moreale, E. (2004). *Analysing tutor feedback to students: first steps towards constructing an electronic monitoring system.* ALT-J, 1(3), 31-42.