Multimedia Computing & Web Development Consortium

ARRANGEMENTS DOCUMENT

G7DD 15

Higher National Certificate

Multimedia Computing: Web Development

G7DF 16

Higher National Diploma

Multimedia Computing

G7DE 16

Higher National Diploma

Multimedia Computing: Web Development

Release 1.1, December 18th 2003 Release 1.2, 24 March 2004

Developed by the Multimedia Computing & Web Development Consortium

Release 1.1, December 18th 2003

Updated 1.2, March 24th 2004

Table of Contents

1 Award Titles

1.1 Higher National Certificate:

- **G7DD 15 Multimedia Computing: Web Development**

1.2 Higher National Diploma:

- **G7DF 16 Multimedia Computing**
- **G7DE 16 Multimedia Computing: Web Development**

1.3 Validation Event

Date:

Thursday 15th May 2003

Venue:

Ayr College

Dam Park

Ayr

KA8 0EU

2 Introduction

This is the Arrangements document for the revised Higher National qualifications in Multimedia Computing with Web Development, and its predecessors.

The revised qualifications have been developed as part of a College consortium, consisting of representatives from various further and higher education Centres throughout Scotland, the majority of whom are currently delivering at least one of the SQA Multimedia Computing and/or Web Development award frameworks developed by James Watt College of Further and Higher Education between 1993 and 2001. The revised Higher National qualifications detailed in this document aim to consolidate and effectively be an update of the existing qualifications.

James Watt College of Further and Higher Education pioneered the HNC/D Multimedia Computing awards in 1993. These awards were updated and subsequently revalidated in 1996 in light of significant changes within industry, then again in 1999 to reflect the growth of the Internet and, in particular, the World Wide Web. These changes were acknowledged in the title of each award, which in 1999 became: HNC/D Multimedia Computing with Web Development.

In 2001, James Watt College of Further and Higher Education developed and successfully validated the HNC Web Development qualification. This qualification was developed in response to the increased significance of the World Wide Web and to address the fundamental skills-gap in the Web Development sector. The award provided candidates with the opportunity to focus on and specialise in the rapidly expanding field of Web development.

There has been a steady candidate intake over the past decade. Many successful candidates have progressed to Higher Education and have taken advantage of the various third year direct entrant routes to degree programmes being offered by an increasing number of Universities. Others have chosen to move directly into various types of employment. The demand from employers for candidates capable of working effectively in a Multimedia Computing and/or Web Development environment continues to grow, as does their demand for technical skills and expertise. The revised Higher National Certificate and Higher National Diploma qualifications aim to provide the necessary skills and depth of knowledge to ensure that candidates remain attractive to relevant employment markets.

This document contains modifications recommended by the consortium members and their respective Course Teams. Much of the decision making process has come as a result of constant monitoring of the market place. Other modifications and improvements have been incorporated to reflect feedback from industry, movements within Higher Education and input from current and former students.

It is intended that the resulting qualifications be a redevelopment of existing awards rather than the introduction of completely new awards. In light of technological advances and skills focus, it has been standard practice by the awards development team at James Watt College to carry out qualification 'health checks' at three to four year intervals (1993, 1996, 1999) for the Multimedia Computing provision. This is considered good practice in ensuring the validity of the awards.

3 Background to the redevelopment of the qualification

3.1 General Background

The Multimedia Computing with Web Development consortium was formed from representatives of various Further and Higher education Centres throughout Scotland. The majority of Centres represented currently deliver one or more of the frameworks originally developed by James Watt College of Further and Higher Education, a devolved Centre.

The consortium were charged with the task of developing a relevant and highly robust qualification that, through redevelopment, would provide an update to and effectively consolidate all of the existing Multimedia Computing and Web Development frameworks currently being delivered by the majority of Centres represented. The resulting qualifications shall adhere to the revised Higher National Qualification *design principles* introduced by the Scottish Qualifications Authority.

Each of the existing qualifications has proven to be a popular choice among candidates. Table *A* provides a sample of candidate entries from consortium-represented Centres over a three-year period:

Awards	1999/2000	2000/2001	2001/2002
HNC Multimedia Computing	249	216	220
HNC Multimedia Computing with Web Development			
HNC Web Development (James Watt College only)	N/A	13	27
HND Multimedia Computing	162	143	142
HND Multimedia Computing with Web Development			

Table A: Number of Candidate Entries per Year

It is, however, agreed that the existing provisions are in need to redevelopment. This is in large due to rapid change within the vocational sector, in terms of technology and the ever-increasing skill base required by Multimedia Computing and Web Development professionals. The significance of the World Wide Web, and indeed the Internet, to modern society has been reflected in revised awards. It is proposed that a tightly focussed Web development steam be offered to candidates wishing to pursue highly skilled career opportunities offered within this market. A generic Multimedia Computing stream is also proposed at HND level, developing a wider range of technical and creative multimedia skills.

The importance of relational database systems, scripting, programming, technical and professional skills have been recognised. It is also recognised that depth rather than breadth is vitally important to the employability of candidates and hence the justification for specialist streams in the second year of the HND award thus allowing candidates to focus on Multimedia Computing or Web Development. It is proposed that 'common ground' be covered during stage 1 (HNC/HND1) and that a degree of overlap between the proposed streams exist to facilitate development of skills that are deemed transferable.

3.2 Demand from Employers

As part of the revision of the HN Multimedia Computing and Web Development awards, a review was undertaken to identify key 'skill-gaps' within the profession and to identify skills most in demand.

The increased usage of multimedia titles and Web based applications has led to a greater demand for people with relevant and up-to-date, high-quality technical skills. Research shows that the need for such skills will continue to grow as emerging technologies such as 3G and digital interactive television evolve. Indications suggest that demand will continue to grow as developers enter pioneering markets and move towards taking full advantage of content specifically for a broadband user base.

It is significant to note that the skills most in demand by employers today are in large not catered for by the existing HN Multimedia Computing provisions. This is attributed mainly to the speed at which technology evolves within the computing sector and the constant need to retrain and acquire new skills to keep pace with technological developments.

In designing the awards, due consideration was given to the skills most in demand by employers. The resulting awards shall aim to address these skill gaps and make candidates very much more appealing to employers than what they otherwise would be through the existing awards. Appendix III contains analysis of market research gathered from potential employers.

Appendix III and section 12.4 of Appendix VI demonstrate how the revised awards propose to help meet the demands of employers and the steps taken to furnish candidates with transferable skills. Section 12.4 contains a number of recently advertised vacancies and highlights the need for the candidates with the skills that these awards propose to provide.

It is acknowledged that the sector is extremely competitive, despite the large number of vacancies, with most employers preferring to recruit individuals possessing a relevant degree level award. This is reflected by the fact that most candidates who are successful in achieving any of the existing HND awards opt to take advantage of one of several direct entrant articulation routes to stage three of a University degree programme. It is therefore essential that the proposed content of the revised award cater for the needs of Higher Education as well as employers and that existing articulation routes be maintained.

3.3 Multimedia Computing with Web Development Consortium

The redevelopment of the awards was undertaken by members of the Multimedia Computing and Web Development consortium (hereinafter referred to as "the qualification design team").

The Scottish Qualifications Authority wrote to all Scottish colleges to inform each of the existence of the consortium and to gauge interest and boost membership. Details of the consortium membership and Centres represented can be found in Appendix II – The qualification design team.

3.4 Consultation

Consultation was ongoing throughout the redevelopment process of the awards. The consultation involved:

- Course Team members
- Candidates undertaking the existing awards
- Employers within the Multimedia Computing/Web Development sector
- Higher Education institutions to which successful candidates of the existing provisions can articulate

Each of the consortium representatives held discussions with local Course Teams in order to identify the strengths and weaknesses within the existing provisions. Course Team input was duly tabled at meetings of the qualification design team. Course Teams generally agreed that a revision of the existing provision was necessary in order to meet the demands of candidates, employers and the needs of Higher Education in facilitating smooth articulation. Further analysis of Course Team input can be found in Appendix III – Details of consultation.

A number of industrial visits and an overwhelming market research return of seventy-five percent from a total of twenty-four questionnaires sent to industrial contacts has provided a valuable insight to the needs of employers and the skills that potential employees must possess. The majority of returns included an indication as to the possible role that a candidate seeking employment with an HNC or HND might be considered. Furthermore, in all cases, the returns suggested that, based on the proposed structure of the awards, the employment prospects of the candidate would be enhanced. Full analysis of market research can be found in Appendix III – Details of consultation. Sample job advertisements have been included within Appendix V – Evidence of support.

