JISC

JISC Final Report

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JISC Final Report
Making THE Numbers Stack Up

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The project team would like to acknowledge all those individuals who gave advice or agreed to listen to the team talking yet more about learning objects. Within Leeds Met, we would like to acknowledge in particular: Bob Rotheram for his advice on putting the bid together; Nick Sheppard for his repository enthusiasm; Rachel Thornton on copyright; colleagues on the Persona and Streamline related projects. The team would like to make a special mention of Richard Canham for his work, support and his contributions to this project.

Finally, to all those educators and other individuals who put materials on the web. Without them this would not be possible.

Executive Summary

This project focuses on an existing foundation level module. The module covers basic ICT, numerical and financial management knowledge and skills for a range of vocational business courses. Vastly increased student numbers - and a widening range of abilities and experience – have made that module both more important and more difficult to teach.

It is intended to develop the module to provide better quality materials and support for these students – and form the basis of a generic business module that can be adapted for a wider range courses. The basic ideas draw heavily on the team's previous experience and research as teaching fellows and as teachers on this and similar modules.

The project seeks to improve the quality of materials and support for the existing module. However, its wider aim is to put in place systems and tools to allow the rapid development of vocationally relevant and well contextualised materials for the future. It is this 'rapid response' aim that is the core of the project's practical element.

It has been necessary to carry out an in-depth review of existing procedures, materials and tools. In addition discussions with staff and students have been necessary to identify their key needs. In parallel to this, a review of the available tools and learning objects was carried out. These investigations led to a more detailed project plan and initial equipment purchasing.

The most important principle (identified at an early stage) was to design and make all materials – and to plan and implement all systems – with the end user (typical teachers and students) in mind. Throughout the project the consultations with staff and students continued. Module evaluations were done regularly and a more detailed parallel research project conducted an in depth analysis of student experiences. These consultations form the basis of the project evaluation section of the report.

The project has not fully met all its aims or produced all the anticipated outcomes – at least not within the time frame of the JISC call. The work will continue as many issues have been identified which will form the basis of all our future development.

Completed outcomes include:

- The creation of a 'rapid response' toolkit of hardware and software (see appendix 6).
- Improvements in staff skills (and approach) to materials design and production
- A range of standardised VLE module templates that have improved student participation and performance (and which will form the basis of several new modules across the University)
- Improved knowledge of IPR issues – and systems for managing these more easily and effectively

The primary aim of more effective, contextualised module support that has actively improved student uptake, retention and performance has been achieved. The project team will continue to develop these aspects over the coming months.

Vital lessons have been learned which will also inform future work.

IPR issues need to be addressed much more thoroughly A full support package is planned and will be produced over the next few months. The approach to design and production of materials should be revised to focus on the principles of easy modification and repurposing – and the needs of the end-user. Above all, there is a need to foster a greater culture of co-operation and the team will work to improve this via the dissemination stages of the project and other means.

Background

Problems and opportunities addressed by the project

Introduction

In recent years the expansion of Higher Education has led to some common problems:

- Increasing student numbers
- Widening range of student abilities and experience
- Reduced resources - particularly time for teaching and assessment (and consequently feed back)
- Increasing 'subject scope' – the need to cover broader as well as deeper content and skills
- Pace of change – especially in technology related subjects.

In addition there have been changes in the school system (curriculum and delivery) and media (increased coverage of previously niche employment sectors) that have had knock on effects for university educators – especially in our subject areas.

For business education, particularly in specialised vocational fields, these effects have been especially marked. For example this project focuses on Tourism, Events and Entertainment Management courses. In these areas the levels of existing knowledge, technical abilities and (above all) expectation have all been widened.

Pressure on resources is common and increasing. It leads to frequent calls for rationalisation of modules, particularly those modules that are considered as 'foundation' or general. An increased range of courses (together with the student abilities and expectations) mean that there is a need for more vocationally or course specific materials. These two demands are contradictory and often lead to problems in teaching, learning and assessment.

Philosophy – and role – of the project team

It is worth noting that members of the project team have wider, Faculty and University, roles in developing '**Technology Enhanced Learning**.' This means that all activities – and the overall philosophy – work towards using available technology to make teaching, learning, assessment and administration more efficient and effective. Throughout the project, aims and activities were planned and executed with this in mind. (See Appendix 1.)

This role – and our own experience – has led to the development of a simple, central principle. The materials and tools we develop should be used by the widest range of staff and students – as easily and reliably as possible. What seems a small point leads to a very important design and evaluation principles which are detailed elsewhere in the report and in the individual case studies. It is sufficient here to stress that we are intending to develop systems for practicing teachers and students – not technically minded 'early adopters.' (See Appendix 2.)

In turn this has led the project team has developed what we would call an 'engineering approach' – to curriculum development. By this we mean thinking 'backwards' from an overall goal, identifying key process areas and then thinking of ways to use all available technology to make their performance as efficient and flexible as possible. In short, to 'work smarter – not harder.' This has led us to develop a multi pronged strategy for dealing with the changes identified above.

- **Course Management:** There is a greater need for student monitoring and improved feedback system. A wide range of previous work in this area has shown that regular monitoring and detailed, positive feedback can have a dramatic effect on performance. Our view goes a stage further and proposes that thorough initial diagnostics can provide a further substantial benefit for the increasingly hard pressed tutors and managers – allowing them to target resources more effectively.

- **Contextualisation & Currency:** As foundation and supporting modules are 'generalised' they become **less** contextualised and integrated into the course as a whole. Students often see them as 'irrelevant' and this reduces engagement and ultimately performance. In turn this may impact negatively on achievement and retention. These problems are especially significant during the initial transition to Higher Education.

  'Technical support' modules - such as Financial Management, ICT and Numerical Methods - often fall victim to these contradictory aims. The situation is exacerbated as more courses (at all levels) introduce these 'technical support' modules as part of their curriculum. Business and entrepreneurial skills are incorporated in an increasingly wide range of courses (including those with a creative focus). The need for currency – of both content and presentation / distribution channels is obvious – and an obvious problem for a technology based subject such as the target module.

- **Range:** As the numbers and (above all) variety of students increases, tutors will need a wider choice of materials – including assessments. This implies that course teams must spend valuable time devising more and more ‘examples’ or assignments. Alternatively our ‘engineering approach’ centres on devising *tools* to allow *quick* and (relatively) *easy* re-jigging or even *repurposing* of materials. It should be said at the outset that this ‘range’ includes the *levels* of materials provided as well as quantity and ‘contextualisation.’

- **Interaction:** Again research (and experience) suggest that this should be almost a given. Activity based learning and above all interactivity – including the provision of feedback – are vital to improving performance. This is especially important in practical or ‘practice based’ subjects areas such as financial management, maths and ICT.

- **Control:** Linked to range and interactivity is the need to allow students some control over their work load and pace. Our ‘engineering approach’ is intended to help us plan and devise systems to provide these features.

One final aspect of this ‘philosophy’ is reflected in this report. The structure of the report, with stand alone case studies and appendices, is designed to allow the sections to be extracted and used separately by in the dissemination stages of the project. In short the aim is a report that can also be ‘re-purposed’.

Summary

ICT and, increasingly, business skills are now seen as 'core skills' to be incorporated in all courses at all levels. Basic financial management skills are now seen as a basic 'life-skill.' The changes in employment patterns, growth of the service sector and 'knowledge economy' all mean that graduates of all disciplines are increasingly likely to be self-employed for at least part of their career. Some knowledge of financial matters and appropriate management skills are therefore increasingly important to all courses.

The increased uptake of such modules means that the problems of contextualisation and integration need to be addressed urgently. Improvements in contextualisation and integration will lead to increased engagement, understanding and performance. Improvements in these areas will, in turn, improve student satisfaction and retention levels. The purpose, therefore, of this project is to devise and implement a system that allows real benefits in all these areas for the widest possible range of courses and at minimum cost.

Fit with JISC ReProduce

This project fits all aspects of the intended outcomes of the JISC Re-Produce programme:

- To stimulate and inform change in the sector through enhanced capacity, knowledge and skills around the use of information and communications technology to support learning and teaching

- High quality external learning content used more often

- To facilitate the transfer of learning content between institutions, repositories and external web 2.0 content storage

- Case studies documenting the cultural issues regarding the sharing of content

Before this project

The production and making available of materials was done on a limited basis. Re-purposing of these materials appears not to have been tackled in a rigorous way and systematic way. More importantly, most existing materials have not been designed with the idea of 're-purposing'. Traditionally materials are designed and made to meet a specific and usually short-term need and design features that would allow easy 'disaggregation' or redesign are rare.

In addition, many of the materials available were in the form of text and many added little if anything to the similar materials available in text books. In addition, the categorisation of these materials within repositories or on the web has not allowed easy retrieval

The importance of moving forward

In a module such as this one where there are a number of on-going processes over and above those found in a 'standard' module taught face to face. Getting the right materials into place is one concern. Working towards a system of doing so efficiently and effectively is another concern that in the longer term assumes a higher priority. The importance of working towards the effective production, categorisation and re-use is important for the HE community to get right. This project would suggest that putting the right materials in front of the student to take into account their baseline in-coming skills is one that is more easily achieved in large cohorts through the use of automated diagnostics.

Aims and Objectives

Initial Aims

Our aim is to produce a module structure that is adaptable, and allows flexibility in assessment, learning and teaching using diagnostic assessment to deliver appropriate reusable learning objects. (See Appendix 3). This is based on the following objectives:

1. to make extensive use of diagnostic assessment and feedback systems and learning objects to inform module delivery and development
2. to deliver interactive and paper based learning materials along with case studies that provide contextualisation of the material throughout that are usable by a wide range of courses and educators
3. to source or produce a bank of supporting activities and materials that allows tutors to cope with variations of ability, experience and expectation
4. to produce a series of modifiable or 'dynamic' software 'shells' to provide easily customisable 'containers' for different courses and/or institutions to incorporate their own activities, objectives or branding into the materials.

This leads us to the question of how overall aims fit into the JISC ReProduce project. The original aims of the project call were:

- To stimulate and inform change in the sector through enhanced capacity, knowledge and skills around the use of information and communications technology to support learning and teaching
- High quality external learning content used more often
- To facilitate the transfer of learning content between institutions, repositories and external web 2.0 content storage
- Case studies documenting the cultural issues regarding the sharing of content

Our project aims to achieve these aims with (and through) the specific, contextualised materials. However, perhaps more importantly, we want to develop tools to allow quick and easy development and reformulation of materials. Then we want to use the dissemination part of the project to make that approach more widespread as part of the project team's 'global' role helping staff and students to manage their work more effectively.

Changes and Amendments to Initial Aims: Early Lessons Learned

As the project developed some organisational and environmental changes made it apparent that we would need to rethink some of our aims – and some of our methods. Some of these 'changes' would have a slightly negative (or at least slowing) effect on the outcomes. Others had a positive effect, teaching us some valuable lessons for the longer term viability and sustainability of this project - and the development of learning objects in general.

The module has always been taken by two course areas. One of these courses decided to withdraw and run the old version of the module. This meant a smaller project team, fewer students for feedback. However meant we had a direct 'control group' to allow comparisons between materials and approaches.

The divergence of the groups also provided us with a valuable opportunity to make direct comparison tests on the use of our VLE and the reliability and compatibility of its infrastructure.

