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Improving a tutor's feedback assessment tool: transforming Open Mentor following two recent deployments

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Abstract

Evidence shows the vital role that the quality of feedback plays on students' performance and on the overall increase of learning opportunities that good feedback creates for students. Based on this evidence, the Open University developed Open Mentor (OM), a system to support tutors enhance their feedback practice. Open Mentor Technology transfer (OMTetra), a JISC funded project, took OM and deployed it in two Higher Education institutions with the purpose of evaluating the process of transferability and continue the development of the tools available to tutors within the system. This paper describes the original OM and the enhancements identified after use and evaluations from tutors of the institutions involved.

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Importance and usefulness of Open Mentor

In distance education models, interaction between tutors and students takes place mostly through the feedback provided and received on assignments. Thus, feedback that is perceived useful by the student is of extreme importance.

For the Open University the issue of delivering feedback which the students perceive as supportive is even more evident than in other HEIs since their education model means that for some of students, feedback is the only contact they maintain with their tutor (Gibbs & Simpson, 2004). Seeing this particular need, the Open University led the development of Open Mentor (Whitelock, et al, 2004; Whitelock, et al, 2007), a system to assess and report on tutors' written feedback included on assignments delivered electronically.

Open Mentor was conceived as a tool to support tutors' feedback practices by classifying comments added to an assignment using Bales interaction analysis taxonomy and reporting the results of the analysis in summarized views. Summary views show the proportion of the actual number of comments given by the tutors versus an ideal number. This calculated ideal is based on grade distribution and total comments included in the assignment, making the analysis unique to the student, tutor and feedback comments provided. Under Bales taxonomy, tutors' feedback comments are classified as Positive, Questions, Negative and Teaching Points. Examples of text identified by OM when classifying comments can be seen in Table 1.

Table 1. Bales categories

| Categories | Feedback structure | Examples |
|-----------------------------------|---|---|
| Positive reactions | | |
| A1 – Shows solidarity | Jokes, gives help, rewards others | Very Good section, applying Rowntree's Table 1.3. |
| A2 – Shows tension release | Laughs, shows satisfaction | Conflicting ideas that have been resolved elegantly, well done. |
| A3 – Shows agreement | Understands, concurs, complies, passively accepts | Yes. They often also have a conflicting interest. |
| Teaching points | | |
| B1 – Gives suggestions | Directs, proposes, controls | You need a date here to link it to the reference list. |
| B2 – Gives opinions | Evaluates analyses, expresses feelings or wishes | I like the way you've used footnotes to explain your acronyms. Good idea. |
| B3 – Gives information | Orients, repeats, clarifies, confirms | Page 10 of the Assignment Guide shows how to write out these kinds of references. |

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| Questions | | |
|----------------------------------|---|---|
| C1 – Asks for information | Requests orientation, repetition, confirmation, clarification | Here you should have a citation. Did you get this from a particular report? |
| C2 – Asks for opinion | Requests evaluation, analysis, expression of feelings or wishes | If you hadn't specified computers, would it have been clear what you were asking? What other facilities might there be? |
| C3 – Asks for suggestions | Requests directions, proposals | What do you think you should do about that? |
| Negative reactions | | |
| D1 – Shows disagreement | Passively rejects, resorts to formality, withholds help | It is not too clear to me that you addressed the second part of the question. |
| D2 – Shows tension | Asks for help, withdraws | I might not agree entirely with your argument. Perhaps you can elaborate on it further? |
| D3 – Shows antagonism | Deflates others, defends or asserts self | Adding more evidence to support your view will strengthen your argument, regardless its rather controversial nature that some would point out |

Open Mentor first generation: what technology offered for feedback analysis

In order to analyse the feedback given by a tutor to a student via written comments in an assignment file, the user is asked to do three tasks within Open Mentor. Results of the feedback uploaded into OM after analyses are available from the navigation menu and presented in different views. Hence, the full transaction of feedback analysis comprises four steps (see Fig. 1) where:

