

Introduction

You already have considerable experience of planning and carrying out small-scale projects. You know how difficult it can be to juggle resources and make effective use of time. Imagine how much more difficult it is when the project you are managing involves large numbers of people, lots of resources and substantial amounts of money! Determining what has to be done when and by whom, keeping track of progress and reporting to senior management requires considerable expertise. Perhaps not surprisingly, a large number of projects – particularly in ICT – do not fully meet their objectives. Some fail spectacularly!

It is now widely recognised that specialist knowledge and skills are required to manage projects successfully. This unit will introduce you to some formal project management tools and methods and give you an opportunity to use specialist software to plan and monitor projects.

You will be able to put into practice what you have learnt by setting up and running a small-scale software project. You will have to draw on the knowledge and skills you have learned throughout the course in order to plan for and produce the required software product. It is assumed that you already have skills in at least two different software applications and some experience of the processes involved in software design and implementation.

Although - in real life - budgeting is an important factor in any project, you will not be expected to consider finance. However, you will need to identify other resource requirements such as expertise, equipment and time. This is not a team activity, but will involve working closely with others, since people skills and good communication are key to successful project management.

The summative evaluation of your work for this unit will take the form of an end-of-project review at which you and other project stakeholders will assess the success of the project and your performance as the project manager.

This is a user-focused unit. The knowledge and skills developed in this unit are particularly relevant to those who use ICT on a daily basis at work or at school/college for personal, social and work-related purposes.

Recommended prior learning

This unit builds on the work you have done throughout the course. It assumes that you already have some experience of developing a software product, possibly through your work on *Unit 7: Using Database Software*.

What you need to learn

8.1 Examples of projects

As you know from your own experience, a project is not a never-ending process. It runs for a pre-determined period of time, involves a number of people and is intended to achieve a specific goal. A number of factors contribute to the success of a project including detailed planning, efficient use of resources and effective communication.

You will find it useful to begin your work for this unit by studying some real-world examples of projects, both large and small. In particular, you should try to identify:

- the characteristics they have in common
- critical success factors
- reasons why some projects fail.

8.2 Stakeholders

In the course of your research, you will discover that even small projects have a surprisingly large number of people associated with them. These are known collectively as stakeholders. A stakeholder is an individual or organisation actively involved in the project or whose interests may be affected by it.

You must understand the roles and responsibilities of the following stakeholders:

- senior management
- customer/client
- user
- project manager
- team member
- peer reviewer
- supplier.

8.3 Project proposal

The starting point for any project is either a problem that needs solving or a bright idea! Someone identifies a need or an opportunity that may be worth pursuing.

You will learn how to carry out a thorough investigation of an initial project idea and produce a project proposal detailing:

- what the project is about
- what it will deliver
- what benefits it will bring and any potential risks
- impact on personnel and practices
- the functional requirements
- who will use the product(s)/service(s) that are produced
- how long it will take
- when it must be finished
- what resources will be needed
- who else will be involved
- ways of tackling the project including recommendations.

Getting senior management approval is not a foregone conclusion. Project managers need to be good communicators, able to impart complex information in a jargon-free way, willing to compromise if necessary but also confident and determined enough to hold out for what they really believe is important.

A project proposal can be presented on paper, electronically or verbally or any combination of these. You will learn how to conduct yourself appropriately in formal meetings and communicate complex technical information to a non-specialist audience.

8.4 Definition of scope

Once a project is given approval to proceed, it is important that everyone involved knows exactly what it is meant to achieve, by when and how. In other words, it must be formally defined and signed off. Whereas the project proposal consists of initial ideas, the project definition sets out the details (scope) of the project and provides a yardstick against which to judge the performance of the project.

You will learn how to produce a project definition that includes:

- the reason for undertaking the project
- the expected benefits to the organisation
- the objectives of the project
- key success criteria
- the constraints
- areas of risk
- the project roadmap ie a rough estimate of what will be delivered when
- resource requirements ie people, materials, equipment and time
- the project's stakeholders
- interim review points.

Clear objectives are crucial, since a project's success will be judged by how closely it meets them.

You will learn how to define specific, measurable objectives, covering:

- the project deliverables, ie the product(s)/service(s) to be produced
- the quality criteria that the deliverables must meet
- the target completion date.

