



JISC Project Plan Template

OpenMentor

The Project Management Guidelines have detailed instructions for preparing project plans.

Expand tables as appropriate.

Fill in the information for the header, e.g. project acronym, version, and date.

Prepare a cover sheet using the cover sheet template and attach to the project plan.

Overview of Project

1. Background

We propose to provide a learning support tool for teachers in further and higher education, which will help them by providing reflective comments on their assessment and feedback of student assignments and coursework. This system, which will be an 'industrial quality' tool based on open source standards, builds on our prior work on eMentor, which has been successfully evaluated on a number of courses from very different disciplines. eMentor categorises all the tutor comments for an electronic assignment, with just 174 rules. These are based on Bales' interaction categories which analyse: positive reactions, negative reactions, questions and answers written by the tutor. The eMentor system checks the tutor comments against the mark awarded and then provides feedback to the tutor on the socio-emotive and informational aspects of their assessment of the students' written work.

Our new proposed system – OpenMentor – will build on the work from eMentor and will also form the first component of an open source framework for teacher support in further and higher education

Students need an explicit level of socio-emotive support as well as direct instruction, and it is especially important that the feedback they receive from teaching staff provides both the subject-specific guidance they require and the support they need for development. We explored this in our earlier work on FRAMES (Whitelock et al., in press) and eMentor (Whitelock et al., 2003), where we analysed the relationship between tutor feedback and level of attainment in assessed written work. We adopted Bales' (1950) interactional categories in this work, as they give structure to this difference between the socio-emotive and informational aspects of the dialogue between learner and teacher.

Initially, our work explored computer-assisted assessment systems, such as e-rater and the Intelligent Essay Assessor (Hearst, 2000). In practice, these turned out to be far less effective in further and higher education than at primary and secondary levels. However, we were more interested in using these technologies to support learners and teachers by providing additional feedback, and to improve quality assurance procedures by focusing them on those assessments that merited attention, than we were on using them to provide summative assessment. Our evaluation provided convincing evidence of systematic connections between different types of tutor comments and level of attainment in assessment (Whitelock et al., in press), and this was the platform for the current work.

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 led to a follow-up project, to evaluate the feasibility of using machine learning techniques to build rules capable of categorising tutor comments in context, and measure the extent to which this could be used to monitor and provide feedback to teachers on the socio-emotive and informational aspects of their assessments of written work. This pilot system, eMentor (Whitelock et al., 2003), demonstrated that a machine learning system could correctly categorise more than 90% of tutor comments, well above the level needed to provide constructive feedback to teachers. This proposal aims to transform eMentor from an evaluation pilot into industry standard software that can be disseminated throughout the UK, and a feedback service for teachers in UK further and higher education.

OpenMentor – like eMentor – will be based on Bales’ interactional categories. These provide four main categories of interaction: positive reactions, negative reactions, questions, and answers; our earlier work on eMentor established clear patterns of correlation between these categories of comment. These interactional categories illustrate the balance of socio-emotional comments that support the student. The advantage of this category system is that it distinguishes between task-oriented contributions, and the ‘socio-emotive’ element used by tutors to maintain student motivation. Our earlier work also detected that the tutor uses different types of questions in different ways, some to stimulate further reflection, but others to point out, in a nice way, that there are problems with parts of the essay.

A REPRESENTATIVE SCENARIO

Sam Green is a tutor on a psychology course, and has just finished marking her latest batch of 43 course assessments. On the whole, she feels that her students have done well. Before passing them to a second marker, Sam sends them to OpenMentor, and in return, she gets a table which flags a few questions on about five of them. Two are marked that she is giving fewer suggestions than would be expected for the low grade she has awarded, and three that she is asking for more information than would be expected for the high grade awarded. She decides to revise her feedback in three cases, and considers changing the grade in two others. When her changes are complete, she sends them to OpenMentor again, and then forwards them – with the feedback table – to her course coordinator for monitoring. Her course coordinator, Chris Brown, is able to use the feedback to focus more carefully on those assessments that seem to need most attention, rather than (as she used to do) simply looking at the borderline cases. This enables her to keep a better overview of the learners’ progress than when she used to simply look at a bar chart of the grade distribution.

