

Higher National Unit Specification

General information for centres

Unit title: Multimedia: Developing Multimedia Applications

Unit code: D75W 34

Unit purpose: This Unit is designed to provide candidates with a broad knowledge of the theoretical concepts, principles, boundaries and scope of the development of multimedia applications. The Unit adopts a structured approach to the development process from analysis of the problem and research of user needs, through design, prototyping, implementation, testing and evaluation to ensure that the selection and deployment of media types matches the task requirements, context of use and user requirements. It prepares candidates for this role by providing them with the underpinning knowledge needed to carry out this type of development effectively. Current terminology is introduced as appropriate. The Unit is primarily intended for candidates in computing or graphic design. It would also be relevant to those with appropriate work experience such as the use of desktop publishing or computer graphics packages.

On completion of the Unit the candidate should be able to:

1. Identify task and user requirements and context of use
2. Design and prototype a multimedia application
3. Implement a multimedia application based on a design specification
4. Test and evaluate a multimedia application and revise as required

Credit value: 2 HN credits at SCQF level 7: (16 SCQF credit points at SCQF level 7).

SCQF (the Scottish Credit and Qualifications Framework) brings Scottish qualifications into a single framework of 12 levels ranging from SQA Access 1 to doctorates. The SCQF includes degrees; HNC/Ds; SQA National Qualifications; and SVQs. Each SQA Unit is allocated a number of SCQF credit points at a specific level. 1 SCQF point = 10 hours of learning. HN candidates are normally expected to input a further number of hours, matched to the credit value of the Unit, of non-contact time or candidate-led effort to consolidate and reinforce learning.

Recommended prior knowledge and skills: Access to this Unit will be at the discretion of the Centre. There are no specific requirements, however it would be beneficial if candidates had some general communication and practical computing skills such as might be demonstrated by the achievement of core skills Units in Communication and Using Information Technology at Intermediate 2.

Core skills: There are opportunities to develop the Core Skill of Critical Thinking at SCQF level 5 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Higher National Unit specification: General Information for centres (cont)

Context for delivery: This Unit is included in the framework of a number of HNC and HND group awards. It is recommended that it should be taught and assessed within the context of the particular group award to which it contributes.

Assessment: The Unit should be assessed by means of a single project covering all four Outcomes. Where this is not possible, Outcomes may be assessed individually.

Higher National Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, knowledge and/or skills, and evidence requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Identify task and user requirements and context of use

Knowledge and/or skills

- Identifying client requirements
- Identifying user requirements
- Identifying context of use
- Identifying hardware and software requirements

Evidence requirements

Evidence for the knowledge and/or skills in this Outcome may be presented as part of a report or in response to a specific question or questions. Each candidate will need evidence to show that s/he can, with reference to a particular proposal, identify hardware and software requirements and context of use, and investigate client and user requirements. The evidence could be derived from a case study or workplace situation, which covers all four items being assessed. A candidate's response can be judged to be satisfactory where the evidence provided is sufficient to demonstrate that the candidate is able to:

- Investigate why the clients need the multimedia application and what they expect it to achieve
- Investigate user requirements for the multimedia application
- Identify the context in which the application will be used
- Identify the hardware and software required to develop and run the application

Evidence should take the form of completed proformas for hardware (development system and delivery system) and software requirements (one for each package used), plus brief statements (one page each) of client and user requirements and context of use. The context of use must include the identification of users, a description of user needs, delivery medium, purpose and likely location of the package, and identify the appropriate hardware and software.

If a report is used this must be a minimum of 500 words. If extended response questions are used these must be completed in a minimum of 500 words.

Higher National Unit specification: statements of standards (cont)

Assessment guidelines

The assessment of this Outcome could be combined with the other Outcomes by using a single project that covers all Outcomes. Where this is not possible the Outcome may be assessed in isolation. Assessment should be open book. Candidates should draw on experiences if applicable, textbooks and handouts and use examples, tables, forms and diagrams to explain assessment points.

Outcome 2

Design and prototype a multimedia application

Knowledge and/or skills

- Information components of the application
- Production of a design specification
- Navigational techniques
- Prototyping the application
- Testing the prototype

Evidence Requirements

Evidence for the knowledge and/or skills in this Outcome may be presented as part of a report or in response to a specific question or questions. A working application prototype should be demonstrated. Each candidate will need evidence to show that s/he can, with reference to a particular problem description, identify information components, produce a design specification which shows the overall structure of the application, specify navigational techniques used to access information components and prototype and test the application. This will involve problem solving, analysis and synthesis. The evidence should be derived from a case study or workplace task, which covers all of the following six items. The evidence should be consistent and should accurately:

- Identify the information components that make up the application
- Include a design specification that shows the overall structure of the application
- Specify the navigational techniques used to access the information components
- Include a working application prototype
- Describe methods of testing of the prototype
- Demonstrate revision of the design if necessary

Information components should be listed and a brief description of each given (one page in total). The design specification should be presented in graphical form, eg using structure charts and/or storyboards (one page overview, plus one page for each major subsection). The application prototype should consist of (at least): an introductory screen, main menu interface (and sub-menus where appropriate), sample feedback or information screens, a finishing screen and appropriate navigational links. A brief report on testing (one page) should indicate what tests were carried out and the results achieved. This report should also include details of any revisions to the prototype implemented as a result of testing.