8.5 Project organisation

Since a project will involve other people, it is essential that the ground rules for communication and reporting are established at the outset.

You will learn how to set up and use procedures for:

- storing documents relating to a project (project folder)
- protecting information from accidental damage
- communicating with stakeholders
- reporting on progress
- holding reviews.

8.6 Phases of a project

Detailed planning is critical to the success of any project. A project manager needs to be able to analyse the requirements and to draw up a project plan.

You are already familiar with the sequence of activities involved in designing and producing software products such as relational databases and complex spreadsheet models. You will draw on this knowledge to help you divide up projects into phases, such as:

- analysis
- initial design
- prototyping and formative testing
- summative testing
- documentation
- hand over to customer.

You will learn how to break down each phase into a number of activities, estimate how much time will be needed for each and identify any dependencies between activities.

8.7 Project planning

A good plan should be easy to read and maintain. You will use project management software to help you produce detailed project plans, showing:

- the phases of the project
- the activities to be carried out in each phase
- start date and end date of each activity
- dependencies
- resources required for each activity
- dates of key milestones
- potential risks, their affect on the plan and how their impact can be minimised.

You will use charting facilities provided by the software to produce graphical representations of plans, such as:

- Gantt charts
- PERT charts.

Far from being fixed in time, the project plan is a dynamic document. It is likely to change many times during the course of a project. You will learn the importance of checking progress against your plan at regular intervals and of modifying and updating the plan so that it is always current and gives an accurate picture of what work has been completed, what still needs to be done and what problems or potential problems – if any – need to be addressed.

The plan provides a snapshot of the project at a particular point in time. Anyone looking at it should see at a glance the current state of the project. A complete project history can be built up overtime by capturing and storing copies of the plan at key points in the project (known as base lining).

You will learn the importance of base lining project plans at regular intervals to create a detailed project history.

8.8 Project execution

Once the initial plan has been drawn up and approved, the execution of the project in accordance with the plan can get underway.

You will learn how to use techniques for measuring progress against plan and spotting potential problems. Even the best-made plans can go awry! You need to be aware of what can go wrong in a project, such as a change to user requirements, a missing piece of equipment, illness or simply that the project is too ambitious.

A delay in completing one part of the plan is likely to have knock-on effects elsewhere. You will learn how to assess the impact of a hold up and take appropriate corrective action – if possible, to get the project back on target and thereby meet the stated handover date. You must decide how much deviation from the plan is acceptable before you inform senior management that there is a problem.

8.9 Deliverables

The output of a project is a set of deliverables, not all of which are necessarily delivered at the end.

You will need to be able to identify project deliverables, such as:

- software products
- documentation
- user training
- and produce a schedule for what will be delivered when and to whom.

8.10 Reviews

One way of checking that a project is on course and likely to succeed is to get someone who has no day-to-day involvement with it to carry out an independent review. Reviewers feed back to the project manager and to senior management.

You will learn how to identify suitable people and persuade them to act as reviewers for your projects and to make full use of their knowledge and expertise.

Formal management reviews also take place from time to time throughout the lifecycle of a project. Dates for these are usually agreed at the outset and listed in the project definition. You should never forget that senior management have the power to order work on a project to cease or change direction at any time. You will learn to prepare and present information at a formal management review.

8.11 Close down and end of project review

Sometimes projects simply refuse to come to an end. This is usually down to poor planning. The plan should specify dates for formal close down and end-of-project review, giving all those involved the opportunity to air their views about the strengths and weaknesses of the project and to formulate a list of lessons learnt. The project definition should be used as a yardstick to measure achievement.

You will learn how to set up and run an end-of-project review meeting, encourage attendees to voice their opinions, take accurate notes of the discussion and produce a written summary of the main points.

You should use this opportunity to gather information about your own performance and identify further development needs.

8.12 ICT skills

In order to manage projects efficiently you should be able to use ICT to:

- produce and maintain a project plan using project management software
- create and manage a shared work area
- present information to stakeholders
- produce agendas and minutes of meetings.