The initial consultation process highlighted a number of criticisms from candidates undertaking the existing awards. In large this related to the lack of Web development content, particularly in relation to the criteria specified in a significant number of recruitment advertisements, noting also that a number of the mandatory units were not particularly relevant to the skills demanded by employers. Candidates indicated that specialist streams would have been desirable in order to accommodate more in the way of depth of knowledge in key areas. Full analysis of candidate feedback can be found in Appendix III – Details of consultation.

Various articulation agreements between Universities and Centres delivering the existing provisions are well established and have proven to be very successful. The qualification design team are keen that all existing articulation agreements be maintained and further enhanced where possible. Due consideration has been given to ensuring that the articulation process between Centres and Universities is smoother and more directly relevant to the candidate. Details of articulation agreements can be found in Appendix VI – Examples of degree articulation. The consultation process with Higher Education is on-going and representative from the University of Paisley, Glasgow Caledonian University and Napier University have been invited to join the Validation Panel to help ensure that the revised provision offers directly relevant content for successful articulation to each of the direct entrant degree programmes.

The consultation process has confirmed that there is considerable demand for the proposed awards, their relevance to the Information Technology industry, the importance of core skills to both employers and Universities and that the redevelopment would increase the attractiveness of the awards to candidates.

3.5 The Scottish Credit and Qualification Framework (SCQF)

Due cognisance has been taken of the requirements of the Scottish Credit and Qualifications Framework (SCQF) in the design of these awards. This means that the Higher National Certificate (HNC) award would be broadly equivalent to the first year of a Scottish degree. The Higher National Diploma (HND) will be broadly equivalent to the first and second years of a Scottish degree.

All new units have been allocated to an SCQF level, HNC being level 7, while HND is level 8.

The National Qualifications ('Higher Still') units at Advanced Higher are at level 7. The Advanced Higher units 'D299 13 - Database Systems' and 'D095 13 – Software Development' have been included in the frameworks as an option. Section 3.9, below, contains information pertaining to the relationship between the awards and AH units.

The HN *design principles* (Appendix II) dictate how HNC and HND be composed of units at different levels.

Details of the SCQF Level Descriptors at levels 6, 7, 8 and 9 are given in Appendix IV. These Level Descriptors clearly indicate the cognitive skills to be demonstrated at each level.

3.6 Relationship between the awards and the Advanced Higher units

The awards incorporate an Advanced Higher (AH) unit from the 'Higher Still' National Qualifications (NQ) framework. This means that candidates having achieved appropriate Advanced Higher units prior to entry may count up to 1 credit from these towards their HNC/D.

3.7 Core Skills

The importance of core skills has been recognised (the survey of employers rated core skills highly in the vast majority of cases) and these are developed throughout the awards.

Recommended entry and exit levels for the core skills profiles, together with the appropriate carrier units are given in Tables *B* and *C* as shown on the next page:

Core Skill	***Recommended*** **Entry Level HNC/D**	***Recommended*** **Exit Level HNC**	***Recommended*** **Exit Level HND**
Communication	Intermediate 2	Higher	Higher
Information Technology	Intermediate 2	Higher	Higher
Numeracy	Intermediate 2	Intermediate 2	Intermediate 2
Working with Others	Intermediate 2	Higher	Higher
Problem Solving	Intermediate 2	Higher	Higher

Table B: Core Skills Profile

Core Skill	Carrier Unit(s)	Level
Communication	Communication: Practical Skills (Mandatory unit which carries Communication at Higher)	Higher
Using IT	Multimedia Computing: Multimedia Technology (Mandatory unit - contributes towards but *could carry* Using IT at Higher – see unit Support Notes) **D75X34** - Information Technology: Applications Software 1 (Optional unit which carries Using IT at Higher)	Higher
Numeracy	Mathematics for Computing: 2 (Optional unit – carries Using Number core skill element at only)	Higher
Working with Others	HNC Graded Unit Credit – Project (Mandatory unit - carries WwO at Higher* – see unit Support Notes) *audited but subject to confirmation by core skills validation panel	Higher
Problem Solving	HNC Graded Unit 1 Credit – Project (Mandatory unit – carries PS at Higher*) *audited but subject to confirmation by core skills validation panel HND Graded Units 2 Credits – Project (Mandatory unit - contributes towards PS at Higher)	Higher Higher

Table C: Carrier Units for Core Skill

It should be noted that Higher Level is the most advanced level of Core Skill currently defined by the Scottish Qualifications Authority. The qualification design team considered it appropriate to recommend Intermediate 2 as an entry level for all Core Skills for HNC and HND awards. Candidates who had completed a Scottish Group Award at Higher would have Intermediate 2 or above in each of the Core Skills.

It is recognised that many candidates, particularly adult returnees, may not possess a specific Core Skills Profile on entry and hence entry level is recommended only. The recommended exit level Core Skills Profile is an indication of what the qualification design team considered would denote the level of proficiency required to enable candidates to derive the maximum benefit from studying the HNC/HND awards in terms of opportunities for further study (including Higher Education), personal development and employment.

Market Research targeted mainly at industry gave a high prominence to the importance of Core Skills. This is most noticeable in demand for communication, problem solving and working with others core skills. A high level of proficiency was expected among employers for the IT core skill.

The qualification design team considered it important to develop each of these Core Skills within the HNC award, and thus the recommended exit level for the Core Skills set has been set at 'Higher', with the exception of the Numeracy Core Skill, which has remained at Intermediate 2. It should be noted that for candidates wishing to gain the Higher Level Numeracy Core Skill, it is possible to achieve the Using Number element at Higher Level through the completion of optional unit *Mathematics for Computing 2*. This unit is available to candidates studying either stream of the revised HND provision.

In line with that of the revised Higher National Computing framework of July 2001, the qualification design team considered it appropriate to develop the Communication Core Skill through a discrete Communication Unit (see *Table C* on the previous page).

The Core Skills 'Working with Others', 'Problem Solving' and 'Information Technology' can be developed comfortably within the mandatory carrier units/Graded Units without forcing them artificially.

The qualification design team gave due consideration to setting the Numeracy Core Skill exit profile to Higher Level. It should be noted that feedback from industry rated the Numeracy Core Skill as the least significant among the five Core Skills. In light of all factors, the consensus of the qualification design team was that to embed this Core Skill artificially in a unit such as 'Digital Content: Audio and Video 2' would be unacceptable, as would making the HN unit *Mathematics for Computing 2* a mandatory unit. The qualification design team agree that to force a Higher Level exit profile for the Numeracy Core Skill would detract from the vocational nature of the awards and place a greater emphasis on Core Skills rather than technical skills.

4 Rationale and aims of the redeveloped qualification

4.1 General

The revised awards are designed for those who will design, implement and support multimedia and/or web based applications. Employment opportunities encompass a significant range of the vocational area, from employers specialising in the development and maintenance of multimedia/web based systems to large corporate organisations with dedicated in-house support for off-the-shelf and bespoke solutions.

The current HN Multimedia Computing *and* HN Multimedia Computing with Web Development awards are well established and have proven popular among candidates. It is, however, acknowledged that the awards are in need of substantial redevelopment in order to make them more relevant to the vocational area for which they exist. The consultation process has highlighted that the frameworks: G5DC15 (HNC) and G5DC16 (HND) for Multimedia Computing with Web Development no longer fully satisfy the needs of candidates or come anywhere close to meeting the skills demanded by employers. They do, however, continue to articulate well with stage 3 direct entry degree level programmes.

In light of the fact that Centres aim to offer truly vocational qualifications rather than simply degree access courses, it is proposed that the revised awards be designed in such a way that they help to satisfy the government's stated aims of developing the 'knowledge economy' and the IT industry, of enhancing the IT skills of the population and of closing the IT skills-gap and so increasing economic competitiveness. The redeveloped awards shall reflect the skills most in demand in today's IT industry but in the main remaining specific to the technologies and skills of the prescribed vocational areas of Multimedia Computing and Web Development. The qualification design team acknowledge that it is impossible to 'future-proof' such awards or attempt to fully address all skill areas in demand, and that the revised award is likely to require updating within a three to five year period. The generic design of unit content, in that reference to specific technologies has in large been moved to the 'support notes' section of descriptors. This may go some way to reducing the need for full revalidation within that timescale.