2. Aims and Objectives

The overall aim of the project is to provide a learning support tool for teachers in further and higher education, which will help them by providing reflective comments on their assessment and feedback of student assignments and coursework

The key objectives of this proposal are as follows:

- To convert eMentor into an open source equivalent system, OpenMentor, and to ensure it meets the standards needed for adoption by IT facilities in education
- To validate the new OpenMentor against assessment strategies used in a range of further and higher education institutions
- To establish an essay and report assessment mentoring tool for teaching staff in further and higher education
- To disseminate OpenMentor through the UK education community

3. Overall Approach

Describe the overall approach you will take to achieve the objectives outlined above, including:

- *Strategy and/or methodology and how the work will be structured*
- *Important issues to be addressed, e.g. interoperability*
- *Scope and boundaries of the work, including any issues that will not be covered.*
- *Critical success factors.*

The proposal focuses around redeveloping the existing proof of concept system (eMentor) into an open source tool. We hope to assess the system using current OU course submissions whilst working

with the course teams. We hope to be able to gauge the effectiveness of the system through feedback from the course teams teaching staff. The project will be based around the established principles of Open Source standards compliant tools development.

The bulk of the development within the project will be conducted by two full-time staff. One will be Alex Little, who worked previously on the eMentor project. He is based at the Open University. The other developer will be based at Robert Gordon. There is a natural division between the tasks associated with the machine learning strand in the upper path of the system architecture in Figure 1, and the interface and feedback strand in the lower path, and we anticipate that this division will be used to structure the roles of the two project officers working on the project. The other staff (Whitelock, Watt, and Eccleston) will guide the design, provide additional support on moving the system to Java and open source technologies, and on the machine learning and information retrieval technologies needed within the project. They will also actively participate in the testing and evaluation, and guide the deployment of the final tool.

Outline project plan

This project plan assumes a level of concurrency and of iteration in order to meet the final project objectives therefore many of the tasks listed below run in parallel throughout the project development life cycle.

Design meetings – An initial design meeting will be held over three days at the beginning of the project, to start the detailed project management and design processes. This will be followed by further management and design meetings every two months, as well as regular use of web video conferences. (10 person days)

Prepare project plan and use case scenarios – A detailed project plan will be prepared according to the JISC project management guidelines, based on the consultation from the initial design meeting. (30 person days)

Interface definitions – Interfaces for the principal components will be defined and agreed, and placed within the version control system. Changes to these interfaces will be tracked and agreed by the project's technical manager. (20 person days)

Word processor connectors – This software component will allow text to be extracted from word-processed files containing learner feedback. Existing open source modules (e.g., those in open source office packages) will be used as the basis for this component. (20 person days)

Rule based system component – This software component forms the 'engine' for the feedback rules. Again, existing open source modules will be used as the basis for this. (30 person days)

Machine learning component – eMentor showed that machine learning can build an effective set of rules for categorising comments. This component will provide support for users to provide their own training sets if required. (30 person days)

Database design and deployment – OpenMentor will use a database to record much of its information, and to store the processing rules – which will vary between institutions. This task will design the database, and ensure that its database management is secure and conforms to the Data Protection Act and other legislation. (20 person days)

Web interface design and development – Web development will follow a task-centred approach, with the development of scenarios and paper-based storyboards before moving to web technologies. Cognitive walkthroughs will be used to ensure that the final web interface is usable. (40 person days)

Benchmarking study – With the core of OpenMentor complete, this task will run larger training sets than our earlier studies to assess the quality of the machine learning techniques, and begin preparing the final set of feedback rules. (40 person days)

Tutor feedback component – In this task, the component which analyses text and structures the text feedback from the new rules will be developed. This integrates the feedback systems with the web interface. (20 person days)

Integration – This task will assemble all components within a web service framework, to complete the first testable version of the complete system. The major deliverable from this is an ‘alpha test’ version of the system which can be tested within the consortium. (20 person days)