8.13 Standard ways of working

Whilst working on this unit, you will be expected to use ICT efficiently, legally and safely. You must adhere to standard ways of working, including:

- file management
 - saving work regularly
 - using sensible filenames
 - setting up directory/folder structures to organise files
 - making backups
 - choosing appropriate file formats
 - limiting access to confidential or sensitive files
 - using effective virus protection
 - using 'readme' files where appropriate to provide technical information, eg system requirements
- personal effectiveness
 - selecting appropriate ICT tools and techniques
 - customising settings
 - creating and using shortcuts
 - using available sources of help
 - using a plan to help you organise your work and meet deadlines
- quality assurance
 - using spell check, grammar check and print preview
 - proofreading
 - seeking views of others
 - authenticating work
- legislation and codes of practice
 - acknowledging sources
 - respecting copyright
 - avoiding plagiarism
 - protecting confidentiality

- eportfolio
 - creating an appropriate structure for an eportfolio
 - collecting together all the required information, converting files to an appropriate format if necessary
 - authenticating your work
 - providing a table of contents, using hyperlinks to locate information easily
 - testing for size, compatibility and ease of use, making sure that the eportfolio conforms to the technical specification.
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Assessment evidence

For this unit you will:

- research and produce a proposal for a new software product, present your proposal to senior management and draw up a project definition that defines the scope of the project once this has been agreed (assessment evidence a)
- produce a detailed project plan using project management software and use it to monitor and communicate progress throughout the project (assessment evidence b)
- keep detailed records showing how you managed the project (assessment evidence c)
- design and produce the software product and other deliverables specified in the project definition in accordance with the project plan (assessment evidence d)
- evaluate the project and your own performance, incorporating feedback from the end-of-project review (assessment evidence e).

Your eportfolio for this unit should include:

- (a) A project proposal, with evidence of how you presented it to senior management, and a project definition document that has been approved by senior management.
- (b) A project plan covering all the key phases of the project. Plus evidence of your use of the plan to monitor and communicate progress throughout the project.
- (c) Evidence of your performance as a project manager, showing how you communicated with stakeholders, acted on feedback, provided accurate information and ran meetings.
- (d) The software product – plus any other specified deliverables that you produce as outcomes of the project. Plus evidence showing how the production of the product correlated with the schedule specified in the plan.
- (e)* An evaluation – using feedback from the end-of-project review – assessing the success of the project, the effectiveness of the project management methods you used and your own performance.

*Opportunity for learners to be assessed on Quality of Written Communication (QWC) - (i-iii).

Assessment criteria – Unit 8: Managing ICT Projects

	Mark band 1	Mark band 2	Mark band 3	Mark awarded
(a) (AO 2)	<p>An outline project proposal that:</p> <ul style="list-style-type: none"> provides some information, but not sufficient on its own for senior management to make an informed decision shows limited awareness of audience and purpose. <p>Plus, a project definition document that defines the scope of the project.</p> <p>(0-3)</p>	<p>A well-researched, detailed project proposal that:</p> <ul style="list-style-type: none"> provides sufficient information for senior management to make an informed decision considers the impact of the proposal on others is clearly communicated, demonstrating sound awareness of audience and purpose. <p>Plus, a project definition document that fully defines the scope of the project.</p> <p>(4-5)</p>	<p>A well-researched, comprehensive project proposal that:</p> <ul style="list-style-type: none"> provides all the information needed for senior management to make an informed decision carefully considers the impact of the proposal on others is well argued and clearly communicated, demonstrating sound awareness of audience and purpose. <p>Plus a project definition document that fully defines the scope of the project and identifies clear and measurable objectives.</p> <p>(6)</p>	6