Higher National Unit specification: statements of standards (cont)

Assessment Guidelines

The assessment of this Outcome could be combined with the other Outcomes by using a single project that covers all Outcomes. Where this is not possible, the Outcome may be assessed in isolation. Assessment should be open book. Candidates should draw on experiences if applicable, textbooks and handouts, and use examples, tables, forms and diagrams to explain assessment points.

Outcome 3

Implement a multimedia application based on a design specification

Knowledge and/or skills

- Appropriate text, graphic, audio and video elements
- Acquire the identified media elements in accordance with relevant legislation
- Import and manipulate media elements
- Determination and setting of interface object properties
- Handle keyboard and mouse events

Evidence requirements

Evidence for the knowledge and/or skills in this Outcome may be presented as part of a report or in response to a specific question or questions. Each candidate will need evidence to show that s/he can, with reference to a particular problem description, identify the text, graphic, audio and video elements to be used to present each information component, acquire the relevant media elements, import and manipulate media elements, determine and set interface object properties and handle keyboard and mouse events. The evidence should be consistent and should accurately:

- Identify the text, graphic, audio and video elements to be used to present each information component
- Demonstrate that the identified media elements have been acquired in accordance with relevant legislation
- Show how media elements are imported and manipulated
- Describe how interface object properties are determined and set
- Describe the handling of keyboard and mouse events

Evidence should take the form of completed proformas of media elements for each information component listing type, source, import and manipulation details and any relevant legal requirements. A short report (one page) should describe the determination and setting of interface object properties and the handling of keyboard and mouse events.

Higher National Unit specification: statement of standards (cont)

Assessment guidelines

The assessment of this Outcome could be combined with the other Outcomes by using a single case study that covers all Outcomes. If this is not possible, the Outcome could be assessed in isolation. Assessment should be open book. Candidates should draw on experiences if applicable, textbooks and handouts and use examples, tables, forms and diagrams to explain assessment points.

Outcome 4

Test and evaluate a multimedia application and revise as required

Knowledge and/or skills

- Select an appropriate test strategy
- Ensure that the application operates as specified
- Check the usability of the application
- Evaluate the extent to which the application meets client and user requirements
- Revise the application as required

Evidence requirements

Evidence for the knowledge and/or skills in this Outcome should be presented as part of a report or in response to a specific question or questions. Each candidate will need evidence to show that s/he can, with reference to a particular proposal, select an appropriate test strategy, ensure that the application operates as specified, check the usability of the application, evaluate the extent to which the application meets client and user requirements, revise the application as required. The evidence should be derived from a case study or workplace task, which covers all five items being assessed.

Evidence should take the form of a brief description of the chosen test strategy, a test log and a usability checklist. Evaluation could be assessed via a checklist of points covered, a list of any deficiencies noted and the steps taken to remedy these.

Assessment Guidelines

The assessment of this Outcome could be combined with the other Outcomes by using a single case study that covers all Outcomes. Where this is not possible, the Outcome could be assessed in isolation. Assessment should be open book. Candidates should draw on experiences if applicable, textbooks and handouts and use examples, tables, forms and diagrams to explain assessment points.

Administrative Information

Unit code:	D75W 34
Unit title:	Multimedia: Developing Multimedia Applications
Superclass category:	CE
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History of Changes:

Version	Description of change	Date
02	Result of Core Skills audit	30/11/06

Source: SQA

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Higher National Unit specification: support notes

Unit title: Multimedia: Developing Multimedia Applications

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the Centre, the notional design length is 80 hours.

Guidance on the content and context for this Unit

The Unit is primarily intended to prepare candidates to undertake the development of multimedia applications. The Unit adopts a structured approach to the development process from analysis of the problem through design, prototyping and implementation to ensure that the selection and deployment of media types matches task requirements, context of use and user requirements. It prepares candidates for this role by providing them with the underpinning knowledge needed to carry out this type of development effectively. It is primarily intended for candidates in computing or graphic design. It would also be relevant to those with appropriate work experience such as the use of desktop publishing or computer graphics packages. Candidates will be expected to exercise a significant degree of autonomy in carrying out the tasks required for the Unit.

There is no prescription regarding hardware and software facilities. However, the relevant facilities should be available to the candidate throughout the duration of the Unit. In some instances, candidates may decide to create media elements themselves, eg by creating graphics with a drawing package or taking photographs with a digital camera. Although these activities could enrich the learning process, they are not directly assessable as part of the Unit. Candidates may also gain significant skills in the use of application packages, such as image editors, but again, these are not directly assessable.

Outcome 1

This will consist of investigating client and user requirements and identifying the context of use. The client is the individual or organisation who put forward the proposal for the application. The users are those who will make use of the final product. The context of use would include the users, delivery medium, purpose and likely location of the package, eg:

A basic numeracy package at SQA Intermediate 1 level, delivered on CD-ROM. The package is designed for use by schoolchildren in the classroom or for revision at home, but it may also be of use to adults who wish to improve their numeracy skills at home, at work or in libraries or study centres.