Evaluation, testing and quality assurance – Through the project life cycle an extensive testing programme will be conducted within the consortium, to ensure that the system will be sustainable as a web service. We will also work with external stakeholders to ensure the software can be used effectively outside the development team. The evaluator will work with stakeholders and developers to ensure that the project is providing the necessary user requirements and to evaluate it thoroughly within different contexts. (30 person days)

Prepare install script – This task will develop an installation manual, plan, and script that can be used by external organisations to run the software on their own system. (10 person days)

User documentation – As this is intended as a service for teachers in further and higher education, guiding text is needed to help support their use of it. This task will prepare that guiding text, and incorporate it within the web interface as well as in reference manuals available through the web. (10 person days)

4. Project Outputs

List the tangible deliverables (including reports) your project will create, and the less tangible knowledge and experience you hope to build and share.

1. A short reflective report at the end of the project
2. Release through Sourceforge of openMentor version 1.0
3. Release of components through Sourceforge
4. A demonstration of the system in action
5. Workshops for stakeholders and potential clients
6. Documentation to allow reuse and understanding using e.g.UML

5. Project Outcomes

List the outcomes you envisage, including their impact on the teaching, learning, or research communities, and what change they will stimulate or enable.

Impact of the development

This service will make a significant contribution to the personal and academic development of teachers in further and higher education, and will indirectly also improve the support for learners in a wide range of subjects as they develop the generic skills of essay and report writing.

The other principal benefits of the work are as follows:

- Improving the quality and effectiveness of academic monitoring processes such as ‘second marking’, by allowing them to be focused effectively on more anomalous assessments
- Providing tools which can be used to provide a clearer personal development record for teacher’s use of assessment in essay and report writing
- Reducing the costs and improving the training of teachers with respect to assessment in further and higher education

The proposed development also fits well with a general drive from the Quality Assurance Agency to improve the innovative use of assessment strategies

6. Stakeholder Analysis

List key stakeholder groups and individuals that will be interested in your project outcomes, will be affected by them, or whose support/approval is essential, both within your institution and in the community, and assess their importance (low/medium/high).

Stakeholder	Interest / stake	Importance
Teachers and Monitors	Improving assessment feedback	High
Higher education monitoring systems	Quicker and more rigorous Q.A.	Medium
Quality Assurance agency	System in place	Low
Teacher/lecturer trainers in methods of assessment	Adoption of new practices	Medium
Exams and assessment (OU)	More rigorous selection of assignments for monitoring	Medium
Course Teams (OU)	Better feedback on tutor performance	Medium
Computing Department (RGU)	Changing systems to open source for adoption in RGU	Medium

7. Risk Analysis

List factors that could pose a risk to the project's success, assess their likelihood and severity, and how you will prevent them from happening (or manage them if they if they occur). Cover the types of risks listed and any others that apply.

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Staffing	1	4	4	Ensure that we have developers who can cover the work if the current programmer is unable to complete project.
Organisational	2	3	6	We have a history of working and collaborating with other institutions so project organisation should be straightforward. This is a short project so we don't expect problems; we have a project manager who is ensuring the deadlines are met.
Technical	1	5	5	We have the tools and developers available, and we have a technical project manager who is co-ordinating the work.
External suppliers	1	2	2	The only "external" supplier is Robert Gordon University who we work with on the project so risk is minimal.
Legal	1	1	1	All IPR and contractual issues have been discussed and agreed between partners. The tools and services are Open Source. No problems are expected.
Dependencies	2	2	4	Due to existing commitments the

				programming work is being split between the project partners. The changeover needs to be carefully managed to avoid delays and misunderstandings
Non acceptance of the system by Teachers and other stakeholders	3	1	3	Proper communication and dissemination to all stakeholders

8. Standards

List any specific standards you will adopt and why they are important.

9. Technical Development

Indicate how the project will follow best practice for technical development, and any specific technologies or development approaches the project will adopt and why.