	Mark band 1	Mark band 2	Mark band 3	Mark awarded
<p>(b)</p> <p>(AO 1, 2, 3)</p>	<p>An outline project plan – produced at the start of the project – that:</p> <ul style="list-style-type: none"> divides the project into a number of phases, though these may not be entirely logical identifies some of the main activities to be carried out in each phase allocates time and resources to each activity, although these may not be entirely realistic identities some potential risks. <p>Evidence that some limited use was made of the plan to monitor and communicate progress.</p> <p>(0-6)</p>	<p>A detailed project plan – produced at the start of the project – that:</p> <ul style="list-style-type: none"> divides the project into a number of logical phases identifies most of the main activities to be carried out during each phase allocates a realistic amount of time and resources to most activities identities and assesses some potential risks uses graphical representation appropriately. <p>Evidence that the plan was used throughout the project to monitor and communicate progress.</p> <p>(7-9)</p>	<p>A comprehensive project plan – produced at the start of the project – that:</p> <ul style="list-style-type: none"> divides the project into a number of logical phases identifies all of the main activities to be carried out during each phase allocates a realistic amount of time and resources to every activity, taking account of dependencies between them identities and accurately assesses potential risks uses graphical representation effectively to give an ‘at a glance’ overview of the project. <p>Evidence that the plan was used effectively throughout the project to monitor and communicate progress and identify potential problems and that contingency measures were taken when necessary to keep the project on track.</p> <p>(10-12)</p>	<p>12</p>

	Mark band 1	Mark band 2	Mark band 3	Mark awarded
(c) (AO 3, 4)	<p>During the project, the learner:</p> <ul style="list-style-type: none"> communicates with stakeholders – both formally and informally – but needs frequent prompting provides some accurate information, but only on request needs support to organise, run and record the outcomes of formal project meetings. <p>(0-10)</p>	<p>During the project, the learner:</p> <ul style="list-style-type: none"> communicates appropriately with stakeholders – both formally and informally – making some use of feedback received provides accurate, information, with only occasional prompting independently organises, runs and records the outcomes of formal project meetings. <p>(11-15)</p>	<p>During the project, the learner:</p> <ul style="list-style-type: none"> communicates effectively with stakeholders – both formally and informally – making good use of feedback received provides accurate, detailed and up-to-date information, without needing to be prompted independently organises, runs and records the outcomes of formal project meetings confidently and professionally actively drives the project forward, adopting a proactive approach to project management, anticipating problems and taking appropriate corrective action when necessary. <p>(16-20)</p>	20

	Mark band 1	Mark band 2	Mark band 3	Mark awarded
(d) (AO 1, 3)	<p>A software product produced in accordance with the project plan that meets some of the objectives specified in the project definition, with some deliverables meeting the agreed quality criteria.</p> <p>(0-5)</p>	<p>A software product produced in accordance with the project plan that meets most of the objectives specified in the project definition and is delivered on time, with most deliverables meeting the agreed quality criteria.</p> <p>Throughout the development of the product there is some correlation between what the plan indicates should be happening and what is actually happening.</p> <p>(6-8)</p>	<p>A software product produced in accordance with the project plan that meets all of the objectives specified in the project definition and is delivered on time, with all deliverables meeting the agreed quality criteria.</p> <p>Throughout the development of the product there is a close correlation between what the plan indicates should be happening and what is actually happening.</p> <p>(9-10)</p>	10

	Mark band 1	Mark band 2	Mark band 3	Mark awarded
(e) (AO 4) QWC (i-iii)	<p>An evaluation - taking account of feedback from the end-of-project review meeting – commenting on:</p> <ul style="list-style-type: none"> the success of the project the effectiveness of the project management methods used their own performance as a project manager. <p>The learner uses everyday language and the response lacks clarity and organisation. Spelling, punctuation and the rules of grammar are used with limited accuracy.</p> <p>(0-6)</p>	<p>An evaluation – using feedback from the end-of-project review meeting – assessing:</p> <ul style="list-style-type: none"> the success of the project the effectiveness of the project management methods used, identifying key lessons learnt strengths and weaknesses of their own performance as a project manager. <p>The learner uses some specialist terms and the response shows some focus and organisation. Spelling, punctuation and the rules of grammar are used with some accuracy.</p> <p>(7-9)</p>	<p>A critical evaluation - making extensive use of feedback from the end-of-project review meeting – analysing:</p> <ul style="list-style-type: none"> the success of the project, measured against the objectives specified in the project definition document the effectiveness of the project management methods used, exploring key lessons learnt and justifying actions taken/decision made strengths and weaknesses of their own performance as a project manager, identifying areas for improvement. <p>The learner uses appropriate specialist terms consistently and the response shows good focus and organisation. Spelling, punctuation and the rules of grammar are used with considerable accuracy.</p> <p>(10-12)</p>	<p>12</p>
Total marks				60

(For AO performance descriptions see page 291.)