Finally, it was obviously our intention to produce resources that could be distributed via JORUM (and other repositories). During the period of the project there were major developments in our institution's plans for a repository. These events meant that our 'engineering approach' became even more important, allowing us to have multiple versions of resources in suitable formats – as the report and case studies will demonstrate.

Methodology, Implementation, Outputs and Results

Overall Plan

Specific details of each section of the project are given in the accompanying case studies. However the following is a summary of the basic, 'shared' steps and process.

The key 'deliverables' we aimed to produce were:

- Equipment, software and tools for the rapid production and deployment of audio-video case studies.
- Easily customizable or 'dynamic' software 'shells' or 'templates' – with accompanying tutorial aids - to allow rapid (and easy) production of support materials in a variety of formats.
- A revamped VLE module to allow easier management of and access to course materials. Ideally this would form a template for the quick and easy roll out of future support modules. As such it would be self-contained, including as many 'standard' tools and resources as possible.
- Tools and guides on 'workflow' and methods for staff to allow them to use these tools as efficiently as possible – with minimum effort and the shortest learning curve possible.
- An 'accounts generator' allowing rapid generation of 'practice' or 'test' accounts, together with questions and answers.
- Question banks (diagnostic, formative and summative).
- Practice exams.
- Lecture, workshop and supplementary supporting materials.

The combination of our philosophy and the project aims led, logically, to several key areas of (sometimes parallel) activity).

- Discussions with staff and students to identify strengths and weaknesses of current resources and systems.
- Identification, testing and evaluation of hardware and software tools.
- Identifying, testing and evaluating existing internal and external materials – building on the work done during project planning.
- Identifying and evaluating methods of developing software and workflow systems for materials production.
- Investigation of IPR and copyright legislation – and the development of administrative systems to manage clearance.
- Production of staff support materials for each of these activities/issues.

Detailed case studies for each can be found in the appendices. Each of these takes the format: Aim, Methodology, Implementation, Outputs, Results and Impacts/implications.

Overall Methodology

Initial planning: Staff / Student / Employer opinion

Course, evaluation and feedback documents were reviewed to identify the initial strengths and weaknesses of the module – and areas that needed to be addressed by the project. Consultations with staff (through informal team meetings) and students (via informally organised focus and discussion groups followed. All staff who had taught on the target module over the previous 5 years were consulted. For the 'consumer' view, students who had completed the module over the previous 3 years were consulted. These groups were 'open invitation' and wide ranging. Four groups of between 5 and 10 at a time were invited to comment on the module and its materials and (most usefully) to link the work done to their succeeding college and industrial experience.

As the project progressed a valuable secondary level of review came from staff and students on other courses. One member of the project team became involved in cross-institutional programs supporting Course Representatives (organised by the Student Union). Another member has taken a central role n the development of course and module evaluations. Both of these 'peripheral' activities provided further and valuable information and ideas.

Discussions with employers were also undertaken. This was part of the regular course review process but expanded for the purpose of this project. In addition, one of the course team had been involved in extensive discussions with employers as part of the recent development of a course in Entertainment Management. The findings from these discussions gave valuable clues as to the direction which needed to be taken in developing the new module.

All these 'consultations' were maintained throughout the project. Student opinion was sought on a regular basis – with discussion groups never more than one month apart. In addition a final, more formal, study of student experience was undertaken as part of a wider research project by the project leader. (See Appendix 4).

More detailed results will be made available via the web site and other dissemination channels. However, the overall findings identified the weaknesses we have already discussed in previous sections.

Trawling for Materials

In parallel to these consultations there was a wide ranging trawl of repositories to select and categorise appropriate objects. This proved very time consuming. Repositories such as JORUM and MERLOT, Educational establishments such as Cornel and MIT, and commercial sources such as BizEd were searched thoroughly, continuing the work done during the planning stage.

In common with many other projects we started by looking at a number of previous projects where materials have been updated or material from other courses have been repurposed. These centred on two projects that had been undertaken at Leeds Metropolitan University - **Streamline** and **Persona**.

It is worth noting the major problems encountered at this stage.

- As with any 'directory' (especially web based sources) there were problems with materials - and the links identifying them – being up to date and fully descriptive of their purpose, extent or technical details.
- More importantly the exact details of the original creators – and hence copyright holders or IPR terms was often harder to establish.

The most important lessons to be learned are not new. And they are not unique.

- Any database is only as good as the organisation - and the regular housekeeping – supporting it.
- Full details of any project – the team involved and the terms under which it was created – should be provided.

From our point of view these findings served to further support the contention that it is important to produce complete ‘packages’ of materials that include full descriptions, technical and briefing documents.

Software Tools

The accompanying case study details the underlying aims and design philosophy of the software project. Discussions with JISC, Learning Technologists and other experienced ‘re-purposers’ suggested several possible pieces of software – including educationally produced open source tools such as Reload, Glo-Maker and Xerte.

Our own experiences and investigations led us to try some commercial or open source tools (such as Course Genie, Respondus, Authorpoint, Captivate and Camtasia), many of which were available to us via the University’s site licenses.

There is a tabulated summary of the main tools used is in appendix 5. However, it is worth noting the major observations regarding software tools here.

Most of the re-purposing packages appeared to be aimed more at the technically minded. Using it isn’t always straight forward and would present barriers for the typical (hard pressed) academic – again this would work against a more wide-scale production and re-use of materials.

One issue is that many projects are run by the technically competent for the technically competent. Language used is aimed at the technically minded and is likely to prove a barrier to many outside of this category. Ask someone outside of the project what SCORM or IMTS is and the look is often a blank one. One input from the Leeds team has been a critical evaluation from the end-user perspective. Widespread take-up of use and re-use of materials needs a simpler approach and more consideration for the end-user.

Additional Planning

To allow flexibility in deployment of the learning objects the team investigated and tested approaches to the development and re-purposing of learning objects. Subsequently the team used statistics from the VLE to monitor usage and results from the diagnostic tests along with those from module assessments to monitor the effectiveness of materials produced. Comparisons were made with statistics from previous years and with the unexpected control group. These were cross referenced to the consultations already outlined.

In terms of stakeholder dialogue with interested parties around the university and beyond; as already mentioned, the cross-university roles of the project team members helped with this. For example, forums hosted by the Leeds Met Technology Enhanced Learning team (TEL Team) were used to both disseminate and gather advice. In particular the role of the learning technologists was useful in informing the project.

Working with others

A key issue in managing projects at this level is that it calls heavily on the good will of others outside of the direct project teams. Equally, a positive aspect of this issue is that the project also led to new contacts within and beyond the institution since it was often necessary to talk with colleagues outside of normal circles.

Engaging authors became increasingly difficult as soon as any hint of written clarification of IP was involved – You Tube videos a particular case in point, a shame since this is a rich source of basic finance videos.

Engaging with teaching and learning practitioners and content managers and owners and indeed pedagogic learning designers has been an essential aspect of this project. At Leeds Met, the manager of the new repository was helpful in shedding light on a number of issues – including the need for comprehensive labelling and tagging of materials. This really serves to show how much this sort of work is dependent on a number of individuals and where concurrent related projects can help each other. It is also important to recognise that much of the learning from this sort of developmental work is from ad-hoc conversations where short but useful snippets are volunteered in addition to formal meetings.

Because of this, one of the main 'secondary' outcomes of the project has been to reinforce (and accelerate) an existing initiative. Several of the University's Learning Technologists have been attempting to establish more structured – but still informal – means of communicating and sharing ideas, materials and tools. The lessons learned from this project have meant that has been developed into a full web presence using the VLE. It is anticipated that we will be opening this up to 'external' interested parties in the future.

There is a more detailed evaluation of the project's outcomes below, and a full summary of the feedback from learners in appendix 4. However it is worth noting here that it has been useful to learn not just about the about the *efficacy* of content but also about their *acceptance* and *usage* of an approach that requires them to engage with content provided in a form that they aren't always used to. One student at Leeds echoed a generally positive acceptance once they got used to it said 'this module is more straightforward than other modules due to the resources available.' The design and structure of the VLE module was praised for this reason – and (as already noted) has led to its development as a template for several other subject and support areas (including the University wide Student Union support for course representatives).

Finally, there have been various dissemination initiatives (including TEL team forums, the Learning Technology VLE site and staff workshops carried out by project team members). It is interesting to see that as colleagues are pulled into discussions on open-content and re-using content that they tend to open up to the possibilities, though it is fair to say that a number remain cynical of this approach.

The attitudes tend to reflect the experience, background and (often) career stages of the staff involved. For example:

- Staff with recent and wide experience of industry tend to be more open, reflecting a more co-operative culture.
- Academic staff who are either at an early or well established stage in their career tend to be more open. It is the 'middle ground' academics (presumably in the process of building a reputation and therefore more guarded about, for example, research) that are less forthcoming.

These are, obviously, generalisations made from a relatively small sample. However, it is (possibly) significant that they reflect comments made at JISC workshops by other ReProduce teams. Most significant is the simple conclusion that an environment that might be expected to be more co-operative (the academic world) shares much of the reticence and suspicion of the commercial world. This is a cultural tendency that needs to be addressed if 're-purposing' or sharing of materials is to become more prevalent – and more effective.

General evaluation and results

This section contains an outline of summary results. Attention is drawn to the evaluation and results within appendices and case studies.

Students generally were very pleased – with better feedback than other foundation modules. There have been some great module evaluation comments. There were some issues relating to students getting used to using some of the objects. In many cases they had not really used some of the additional support materials before. No problems were noted in using materials with other people's names on or videos where other academics were discussing a topic. The university also runs a module evaluation survey. In the case of this module, the student module evaluation results are very good and above the average for the university. The module statistics showed an improvement on previous years. There is still some further work to complete here since the module has only recently finished and data such as external moderator comments have yet to be received.

At the time of writing, colleagues on the 'control' half of the module had expressed interest in the learning objects and materials. It is highly likely that the materials re-purposed in this project will find their way into the whole module. This is one strong indicator of confidence in the process and of the materials sourced and re-purposed. One member of staff associated with the module commented on the much wider range of materials available in the module and its implications for a more accommodating and flexible delivery.

Further evaluation and results are included within the appendices and in the case studies contained within the appendices.

Outcomes and Impact

Staff discussions and student feedback suggest that staff (and students) are changing their practice as a result of our module. This is particularly true of materials that relate to exam practice.

There has been little work on externally sourced learning objects prior to this project. This and similar projects has been seen positively by senior management, colleagues and students. However dissemination has only just begun – and will be long-term element of the work started here, extending well beyond the formal timescale of the project.

It was felt that to really understand effectiveness of these resources it is probably necessary to run through the materials with two cohorts. Introducing materials and pedagogic changes will have impacts on students that can be investigated, but often module tutors will need to optimise their (changed?) approaches in the light of a couple of runs through of the module.

At Leeds Met, some of the re-purposed finance materials are about to be evaluated by the business school whilst the basic numeracy support resources are of interest to a skills development module in Hospitality Management.

Conclusions & Recommendations

This project has been interesting and challenging in equal doses. The basic concept of re-use of content would at first glance appear straightforward. However, there are so many issues that may or may not get in the way. It would appear to this project team that judicious choice of what is re-purposed is a key to reducing the number of issues involved. In many ways re-purposing can be as difficult or as easy as you want to make it – of course it may be that a particular piece of content is a must have and that all the barriers are worth overcoming. Nevertheless issues such as finding, choosing and using the right approach to re-purposing – together with the pervasive issue of IPR – will get in the way of this to a greater or lesser extent.