1. A tutor logs into the system and
2. Selects a course for which an assignment will be uploaded for analysis. The course selection is followed by an assignment creation window where tutors are able to add characteristics to the assignment to upload, including title and a code identifier.
3. Assignments are uploaded by completing a short form where they select the title of the assignment, the mark, the student and the tutor. The uploaded assignment file is processed by Open Mentor by extracting the feedback text within the comment boxes inserted throughout the document. An algorithm within Open Mentor analyses and processes the text against a series of rules. The categorized text is presented in tables and final graphs are plotted depicting the actual and ideal number of comments for an assignment awarded a specific mark.
4. Results of the analysed assignment can be generated per tutor, course or student. Resulting graphs are used by the tutor to reflect on their feedback practices and identify potential areas of improvement.

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Figure 1. Analysis feedback workflow in Open Mentor

The technology available at the time of the original OM development made developers to decide that creation of users would be done through direct interaction with the database, which was not ideal for a large-scale deployment of the system.

With regards to feedback comments analysis, the initial classification algorithm took into consideration a large sample of marked assignments from modules delivered by the Open University and constructed the mechanism to aggregate the total number of comments title and classified these into the four major categories (explained above).

Transferring OM

From September to November 2011 tutors from Southampton and KCL were invited to participate in the JISC funded OMTetra project, uploading assignments about their modules and providing us with feedback from the system and its potential to improve their feedback practices. Tutors were asked to use OM analysing assignments from their current modules and study the reports produced by the system. After these tasks, participant tutors were interviewed with two purposes: to evaluate the system's usability and explore the tutors' views on the pedagogical impact of using a system like OM on their feedback practice.

Methods and Participants

King's College London: three tutors (two academic developers from King's Learning Institute and a lecturer from the Department of Education and Professional Studies) were asked to evaluate OM in full, uploading various assignments from current students. Two of the tutors were interviewed (on average one hour length) and gave feedback and discussed the reports generated by OM. In addition, twenty five e-learning experts were introduced to OM during the College's Technology Enhanced

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Learning forum. The group provided feedback on the functionality of the system a with tutor and student ideas for improvement of OM.

University of Southampton: three tutors from Electronics and Computer Science used OM to evaluate the feedback provided in the modules of Interface Design, Intranet Systems Development, and Information Retrieval. The tutors were sent a questionnaire with the purpose of evaluating functionality and design of OM. Two of the tutors who responded to the questionnaire were also interviewed.

The Open University: OM was evaluated by three distance education tutors using the questionnaire prepared for all three sites. Feedback and discussions took place by email. OM was implemented within a module of 113 students in a Masters course focussing on Innovation in eLearning and 5 tutors.

Results of the evaluation of OM from King's College London and Southampton

Comments from tutors were varied and focused on different aspects of the system, ranging from the very functional to a list of relatively technical issues. This section presents the findings from interviewing tutors in relation to the usability and design of Open Mentor.

Tutor attitudes towards the system and perceived usability

Tutors appreciated the opportunity they were given to receive comments on their feedback. Feedback on assessment practices (including feedback given to assignments) is received, but not systematically, at a College level, at tutor team meetings and sometimes at programme exam boards, through commentary provided by the external examiners. The tutors did not face usability issues and they considered the induction that was offered to them a necessary step for the adoption of the system.

Multidisciplinary nature of the system and enhancement of the formative function

The tutors were appreciative of the multidisciplinary aspect of the system, however one of them commented on the particular idiosyncrasies of disciplines that might make evaluating feedback across different disciplines difficult. They would like the system to have a purely formative function, which they claimed would be useful for feedback on draft assignments and where the summative aspect could be 'switched off' (e.g. in feedback given to PhD students). One of them thought that some of the system classifications were unclear and provided an inventory of comments that in her view were misclassified, e.g. in teaching points and questions. In addition, this tutor indicated that she would have liked to see the system display how the classified comments were calculated in relation to the grade. In this respect, considering the relevance of the feedback provided by this tutor, changes were made to the bar charts generated by Open Mentor which are displayed in the Reports section (see section Enhanced clarity and usefulness of graphs). This comment was related to the one where the tutor expressed that the calculations to construct the graphs were not transparent and the process to obtain the graphs in the system was felt to be a 'black box' for the tutor. Understanding the reasoning and origin of the graphs was identified as a feature that could help the tutor improve their feedback by having a more concise perception of how the system operates.