Assessment guidance

The guidance should be used within the context of a 'best fit' approach within the band. (See the section *Applying the mark bands* for further guidance.)

Assessment evidence (a)

Mark band 1 (0-3 marks)

To be eligible for mark band 1, learners must have produced an outline project proposal providing some of the required information (*What you need to learn* section 8.3) and an approved project definition document (8.4). However, the proposal will not provide sufficient information to enable senior management to make a decision.

For full marks in this band, learners must have shown some awareness of the audience for, and purpose of, the project proposal.

Mark band 2 (4-5 marks)

To be eligible for mark band 2, learners must have produced a detailed project proposal which has been well researched and that provides enough information for senior management to make an informed decision. Subsequently, learners must have drawn up a project definition document that accurately reflects this decision.

For full marks in this band, learners must have considered the likely impact of their proposal on others (Impact of personnel and practices 8.2) and have demonstrated a sound awareness of audience and purpose for both the proposal and the project definition documents.

Mark band 3 (6 marks)

To be eligible for mark band 3, learners must have produced a well-researched, comprehensive project proposal that gives careful consideration to the impact of their proposal on others.

The proposal provides all the information needed by senior management to make an informed decision. Learners will have communicated their proposal clearly, arguing their case if necessary. Their project definition document will contain a set of clear and measurable objectives.

Assessment evidence (b)

Mark band 1 (0-6 marks)

To be eligible for mark band 1, learners must have produced the plan before starting work on the project! They must have made some attempt to divide the project into phases and identify some of the main activities that will take place in each phase.

For full marks in this band, the learner must have allocated time and resources to each activity, although these may not always be realistic, and have identified some (at least two) potential risks. Project management software has been used to produce graphical representation of the plan.

Learners must also have updated the plan from time to time during the course of the project, though not often enough to ensure that it accurately reflects the current state of the project at all times.

**Mark band 2
(7-9 marks)**

To be eligible for mark band 2, learners must have produced a detailed plan up front using project management software, dividing the project into logical phases, identifying most of the main activities associated with each phase and allocating realistic amounts of time and resources to each activity and identifying some potential risks.

They must also have updated the plan regularly throughout the project and made some use of it to monitor and communicate progress through progress reports and meetings.

For full marks in this band, learners must have identified and assessed some potential risks, categorising them according to their likelihood/impact. They must have updated the plan regularly throughout the project and used graphical representation to show progress to plan and explained the changes made.

**Mark band 3
(10-12 marks)**

To be eligible for mark band 3, learners must have produced a comprehensive plan using project management software, dividing the project into logical phases, identifying all of the main activities associated with each phase and allocating realistic amounts of time and resources to each activity – taking account of dependencies between tasks – and have identified and assessed risks, categorising them realistically according to their likelihood/impact.

Learners must also have updated the plan frequently throughout the project, so that it always conveyed an accurate picture of progress to plan, using graphical representation effectively to communicate this and explaining changes made.

For full marks in this band, learners must have used the plan effectively throughout the project to communicate progress and identify potential problems (through progress reports and meetings), taking contingency measures when necessary to keep the project on track.

Assessment evidence (c)

**Mark band 1
(0-10 marks)**

To be eligible for mark band 1, learners must have made some attempt to manage the project, though they will have needed considerable ‘hand-holding’. They must have set up a project folder, organised and run one formal meeting – keeping a record of the outcomes – and produced one progress report.

For full marks in this band, learners must have communicated with stakeholders – formally and informally – at intervals throughout the project and organised and run different types of review meetings eg peer, formal management, end-of-project.

**Mark band 2
(11-15 marks)**

To be eligible for mark band 2, learners must have managed the project with very little prompting. They will have set up and maintained a project folder, organised and run various review meetings – keeping accurate records of the outcomes – and produced regular progress reports.

For full marks in this band, learners must have demonstrated that they made constructive use of the feedback they received from others, taking corrective action where appropriate. The documents produced must be appropriately presented.