In an ideal world re-purposing content would be a very efficient process possibly akin to putting a new skin on a core content, but the teams experience has not suggested that this is so.

If the material is be exactly what you need it will have to be taken apart to 'disaggregate' the relevant sections of content which can be very time consuming.

Secondly there's the issue about currency -- just how up-to-date is this material? Updating material is a process that we have found to be extremely time consuming. The projects experience is that this will often depend on the level and subject area. As an example L1 finance materials tend to date less rapidly than higher level materials or in subjects that change i.e. technology.

There is an argument for working in blocks and stages to create multiple versions (often an output from the workflow) and developing a workflow that produces multiple versions to allow unpicking and different sized materials. This also allows staff to add formative tests or any other exercise more easily in a range of appropriate places. This approach has become our new 'standard practice' and is starting to pay dividends – most notably in the ability to rapidly develop or update materials – and to output them in a variety of formats.

Then there is the design issue -- it's okay if you have time to be able to sit down and design a module from scratch but discussions with other ReProduce teams suggests that it really has been about trying to take existing material, add some new material and repurpose it. One of the key learning points has been that if we try and break down content into objects small enough to be reused, the breaking down process is costly is enormously time-consuming. And so instead of a bottom-up design process, the end result was a top-down process when the content was put together and then chunked up later into individual resources. This also suggests that the producer of materials needs to work with both the module in mind **and** future external usage – not all content producers are likely to want to have this overhead.

Another design issue is where the original producer put an instruction 'you'll find this on WebCT' rather than 'you'll find this on the VLE/Learning System/Web' or some other suitably generic (though easily understood) term' – the latter reduces an avoidable element of re-purposing.

The repository has been an interesting system to engage with – it has been incredible that there is a lack of clear and consistent standard taxonomies and hierarchies for searching various repositories. It's almost as if the repositories have arrived, been filled with material, and then that material has been indexed by a group of people in different countries. With very limited time to re-purpose, access to external content has been critical, and the content is certainly not always been what it said "on the tin". It would be beneficial if content depositors had training for this area, though it is recognised that this is another overhead. This is an area where the JISC 'Streamline' project may benefit the community.

Finally, another critical issue has been that of intellectual property – it is not always easy to find out who owns a webpage and we have a number of materials still to clear for this project. Unfortunately IPR clearance also has the biggest potential penalties for getting it wrong – legal battles are not welcome in most institutions!

We have found that some learning technologists are really concerned with exposure to legal risk by just the action of placing (not creating/re-purposing) content on the VLE if the copyright situation is unclear.

So in terms of overcoming obstacles and recommendations for the future, we suggest the following:

- Any reuse project probably needs more time than one year, especially if it needs to be demonstrated to work inside the UK educational system;
- The older the material that's been reused, the longer it takes to refurbish – materials from newer projects is very efficient because the material is new, current and still familiar to the author;
- Consideration is taken of the level the content is initially developed for along with its propensity to date;
- IP issues are enormously complex and take multiples of the time you estimate, no matter how patient and lovely the JISC people are;
- Repositories are potentially fabulous sources of material, but are completely useless if that material cannot be found or isn't what the index suggests;
- Some centralised resource or support for learning technologists on the handling of IP issues would be beneficial

Implications for the future

We now have the majority of the tools and infrastructure to continue – and accelerate – development of re-usable materials. However, there are certain 'issues' that have been raised by our experiences.

- All future resources should be planned and produced with the idea of repurposing in mind – or at least to allow easy updating or customisation. This implies a 'modular' approach to structure and development.
- All resources should be packaged with the end-user in mind. This means the 'average' teacher – not the technically minded and definitely not the technician or developer. In addition resources should (as far as possible be produced as a package – with full documentation, instructions and all necessary supporting materials contained in that package.
- This 'one-stop' or package philosophy should be extended to the issue of IPR management. Materials, tools (documentary or otherwise) should be produced to make 'housekeeping' of IPR as easy to understand and (above all) as easy to do as possible. Production of such a package has been identified as one of our major goals for the coming year.

The biggest issues raised by this project inevitably centre on the overall approach to re-purposing of materials. IPR management is undoubtedly one of these. However, more significant is the need to foster a culture of sharing and co-operation among the academic community.

Appendices and Case Studies

Appendices

Appendix 1: The Technology Enhanced Learning Team at Leeds Metropolitan University

Appendix 2: Design Principles & Project Philosophy – Staff handout produced by the project team

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Case Studies

This section contains brief outlines of the separate project strands. Each section covers one specific aim or deliverable, including a summary of the evaluation for each.

Case 1: Excel Generated RLOs

Case 2: Learning Objects Re-Purposed as Exams

Case 3: Customisable Shells for Learning Materials

Case 4: Tools for Rapid Development & Deployment of Materials

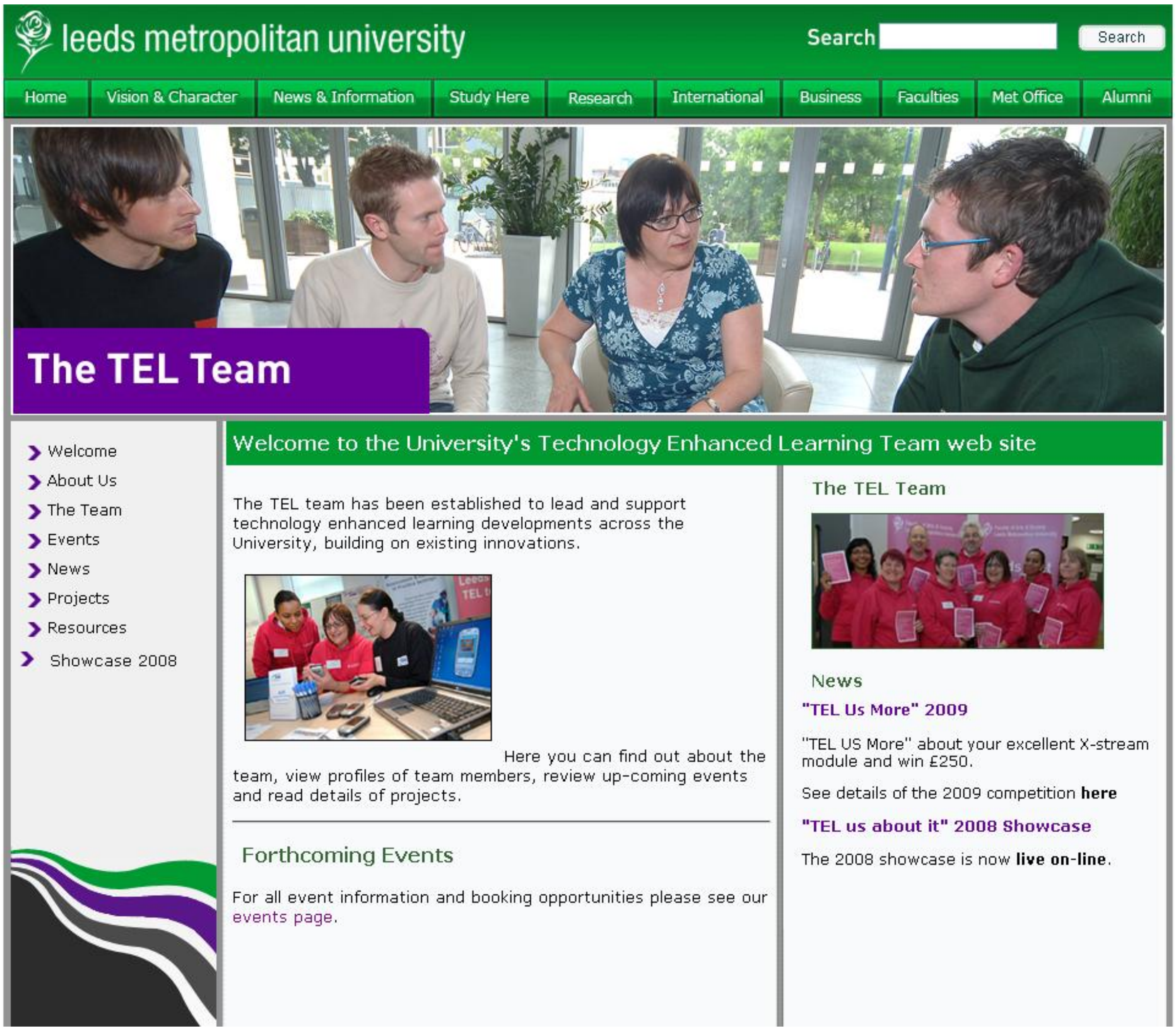
Case 5: Retrieving, packaging & uploading a typical academic's perspective.

Abridged Project Blogs

This section contains excerpts from the projects blog that are considered to be potentially of interest to the reader.

Appendix 1: The Technology Enhanced Learning Team at Leeds Metropolitan University

The TEL Team is made up of seconded academics with administrative support. Their role is to develop and foster the increased use of all technologies in support of teaching, learning and assessment. More information on: http://www.leedsmet.ac.uk/tel



Appendix 2: Design Principles & Project Philosophy – Staff handout produced by the project team

Over several years the Learning Technologists involved in this project have evolved a working 'philosophy' or set of principles for the design of learning materials – and the selection of tools used to produce them. The following is an in-house handout produced by the group for use in staff workshops and summarises those principles.

For more information, see: http://www.all4learning.org/monkey1.html

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Choosing & Using Development Tools

Some basic principles from the Monkey Butlers…

They should be **CHEAP** - or better yet **FREE!**

To buy **and** to run?

They should be **EASY** to use – with a short and shallow 'learning curve.'

If you have to read the manual…

They must be **RELIABLE** – or if you prefer **'ROBUST'**

Tools are no good if they don't work – with the minimum of maintenance

They should be well supported – and documented

They should work **OUT OF THE BOX** – as a **PACKAGE** with no **'tinkering'** necessary