The 'HNC Multimedia Computing: Web Development' award has been designed to allow candidates the opportunity to develop the essential skills, knowledge and understanding relevant to digital media content creation and development techniques for applications targeted at offline and online distribution. The award shall endeavour to harvest key skills in analysis, design, authoring, scripting, programming, problem solving and personal/interpersonal communication, and seek to develop an underpinning knowledge and understanding of the associated technologies. The award in large provides a solid foundation for candidates to progress to either of two specialist HND streams being offered. In large, the skills gained at stage 1 are transferable skills and relevant to both of the proposed stage 2 streams. These are 'HND Multimedia Computing' *and* 'HND Multimedia Computing: Web Development' – where the title after the colon denotes the area of specialism. For a number of reasons, candidates may prefer to seek employment on completion of the HNC award. The consultation process with industry suggests that the prospects of a candidate possessing such an award would be enhanced and typically may find employment in technical roles such as a junior Web designer or trainee multimedia applications developer.

It is envisaged that a significant proportion of candidates will opt to progress to one of the two second year HND awards. It is intended that each stream specialise deeply rather than broadly in the chosen discipline. A degree of overlap is in-built between the two disciplines so as to permit transferable skills.

Stage 2 of the 'HND Multimedia Computing' award focuses on the development of media rich content primarily for offline (e.g. CD and DVD) distribution. Candidates will develop advanced authoring and scripting skills in conjunction with an underpinning knowledge and understanding of effective Human Computer Interaction and raise the candidates awareness of professional and legal issues associated with the production of multimedia applications. In addition, candidates shall deepen their understanding of audio, video and 3D animation/modelling content and project management. Opportunities exist for candidates to further enhance their career prospects by developing highly sought after object-oriented and/or event-driven language programming skills and an understanding of relational database systems.

The 'HND Multimedia Computing: Web Development' award specialises in the field of Web Development, homing in on key skill gaps within the vocational area. Candidates, having built a solid foundation during stage 1, will specialise in areas such as relational database systems, server-side scripting, object-0riented programming or event-driven programming, Web server configuration, management and administration, Web technology, HCI, professional and legal issues, project management and online applications deployment. Knowledge gained in stage 1 will be reinforced through the practical application of theory. Research suggests that this will provide candidates with an ideal skill set for seeking employment and for following an articulation route to stage 3 of a relevant university degree programme.

The HNC award has been designed for both full-time and part-time students. The revised HN design principles require 12 credits for the HNC. Previously the revised 'design rules' introduced with the 2001 HN Computing pilot specified a requirement for 15 credits to be attained. However, the Scottish Qualifications Authority has since advised that the 'design rules' have been amended and are now known as 'design principles'. The HNC group award to which this document refers shall work to a revised 12 credit Higher National Certificate.

The HNC group award is designed at SCQF level 7 comprising of 96 SCOTCAT credit points, of which at least 48 SCOTCAT credit points must be at SCQF level 7 or above.

Each HND award is designed at SCQF level 8 comprising of 240 SCOTCAT credit points, of which at least 64 SCOTCAT credit points must be at SCQF level 8.

Full-time students normally take on the HND awards, but part-time or flexible provision is likely to be offered by some Centres.

The target candidate groups for each of the awards includes, but is not limited to:

- School leavers who have chosen a career path in Multimedia Computing and/or Web Development

- Adults returning to education
- Candidates seeking to improve current qualifications or change career direction
- Candidates in employment who wish to gain qualifications (including part-time/day release)
- Candidates preparing to re-enter the employment market
- Candidates with a long term aim of gaining a degree level qualification in Multimedia Computing/Web Development

The awards may be delivered by open and distance learning methods, provided that adequate preparations are made. Additional planning and resources will be required for candidate support, assessment and reassessment. In respect of the latter, a combination of new and traditional authentication tools and techniques may have to be devised. Quality assurance procedures must also be sufficiently robust to fully support open and distance learning. Further advice and guidance is contained in the SQA publication '*Assessment and Quality Assurance for Open and Distance Learning – SQA February 2001*'.

Evidence of market research is given in Appendix III - Details of consultation. The need for the revised qualifications has been clearly identified. These awards have been designed to contribute to an overall strategy for reducing the IT skills-gap and enhancing Scottish prosperity by enabling further enhancement and expansion of the 'knowledge economy'.

The evidence of support from employers (Appendix III, V) and universities (Appendix V) indicates that the structure and content of the award, in large, satisfy the needs identified. Evidence from First Destination Statistics of students achieving the existing award of HND Multimedia Computing with Web Development indicate that around two-thirds or more of successful students go on to further study (usually at stage 3 of a degree programme), with the remaining third entering the employment market.

A principal objective of the qualification design team, in the knowledge that the majority of successful HND students from the existing awards opt to progress to degree level study as third year direct entrants, was to ensure that all established articulation routes from the existing HN qualifications to advanced degree level study be maintained. Centres represented by the qualification design team have a very good, if not excellent, relationship with at least one university offering a stage 3 direct entrant programme. The qualification design team also acknowledge the need for the awards to contain relevant and transferable skills that will allow immediate entry to employment within the vocational area. The qualification design team believe that an appropriate balance between 'academic' and 'vocational' (i.e. between knowledge and its practical application) and also between 'breadth' and 'depth' has been achieved.

4.2 General aims

The HNC and HND awards have a range of broad aims that are generally applicable to all Higher National qualifications. Some of these general aims are:

- To develop the candidate's knowledge and skills in planning, analysing, implementing, testing and evaluating;
- To develop relevant employment skills and enhance candidate employment prospects;
- To enable progression within the Scottish Credit and Qualification Framework (SCQF);
- To develop study and research skills;
- To develop transferable skills, including Core Skills;
- To provide academic stimulus and challenge, and foster an enjoyment of the subject;
- To provide a satisfying and rewarding student learning experience.

4.3 Specific aims

HNC Multimedia Computing: Web Development

The specific aims of the 'HNC Multimedia Computing: Web Development' award are:

- To prepare candidates for employment in a Multimedia Computing, Web Development or related IT/Computing post at a technical level such as a junior Web Developer or junior Interactive Applications Developer by:
    - Developing the candidate's skills and competencies in the planning, designing and development of both interactive multimedia and Web based applications, encouraging an iterative and evaluative approach;
    - Providing key skills in the manipulation of graphics for the screen;
- To meet the demands of employers by providing a relevant and highly robust qualification that exposes candidates to a range of relevant software packages and ensure that candidates acquire the underpinning technical skills;
- To provide a route to a recognised qualification for candidates already in employment and to recognise their existing skills and experience;
- To provide a sound academic foundation on which candidates can continue to develop practical and conceptual skills;
- To prepare candidate's for further study at HND or second year degree level in a Multimedia Computing, Web Development or related discipline. Candidates articulating to the second year of the HND can choose to specialise in either Multimedia Computing or Web Development;

HND Multimedia Computing

- To prepare candidates for employment within the vocational area of Multimedia Computing at a technical level in a multimedia applications development role such as Multimedia Developer or Multimedia Programmer by:
    - Providing key skills in developing advanced interactive multimedia applications, encouraging an iterative and evaluative approach;
    - To develop awareness of the HCI, legal and professional issues associated with applications development;
    - To extend critical skills and understanding of digital content development; extending through digital audio, video and 3D animation;
    - To develop project management and interpersonal skills;
    - To further develop analytical programming and/or scripting skills;
- To facilitate depth of knowledge within the candidate, essential to the vocational area;
- To develop the technical skills essential within the candidates, relevant to the vocational area;
- To prepare candidate's for further study with possible advanced entry at degree level in a Multimedia Computing or related discipline by:
    - Ensuring core skills levels are adequate
    - Developing awareness of legal and professional issues
    - Developing study and interpersonal skills

HND Multimedia Computing: Web Development

- To prepare candidates for employment within the Web development vocational area at a technical level in a role such as Web Developer, Web Designer or Junior Programmer by:
    - providing key skills in developing, implementing and testing advanced Web applications, encouraging an iterative and evaluative approach;
    - developing an awareness, understanding and appreciation of the HCI, legal and professional issues associated with development and deployment of Web applications;
    - developing skills in the design and deployment of relational database systems;
    - developing project management and interpersonal skills;
    - further developing and enhancing programming and scripting skills and techniques;
- Facilitating focussed depth of knowledge within the candidate essential to the vocational area;
- Developing the key technical skills essential within the candidates essential to the vocational area;
- Preparing candidates for further study with possible advanced entry at degree level in a Web development or related discipline by:

- ensuring core skills levels are adequate
- developing awareness of legal and professional issues
- developing study and interpersonal skills

4.4 Realisation of Aims by Unit and Award

The table below gives an indication of where the specific aims of each of the three awards may be met in relation to individual units.