OpenMentor will be a standalone application developed in Java. The code will be developed using the Borland J++ Developer environment. The system is likely to be available for Wintel server platforms initially but the application itself can be platform independent. There will be a backend SQL database which will store the data. The code will be made available through Sourceforge and will be subject to a standard (OU) GPL licensing agreement.

The system consists of the following components

- (a) Data input module
- (b) Data verifier
- (c) Data processing module
- (d) Reporting module

There will be an in-built security/authentication system which can be used so that it will work “out of the box” or the code may be adapted to work with any institutional security or authentication system by simple customization of the code. We expect to use a web based user interface for data input and for reporting and output, these will all be W3C standards compliant and conform to current accessibility and usability standards (SENDA compliance etc.).

The OpenMentor system spans the areas of Tracking, Quality Assurance and Competency as described in the JISC e-learning framework. It is actually an area not described in particular detail within the e-learning framework which is the area of measuring the quality and competency of student support and specifically measuring the level of socio-emotive support as well as direct instruction. The Tracking area of the e-learning framework is the one which this project most suitably fits within and the resulting OpenMentor system will be available as a toolkit which can either be a standalone service or be part of a larger service oriented architecture such as the e-learning framework. It will specifically make use the Rating/Annotation service within ELF to gather information on the level and quality of tutorial support.

10. Intellectual Property Rights

List any intellectual property owned by third parties that will be incorporated into project outputs, when/how you will obtain permission to use them, and any implications for project outputs after the project ends.

Project Resources

11. Project Partners

List all project partners (including subcontractors), their roles, and the main contact. Indicate the date a consortium agreement was signed (or will be signed), and send a copy to the programme manager.

Open University (UK) <http://www.open.ac.uk>
Robert Gordon University <http://www.rgu.ac.uk>

12. Project Management

Briefly describe the project management framework, including organisation, reporting relationships, decision process, and the role of any local management committee.

List all members of the project team, their roles, and contact details. Indicate the proportion of time the project manager will spend on project management.

Indicate if the project has training needs and how they will be met.

Project Manager

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13. Programme Support

Indicate if there are specific areas where you would like support from the programme or programme manager.

Developer support and resources.

14. Budget

Use the budget template and attach the project budget as Appendix A. Explain any changes from the budget in the agreed project proposal.

Detailed Project Planning

15. Workpackages

Use the workpackages template to plan the detailed project work and attach as Appendix B. Clearly indicate project deliverables and reports (in **bold**), when they are due, phasing of workpackages, and explain any dependencies. You may also attach a Gantt chart, diagram, or flowchart to illustrate phasing.

16. Evaluation Plan

Indicate how you will evaluate the quality of the project outputs and the success of the project. List the factors you plan to evaluate, questions the evaluation will answer, methods you will use, and how success will be measured. Expand as appropriate on how you will conduct the evaluation.

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success

17. Quality Assurance Plan

Explain the quality assurance procedures you will put in place to ensure that project outputs comply with JISC technical standards and best practice, and what will constitute evidence of compliance.

Timing	Compliance With	QA Method(s)	Evidence of Compliance
	Fitness for purpose		
	Best practice for processes		
	Adherence to specifications		
	Adherence to standards		
	Accessibility legislation		

18. Dissemination Plan

Explain how the project will share outcomes and learning with stakeholders and the community. List important dissemination activities planned throughout the project, indicating purpose, target audience, timing, and key message.

Timing	Dissemination Activity	Audience	Purpose	Key Message

19. Exit/Sustainability Plan

Explain what will happen to project outputs at the end of the project (including knowledge and learning). Focus on the work needed to ensure they are taken up by the community and any work needed for project closedown, e.g. preservation, maintenance, documentation.

Project Outputs	Action for Take-up & Embedding	Action for Exit

List any project outputs that may have potential to live on after the project ends, why, how they might be taken forward, and any issues involved in making them sustainable in the long term.

Project Outputs	Why Sustainable	Scenarios for Taking Forward	Issues to Address

Appendixes

Appendix A. Project Budget

Appendix B. Workpackages