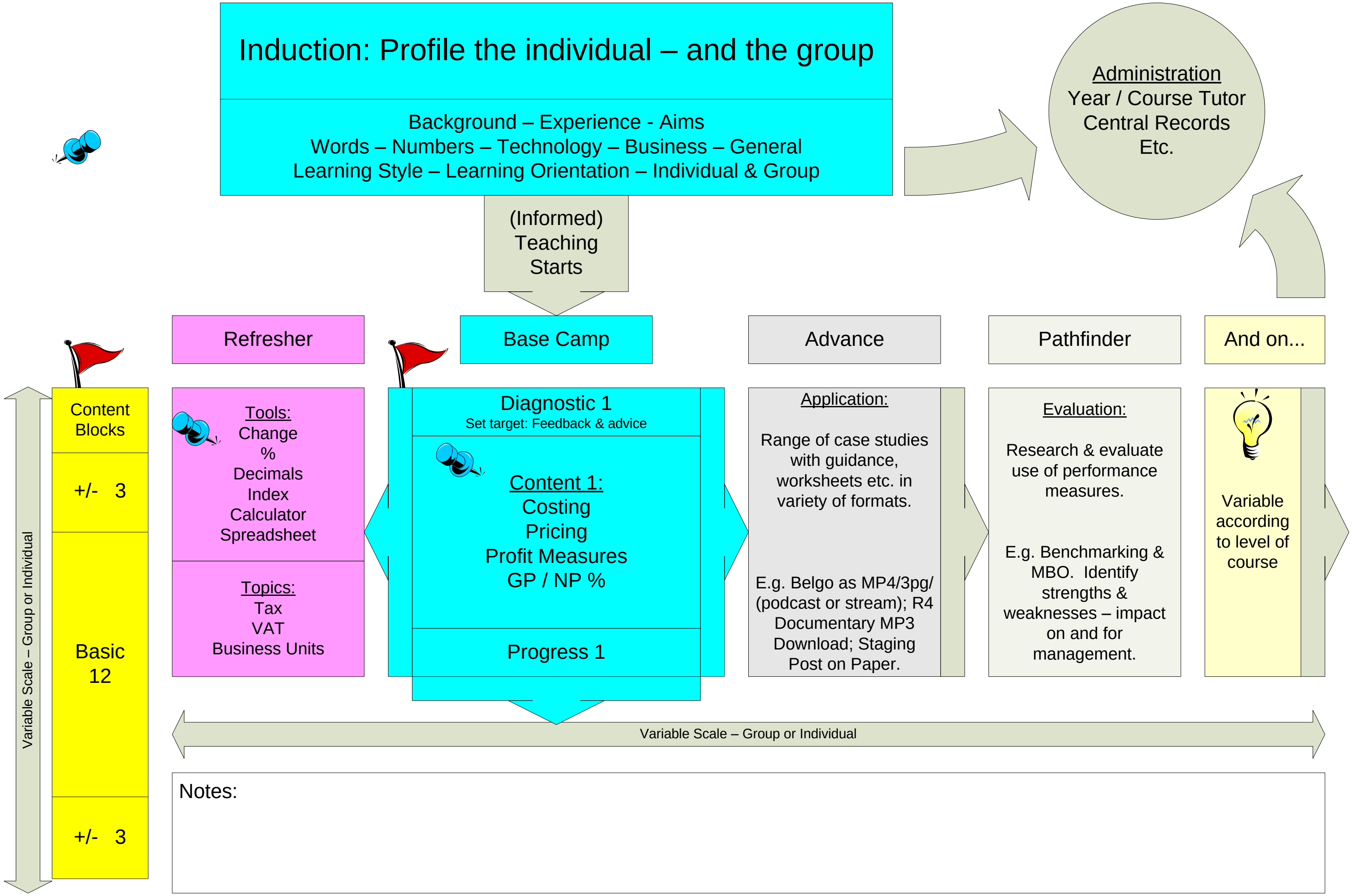
No plug-ins, no add-ons necessary

No need to 'just change a few settings…'

All instructions, documentation and 'bits' should be included

Remember: They are to be used by real teachers – not technicians or developers!

Appendix 3: Two Way Stretch – the Project Team's 'Flexible Module Structure'



Appendix 4: Student Feedback on the E-Learning Experience – Summary of research findings

Your experience of learning in the first year and the use of computer based assessment

About yourself

Q1 My course

BA Entertainment	1.9%
BA Events	69.7%
HND Events	18.7%
BA Tourism	5.8%
HND Tourism	1.9%

Q2 My age

18 - 20	85.2%
21 - 24	11.6%
25 and over	1.3%

Q3 I am

Male	14.8%
Female	82.6%

Q4 When I first started this course I rated myself as..

	Very confident	*Confident*	*Neither confident or unconfident*	*Unconfident*	*Very unconfident*
at finance	1.9%	25.2%	31.0%	27.1%	12.9%
at maths	6.5%	31.6%	27.1%	23.2%	9.0%
at using computers	20.0%	51.6%	18.7%	4.5%	2.6%

About your experience in the first semester at University

Q5 When I first started university achieving the right level in my studies is something I was...

Very confident I would achieve	7.1%
Confident I would achieve	67.7%
Neither confident nor unconfident I would achieve	18.1%
Unconfident I would achieve	5.2%
Very unconfident I would achieve	0.0%

Q6 My first assessment at university was useful for me to experience early on

Strongly agree	17.4%
Agree	62.6%
Neither agree nor disagree	14.2%
Disagree	3.2%
Strongly disagree	0.6%

Q7 Do you have any other comments about your first experience of assessment?

14.2%

Q8 Please consider the following about Applied Technology and Finance tests

	Strongly agree	*Agree*	*Neither disagree nor agree*	*Disagree*	*Strongly disagree*	*Not applicable*
Computer based assessment was useful to give me an early idea of my level of achievement	24.5%	63.2%	8.4%	1.3%	0.0%	0.0%

Getting my results back very quickly was useful	62.6%	31.6%	3.2%	0.0%	0.0%	0.0%
The tests are useful to see how much I have learned	33.5%	48.4%	7.7%	3.9%	1.3%	0.6%
In general the tests are too easy	1.3%	3.2%	27.1%	42.6%	21.9%	0.6%
On-line feedback from the tests is useful	23.2%	57.4%	9.7%	3.9%	1.3%	1.9%
Feedback in the classroom by the tutor is useful	21.9%	55.5%	14.2%	3.2%	0.0%	1.9%

Q9 Do you have any other comments about the use of computer based assessment in Applied Technology and Finance?

11.0%

Q10 Please rate your use of the following

	Don't know about this	*Do know but not used*	*Little use*	*Use a lot*	*Use each time*
Resources for the module on X-stream in general	1.9%	3.2%	21.9%	51.0%	20.0%
Each weeks extra materials	2.6%	13.5%	48.4%	28.4%	4.5%
Feedback from tests	5.2%	6.5%	29.0%	43.2%	13.5%
In-class pre-test revision	7.7%	8.4%	32.9%	38.7%	9.0%
The course text book	5.8%	28.4%	37.4%	22.6%	3.2%
Hints given on x-stream as to what to study	14.8%	4.5%	32.3%	38.7%	7.1%
Hints given by lecturers as to what to study	5.8%	5.2%	20.0%	49.0%	16.8%

Q11 Please rate your attendance

0 - 3 sessions	0.6%
4 - 6 sessions	4.5%
7 - 9 sessions	41.9%
10 - 12 sessions	48.4%

Q12 Please rate yourself on the following with 0 being zero or lowest and 5 being the highest

	0	*1*	*2*	*3*	*4*	*5*
Number of tests taken	0.0%	0.0%	1.9%	3.2%	16.8%	75.5%
Revision for tests	5.2%	9.7%	23.2%	31.6%	23.2%	3.9%
Work I did outside of class	7.1%	14.8%	25.8%	34.2%	11.6%	3.2%
Reading	12.9%	22.6%	28.4%	21.3%	11.0%	0.6%
My enthusiasm for the subject area	11.6%	7.1%	18.7%	35.5%	17.4%	6.5%
The importance of the subject area to me	0.6%	4.5%	14.2%	27.1%	35.5%	14.2%

This section is about your perceptions of the use of technology and finance within your chosen industry.

Q13 In my chosen industry use of technology

	Strongly disagree	*Disagree*	*Neither agree nor disagree*	*Agree*	*Strongly agree*
Is essential day to day	3.9%	0.0%	9.0%	49.7%	34.2%
Is essential for managers	3.9%	0.6%	5.2%	47.1%	40.0%
Is essential for workers	3.2%	1.9%	15.5%	50.3%	24.5%

Q14 In my chosen industry a knowledge of finance

	Strongly disagree	*Disagree*	*Neither agree nor disagree*	*Agree*	*Strongly agree*
Is essential day to day	4.5%	1.3%	14.2%	47.1%	29.0%
Is essential for managers	3.9%	0.6%	5.2%	45.8%	40.6%
Is essential for workers	3.9%	1.3%	23.9%	47.1%	19.4%

Q15 In my chosen industry

	Strongly disagree	*Disagree*	*Neither agree nor disagree*	*Agree*	*Strongly agree*
Finance is essential as part of a management course in this industry	4.5%	1.3%	7.1%	49.0%	34.2%

Technology is essential as part of a management course in this industry	4.5%	1.3%	7.1%	49.0%	34.2%
Basic maths skills is essential as part of a management course in this industry	4.5%	0.0%	9.7%	43.9%	38.1%

Thank you for completing this questionnaire. Please click submit to finish.

Appendix 5: Software Tools for Re-Purposing – Summary of evaluations

	Use?	Cost?	Comments
Re-Load http://www.reload.ac.uk/	Creation & Conversion of Learning Objects	Free	
Xerte http://www.nottingham.ac.uk/xerte/	Creation & Conversion of Learning Objects	Free	
Glo-Maker http://www.glomaker.org/	Creation & Conversion of Learning Objects	Free	
Respondus Suite http://www.respondus.com/	Creates questions, quizzes and class exercises (e.g. flashcards) in QTI or VLE specific formats.	? License depends on site, users etc. LMET Approx $5Kpa	Can import questions created in text files (though files may need cleaning up).
Wimba Create (Formerly Course Genie) http://www.wimba.com/products/wimba_create/		? License depends on site, users etc. LMET Approx £1Kpa	
Authorgen Author Point Author Point Lite http://www.authorgen.com/	Lite: Imports Power Point files & makes self contained flash files presentations with menu etc. Full: As above with more import/output and dubbing options.	Authorgen Lite is Free Quoted $99 academic license for full version	
Captivate (Adobe) http://www.adobe.com/uk/products/captivate/		? License depends on site, users etc. LMET Approx £50-	Can do direct screen recording to make video tutorials. Can report scores

		60 per copy	but only via client e-mail (up to version 3) Large range of outputs – especially video formats (including .flv, .avi etc.) Basics are easy – but advanced features need learning. IS a large range of tutorial material available Cost may be prohibitive. Can't import existing PowerPoints – need to perform/record/edit slideshow and then add interactivity, quizzes etc. Can add extra sound tracks etc.
Camtasia Studio (Techsmith) http://www.techsmith.com/camtasia.asp		? License depends on site, users etc. LMET Approx £85-100 per copy (inc. Snagit).	Can do direct screen recording to make video tutorials. Can import existing PowerPoints and allows addition of interactivity, quizzes etc. Can report scores but only via client e-mail (up to version 3) Large range of outputs including stand alone .exe files and SCORM. Basics are easy – but advanced features need learning. IS a large range of tutorial material available Cost may be prohibitive.

Snagit (Techsmith) http://www.techsmith.com/screen-capture.asp		If bought separately price unknown. Usually bought as bundle with Camtasia studio.	Extremely easy to use, powerful tools for capturing screen shots and building tutorial presentations. Can send directly to Power Point, Word etc. Can edit image
DVDx (Lab DV - freeware) http://www.labdv.com/dvdx/	Convert DVD (VOB) files to AVI, Mpg etc. for editing and inclusion on the web/in Power Point etc.	Free	Quick, reliable and has several presets. Ideal for converting DVD files to an editable format Allows minimal editing / cutting. Interface takes a few minutes to learn – and needs some technical knowledge. Only works on DVD (VOB) files – and can't decrypt.
Irfanview http://www.irfanview.com/	Converts & adjusts any graphics format Thumbnail viewer & file organiser. E.g. Convert from .jpg to .bmp while resizing, adjusting colour etc.	Free	Batch processing capability – so you can do several jobs at once. Quick, easy & reliable. Does multiple jobs at same time and can process in batches. Allows creation of working folders and easy processing/ copying when preparing materials. Slightly old fashioned interface – but not difficult to learn. Saves lots of time compared to full feature programs like Photoshop etc.
Super (eRightsoft.com – freeware) http://www.erightsoft.com/SUPER.html	Converts & plays any video format – and can adjust size, quality etc. at	Free	Batch processing capability – so you can do several jobs at once.

	same time. E.g. Convert existing .avi or .mpg files into .3pg for use on Sony Ericsson phone – automatically resizing to fit.		Old fashioned interface that is not very intuitive. Takes some experimentation to get used to it. Very quick and efficient – especially when compared to full feature programs like Premiere. Conversion only. No editing. Best used after all editing etc. done. Use for final file conversion.