				- Aims -		
Unit Nº	**Title**	**Credit**	**SCQF Level**	**HNC Multimedia Computing: Web Development**	**HND Multimedia Computing**	**HND Multimedia Computing: Web Development**
DF63 34	Multimedia Computing: Interface Design and Authoring	3	7	Develop candidates skills and competences in planning, designing and development of interactive multimedia applications	Develop candidates skills and competences in planning, designing and development of interactive multimedia applications	Develop candidates skills and competences in planning, designing and development of interactive multimedia applications
DF60 35	Internet: Web Development	2	8	Develop candidates skills and competences in planning, designing and development of Web applications	Develop candidates skills and competences in planning, designing and development of Web applications	Develop candidates skills and competences in planning, designing and development of Web applications
DF69 34	Multimedia Computing: Screen Based Graphics	2	7	Provide key skills in the manipulation of graphics for the screen	Provide key skills in the manipulation of graphics for the screen	Provide key skills in the manipulation of graphics for the screen
DF6N 35	Multimedia Computing: Advanced Authoring	2	8		Providing key skills in developing advanced interactive multimedia applications, encouraging an iterative and evaluative approach	
DF6D 35	Human Computer Interface	1	8		Develop an awareness, understanding and appreciation of the HCI issues associated with development and deployment of Web applications	Develop an awareness, understanding and appreciation of the HCI issues associated with development and deployment of Web applications
DF6A35	Professional and Legal Issues for Web and Multimedia Developers	1	8		To develop an awareness, understanding and appreciation of the legal and professional issues associated with development and deployment of Web applications	To develop an awareness, understanding and appreciation of the legal and professional issues associated with development and deployment of Web applications

DF6735	Multimedia Computing: Audio and Video 2	2	8		To extend critical skills and understanding of digital content development; extending through audio and video	
DF6535	Multimedia Computing: Animation 2	2	8		To extend critical skills and understanding of digital content development; extending candidate skill base to include 3D animation and modelling	To extend critical skills and understanding of digital content development; diversifying skill base to include 3D animation and modelling
D76J35	Project Management	2	8		To develop project management skills	To develop project management skills
D76R35	Software Development: Event Driven Language				To further develop analytical programming skills	To further develop analytical programming skills
D76V35	Software Development: Object Orientated Language				To further develop analytical programming skills	To further develop analytical programming skills
D76P35	Software Development: Developing for the WWW	2	8			Provide key skills in developing, implementing and testing advanced Web applications, encouraging an iterative and evaluative approach; To further develop and enhance programming and scripting skills and techniques;
DF6P35	Internet: Client Side Web Scripting	1	8			To further develop and enhance programming and scripting skills and techniques;
D77C35	Systems Development: Relational Database Systems	2	8			To develop skills in the design and deployment of relational database systems;

5 Recommended conditions for entry to the qualification

The target candidate groups for each of the awards includes, but is not limited to:

- School leavers who have chosen a career path in Multimedia Computing and/or Web Development
- Adults returning to education
- Candidates seeking to improve current qualifications or change career direction
- Candidates in employment who wish to gain qualifications (including part-time/day release)
- Candidates preparing to re-enter the employment market
- Candidates with a long term aim of gaining a degree level qualification in Multimedia Computing/Web Development

As with all SQA qualifications, access will be at the discretion of the Centre and the following are for guidance purposes only.

Some examples of appropriate formal entry qualifications are specified below. They are not exhaustive or mutually exclusive and may be offered in a variety of combinations:

I. Scottish Group Awards in Computing and Information Technology at Intermediate 2 (SCQF level 5 - minimum) or Higher (SCQF level 6 – preferred).

II. Any other relevant Scottish Group Award at Intermediate 2 (SCQF level 5 - minimum) or Higher (SCQF level 6 – preferred).

III. Any two relevant National Courses at Higher together with three Standard Grade passes at grade 3 (SCQF level 4) or above (SCQF level 5). Candidates with only one at Higher (SCQF level 6) may be considered for entry to HNC.

IV. SVQ at level 2 (SCQF level 5) or 3 (SCQF level 6) in Computing, Information Technology or other relevant area.

V. Different combinations of relevant National Qualifications or Vocational Qualifications

VI. Equivalent qualifications from other awarding bodies may also be acceptable

VII. Mature candidates with suitable work experience may be accepted for entry provided the enrolling Centre believes that the candidate is likely to benefit from undertaking the award.

In addition:

It is recommended that candidates have some prior knowledge of information technology and the Internet.

Candidates should have core skills at intermediate 2 level (SCQF level 5). At the time of writing, it is unrealistic to expect all candidates to have formal evidence – particularly mature or 'returning' candidates. Centres will have discretion to admit candidates who do not have the recommended core skills entry profile (i.e. all core skills at Intermediate 2) but all candidates who achieve any of these HN awards should, whenever possible, have attained the recommended core skills exit profile.

It is strongly recommended that a 'personal interview' with each prospective student take place. This will play an important role in the selection process and help to ensure a candidate's suitability to the course. It is expected that core skills entry profiling will take place prior to admission and that centres will advise candidates on how to bridge any gap. It is the intention of Centres that admission to courses is as broadly based as possible but that should be consistent with the selection of candidates who have a reasonable chance of successfully completing the award.

6 The structure of the qualification

6.1 G7DD 15 HNC Multimedia Computing: Web Development

To gain this award, candidates must successfully achieve **twelve credits** comprising:

- Ten credits from Group A (Mandatory Units), plus
- Two credits from Group B (Optional Units)
- 96 SCOTCAT points of which at least 48 SCOTCAT points must be at SCQF level 7 or above.

Group A: Mandatory Units (10 credits required)

Unit	Credits	SCQF Level
D77G 34 – Communication: Practical Skills	1	7
DF6E 34 – Multimedia Computing: Web Development Graded Unit 1	1	7
DF60 35 – Internet: Web Development	2	8
DF69 34 - Multimedia Computing: Screen Based Graphics	2	7
DF63 34 - Multimedia Computing: Interface Design and Authoring	3	7
DF68 34 – Multimedia Computing: Multimedia Technology	1	7

SCOTCAT Points at SCQF level 7: 64
SCOTCAT Points at SCQF level 8: 16

Group B: Optional Units (2 credits required)

Unit	Credits	SCQF Level
A5FW 33 – Basic Communication in French 1	1	6
A5FT 33 – Basic Communication in Spanish 1	1	6
D299 13 – Database Systems (Avdanced Higher)	0.5	7
A6Y7 34 – Developing Entrepreneurial Skills	1	7
DF5Y 34 - Desk Top Publishing	1	7
D77H 34 - Employment Experience 2	1	7
DF6P 35 – Internet: Client Side Web Scripting	1	8
D75X 34 - Information Technology: Applications Software 1	1	7
D7CY 35 - Information Technology: Applications Software 2	1	8
D76B 34 - Internet: Internet client services	1	7
DF62 33 – Internet: Introduction to Technologies	1	6
D76A 34 – Internet: Introduction to e-commerce	1	7
D5V4 34 – Introduction to SQL	1	7
D76E34 - Maths for Computing 1	1	7
DF64 34 – Multimedia Computing: Animation 1	1	7
DF66 34 - Multimedia Computing: Audio and Video 1	2	7
D095 13 – Software Development (Advanced Higher)	0.5	7
DF6C 34 - Software Development: Introduction	1	7
D76W 34 - Software Development: Program Planning	1	7

6.2 G7DF 16 HND Multimedia Computing

To gain this award, candidates must successfully achieve **thirty credits** comprising:

- Sixteen credits from Group A (Mandatory Units), plus
- Seven credits from Group B (Additional Mandatory Units: HND Multimedia Computing), plus
- Seven credits from Group C (Optional Units: HND Multimedia Computing)
- 240 SCOTCAT points of which a minimum of 64 SCOTCAT points must be at SCQF level 8.