**Mark band 3
(16-20 marks)**

To be eligible for mark band 3, learners must have taken ownership of the project, communicating effectively with stakeholders, maintaining detailed records, holding meetings, providing accurate and up-to-date information and making good use of feedback.

For full marks in this band, learners must have adopted a proactive approach to project management, using project processes and methodology to good effect to drive the project forward and produce the required results. They will have managed the project confidently and professionally.

Assessment evidence (d)

**Mark band 1
(0-5 marks)**

To be eligible for mark band 1, learners must have produced a software product **in accordance with the project plan** which meets some of the objectives specified in the project definition. The emphasis here is on working to the plan. A product that meets the objectives but was not developed in line with the sequence/timings of phases and activities specified in the project plan should not be awarded any marks.

For full marks in this band, the product must meet most of the objectives, with some of the deliverables produced meeting agreed quality criteria.

**Mark band 2
(6-8 marks)**

To be eligible for mark band 2, learners must have produced a software product in accordance with the project plan that meets most of the objectives and is delivered on time, with most of the deliverables meeting agreed quality criteria.

For full marks in this band, there must be some correlation throughout the development of the product between what the plan says should be happening and what is actually happening.

**Mark band 3
(9-10 marks)**

To be eligible for mark band 3, learners must have produced a software product in accordance with the project plan that meets all the objectives specified in the project definition and is delivered on time, with all deliverables meeting agreed quality criteria.

For full marks in this band, there must be a close correlation throughout the development of the product between what the plan says should be happening and what is actually happening.

Assessment evidence (e)

Mark band 1 (0-6 marks)

To be eligible for mark band 1, learners must have made some use of feedback from the end-of-project review meeting when commenting on the success of the project and their own performance as a project manager. The learner uses everyday language and the response lacks clarity and organisation. Spelling, punctuation and the rules of grammar are used with limited accuracy.

For full marks in this band, learners must have commented on the effectiveness of the project management methods they employed.

Mark band 2 (7-9 marks)

To be eligible for mark band 2, learners must have made good use of feedback from the end-of-project review to inform their evaluation. They must have produced an accurate assessment of the success of the project, the effectiveness of the project management methods used and their own performance as a project manager. The learner uses some specialist terms and the response shows some focus and organisation. Spelling, punctuation and the rules of grammar are used with some accuracy.

For full marks in this band, learners must have identified key lessons learnt and assessed the strengths and weaknesses of their own performance.

Mark band 3 (10-12 marks)

To be eligible for mark band 3, learners must have made extensive use of feedback from the end-of-project review to inform their evaluation. They must have analysed the success of the project (measuring it against the objectives specified in the project definition), the effectiveness of the project management methods employed and their own performance as a project manager (assessing strengths and weaknesses) and have explored key lessons learnt. The learner uses appropriate specialist terms consistently and the response shows good focus and organisation. Spelling, punctuation and the rules of grammar are used with considerable accuracy.

For full marks in this band, learners must have included some justification for their actions and decisions and have identified areas for self-improvement.

(See the section *Applying the mark bands* for further guidance.)

Delivering this unit

General information

Assessment requirements

The *Assessment evidence* section is addressed to learners and gives precise details of what they must do.

The *Assessment criteria* grid, on the other hand, is addressed to the assessor and defines the quality of output required for each mark band. Whilst the requirements remain the same across the mark bands, performance is differentiated by the quality of the learner's response, eg level of detail provided, quality of output, mastery of software tools, depth of analysis/evaluation.

The *Assessment guidance* section provides further information to help assessors determine which mark band a piece of work falls into and how to award marks within that band.

Balance of theory and practical work

All the marks available for this unit are for practical activities related to planning and managing a project using formal project management methods.

Learners will need to use project management software for this unit.

Vocational context

This unit has a user focus. Ideally, learners should experience a large-scale ICT project, possibly by sitting in on reviews, studying project documentation etc.

Standard ways of working

To be eligible for mark band 1, learners must work safely and adhere to relevant legislation and codes of practice. To be eligible for higher mark bands, learners must use standard ways of working to manage files, enhance personal effectiveness and quality assure their work.

Eportfolio

Learners will be expected to present their evidence for this unit in an eportfolio. The eportfolio must be constructed so that its contents can be accessed using 5th generation, or equivalent, web browsers, such as Microsoft internet Explorer version 5 or Netscape Navigator version 5 and be in a format appropriate for viewing at a resolution of 1024 x 768 pixels.