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A tool for tutor development

Tutors were also asked whether they would agree to share the feedback from the system and the Bales' categorisation outcomes with their students and colleagues. Their response was that in both cases this would lead to useful discussions that would allow establishing shared views on what constitutes constructive and supportive feedback. One of the tutors (who is the Programme leader of the Postgraduate Certificate in Academic practice, a King's programme, whose target audience are probationary lecturers and novice tutors) highlighted that a system such as Open Mentor could be a very useful peer review tool that could generate discussions on feedback good practice between the programme participants. She also recommended the tool to be used particularly with novice tutors in academic development sessions; these tutors are particularly appreciative of feedback on their assessment practice. Major improvements suggested by tutors are shown in Table 2.

Table 2. Summary of recommended improvements

- System access from networks external to the institution
- Enhancement of narrative in reports as quite often the graphs were not easy to interpret, without supporting explanations.
- Renaming 'negative' comments, as they thought current trends in assessment avoided terminology of this kind and the term might alienate students or peer reviewers.
- A purely formative function to be used when commenting on drafts.
- Developing the route that would help tutors to move towards the ideal 'state', which they thought was not explicit in current version.

Decisions on development

Results of the evaluation of OM produced the need to focus in both technical and functional aspects of the system. Features identified with potential for improvement were used to plan the development of OM. However, after discussions with the research team and accounting for project resources, development focused on all back-end issues and only one front-end element, which was the improvement of reports that are ultimately what tutors require to evaluate their feedback practice. All identified OM improvements included:

- Back-end: migrating the system to grails¹; development of a user management module to create and administer end-user accounts; improve the algorithm used to classify the comments included in an uploaded assignment.
- Front-end: clarify the contents of the reports generated by OM in the graphs and the tables where feedback comments were displayed according to Bales' categories.

¹ Grails by definition is an open source web application framework. Like other frameworks of this kind, its purpose is to support the rapid development of web applications and services.

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Open Mentor second generation: responding to end-user feedback

Based on the decisions regarding development which were mainly made following users' feedback, this section shows the changes in Open Mentor which prepared the system for the second pilot exercise.

Migrating to grails

OM 2.0 running on grails has given the system various advantages including flexibility to develop the user management module and facilitate integration with institutional systems (e.g. email services) via Lightweight Directory Access Protocol (LDAP) and Shibboleth. The development of the user management module allows the account creation process to be initiated by the end-user. Furthermore, upgrading OM to grails has resulted in a system that is at a readily transferable state, easy to deploy and develop. Both features are important to continue the growth of end-users and developers communities interested and involved in e-assessment.

Because of the flexibility that grails gives to developers, two important features were added into the system. A tutor is now able to create courses as well as students within OM. The result of the added functionality is that a tutor is now able to complete the cycle of creating an account, a group, students associated to the group and uploading assignments for those students without having to interact with a systems administrator. This reduces the time required to have access to the system and make full use of its features, making it more attractive and facilitating the use and adoption by the user community.

Accuracy of the analysis algorithm

Calculations are now more exact in terms of ideal number of comments per grading distribution and categorization type.

Feedback comments written by tutors can sometimes meet the criteria to belong to more than one category, like in the case of the following comment which belongs to both A positive reaction (shows agreement) and B teaching point categories (gives opinion).

"I like the way you've used footnotes to explain your acronyms. Good idea."