Group A: Mandatory Units – Common (16 credits)

Unit	Credits	SCQF Level
D77G 34 - Communication: Practical Skills	1	7
DF6E 34 – Multimedia Computing: Web Development Graded Unit 1	1	7
DF6G 35 - Multimedia Computing Graded Unit 2	2	8
DF6D 35 - Human Computer Interface	1	8
DF60 35 - Internet: Web Development	2	8
DF69 34 - Multimedia Computing: Screen Based Graphics	2	7
DF63 34 - Multimedia Computing: Interface Design and Authoring	3	7
DF68 34 - Multimedia Computing: Multimedia Technology	1	7
DF6A 35 - Professional and Legal Issues for Web and Multimedia Developers	1	8
D76J 35 - Project Management	1	8
DF6C 34 - Software Development: Introduction	1	7

SCOTCAT Points at SCQF level 7: 72
SCOTCAT Points at SCQF level 8: 56

Group B: Additional Mandatory Units: HND Multimedia Computing (7 credits)

Unit	Credits	SCQF Level
DF6N 35 - Multimedia Computing: Advanced Authoring	2	8
DF64 34- Multimedia Computing: Animation 1	1	7
DF66 34 - Multimedia Computing: Audio and Video 1	2	7
DF67 35 - Multimedia Computing: Audio and Video 2	2	8

SCOTCAT Points at SCQF level 7: 24
SCOTCAT Points at SCQF level 8: 32

Total mandatory SCOTCAT Points at SCQF level 7: 96
Total mandatory SCOTCAT Points at SCQF level 8: 88

Group C: Options: HND Multimedia Computing (7 credits)

Unit	Credits	SCQF Level
A5FW 33 – Basic Communication in French 1	1	6
A5FT 33 – Basic Communication in Spanish 1	1	6
D299 13 – Database Systems (Advanced Higher)	0.5	7
DF5Y 34 - Desk Top Publishing	1	7
A6Y7 34 – Developing Entrepreneurial Skills	1	7
D77H 34 - Employment Experience 2	1	7
D75X 34 – Information Technology: Applications Software 1	1	7
D7CY 35 - Information Technology: Applications Software 2	1	8
D76B 34 – Internet: Internet Client Services	1	7
DF6P 35 – Internet: Client Side Web Scripting	1	8
D76A34 – Internet: Introduction to e-Commerce	1	7
DF62 33 – Internet: Introduction to Technologies	1	6
D5V4 34 – Introduction to SQL	1	7
D76E 34 - Maths for Computing 1	1	7
D76F 34 - Maths for Computing 2	1	8
DF65 35 - Multimedia Computing: Animation 2	2	8
D095 13 – Software Development (Advanced Higher)	0.5	7
D76R 35 – Software Development: Event Driven Programming	2	8
D76V 35 - Software Development: Object-Oriented Programming	2	8
D76W 34 - Software Development: Program Planning	1	7
D77C 35 - Systems Development: Relational Database Systems	2	8

6.3 HND Multimedia Computing: Web Development

To gain this award, candidates must successfully achieve **thirty credits** comprising:

- Sixteen credits from Group A (Mandatory Units), plus
- Seven credits from Group C (Additional Mandatory Units: HND Multimedia Computing with Web Development), plus
- Seven credits from Group D (Optional Units: HND Multimedia Computing with Web Devleopment)
- 240 SCOTCAT points of which a minimum of 64 SCOTCAT points must be at SCQF level 8.

Group A: Mandatory Units – Common (16 credits)

Unit	Credits	SCQF Level
D77G 34 - Communication: Practical Skills	1	7
DF6E 34 - Multimedia Computing: Web Development Graded Unit1	1	7
DF6F 35 - Multimedia Computing: Web Development Graded Unit 2	2	8
DF6D 35 - Human Computer Interface	1	8
DF60 35 – Internet: Web Development	2	8
DF69 34 - Multimedia Computing: Screen Based Graphics	2	7
DF63 34 - Multimedia Computing: Interface design and Authoring	3	7
DF68 34 - Multimedia Computing: Multimedia Technology	1	7
DF6A 35 - Professional and Legal Issues for Web and Multimedia Developers	1	8
D76J 35 - Project Management	1	8
DF6C 34 - Software Development: Introduction	1	7

SCOTCAT Points at SCQF level 7: 72
SCOTCAT Points at SCQF level 8: 56

Group B: Additional Mandatory Units: HND Multimedia Computing: Web Development (7 credits)

Unit	Credits	SCQF Level
DF6P 35 – Internet: Client Side Web Scripting	1	8
D76D 35 - Internet: Web Server Management	2	8
DF61 35 – Internet: Web Technology and Security	2	8
D76P 35 - Software Development: Developing for the WWW	2	8

SCOTCAT Points at SCQF level 8: 56

Total mandatory SCOTCAT Points at SCQF level 8: 112

Group C: Options: HND Multimedia Computing: Web Developent (7 credits)

Unit	Credits	SCQF Level
A5FW 33 – Basic Communication in French 1	1	6
A5FT 33 – Basic Communication in Spannish 1	1	6
D299 13 – Database Systems (Avdanced Higher)	0.5	7
A6Y7 34 – Developing Entrepreneurial Skills	1	7
D095 13 – Software Development (Advanced Higher)	0.5	7
DF5Y 34 - Desk Top Publishing	1	7
D77H 34 - Employment Experience 2	1	7
D75X 34 – Information Technology: Applications Software 1	1	7
D7CY 35 - Information Technology: Applications Software 2	1	8
D76C 35 - Internet: Configuration and Administration of Internet Services	2	8
D76B 34 - Internet: Internet Client Services	1	7
D76A34 – Internet: Introduction to e-Commerce	1	7
DF62 33 – Internet: Introduction to Technologies	1	6
D5V4 34 – Introduction to SQL	1	7
D76E 34 - Maths for Computing 1	1	7
D76F 34 - Maths for Computing 2	1	8
DF64 34 - Multimedia Computing: Animation 1	1	7
DF65 34 - Multimedia Computing: Animation 2	2	8
DF66 34 - Multimedia Computing: Audio and Video 1	2	7
D76W 34 - Software Development: Program Planning	1	7
D76R 35 - Software development: Event Driven Programming	2	8
D76V 35 - Software development: Object-Oriented Programming	2	8
D77C 35 - Systems Development: Relational Database Systems	2	8

7 Approaches to delivery and assessment

7.1 Content and context

Each of the three awards to which this document refers relate to the computing based vocation areas of:

Multimedia Computing – focussing on the design and development of interactive applications and integration of digital media elements primarily for offline distribution but facilitating online content where appropriate or directly relevant. A tightly focussed HND2 stream is available to candidates.

Web Development – focussing on the design and development of Web based applications and associated technologies – incorporating content generation, scripting, relational database and Web server management. A tightly focussed HND2 stream is available to candidates.

Year one of the award (encapsulating both the HNC and HND1) provide candidates with skills and knowledge common across both disciplines, whilst also providing with the opportunity to explore both Multimedia Computing and Web Development as discrete entities. Candidates, having completed the HNC should be able to make an informed decision about which area of study is most suited to them. A brief summary of the component of each award is provided over the following pages.

The qualification design team have not pursued the possibility of building in vendor qualification or seeking recognition from professional bodies or other organisations. Such possibilities may be re-examined post validation. This inclusion of such is not considered critical to the success of the proposed awards.

DF69 34 Multimedia Computing: Screen Based Graphics

(2 HN Credits at level 7 – Mandatory)

This Unit provides candidates with an introduction to various aspects of digital image production for screen-based applications. The Unit will develop the candidate's ability to create and use the various graphic types and formats available for screen-based images. The topics covered include: applicable hardware and software, characteristics of various image formats, producing images, incorporating and using images. Candidates will evidence these skills through a practical assessment to a given brief.

DF63 34 Multimedia Computing: Interface Design and Authoring

(3 HN Credits at level 7 – Mandatory)

This Unit is designed to introduce candidates to the fundamentals of the development lifecycle of multimedia design and authoring. The aim of the Unit is to develop the candidate's skills in analysing the requirements of a proposed multimedia application, designing the application, gathering and manipulating appropriate media elements and then assembling and integrating the elements to produce an interactive multimedia application for an appropriate medium (e.g. Web, CD or DVD). By the end of the Unit, candidates will be able to plan, design and develop a multimedia application, for a target audience.

DF68 34 Multimedia Computing: Multimedia Technology

(1 HN Credit at level 7 – Mandatory)

This Unit is designed to introduce candidates to the hardware, software and delivery media used in industry to produce interactive applications. Candidates will develop knowledge of hardware technology, software categories, proprietary software applications, standard file formats, technology of distribution media and the processes involved in publishing to disk and Web. This will give candidates a solid base understanding for subsequent Units in the course and help to conceptualise the working of interactive computer development systems. Candidates will gain practical experience in preparing applications for distribution.