A home shopping application for electronic goods, delivered via the Internet for the use of adults who wish to compare products and select purchases from home and make payment via secure credit card transaction.

Hardware and software facilities include those required to develop the application and those required to run it. Candidates will be required to be familiar with the processes of research in order to investigate task and user requirements.

Higher National Unit specification: support notes (cont)

Outcome 2

The information components are the subsections into which the application is divided. Each will normally relate to some topic and could have several media elements associated with it, eg a few paragraphs of text, some photographs and a sound file.

The design specification may be presented in graphical form, eg using structure charts and/or storyboards and should show the overall structure of the application and the navigational techniques used to access information components. The application prototype should be a skeleton application consisting of at least: an introductory screen, main menu interface (and sub-menus where appropriate, sample feedback or information screens, a finishing screen and appropriate navigational links. It should show all the major navigational elements of the system and give an indication of the content at each level. Candidates should be encouraged to use their creative skills in designing and prototyping the application.

The prototype must be thoroughly tested, as it will provide the navigational model for the final application. Testing should be carried out systematically, eg using a depth-first or breadth-first strategy, to ensure that all possible navigational routes are checked. The prototype should be revised to correct any errors or deficiencies uncovered during testing.

Outcome 3

Candidates should be encouraged to present information by using a variety of media elements, including text graphics (drawings, diagrams and photographs) audio (sampled or midi) and video. Meticulous attention should be paid to the copyright status of media elements. Candidates should be encouraged to generate their own media elements or make use of public domain or licensed resources, such as clip-art collections. Where this is not possible, permission should be sought from copyright holders. As this can be a time-consuming process, it should be done as early in the Unit as possible.

In many cases media elements will require to be imported, eg by digitising video or sampling sound. Media elements may also require manipulation, eg resizing or cropping of images, compression of sound files etc. Candidates will need to know how to determine and set the properties of interface objects, such as buttons and handle simple keyboard and mouse events (eg press of alpha, numeric or function keys, left and right mouse clicks, mouse movement).

Outcome 4

Each candidate will need evidence to show that s/he can, with reference to a particular proposal, select an appropriate test strategy, ensure that the application operates as specified, check the usability of the application, evaluate the extent to which the application meets client and user requirements, revise the application as required.

Testing will provide an opportunity for candidates to demonstrate their skills in solving non-routine problems. Possible strategies would include top-down testing, starting with a skeleton which includes the main navigational paths and gradually adding additional components, testing each as it is added, or bottom-up testing, constructing and testing components in isolation then bringing them together to create the final product. Evaluation is an important component of this Outcome and should include an assessment of the extent to which the objectives of the product have been achieved, along with suggestions for further development or future enhancement.

Higher National Unit specification: support notes (cont)

Guidance on the delivery and assessment of this Unit

This Unit is likely to form part of a group award that is primarily designed to provide candidates with technical or professional knowledge and skills related to the development of multimedia applications. The Unit is highly practical in nature, so formal delivery should be kept to a minimum, with candidates being encouraged to gain as much practical experience as possible and explore the features of hardware and software.

Assessment will normally be by single assessment based on a project that will be undertaken as and when appropriate. Candidates who are in employment may be able to identify a suitable project at work, eg an electronic brochure for one of their employer's products, or a training package for a new business or procedure. Other candidates may wish to produce a web site or CD-ROM relating to a hobby, a biography or fanzine for a media personality or a product devoted to a sports club.

However, in some circumstances it may be appropriate to use shorter stand-alone assessments for each Outcome. Assessments of this nature could also be used for reassessment purposes.

Open learning

If this Unit is delivered by open or distance learning methods, additional planning and resources may be required for candidate support, assessment and quality assurance. A combination of new and traditional authentication tools may have to be devised for assessment and re-assessment purposes. For further information and advice, please see *Assessment and Quality Assurance for Open and Distance Learning* (SQA, February 2001 — publication code A1030).

Candidates with disabilities and/or additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative Outcomes for Units. For information on these, please refer to the SQA document *Guidance on Alternative Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs*, which is available on SQA's website: www.sqa.org.uk.

General information for candidates

Unit title: Multimedia: Developing Multimedia Applications

The Unit is about the skills and techniques required to undertake the development of multimedia systems. It has four main areas, each of which is the subject of a separate Outcome. To begin with you will analyse a problem description to identify task and user requirements and context of use. You will then specify the information needs and interaction requirements for a multimedia application. Following this you will design and prototype the overall structure of the application and the navigation techniques used to access information components. You will then obtain the media elements used to present each information component. After this you will implement a multimedia application based on a design specification. Finally, you will test and evaluate a multimedia application, revise and amend system as required.

Overall, you will be expected to use the knowledge and skills from the Unit to enable you to develop multimedia applications.

Assessment will either be by means of a single project covering all the outcomes or by individual assessments for each of the four Outcomes.

In order to complete this Unit successfully, you will be required to achieve a satisfactory level of performance in all assessed work.