Recommended Tool for direct conversion of Video

Slysoft.com ‘**Clone DVD Mobile**.’ Allows easy, menu/wizard conversion of existing VOB files to preset outputs for mobile devices. Includes Apple iPods/Touches, most phones and PDAs etc. Very quick and very easy to use.

http://www.slysoft.com/en

Appendix 6: Rapid Response 'Go Bag: Equipment & Tools

The following is a summary of the main equipment, software and hardware that makes up our rapid response and development 'kit.'

Toshiba Laptop – windows XP with Office, Adobe Web Elements and other software (listed below)

Sony DV Camera – DV tape with inputs for external microphone

Mustek DV camera – direct to SD / MP4 recording

Dazzle USB Analogue / Digital Audio / Video capture device for laptop

Yamaha MG102C Mixer – allowing use of multiple microphone/recording inputs and simultaneous recording to more than one device

2 x Desktop Stereo Microphones, stands and pop filters for recording of interviews and/or tutorials

2 x lapel microphones

(Intention is to invest in wireless recording system when possible)

Adobe Premiere Elements video editing software

Audacity audio recording software

Adobe Soundbooth recording, editing and cleanup software

Camtasia 4 / Snagit 8 – screen recording and capture tools

Captivate 3 – screen capture and e-learning creation tool

Suite of 'open source' software tools. Including:

Super – video format conversion & manipulation utility

DVDx – DVD/VOB to 'editable video format' conversion utility

Irfanview – graphics conversion & manipulation

Authorgen Lite – PowerPoint to Flash conversion and presentation utility

See **appendix 5** for summaries and reviews of **all** software used in the project

In addition, we have developed a 'workflow' pattern (with full instructions & documentation) to allow facilitate the use of the equipment by any member of staff. This initiative is being continued by a group of the University's Learning Technologists with regular workshops and a dedicated VLE site.

Case Studies

This section contains brief outlines of the separate project strands. Each section covers one specific aim or deliverable, including a summary of the evaluation for each.

Case 1: Excel Generated RLOs

Case 2: Learning Objects Re-Purposed as Exams

Case 3: Customisable Shells for Learning Materials

Case 4: Tools for Rapid Development & Deployment of Materials

Case 5: Retrieving, packaging & uploading a typical academic's perspective.

Case 1: Excel generated Learning Objects

This focus of this case study is to investigate how commonly available applications can be used to generate learning objects. The drivers for this case study stemmed from an analysis of basic final accounts practice exercises and how students use them in their learning. Students have found it useful to have a number of similar exercises to get used to a new technique. Rather than create these exercises manually and go through the process of checking that they balanced, Excel was used to create these exercises automatically using random values within certain parameters.

Aim of the case study

The aim was to investigate the use of software to generate simple repetitive learning objects.

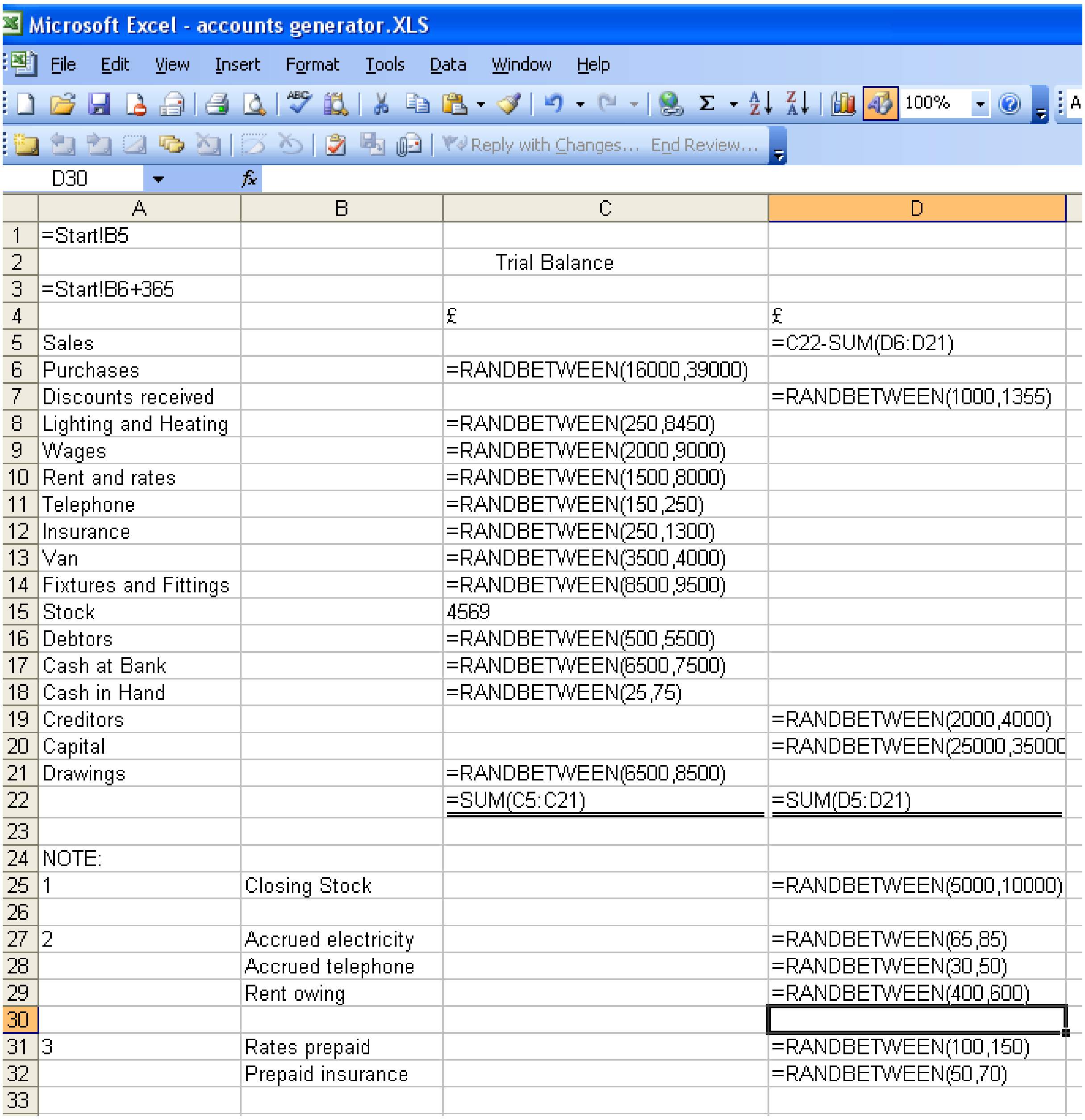
In achieving this aim, the following objectives were followed:

- To review the typical features of a basic final accounts exercise.
- To consider how this could be used in this area of teaching.
- To develop a simple approach that can be used in several different ways.
- To evaluate the product in use both in teaching and as a supplementary out of class exercise.

Methodology / Implementation

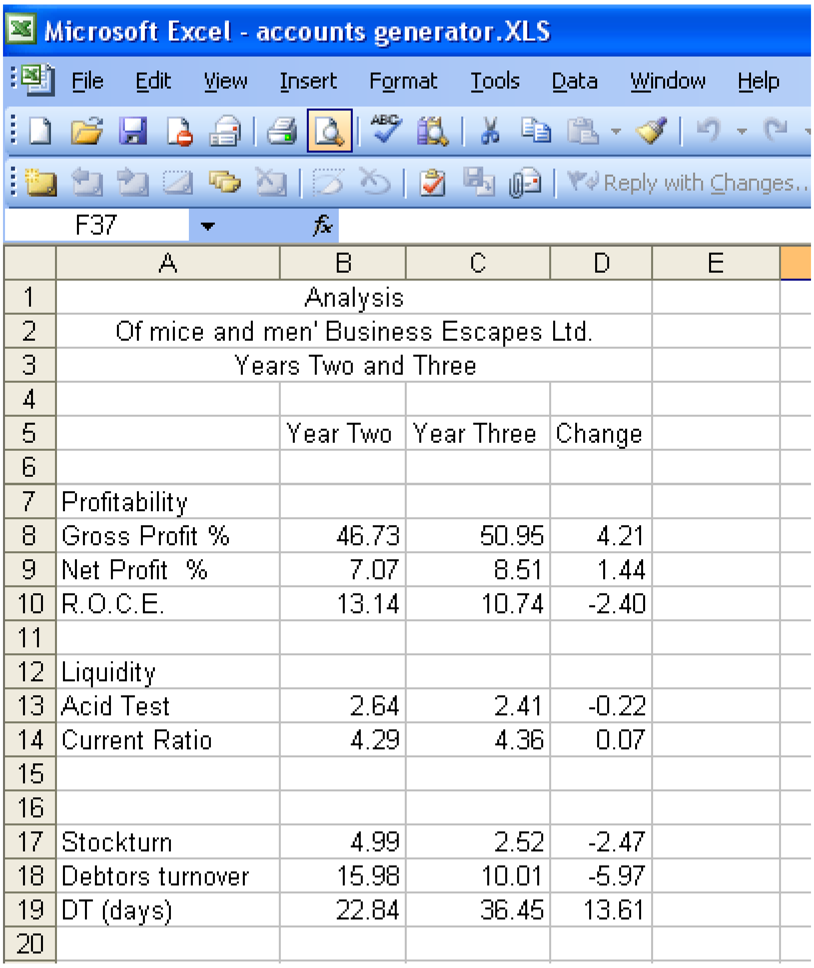
A trawl was made through exercises used by the project team and by colleagues teaching on other similar modules. This was followed by a look through similar exercises on the Internet. This review covered both typical content and the way that the exercise was used. Typical exercises asked the students to create a profit and loss account, and a balance sheet from a trial balance. Many of these exercises also provided answers for the tutor in a password protected area. Other exercises extended this concept by asking the students to produce accounts for an additional year and then perform some rudimentary analysis of the accounts. Again, a number of these exercises were accompanied by answers for either the tutor or for the students to check their own work. A particular feature apparent from this review was that many of these exercises were followed up by another very similar exercise to allow the student to practice skills. It became apparent that this was a suitable area to consider for the automated production of learning objects.

The first approach was to use Excel to produce a trial balance based on random figures. It became apparent later that this sometimes led to accounts that really didn't make much sense from a business perspective that some sort of parameters on areas of expenditure and income would be necessary - the Excel randbetween() function was used for this purpose to produce random figures between given parameters. This was the basis of an initial set of exercises. It was an easy matter to extend this and produce profit and loss accounts, and balance sheet as answers for the tutor to check students work.