DF60 35 Internet: Web Development (2 HN Credits at level 8 – Mandatory)

This Unit is designed to provide candidates with essential Web design and authoring skills with an underpinning knowledge of factors affecting Web development. Candidates will be able to identify the factors that influence the development of World Wide Web (WWW) documents and plan, produce, test and publish efficient, effective and comprehensive WWW documents using a variety of techniques.

DF6E 34 Graded Unit 1 (1 HN Credit at level 7 – Mandatory)

This is a project-based 'graded Unit'. The Core Skills of Problem Solving at Higher and Working with Others at Higher are embedded in the content of this Unit specification.* Candidates will be required to follow the assessment instructions and evidence requirements given. The "fleshed-out" Practical Assignment will provide the candidate with the opportunity to produce evidence that demonstrates s/he has met the aims of the group award, which this Graded Unit covers.

* Audited but subject to confirmation by the Core Skills validation panel.

DF6C 34 Software Development: Introduction (1 HN Credit at level 7)

This Unit is designed to enable candidates to gain an understanding of fundamental programming concepts and structures required to produce simple computer programs. Candidates will gain practical experience in the basic structure and features of a programming language, which will be evidenced through the design, implementation and testing of a solution to a given problem using an appropriate software development language selected by the Centre.

D77G 34 Communication: Practical Skills (1 HN Credit at level 7 – Mandatory – Core Skill)

This Unit is about applying practical communication skills to complex issues in a vocational context directly relevant to multimedia computing and/or Web development. On completion of the Unit candidate should be able to respond to written information on a complex vocational issue, produce written information in a prescribed format on a complex vocational issue and contribute to a formal group discussion on a complex vocational issue.

DF62 33 Internet: Introduction to Technologies (1 HN Credit at level 6)

This Unit is designed to enable candidates to gain an understanding of using the Internet and of how it works. Candidates will learn how to use the services provided by the Internet such as email and WWW.

Candidates will also be introduced to the technical aspects of the Internet, how it works, the languages used within the WWW. Candidates will also learn the hardware and software used by the Internet and of current and future technologies.

DF66 34 Multimedia Computing: Audio & Video 1 (2 HN Credits at level 7)

This Unit is designed to enable candidates to work with audio and video in a multimedia and Web development role. The Unit prepares candidates for this role by ensuring that the basic underpinning knowledge required to understand the basic operations involved in modern personal computer based multimedia. Practical experience is then gained of recording audio and video data from a variety of sources and under varying conditions then storing this data in a manner reflecting current industry standards. The candidate will manipulate the captured audio and video then implement the files into both traditional multimedia applications and multimedia web pages, whereby smooth playback is achieved.

DF67 35 Multimedia Computing: Animation 1 (1 HN Credit at level 7)

This Unit will expose candidates to the subject of computer animation. It will enable candidates to understand industry standard animation file formats and produce a multimedia-rich animation suitable for use either in web pages or disc-based multimedia applications. This will cover the whole process of producing a 2D animation, from storyboarding, to choosing the correct hardware and delivering the finished product. This will help enable candidates to work with an Animator in team projects.

DF61 35 Internet: Web Technology and Security (2 HN Credit at level 8)

This Unit is designed to provide candidates with an understanding of current Web technologies, factors affecting Web applications development, awareness of key security issues and methods of data protection.

Candidates will gain a compressive knowledge and understanding of dynamic Web application technologies and security issues associated with the World Wide Web, Web application technologies and methods of data encryption and intruder prevention.

DF6P 35 Internet: Client Side Web Scripting (1 HN Credit at level 8)

This Unit is designed to enable candidates to understand the concepts of client-side Web scripting, and to enable them to become proficient in designing and implementing scripts within Web pages. Candidates will learn how to use a scripting language where competence will be assessed via a practical assessment with a specific brief

D76A 34 Internet: Introducing e-Commerce (1 HN Credit at level 7)

This Unit is designed to provide the candidate with a broad knowledge of the theoretical concepts, principles, boundaries and scope of electronic commerce (e-commerce). The Unit introduces the key features of e-commerce, examines the business-to-business and business-to-consumer models and considers the security requirements for e-commerce. Current terminology is introduced as appropriate.

DF5Y 34 Desk-Top Publishing (1 HN Credit at level 7)

This Unit is designed to enable candidates to work effectively in a desktop publishing environment. It prepares them for this task by ensuring they possess the underpinning knowledge required to understand the basic instructions involved in a Desktop Publishing (DTP) system and how to produce a DTP publication. This progresses from knowing the equipment required and DTP terminology to planning and producing a design to a given brief.

D77H 34 Employment Experience 2 (1 HN Credit at level 7 – Option)

This Unit is designed to enable candidates to demonstrate that they can, in their normal work environment, work with others to complete a task. It is intended for candidates who are in employment and who are undertaking a course of study relevant to their occupational role with the support of their employer or who may wish to develop their career prospects. On completion of the Unit candidates should be able to analyze and plan a workplace task in co-operation with others, implement a workplace task in co-operation with others, evaluate own contribution to the completion of a workplace task

D67E 34 Mathematics for Computing 1 (1 HN Credit at level 7 – Option)

This Unit is designed to allow candidates to acquire the fundamental mathematical knowledge required to apply computing techniques to problem situations effectively. Candidates will be able to create a mathematical model or express a problem mathematically. It is primarily intended for candidates who will specialise in programming or candidates who require a deeper understanding of computer operation at a basic hardware level. On completion of the Unit the candidate should be able to demonstrate an understanding of scientific notation and manipulate numbers in scientific notation, demonstrate an understanding of co-ordinate systems and vectors, and apply linear transformations, demonstrate a knowledge of simple functions and the ability to perform basic algebraic operations and demonstrate the application of Boolean algebra to problem situations.

DF6G 35 / DF6F 35 HND Graded Unit 2 (2 HN Credits at level 8 - Mandatory)

This Graded Unit is designed to provide evidence that the candidate has achieved the aims of the chosen second year stream, by preparing students for employment in a related field or further education, whereby they have developed a range of specialist technical applications development skills and knowledge in developing applications using coding and proprietary packages. The graded examines the lifecycle of a project from analysis and design to implementation to delivery and evaluation.

D76J 35 Project Management (1 HN Credit at level 8 – Mandatory both HND2 streams)

This Unit is designed to develop a broad general knowledge and understanding of the theoretical concepts, principles, boundaries and scope of project management this includes planning, using project management software tools and costing projects. The Unit provides candidates with the underpinning knowledge required for progression in training and education in project management. This will help candidates to prepare for supervisory posts later in their career. This Unit should also provide candidates with the broad background knowledge of project management required for working in a project team. The knowledge and skills from the Unit will help candidates to assess how Project Management can enable an organisation to be as effective as possible.

DF6D 35 Human Computer Interface (1 HN Credit at level 8 – Mandatory both HND2 streams)

This unit is designed to provide candidates with an understanding of the interaction between humans and computers and the skills required in the design, prototyping and evaluation of effective interfaces. Candidates will be required to design an interface and develop and evaluate a prototype model of it. This will enable candidates to develop the Human Computer Interface in a professional manner by employing tools and techniques commonly used in industry.

DF6A 35 Professional and Legal Issues for Web and Multimedia Developers

(1 HN Credit at level 8 – Mandatory both HND2 streams)

This Unit is designed to provide candidates with an extensive understanding of the context within which they will work as a professional in the fields of Web Development and Multimedia Computing. The Unit will provide candidates with a broad knowledge of the current and evolving legal aspects e.g. data protection and intellectual property rights, standards and guidelines of professional development environments. This Unit is primarily intended for candidates who propose to follow a career, or are following a career, as Web developers or Multimedia professionals and who require an understanding of the professional responsibilities of such employment. It will enable candidates to gain an appreciation of a number of areas of concern to organisations that will affect them in the performance of their own job as a professional.

DF6N 35 Multimedia Computing: Advanced Authoring

(2 HN Credits at level 8 – Mandatory - HND Multimedia Computing)

This unit is designed to provide candidates with the knowledge of creating multimedia rich applications using advanced interactive features, for CD, DVD or any other delivery media that is considered suitable. It will also give the candidate the knowledge and skills to prepare and test applications for distribution and the relevant accompanying documentation.

DF65 35 Multimedia Computing: Animation 2

(2 HN Credits at level 8 – Mandatory - HND Multimedia Computing)

This unit will teach candidates how to create 3-dimensional animation sequences using appropriate software. These will specifically be created for interactive applications, whereby candidates have to integrate the sequence then publish the application. The unit will help candidates to understand the processes and technologies involved in producing 3D animations, thus enabling them to work with an Animator in a commercial team.