In order to calculate the proportion of ideal number of comments per category that should be included in one assignment, the analysis algorithm in OM takes into consideration the total number of comments and the grade distribution. Multiple classifications of comments was affecting the total calculation of percentages shown by the system as ideal in the tables and graphs included in the reports. In order to minimize the margin of over classification, changes in the database were implemented to 'mark' those comments already used for the overall comments count. As a result, the reports of OM show all comments classified in as many categories that match their criteria, but the total numbers are correctly calculated.

Enhanced clarity and usefulness of graphs

Reports in the system now show assignments that are uploaded for a course and associated with a tutor side to side. In this way, a tutor can analyse at first glance their feedback practice in a course and per student. In addition, data from a graph may be drilled down from tutor level to student level by clicking on the bars.

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A view to compare students within a course was added in this version of OM. Changes to the reports address the need expressed by tutors of *developing a route that would help tutors to move towards the ideal 'state'*. In the new version of OM, reports can be used more easily by tutors to plan or make changes to their current feedback practice to reach the ideal number of comments per category.

Access to the system from different networks is easily configurable and was done in both installations of the system.

Some of the suggestions made by tutors were discussed by the project team and the agreement reached was to prioritise the development of those features that would provide a clear and transparent use of OM. The features identified as more relevant and useful were developed following tutors' feedback. With regards to the remaining features pointed out by the tutors, a development plan was drawn and is scheduled to be completed by the end of 2012.

Future: pedagogical implications of using Open Mentor

One of the important outcomes of the OMTetra project and the dissemination of OM is the positive effect in tutors' feedback practice, which would reflect on students' learning and performance. By supporting tutors' feedback practices through a strong formative function where the tutor can use the output of the system (reports and classifications) to engage in reflection about the quality and appropriateness of his/her feedback, students are more likely to receive feedback that is ultimately useful. Interestingly however, is the fact that students may also need to receive a form of training to interpret their tutors' feedback in order to benefit from receiving good quality feedback (Buhagiar, 2012). Further development of OM may include a student module where learners are asked to make notes on how they made use of their tutors' feedback. These notes could then be read by the tutor and mismatches between intended purpose of the feedback provided and that interpreted by the student are negotiated.

For tutors, there are significant opportunities in the use of OM as an academic development tool as it can generate dialogue about effective feedback between (a) tutors and academic developers and (b) peer reviewers during 'peer observation' of assessment practice. Consequently qualitative and quantitative outputs of the system which have been perceived as very useful during the pilots can be complemented by the function of the tool as generator of discussion and reflection on assessment practice. For students the tool can play a significant role in generating a dialogue between tutors and students about feedback and help them to close the loop (Sadler, 1989). This dialogue can achieve a consensus and a better understanding of standards of quality in student assessed work.

Alignment of OM with Bales taxonomy is important as it offers an objective evaluation of the quantity and quality of the comments. In addition, the correspondence against a robust theoretical framework like that offered by the taxonomy can create awareness of underpinning theoretical approaches in evaluating student feedback. In the future, the current taxonomy used to analyse feedback in OM can be complemented with a dynamic algorithm that 'learns' from tutors feedback and classifies text using natural language processing techniques. This addition to the analysis algorithm of OM should address the needs of individual institutions where feedback practice is aligned to that of the culture of the organization. Our assumption, after the lessons learned from the implementation of OM in two HEIs (Whitelock, et al, 2012), is that the more configurable OM is, the more attractive it will be to disseminate its use across institutions.

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Conclusions

The OMTetra project has been successful in taking up Open Mentor and complete its transference into two HEIs. Interest shown by tutors from the institutions involved has translated into ideas to facilitate assignment analysis through Open Mentor and to encourage adoption of the system across institutional departments. Development of Open Mentor features and promotion for adoption of the system at a larger scale are on-going efforts that will ensure that Open Mentor has an impact on a core task of HEIs: the delivery of quality feedback that will support the teaching and learning process.

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