	A	B	C	D
1	=Start!B5			
2			Trial Balance	
3	=Start!B6+365			
4			£	£
5	Sales			=C22-SUM(D6:D21)
6	Purchases		=RANDBETWEEN(16000,39000)	
7	Discounts received			=RANDBETWEEN(1000,1355)
8	Lighting and Heating		=RANDBETWEEN(250,8450)	
9	Wages		=RANDBETWEEN(2000,9000)	
10	Rent and rates		=RANDBETWEEN(1500,8000)	
11	Telephone		=RANDBETWEEN(150,250)	
12	Insurance		=RANDBETWEEN(250,1300)	
13	Van		=RANDBETWEEN(3500,4000)	
14	Fixtures and Fittings		=RANDBETWEEN(8500,9500)	
15	Stock		4569	
16	Debtors		=RANDBETWEEN(500,5500)	
17	Cash at Bank		=RANDBETWEEN(6500,7500)	
18	Cash in Hand		=RANDBETWEEN(25,75)	
19	Creditors			=RANDBETWEEN(2000,4000)
20	Capital			=RANDBETWEEN(25000,35000
21	Drawings		=RANDBETWEEN(6500,8500)	
22			=SUM(C5:C21)	=SUM(D5:D21)
23				
24	NOTE:			
25	1	Closing Stock		=RANDBETWEEN(5000,10000)
26				
27	2	Accrued electricity		=RANDBETWEEN(65,85)
28		Accrued telephone		=RANDBETWEEN(30,50)
29		Rent owing		=RANDBETWEEN(400,600)
30				
31	3	Rates prepaid		=RANDBETWEEN(100,150)
32		Prepaid insurance		=RANDBETWEEN(50,70)
33				

A further extension of this approach was to take key figures forward into the next year and produce a further trial balance exercise along with answers. This approach was found useful in providing the tutor with an unlimited supply of simple exercises for the student to practice with. A review of the use of the exercises led to a further enhancement by including the answers to a series of typical accounting ratios and percentages. This then allowed the tutor to ask the students to take the two years worth of accounts that they had produced, analyse them and produce some form of interpretation of these figures and the businesses performance. The following screenshot illustrates the sort of out report that can be then copied and pasted into an exercise or assessment.



	A	B	C	D	E
1	Analysis				
2	Of mice and men' Business Escapes Ltd.				
3	Years Two and Three				
4					
5		Year Two	Year Three	Change	
6					
7	Profitability				
8	Gross Profit %	46.73	50.95	4.21	
9	Net Profit %	7.07	8.51	1.44	
10	R.O.C.E.	13.14	10.74	-2.40	
11					
12	Liquidity				
13	Acid Test	2.64	2.41	-0.22	
14	Current Ratio	4.29	4.36	0.07	
15					
16					
17	Stockturn	4.99	2.52	-2.47	
18	Debtors turnover	15.98	10.01	-5.97	
19	DT (days)	22.84	36.45	13.61	
20					

As well as being used to produce exercises for workshop groups, the whole accounts generator spreadsheet was made available on the VLE so that students could generate their own accounts, practice and check their answers against the model answers generated by Excel.

A small scale review of this approach was carried out with tutors teaching on the module. A small sample of students who had used the accounts generator spreadsheet itself for further practice were also asked to comment.

Outputs and Results

The team have made available a number of these exercises and at the time of writing were uploading them to repositories. The accounts generator is also being made available. Further development of this approach is both feasible and desirable since there is a need for more challenging exercises - it is likely that further versions will be created and added to repositories. Using a commonly available application like Excel has advantages since most accountants will be familiar with this type of usage.

The module team found that this approach allowed the production of a number of similar exercises that can be changed easily from year to year and provide a new set of exercises for each cohort. This dramatically reduced the time required in preparation of materials for this stage of the module. In addition, allowing students to use the accounts generator software allowed students to further practice their own unique accounts as much as they required. The students using the accounts generator for supplementary work commented that the availability of answers was useful to them. The use of this approach also meant that at a later stage in the course the accounts can be used for analysis and interpretation of exercises.

The disadvantage of this approach was one commented on by students that unfortunately exercises produced have the same look. This was appreciated for the first couple of exercises but sooner became a negative factor.

Outcomes and Impact

This sort of approach is useful within the context of this area and for students who see finance as a difficult part of their level one studies. It is also possible that this could be extended to other areas of finance or perhaps some simple mathematical problems. It would be more difficult to extend this to other areas of the undergraduate curriculum. In terms of this project and this type of exercise however, it is probably easier than looking through the Internet for exercises that are available free from copyright and IPR restrictions.

One final question the team asked itself – “Is this the re-use of a learning object”? The answer really was considered to be yes, because it synthesises a number of very similar objects and allows re-use of the concept to generate as many new objects as needed.

Case 2: Learning objects re-purposed as exams

This case study looks at the process of taking learning objects from the internet and repurposing them as practice exams. The opportunity to practice exams is something that was welcomed by a number of students who are perhaps less confident or are keen to score a high mark. Production of multiple exams however is something that many tutors find a difficult chore. There are other issues such as the provision of feedback to questions which is required if the students are to benefit from taking a practice exam and some way of marking the practice exam as and when required by the students.

Aim of the case study

To look at the issues involved in repurposing final accounts into practice exams.

Methodology / Implementation

The assessment specification for the module called for the analysis and interpretation of two years of final accounts (profit and loss account, and the balance sheet) for a company. A search revealed a number of suitable sets of accounts available since this is a type of exercise frequently given to students. Most of these accounts however had no questions, answers or feedback. A small number of these accounts were acquired that were made available by their authors for reuse. These accounts with then re-purposed into exams.

The repurposing process involved adding exam header information, instructions to candidates and an outline of the task. Whilst the accounts varied from paper to paper, the only other variation was in the name of the accounts referred to in the outline of the task. This was produced as a PDF document that could be either printed out or read from the screen. The questions along with relevant feedback were added to the VLE; these included multiple choice questions, numeric answers and other question types. Questions were designed so that whilst the answer was unique to a particular set of accounts, they could be quickly repurposed for a different set of accounts. The exam paper and questions on the VLE were checked for readability and typos, with particular attention paid to the initial questions and paper which formed a master set from which all the other papers were produced.

Some of the papers were retained as future potential exam papers whilst others were released as practice exams on the VLE. Usage of the practice exams was monitored in terms of time and numbers accessing. At the end of the semester an evaluation was performed to investigate usage, effectiveness and impact on students' performance.

A number of exams were packaged and uploaded to repositories for future use and reuse. The only alterations were to remove some institution data specific information. The paper and questions were kept separate; this was to allow other academics to use the paper containing a set of accounts in different ways to those envisaged by the team.

Outputs and Results

The outputs of this aspect of the project have already been used by the team and a number of students. It is hoped that these exams are in a generic enough area to be useful to colleagues in other institutions.

The practice exams were used by 58% of students. The average mark obtained in the final exam was 71% for those who used the practice tests against 54% for those who didn't.

Students commented that it was useful to be provided with practice exams with feedback and to have a preview of the sort of paper they would have to tackle in the final exam. More work will be undertaken to evaluate this area of work further.

From a process point of view, taking sets of accounts and adding header and words etc was straight forward. Writing questions that were re-usable was harder, but it was found that the type that needs a student to perform calculations using memorised formulae to be able to answer a question was both effective and reasonably straight forward to move from one exam to another.

Outcomes and Impact

This area of work was useful in that it provided exam papers for the team and for colleagues elsewhere to use within a specific area of basic finance. The problems involved were not difficult and the team could foresee few difficulties in making this work in other areas of finance and perhaps beyond.

The question that this work raises is that of why there aren't more exams available in repositories and on the web. We expect students to understand and practice key concepts but in the experience of the project team rarely do we extend this to exams. Often all that is available to students in the way of mock exams are the question papers from previous years stored in the library without the provision of answers and feedback. Perhaps with an eye to student satisfaction surveys (in the UK at least) academics will start to consider the area of exam papers, practice and feedback. Whilst providing a number of practice exams is useful, if institutions started to upload previous exam papers with at least some notes on feedback to repositories, it will be possible to provide students with the opportunity to improve their exam marks.

Case 3: Customisable 'shells' for Learning Materials

Aim

The aim was to develop 'containers' and workflows to allow the importation and repurposing of existing materials **and** to allow rapid development and flexible deployment of new materials.

A secondary intention of the project was to create a complete 'rapid response tool kit' of hardware and software - and any other necessary materials - suitable for use by staff in the future.

To achieve this would mean a twin path strategy:

1. Choose and obtain suitable hardware and software
2. Develop a suitable workflow and all necessary supporting materials.

An over arching principle was to produce complete packages with all tools and instructions included.

Our term 'shell' is used here to indicate a ready made software container or template that can accept text, graphics, audio & video produced externally and (wherever possible) automatically repackage that material for deployment in a variety of formats. Typical examples include:

- Ready made flash based slide shows that can dynamically incorporate materials produced using external standard packages (such as Word or Power Point)
- Pre-produced VLE or web templates that allow quick and easy incorporation of previously produced materials – and the rapid deployment of those resources through a variety of channels (including via mobile media).

Methodology / Implementation

Certain key 'criteria' have underpinned the work in this area – and the choices of 'tools.'

1. Cost - cheap or free
2. Reliable - users should have confidence in the systems
3. Minimum learning curve
4. Maximum flexibility

Two things are worth noting:-

1. These criteria are central - even if they result in a multi-stage workflow that uses more than one 'tool.' (In practice the multi-stage approach is often better since it allows graduated learning & implementation by users and produces several versions of materials).
2. Target users are 'normal non-technical' lecturers - not 'pathfinders' or even the 'early adopters.' This is the most important criterion - and is the reason for minimum learning curve/maximum reliability.

Again, the principle of 'completeness' was central.

Methodology/Activities

The work was divided into several parallel processes:

- Determine needs – which means taking stock of existing hardware/software and (more importantly) the skill levels and preferred working tools and methods of the staff.

- Investigate tools available for 'conversion and creation' of learning objects. Involved research and discussion with existing users. Most significant – and underestimated – effort went into extensive testing and trialling of each potential tool.

A significant lesson was learned. We expected to take time and effort to test and evaluate software since we have experience of software development and testing. However, this went well beyond what we had planned.

We found that there was a need for far greater, more varied and extensive testing than expected. It was not sufficient to ask 'select few' to try software out in 'conventional' circumstances. Need wide range of end users involved – with varying levels of experience and skill. There was also a need to test the tools in time and resource constrained circumstances that mirrored 'live' teaching circumstances. Arranging, collating and interpreting results tool more time than expected – and this is major reason didn't achieve all our aims in this section of the project. However believe it will pay dividends in the end – allowing continued and faster development of more reliable tools and materials in the future. It also has the secondary product of increasing engagement in the staff involved.

This testing involved identifying suitable – and willing – members of staff. As can be imagined it is easy to find 'unskilled' or inexperienced staff – but by definition most of these are unable or unwilling to participate in the trialling of what they see as complex new tools. Extensive contacts built up through Faculty activities allowed a 'test group' to be identified. However, setting up and monitoring the activities took time and effort. Regular 'debriefing' meetings and discussions led to some interesting conclusions – which are set out below.

Identifying potential hardware and equipment was also time consuming – but much easier. Again the principles of ease of operation (with consequent minimum learning curve), reliability and flexibility were adhered to. Here the problems were mainly technical or market led. (For example it is increasingly difficult to obtain consumer level video cameras that allow the use of external microphones as companies move their products 'up-market.')

One area that is worth mentioning – as a lesson for future projects – is the influence of internal 'procedures' for purchasing and suppliers etc. The organisation's rules and regulations can add time and complexity (and frustration) to the process. Before embarking on a project like this it is highly recommended that staff find out as much as possible about those rules and the channels through which they are processed.