D77C 35 Systems Development: Relational Database Systems

(2 HN Credits at level 8 –option)

This Unit is designed to enable candidates to understand the manipulation of normalised data structures, apply this knowledge in the design and use of relational database systems, solve problems and synthesise and evaluate solutions within the discipline of relational database systems.

D76P 35 Software Development: Developing for the WWW

(2 HN Credits at level 8 – Mandatory – HND2 Multimedia Computing: Web Development)

This Unit is designed to introduce candidates to scripting for web pages. The aim of the Unit is to develop candidates' skills in designing and building interactive web based applications while illustrating the similarities between scripting and traditional/Object Oriented Programming (OOP) languages. On completion of this Unit the candidate should be able to describe the factors affecting the production of Web-based applications, design and implement a web-based application using the principles of software engineering, use appropriate tools and techniques to enhance Web based applications, utilise server side scripting and be able to access and query a server-side database.

D76V 35 Software Development: Object Oriented Programming

(2 HN Credits at level 8 – Option –both HND2 stream)

This Unit is designed to enable candidates to recognise the main issues that arise by employment of object-oriented methods. It prepares them by giving them the underpinning knowledge to understand the basic concepts and to develop the candidates' awareness of the key features of object-oriented programming. It would also be relevant to those with appropriate work experience using programming languages and who wish to increase their skill and knowledge base. On completion of the Unit the candidate should be able to produce an object-oriented specification to describe a set of classes of a specified problem, use encapsulation, polymorphism and inheritance and implement a solution from an object-oriented specification demonstrating proficiency in using object-oriented methods

D76R 35 Software Development: Event Driven Programming

(2 HN Credits at level 8 – Option –both HND2 stream)

This Unit is designed to enable candidates to use Event Driven programming methods. Candidates will develop a broad knowledge of the area and an appreciation of the scope of Event Driven languages. It is primarily intended for candidates who expect to be involved with Event Driven languages. This Unit would also be relevant to those with appropriate work experience of other programming languages who wish to increase their skills and knowledge base.

D76E 34 Mathematics for Computing 2

(1 HN Credit at level 8 – Option –both HND2 stream)

This Unit is about preparing candidates to model real problem situations mathematically and apply advanced mathematical techniques (at pre-calculus level) that can be implemented by computer. The Unit introduces the topics of matrices, series, probability and recursion; techniques that are applicable to a wide range of problems. Although the emphasis is on application, the mathematical principles are thoroughly and consistently developed. The Unit is primarily designed for candidates who intend to specialise in programming or candidates who intend to proceed to the third year of a Computing degree course. On completion of the Unit the candidate should be able to demonstrate an understanding of matrices and apply matrix methods to problem situations and demonstrate an understanding of series, probability and recursion, and their application to practical problems.

7.2 Delivery and assessment

This section provides guidance to candidates and Centres who may be delivering the awards for the first time. The following pages contain sample timetable scheduling information to give an indication as to how each of the awards may be delivered. Scheduling is provided for guidance purposes only.

Information regarding the recommended assessment methods and potential opportunities for cross-assessment is provided within individual Unit specifications. The qualification design team has produced a complete set of assessments to complement the development of the group awards. Please refer to the sample instruments of assessment.

It is recommended that Centres utilise opportunities for cross-assessment where commonality or themes exist within Units of a similar scope and level. In doing so, it is anticipated that the assessment workload for Centres and candidates will be significantly reduced. It is at the discretion of individual Centres as to which of the potential possibilities of integrating assessments be used.

Centres should not use Graded Units for cross assessment purposes. Graded Units should be assessed on a stand-alone basis but may be integrated with each other with respect to the SCQF level 8 Graded Units delivered as part of the HND awards.

HNC/D1 Multimedia Computing: Web Development and HND Multimedia Computing (Year 1)

	BLOCK 1	BLOCK 2	BLOCK 3
SLOT 1	Internet: Web Development (2 HN Credits at SCQF level 8)		D77G34 Communication: Practical Skills (1 HN Credit at SCQF level 7)
SLOT 2	Multimedia Computing: Technology (1 HN Credit at SCQF level 7)	Multimedia Computing: Audio & Video 1 (2 HN Credits at SCQF 7)	
SLOT 3	Multimedia Computing: Screen Based Graphics (2 HN Credits at SCQF level 7)		Multimedia Computing: Animation 1 (1 HN Credit at SCQF level 7)
SLOT 4	Multimedia Computing: Interface Design and Authoring (3 HN Credits at SCQF level 7)		Graded Unit (1 HN Credit at SCQF level 7)
SLOT 5		Software Development (1 HN Credit at SCQF level 7)	Internet: Client Side Web Scripting (1 HN Credit at SCQF level 8)

This sample year plan is provided for illustration purposes only illustration providing:

- 12 credits for HNC
- 15 credits towards HND; 12 credits @ SCQF level 7 (96 SCOTCAT points) and 3 credits @ SCQF level 8 (24 SCOTCAT points)

HND Multimedia Computing (Year 2)

Sample

<table>
<tr><th>Block 1</th><th colspan="2">Block 2</th><th>Block 3</th></tr>
<tr><td>Human Computer Interface
1 HN Credit [SCQF 8]</td><td colspan="3">Software Development: Object Orientated Programming
2 HN Credits [SCQF 8]</td></tr>
<tr><td>Professional & Legal Issues for Web and Multimedia Developers
1 HN Credit [SCQF 8]</td><td colspan="2">Project Management
1 HN Credit [SCQF 8]</td><td rowspan="2">Graded Unit 2
2 HN Credit [SCQF 8]</td></tr>
<tr><td colspan="2">Multimedia Computing: Advanced Authoring
2 HN Credits [SCQF 8]</td></tr>
<tr><td colspan="2">Multimedia Computing: Audio and Video 2
2 HN Credits [SCQF 8]</td><td rowspan="2" colspan="2">Multimedia Computing: Animation 2
2 HN Credits [SCQF 8]</td></tr>
<tr><td colspan="2">Software Development: Event-driven Languages
2 HN Credits [SCQF 8]</td></tr>
</table>

HND Multimedia Computing: Web Development (Year 2)

Sample

<table>
<tr><th>Block 1</th><th>Block 2</th><th>Block 3</th></tr>
<tr><td>Human Computer Interface
1 HN Credit [SCQF 8]</td><td colspan="2">Software Development: Object Orientated Programming
2 HN Credits [SCQF 8]</td></tr>
<tr><td>Professional & Legal Issues for Web and Multimedia Developers
1 HN Credit [SCQF 8]</td><td>Project Management
1 HN Credit [SCQF 8]</td><td rowspan="2">Graded Assessment 2
2 HN Credits [SCQF 8]</td></tr>
<tr><td colspan="2">Software Development: Developing software for the WWW
2 HN Credits [SCQF 8]</td></tr>
<tr><td colspan="2">Systems Development: Relational Database Systems
2 HN Credits [SCQF 8]</td><td rowspan="2">Internet: Web Server Management
2 HN Credits [SCQF 8]</td></tr>
<tr><td colspan="2">Internet: Web Technology & Security
2 HN Credits [SCQF 8]</td></tr>
</table>

7.3 Open Learning

The awards may be delivered by open and distance learning methods, provided that adequate preparations are made. Additional planning and resources will be required for candidate support, assessment and reassessment. In respect of the latter, a combination of new and traditional authentication tools and techniques may have to be devised.

Quality assurance procedures must also be sufficiently robust to fully support open and distance learning. Further advice and guidance is contained in the SQA publication '*Assessment and Quality Assurance for Open and Distance Learning – SQA February 2001*'.

7.4 General information for candidates

The 'HNC Multimedia Computing: Web Development' group award is designed to provide candidates with the essential skills and underpinning knowledge required to develop interactive digital multimedia content and applications for delivery on CD/DVD media and/or the World Wide Web.

All candidates will study a common first year or HNC, with the exception of two credits worth of study that the candidate may select from those being offered by the Centre in 'Group B' of the HNC group award framework. To gain the HNC group award candidates are required to successfully complete and achieve all 10 HN credits from Group A (mandatory), plus 2 HN credits from Group B (options).

The award focuses on the development of digital media content and technical skills. Candidates can expect to gain a critical understanding of planning, designing, implementing, testing and evaluating front-end user interfaces, developing Web applications and creating a variety of digital media content for incorporation into the applications developed. Candidates will widen their knowledge by gaining an awareness and understanding of digital media file types and develop the skills to optimise such digital media for online and offline delivery. Opportunities exist for candidates to develop graphics, animation, sound and video sequences.