Learners must be clear about the distinction between file formats appropriate for product creation and read-only file formats appropriate for viewing. Acceptable file formats for eportfolio content are likely to be PDF for paper-based publications, jpg or png for images, html for on-screen publications and swf (Flash movie) for presentations, but may be revised to take account of future developments.

A detailed technical specification for eportfolios for this qualification will be published on the Edexcel website.

The following evidence should appear in the eportfolio for this unit:

- the project proposal, plus evidence of how it was presented to senior management
- the project definition document
- the project plan using project management software, plus evidence of its use to monitor and communicate progress
- a collection of evidence of performance as a project manager, eg project reports, agendas, minutes, diaries, project logs
- the software product, plus any other deliverables, plus evidence of how the production of the product correlated with the schedule (project plans, progress reports, minutes of meetings)
- an evaluation of the project and own performance resulting from feedback obtained at the end of project review meeting.

Teaching and learning strategies

Teachers may wish to combine this unit with one of the 'Using software' units, eg *Unit 10: Using Multimedia Software*, *Unit 11: Using Spreadsheet Software* or *Unit 12: Customising Applications*. Learners will need to have had some experience of developing software prior to attempting to produce a detailed project plan.

If combining the unit with another, learners must ensure that each unit is individually evidenced with clear links to the relevant unit strands.

Although this is not a team project, learners must involve other people to act as stakeholders: senior manager, reviewer, customer. Ideally they should work with 'real' stakeholders, but failing that they will need to have someone acting the part, eg the teacher could act as the senior manager, a fellow learner as a reviewer and other people role play the customer and end user/s.

When researching their project proposal, learners should consider carefully the impact that the proposed software will have on others. This is covered in 8.3 Impact on personnel and practices. The new product could impact on working practices.

The projects learners undertake must address a genuine need or opportunity. Ideally, a real client has a project to be undertaken, but, – failing this, teachers will need to devise a list of appropriate projects for learners to choose from. They should be complex enough to require at least 10 weeks to complete. Possible software projects could be:

- a bespoke software application such as a customer database, a stock control system or an invoicing and sales system, a sports league table
- a multimedia product such as an e-learning resource, an e-book or an eportfolio
- a website for an organisation.

Learners must set up and hold regular reviews throughout the project as well as a formal end-of-project review.

Teachers may wish to consider splitting the class into smaller 'management' groups of five to six learners for the purposes of formative review. Each learner has one management group to which they belong and to which they regularly report on project progress using the review dates built into the project plan at the outset. This will give learners opportunities to formally present ideas to a 'management board', to record minutes and to learn how to conduct themselves in a formal setting. This approach will also enable learners to receive peer support whilst maintaining a personal project.

The emphasis in this unit is very much on project management rather than software development, this is reflected in the way in which marks are allocated for assessment evidence (d) – not for the software product itself, but for its production in accordance to the plan and project definition.

Project proposal and definition of scope

Learners should understand the difference between the two documents. The project proposal is drawn up as the result of a limited project brief from the client. This enables the 'project manager' to discuss the project requirements with the client and draw up a detailed definition of scope which forms the basis of the implementation of the project.

Project Plan

Learners should use project management software to draw up an initial plan using the phases in 8.6. Gantt charts are a good way of depicting the plan in a graphical format and incorporating much of 8.7. The plan should be updated throughout the project period, incorporating changes to the different phases thus enabling the target handover date of the product and deliverables to the client to be met. Learners need to take into account possible risks to the implementation of the project by making provision in the plan. A variety of risks should be considered and learners should be able to categorise whether they are likely to happen or not. Learners need to understand how the plan is used at review meetings with stakeholders to ensure the project is kept on track.

Communicating with stakeholders

Learners need to appreciate the roles of a range of stakeholders to be used in the project. The client and senior manager are two essential stakeholders who undertake very different roles and these should be clearly defined and used appropriately. The client requires a software product and deliverables by a target handover date. The senior manager has allocated this project to a project manager and oversees a series of projects. Reviewers can help see the project is kept on track and target end users and peers can be used as testers in the prototyping and implementation of the product.