Evaluation of Tools / Software

Wanted tools to make and/or convert existing materials. Classify into categories.

1. Free (Often - but not exclusively) Open Source
2. Low Capital cost - minimum maintenance & revenue costs
3. High Cost - Capital purchase and/or revenue/license costs

It is often believed that this also equates to levels of complexity. This is not necessarily true. There **are** open source/educational tools that are hopelessly complex – **and** some commercial packages that are much quicker to learn (and often more flexible). However the reverse can also be true. It is essential to carefully evaluate each and to do so with appropriate end-users rather than technical enthusiasts.

Hardware

The first stage was to decide what we wished to achieve – and what we needed to do this. While the primary focus was on the target module did have extensive sessions with *staff* across faculty Results:

1. Reprocess existing materials - usually in *Office* based formats such as Power Point) and allow output to variety of channels and devices
2. Record, capture process audio - output to variety of channels and devices
3. Record, capture process video - output to variety of channels and devices

Part two of this strand of the project was to evaluate and choose equipment and put together the 'toolkit.' The main issues relating to this have already been discussed above.

The central idea was to create a 'rapid response' or 'go bag' with camera & recording equipment available at short notice, easy to use and capable of producing results in a variety of formats for rapid development and deployment e.g. cameras record ands MP4, audio as MP3 to reduce processing time.

This led to another decision. To meet such a target it was necessary to consider reducing 'production values' with emphasis on content and 'quick & dirty' production. This in turn leads to another – bigger issue and lesson learned: The problem of re-educating *staff.*

Overwhelmingly *staff* who want to make AVA materials think in terms of top quality broadcast quality production quality. Until recently it was, in fact, University policy that all video material had to be broadcast quality. This is both unrealistic (in terms of cost and time scales) and out of touch with student thinking. The YouTube Generation is *used to* lower quality, smaller screen size images and values speed of response (and relevance or usefulness) over outright production quality. This has become a strong and recurring refrain in our discussions with users. It is one which needs addressing and may well become one of most vital lessons learned from this project.

Outputs and Results

Most of these targets have been met. We now have the equipment – hardware and software – to allow the rapid creation of audio and video case or learning materials that can be incorporated into a variety of distribution and presentation tools. The software tools are listed in a separate case study and in appendix 5. The hardware tools and the contents of the 'rapid development kit' are listed in appendix 6.

This includes video and audio recording equipment with direct capture for low to medium quality output that is more than sufficient for on-line, mobile device or computer viewing.

Current work focuses on completing full staff training and work flow documentation to allow the equipment to be sued by any and all staff regardless of prior experience.

The production of full scale case studies – via interviews etc. – will be taking lace between now and the Summer. For the reasons outlined these have been delayed but it is anticipated that they will now be produced rapidly and developed more fully.

Outcomes and Impact

There **has** been a major increase in interest in use of audio video material – for teaching and learning **and** for marking and student feedback. Staff are realising the potential for improved teaching and support – and the ability to integrate both course materials and the learning technology tools available.

One minor 'downside' is the need for increased support and staff training in both direct areas (use of the equipment) and in associated issues (such as IPR). This was fully expected, however, and is inevitable if the project is to be successful. Staff workshops were planned to be held over the coming months – and the 'workflow documentation' will be extended to stress these areas and implications.

Case 4: Tools for Rapid Development & Deployment of Materials

Aim of the case study

Many of the aims for this section are explained in the previous case study. The same design criteria and planning principles were applied here. The production of the software tools and associated workflows are inseparable from the choice of equipment and the development of the audio video case materials.

Again, the methodology has already been outlined. Most of the key issues and problems to be addressed were the same as for hardware/software and tools. The most obvious and significant differences were:

- Copyright clearance. Probably most frequent problem. Project intended to be based around audio/video interviews as basis for case studies. As with all projects there were the usual problems with IPR clearance (identifying copyright owners etc.) However in our case the need to record interviews and AV material within companies brought extra problems. Obtaining clearance to do the interviews let alone use the resulting materials has been incredibly difficult.

In the increasingly corporate service sector businesses there is an ever increasing insistence on line management referring every request to senior staff. It is enough to say that negotiating with the different levels of management has been the most time consuming element of the work.

- Internal 'politics and procedures.' We have had some problems when evaluating and purchasing equipment or choosing, buying and installing software. The rigid procedures for purchasing has meant that the range of allowable 'tools' is restricted. In addition the University's procedures for 'processing' materials have frequently slowed down development.

For example:

  - Standard procedure for processing DV video footage for inclusion on the web involves up to 3 Departments. It is bad enough that the whole process takes a long time, but worse when none of the departments can give a firm indicator of how much time.
  - Until fairly recently there was a University wide policy that any video used must be 'broadcast quality.' Even if the final 'product' was intended for a website or mobile device and would only be in use for a short period. This has now been changed (after much lobbying). However it illustrates the difference of philosophy between the 'corporate' centre and the need for rapid development and deployment of resources.
  - Buying equipment and software means using central purchasing departments. Each of these has a list of 'approved' suppliers and products. If any item is 'non-standard' is extremely difficult to obtain permission to buy or install it. In the case of software, nothing can be installed (even for evaluation) without administrator rights – and staff (including the Learning Technologists) do not have administrator rights.
  - There are numerous software tools in the public domain that are highly suitable for (see appendix 5). On numerous occasions the project team (and other Learning Technologists) have been told that such software cannot be installed or used on University machines. Again, this policy is changing – slowly. Again it requires time and form filling to get the tools installed.

- There has been a need to develop a working network of relationships. This has taken time but we believe that the effort will give payoffs in long term sustainability of the project – and help produce the changes necessary to make rapid development and repurposing easier. A perfect example is the increased co-operation between the University's Learning Technologists (brought about by regular informal workshops to share ideas and the development of a 'special interest' module on the VLE). The project team strongly believe that such communication and co-operation is vital to successfully develop the culture and infrastructure necessary to develop more effective resources.

Outputs and Results

This area of project is the least complete. Have established and identified the tools – and have begun to set up the 'production unit' complete with workflow and documentation. Staff training is just beginning- and is expected to be a rolling program that lasts until the end of the coming Summer. Additional workshops will take place during the University's annual Staff Development Festival in September.

We have a series of software tools that allow us to take existing materials made in widely used packages and turn them into a variety of formats for use on all platforms – including web, computer and mobile devices. This can be done quickly and reliably with a minimum of technical knowledge and skill. These tools – together with all documentation and work flow information will form part of our contribution to JORUM and the project dissemination channels.

Outcomes and Impact

While this has been slower than anticipated, the delay has had some positive effects – and some significant lessons.

The biggest *benefit* has been the involvement of other Learning Technologists in devising and documenting the processes – as already mentioned. This will (hopefully) mean easier and more effective dissemination of the final outcomes.

The biggest 'lessons' involved confirming some principles long held by the team members. These are:

- It is essential to have a 'user focussed' design – and that user should be the 'end-user' in the form of the practicing teacher not the technical specialist or even enthusiast.
- The need for 'chunking' or modular thinking and a multi-stage approach to development of resources. This would then make 're-purposing' (and even simple updating) much easier.
- The aim of building dynamic 'shells' remains - but experience has confirmed and reinforced our belief in the need for 'complete package' approach - with full documentation, central access etc.

The biggest implication of this work is the need to re-educate staff - even the early adopters and 'ICT pathfinders.' They need to understand the principles outlined above – and move away from the development of materials that satisfy only the immediate need and have insufficient supporting documentation for users. Above all they need to move away from developing materials in isolation and in response to short-term pressures – and realise that a relatively small extra investment in time and effort will produce valuable benefits in the long-term.

Case 5: Retrieving, packaging & uploading a typical academic's perspective

Aim of the case study
This case study aims to highlight some of the processes involved in retrieving, packaging and uploading learning objects from the perspective of a typical academic. This case study is written by the academic.

Methodology / Implementation
With a background in IT but with no specific knowledge of the processes or software packages involved, the author was to extract a number of quizzes from the institutions VLE and upload them to the repository. This was to provide an independent test to evaluate the effectiveness of re-packaging learning objects for re-use. Issues and comments were recorded for consideration.

The process can be considered as number of steps: extracting the questions from the VLE module, formatting them and finally uploading them to the repository. The methodology and comments for each stage are present together, followed by general outcomes and impacts.

Extracting MCQ from WebCT
Methodology
Questions and answers were extracted from the institutions VLE using Respondus, a commercial available software tool (version 3.5). Although this is used within the institution the author had not previously encountered it.

The software was relatively straightforward but did have some non-intuitive or cumbersome elements to it. The following process was used to extract the data:

1. From the Respondus start tab, select the WebCT/Vista 4-8 *personality*
2. The Retrieval & Reports tab appears
3. Select Retrieval & Reports tab → Retrieve Questions option
4. From the drop down menu select the server required. If not present a new server can be added by copying the VLEs URL and adding user name and password
5. The appropriate module is selected from the dropdown list title *Group or Section*
6. Template option is greyed out and *Quiz/Survey/self-test* provides a list of all the quizzes within that module. Select the required one.
7. Enter a filename for the Respondus file and click *Retrieve.* This produced a proprietor Respondus file format.

In this example 11 quizzes were extracted, with a range of 14 to 41 questions.

Comments and Issues
The process was straight-forward and present few issues. A guess at the correct *personality* is required to extract the information, or even to present the option for extraction. A step-by-step guide would solve all these problems.

Preparation of Questions
Methodology
To maximise the application of the questions, a generic file format was to be included with the Respondus file. Initially this was to be the IMS QTI format but a plain text file and rich text format was used (see comments below), together with any image files and exam papers. The questions were visually checked for errors.

This was achieved in the following process:

1. Open a Respondus file by clicking *start tab → Open* and selecting the file required.
2. Select *Preview & publish* and *Print Options* menu item.
3. Within the *Select Format* option, select *Exam and answer Key*
4. Click *save to file* and select the file type as txt
5. Repeat 4, selecting file type as rtf

6. Open rtf file (MS Word was used) and visually check for errors
7. Note items for correction
8. Within Respondus select the *Edit* tab, click the question to be corrected, click modify in the resulting dialogue box and edit the question.
9. Save the changes
10. Repeat stages 2 – 5 to update the text and rtf file
11. Zip the required files to a single archive file. This included the Respondus file, txt, rtf and if present images and exam paper (in MS Word format).

This process was repeated for each of the quizzes within the module.

Issues and Comments

The quizzes were to be converted into IMS QTI format. The *personality* of the Respondus file includes a QTI option. An alternative filename can be selected, or the original file can be over-written. It should be noted that if an alternative filename is selected the file is saved. If over-write selected, the original file is not changed until a separate save operation is performed.

When converting multiple-response question/answers the warning:

> Question 5:
> Grading method changed to 'all or none'.

occurred. No information could be found in the help files or on the internet in general. On visual inspection, no difference in the question format could be found. When saved, this format still generated a Respondus file that is indistinguishable from other personalities (until you attempt to open it. If you choose the wrong personality you have the option to change format to the new one, but unfortunately not given information on what the format actually is).

A generic XML version can be generated by exporting the file. No additional warnings were generated, but when this file was imported, the multiple-response questions generated a negative value for wrong answers, which was inconsistent with the original format. E.g. if answer a. and b. both gave 50% of the marks, and c.,d., and e. 0, then upon importing from the XML file a. and b. still gave 50% of the marks, but c., d., or e. gave –33% of the marks.

It was therefore decided to include txt and rft versions of the quizzes rather than the QTI format.

One question generated the incorrect output of:

> 'This is mainly because
>
>
>
'

The corruption was consistent with repeated retrieval of the questions from X-Stream. The error was corrected within Respondus.

Checking the quizzes was best achieved from the rtf file, since all the questions and answers could be easily viewed, together with any images needed. A spell checker could also be employed. Viewing the questions in Respondus was found to be slower, as each question was viewed separately.

Publishing within Institution Repository
Methodology

Leeds Metropolitan University uses the Intralibrary Repository. Publishing the zipped quizzes was accomplished using the following method:

1. Logged into the repository, select the *work area* tab and then *Reserved* tab. Click the upload icon.
2. Select *Learning Object Contributor – Upload* from the drop down box labelled *Upload into Group/Process*
3. Select *Learning Objects* from the *Upload into collection* drop down box
4. Type in the title of the resource and browse to the actual file.

5. Clicking the + icon replicates the input box and step 4 can be repeat if you have multiple resources to upload
6. Check *return to work area* and *reserve resources*
7. Click *upload resource*
8. You are returned to the *Reserved* tab of the work area. Note there is a small padlock on the right hand side. It is closed and denotes that you have locked the resource
9. Left click the small cog icon to the left of the word upload (not the large cog below) and select *edit metadata*
10. You are now in the metadata editor. Select *Jorum* template from the *apply template* option
11. Ok the warning that some fields may be deleted
12. Select *recommended* from the bar that now says *mandatory*
13. Edit the metadata as required. Clicking the '+' icon will replicate that data field, for more than one keyword etc
14. Select '–' icon to delete replicated entries
15. Click *save*
16. Click *classify*
17. Select the appropriate field from the left panel
18. Click the *classify* button
19. Save and exit the editor
20. The upload arrow should be blue and clicking it will publish the resource. If grey, clicking it will show what in the work flow is incomplete

If multiple resources are to be uploaded it is possible to save the metadata of one and then copy it to later resources, and so fill in many of the data that is the same. Click the large cog and select *export resource*. In the window that opens click *advanced* and select metadata.

Comments and Issues

The repository was accessed via a wireless network link and found to be slow. Every change in format or display resulted in a complete page re-load, which resulted in a frustrating experience.

The user interface is not as intuitive as general users have come to expect. To upload a resource, users have to guess that this is on the Reserved tab of the work area tab, and is a small icon. The help files also proved to be of little use. A tutorial style or step by step may be useful.

Once uploaded editing the metadata was similar; getting to the editor took some guesswork and it defaulted to show the *mandatory* fields. Selecting *recommended* resulted in another slow page re-load. Applying the Jorum template generated another page re-load. When the template was applied a number of fields were replicated, each of which had to be removed (a re-load for each).

To speed the entering of common metadata the metadata of the first resource uploaded was saved and then copied to the other. This did speed the process but again some fields were replicated, each of which had to be deleted causing another page re-load.

Before an entry can be published all the mandatory fields have to be completed and a category selected. The publish icon is greyed out but it is not until you try to click this greyed out icon that it tells you why the resource cannot be published.

The uploading of resources generated a number of questions; is there a naming convention? Should there be information regarding the module/faculty that the information came from? This would put the information in context but is not useful externally. What should the contact/author information be? An individual could leave/move. What copyright should be applied? Should the word *quiz* be in the keywords? It is specified in the metadata but will this be searched? The following was used
Name: module name (*Applied Technology and Finance*) followed by the quiz name, or ATF_quiz name. Exam names followed the exam type.

Description: number and format of questions. Module it came from with a note to how relevant this was to the content. File formats.
Author: Leeds Metropolitan University. A contact is to be decided with consultation with the repository team.
Copyright: The copyright used was from the Creative Commons web resource. This gives a number of options, such as non-commercial use, or that it can be copied but not edited. An editable, non-commercial option was chosen, provided the edited material was also published with a similar copyright. The text:

'This work is licenced under the Creative Commons Attribution-Non-Commercial-Share Alike 2.0 UK: England & Wales License. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-sa/2.0/uk/ or send a letter to Creative Commons, 171 Second Street, Suite 300, San Francisco, California 94105, USA.'

is generated from the website and used in the metadata.

Keywords: Respondus, Multiple choice, quiz, plus specific info of quiz.

At present it is not know if the Leeds Metropolitan University Open Search will give access to the learning resources. If it does not it will be difficult to gain access to the information, if it does everyone, including students can gain access to the material. Is this an issue?

To find if the Open Search provided access a test resource was published. However, it could not be *un-published.* Learning objects have a 2 step flow process and metadata can be changed after publication. A *move* option is present but selecting this generates no results, including an error message. Again the help files provided little use.

Outcomes and Impact

The whole process proved to be complicated with a number of subsidiary issues that are best documented and part of a system. It was considerably more time consuming than expected and required a steep learning curve. Also, some unexpected effects resulted in the process having to be repeated to correct errors. A comprehensive step-by-step guide is required, either a written document and/or video of the processes on screen.

It would be easy to imagine other academics not being able to work their way through – at least not in a reasonable time span. One recommendation of this case study is that the sector recognises this and works towards a simplified process that all can follow. Without this, the problems are significant and are likely to prevent progress.

Selected Blog entries

The project team took the decision to compile a selection of the blog entries to provide an insight into some of the issues, conversations and reflections that arose during this project. The blog itself will be removed from the project website due to abuse of the blog comments feature.

Re-purposing for non-techies
The team were looking through some of the software that is available for creation and re-purposing of learning objects. As we looked through we were discussing the longer term future for re-purposing content. Our conclusion was that it really needs to move at least a step or two towards the main-stream. One particular hurdle we came across was that much of the software was aimed at 'techies' with little consideration of interface design or the user. In the team’s opinion, there is a need to clear up complicated software and issues of jargon before a wider adoption is possible.

Who owns the copyright when a book is involved?
A discussion with a colleague who is writing a book raised an interesting issue. This colleague is writing a book and will be producing some resources to go with the companion website. These resources are based on the resources already in use by that individual for teaching. If the existing resources are also released to the wider community, there is potentially a conflict here and a dispute over copyright. Obviously, individual contracts with publishers will vary, but it is difficult to image many publishers not wishing to provide resources only for those who buy the book. Is there an answer or is this down to negotiation with publishers?

It’s only a piece of paper.
Discussions with colleagues who are re-purposing materials is interesting in that it reveals a certain resignation in those involved – get out the legal bits of paper (even if in a friendly plain English) and many will lose interest rapidly. A phone call with someone who has some interesting content (or who will be in an interview) often get a ‘yes’ to using materials. A follow up e-mail is another thing. Asking someone to sign something is often the end of the debate – few will sign legal document without re-course to lawyers etc. In a more legally aware society, the simple act of sharing is something that is suddenly much more difficult than ever before.

A management perspective on RLOs
This is the outcome of several conversations with managers in education. Mention RLOs or external content, and most managers are momentarily perplexed. Try a quick explanation, and they get more interested. It appears the key interest is around efficiencies gained by avoiding duplication of effort. Avoiding duplication of effort is in many ways a worthy driver of change - how many research methods modules must exist across the UK? How many world-wide? A further un-packing of this goes further- quality resources open to all – the argument has been well rehearsed.

Start to move them towards operational issues and things suddenly become less certain. Inevitably their first thought moves to how are they going to prize staff materials away from drive C: on individual computers? Sharing content is so much a combination of top-down support with bottom-up buy in to the concept. Without both, large scale production and adoption of learning materials is likely to be problematic. Further conversations with lecturers also leads to those who think that releasing content is like selling ones soul to the devil - the sort of thinking that a few lines in PowerPoint being the core of what a lecturer ‘is’ - to give away this content is like asking for your redundancy notice; or so the I’m sometimes told. It is of course the same sort of thought process that says putting lecture notes on the VLE will mean that students will never attend a single lecture again - they fail to realise the amount of contextualisation that goes into lectures and any other work the lecturer does. This is or may be something that will fade away as more content is shared. The goals of saving effort and of freeing up of time are something that many will come to appreciate in time –as long as we early adopters and practitioners get at right.

When is a learning object not a learning object?
A conversation with the revolve team led me to re-think what might be considered to be a learning object. In addition to the learning materials they were creating the lesson plan or more realistically the session plan as an object thus adding to the resources available to the team and anyone interested in this externally. With this in mind, the team has decided to look at re-purposing the revolve learning / session plans. From a lot of perspectives, this makes sense; from the teacher who needs a quick fix

to someone looking at the materials in a repository who wants to try and understand the context of the materials and the way in which they were used.

Objects found and lost!
One of the exciting things about a project on re-using and re-purposing learning objects is that there surely ought to be a lot of really exciting things to discover out there. In this project's area, finance, there are a good number of possibilities available when looking at any of the repositories

A closer inspection reveals a large number of 'paper' type objects and a much smaller collection of interactive learning objects. This is really a shame since conversations with students (albeit small numbers) suggests that the type of object that enthuses students are the interactive ones. Is it that on-line reading is a poorer relation to paper and that students are less likely to be receptive to this than some intriguing object created in flash? One might also argue that the possibilities of dynamically connecting these objects with other objects are important; though this applies much more in an on-line environment. An example of this is this interactive supply and demand chart that will work well on its own, but can be linked to diagnostic questions and other resources dependant on the student's responses.

Paper based learning objects are important and do have their place. It is not surprising that there are many more of this sort of resource about - these could be said to be a result of many years of 'Teach 1.0' and very few years of 'Teach 2.0' coupled with a very different skill set needed to produce interactive objects as opposed to digital paper. As a community, I would argue we should invest any time available for interactive objects in areas where they will have an impact across more than one area. The supply and demand chart is one such example; study skills and research skills is another area where objects can be used widely. Perhaps with such a number of paper type objects about, creating many more may risk re-inventing the wheel and the inherent waste of time.

Mea maxima culpa?
One of the interesting aspects of this project is the reaction of various parties to the concept of RLOs. Often they are predictable along the lines of interest of the individual, but some take a surprising direction for a first reaction. One particular reaction came from a learning technologist who raised the issue of his exposure to legal liability if he uploaded a learning object for an academic that turned out to be copyright despite assurances that it was copyright free. This point struck a chord with the other technologists involved in the discussion as the legal implications of some of their day to day work became apparent. How fully are they for some of the work that is carried oit whilst working with learning objects?

Some issues aired are:
- How responsible is a learning technologist responsible for work he/she is asked to upload?
- In what circumstances might this change?
- Should it be assumed that lecturers have a clear enough idea of IPR and copyright to be able to definitively say that a learning object is okay to be uploaded?
- What was the role of a 'take down' clause in giving some legal protection to the technologist?
- What guidance was available from the institution?
- Are there any International legal implications?

So what is a Reusable Learning Object?
Okay, so it's easy to look in Wikipedia and find a usable definition of 'learning object'. There is also plenty of information out there in sites such as JISC, JORUM and the RLO CETL. Ask anyone with an interest in Technology Enhanced Learning they will also come up with a reasonable answer, but other academics?

Mention RLO and many will be unfamiliar with the term. Reusable Learning Object does a little better, but my experience is that many colleagues either don't understand or think that RLOs are just related to computing. This is one barrier that this project and other similar ones face.