Different types of communication need to be evidenced. The learner needs to develop skills related to the running and recording of meetings. Undertaking the role of chair at these meetings involves a range of communication skills for the learner in their role as project manager. Learners will need to set up a project folder and ensure all aspects related to the project are clearly stored. The less formal communication could be recorded in the form of diaries/logs. Formal documents should be presented in an appropriate format and the learner will need to know the layouts of formal reports, agendas and minutes.

There will be meetings with the client, interim reviews with the senior manager and other stakeholders at key points. Such meetings should be incorporated into the project plan. Meetings set into the plan are formal communication. There should be some form of formal handover of the product and deliverables to the client. There needs to be a formal end of project review meeting where the stakeholders, including the project manager and senior manager discuss the strengths and weaknesses of the project and formulate a list of lessons learnt. Feedback from this meeting is essential in order for strand e to be addressed and should be fully documented in the minutes resulting from this meeting.

The project manager should present progress reports detailing where the project is in relation to the project plan at the formal review meetings.

There is likely to be informal communication between the different stakeholders during the implementation of the project. This may be informal discussion whilst various prototyping and testing is carried out. There could be telephone and/or email contact. A record needs to be kept of such communication and project diaries/logs could be used as well as screen prints of email in and sent boxes.

Delivering the project

The learner must evidence that a software product has been produced in accordance with the project plan that meeting the objectives specified in the project definition. Evidence the product has been produced using project management methods should be found in the plans and communication with stakeholders. The product needs to be delivered to the client on the target handover date which was set in the definition of scope and which formed the basis of the plan and updates. The learner will demonstrate that the project should be formally handed over and this is to include all deliverables. Apart from the product there may be user and technical guides as well as training for users. Some products may require an ongoing programme of updates over a specified period of time. This is often the case with a website that is maintained/hosted by a third party and not the client. The client accepts the product which should meet the objectives defined in the definition of scope.

Evaluation

The evaluation is based on feedback obtained from the stakeholders at the end of project review meeting. The learner should have ensured that such feedback was obtained and clearly documented. The emphasis is on the project and covers three areas listed in the assessment criteria. Learners should produce a thoughtful evaluation which assesses the strengths and weaknesses of the project, the project management methods and the learner's own performance as a project manager.

Links

Other units

The concept of project planning is introduced in *Unit 5: Web Management*. The project management skills and techniques that learners learn in this unit are generic. They can be transferred to work in other units.

Resources

Please note that while resources are checked at the time of publication, materials may be withdrawn from circulation and website locations may change.

Equipment

Learners will need access to:

- desktop/laptop computers ideally with the following minimum specification (based on Becta workstation specification 2/10/03):
 - 256 MB memory
 - 1.7Ghz Intel processor or equivalent
 - 40 GB hard drive
 - video card with 32 MB memory
 - CD/DVD
 - some form of rewritable media
 - UK keyboard and pointing device
 - colour, high resolution monitor, capable of supporting 1024 x 768
 - sound output (16 bit soundcard, output through speakers/headphones)
- printing facilities
- sufficient individual storage space
- internet access (broadband)
- Windows XP operating system or equivalent
- software:
 - project management, eg Microsoft Project (note - there are many open source applications available to download from the internet)
 - word processing, eg Microsoft Word, OpenOffice Writer
 - presentation, eg Microsoft PowerPoint, OpenOffice Impress.

Textbooks

Guy and O'Byrne – *ICT for Edexcel Applied A2 Single Award* (Hodder Murray, 2006) ISBN 0340926511

Heathcote T – *Edexcel GCE in Applied ICT A2 Single Award* (Edexcel, 2006) ISBN 1903133785

Johnston A – *A Hacker's Guide to Project Management* (Butterworth Heinemann, 2003) ISBN 0750657464

Watson M – *Managing Smaller Projects* (Multi-media Publications, 2006) ISBN 1895186854

Young T L – *Implementing Projects* (Spiro Press, 1992) ISBN 0852908806

Websites

www.ganttproject.biz – open source project management software

www.openworkbench.org – open source project management software

www.spottydog.u-net.com – Spottydog's Project Management website