In addition, candidates will develop and enhance Core Skills in communications, information technology and problem solving through a range of vocationally relevant units and will be introduced to the principles of programming, multimedia technology and possibly database systems.

There is no formal end of year examination. Candidates will be continually assessed throughout the delivery of Units by means of one or more of instruments of assessment per Unit including: closed book short/restricted response, essays and reports and practical competence based activities. Opportunities may exist to cross-assess between Units. Centres will advise accordingly.

In the latter stages of study, candidates will have the opportunity to demonstrate proficiency in the studied subject areas through the SCQF level 7 'Graded Unit 1'. On conclusion of this Unit, candidates will be awarded a grade that is likely to be reflective of the individual's abilities and overall performance.

Successful candidates may typically find employment in roles such as a junior Web developer, Website designer, interactive applications developer, and interface developer.

Successful candidates may progress directly to the second year of the Higher National Diploma and will select one of two streams, depending on whether the candidates prefers to focus on Multimedia Computing or Web Development. The aim of streaming is to facilitate depth of knowledge in a specific vocational area rather than breadth of knowledge across the two disciplines. Research suggests that many employers prefer potential employees to have depth and focus rather than a wide breadth of less in-depth skills.

Both streams provide candidates with the opportunity to gain awareness of Human Computer Interface, professional and legal issues, develop skills and abilities associated with the management of projects. Candidates studying either stream will complete two Graded Units (at SCQF level 8) relative to their chosen stream in the latter stages of delivery. It is possible for integration of assessment between Graded Units but not between Graded and non-graded Units. There is no formal end of course examination for either of the second year HND streams. Candidates will be continually assessed throughout the delivery of Units by means of one or more instruments of assessment, which may come in the form of closed book short/restricted response questions, essays and reports or practical competence based activities.

In additional to the common elements between both streams, candidates opting for the 'HND Multimedia Computing' stream will focus on the development and manipulation of advanced audio and video including compression and streaming technologies. Candidates will develop skills in authoring advanced interactive applications using a package such as Macromedia Director and the lingo scripting language. Candidates will produce a range of media elements based on the skills gained in the previous year. The digital media produced will be incorporated into the applications developed. Candidates will most likely be given the opportunity to design and produce animated 3D content using industry standard tools such as 3DS Max or lightwave as part of the Digital Content: Animation 2 Unit – an option. Other options include the opportunity to further develop critical programming skills using an event-driven language such as Delphi and/or an Object-oriented language such as Java.

To attain the HND Multimedia Computing group award, candidates must successfully achieve 30 HN credits (including all mandatory and additional mandatory Units).

It is possible for successful candidates with the HND Multimedia Computing group award to articulate directly to degree level studies, including entry to stage 3 of selected degree programmes.

Successful candidates entering the employment market may typically find employment in a role such as Multimedia Applications Developer or Interactive Applications Developer, Multimedia Programmer, Multimedia Animator, Software Engineer (depending on modules selected), Web Design and Development, audio video and TV editing.

Candidates opting for the HND Multimedia Computing: Web Development stream will focus their studies toward the design and development of dynamic Web applications. Candidates will gain awareness of technology and security, web server management and of developing server-side applications for the Web.

Furthermore, all candidates choosing this route will gain hands-on experience in the development of relational database systems and are likely to become deeply involved in Internet programming using an object-oriented language such as Java.

To attain the HND Multimedia Computing: Web Development group award, candidates must successfully achieve 30 HN credits (including all mandatory and additional mandatory Units).

It is possible for successful candidates with the HND Multimedia Computing: Web Development group award to articulate directly to degree level studies, including entry to stage 3 of selected degree programmes.

Successful candidates entering the employment market may typically find employment in a role such as Web Developer / Designer, Web applications programmer, Software Engineer (depending on modules selected), Basic Web Developer, with the emphasis more on the coding side, Database Administrator or Systems Developer.

8 Appendix I: Summary of HN Design Principles

HNCs and HNDs have supported technician, technologist and first line manager occupations for over 75 years, including progression in professional qualifications and other higher education awards. More recently, some HNs have been specifically designed to support progression from Modern Apprenticeships and to degrees.

In order to continue serving these occupations, HN programme designers should adhere to the following design principles. Design teams must always conduct market research, particularly among candidates and employers to ensure the continuing fitness for purpose of the HNs. Where this clearly indicates that any of those design principles marked with an asterisk needs to be re-interpreted or modified, SQA will work with the design team to develop alternatives, which are coherent with the other principles.

The validity of the market research and the fitness for purpose of the proposed alternatives will be confirmed at validation.

8.1 Design Principles

SCQF Level and SCOTCAT points

1. HNCs shall be designed to be at SCQF level 7 and shall comprise 96 SCOTCAT credit points
2. HNDs shall be designed to be at SCQF level 8 and shall comprise 240 SCOTCAT credit points
3. HNCs should incorporate 48 SCOTCAT credit points at SCQF level 7
4. HNDs should incorporate 64 SCOTCAT credit points at SCQF level 8

Core Skills

5. HNC and HND programmes shall incorporate opportunities for candidates to develop Core Skills
6. *HNCs and HNDs should clearly include opportunities for candidates to develop Core Skills to levels required by the occupations or progression pathways the HNs support. This would normally mean all five Core Skills should be developed in every HN programme.

Mandatory Section

7. HNCs should normally include a mandatory section of at least 48 SCOTCAT credits points including a Graded Units. (See Principles 9 and 10 *under 'Graded Units (formerly Integrative Assessments*) below).
8. HNDs should normally include a mandatory section (which may include alternatives) of at least 96 SCOTCAT points, including Graded Units.

Graded Units (formerly Integrative Assessments)

9. *HNCs should normally include one Graded Unit of 8 SCOTCAT credit points at SCQF level 7.
10. *HNDs should normally include one Graded Unit of 8 SCOTCAT credit points at SCQF level 7 plus 16 SCOTCAT credit points of Graded Unit (s) at SCQF level 8.

The purposes of Graded Units will be to assess the candidate's ability to integrate and apply the knowledge and/ or skills gained in the individual HN Units to demonstrate that they have the principal aims of the group award, and grade candidate achievement.

8.2 Further considerations

HN Unit and group award Graded Unit Specifications

SQA produces guidance on how to write HN Unit and group award Graded Unit Specifications. These include templates and examples of how the specifications should be laid out. This guidance should always be used in developing new or revised HN Unit or group award Graded Unit Specifications. The minimum change to current Unit specifications would be to remove the merit statement and to add an SCQF level and SCOTCAT credit points.

Validation of HN Unit Specifications

A key part of validation is to confirm the proposed allocation of SCQF levels and SCOTCAT credit points to each Unit, and this needs to be seen to be done consistently. Until the process of devolving this to centres is fully worked out, SQA will validate all new or revised HN Unit specifications. Centres may continue to develop HN Unit specifications for validation by SQA.

Validation of HN Group Awards and group award Graded Units

Group award validation may continue to be done by those centres with devolved powers to do so. As Graded Units relate to the principle aims of a group award, these too may be validated by devolved centres as part of Group Awards.

Validation periods

HN Units, Graded Units and Group Awards will be kept under review by design teams in order to ensure continuing fitness for purpose. Normally, these will be reviewed every five years or more frequently if recommended by validation panels. However, specific time periods of validation will not be specified.

9 Appendix II: The qualification design team

These awards were developed by the Multimedia Computing and Web Development consortium. The membership and centres represented by the membership are given below:

Jim Sullion
Ayr College
Dam Park
Ayr
KA8 0EU

Tom Will
Cumbernauld College
Tryst Road
Town Centre
Cumbernauld
Glasgow
G67 1HU

Joan Thomson
Dumfries and Galloway College
Heathhall
Dumfries
DG1 3QZ

Mike Andrew
Tom Scamman
Falkirk College of Further & Higher Education
Grangemouth Road
Falkirk
FK2 9AD

Mary Hainey (Chair)
Loraine Johnstone
Scott Campbell
James Watt College of Further & Higher Education
Finnart Street
Greenock
PA16 8HF

William Blakely
Langside College Glasgow
50 Prospecthill Road
Glasgow
G42 9LB

Helen Grant
Moray College
Elgin
IV30 1JJ

Arthur Turnbull
Glasgow College of Nautical Studies
21 Thistle Street
Glasgow
G5 9XB

Linda Millar
Reid Kerr Further Education College
Renfrew Road
Paisley
PA3 4DR

The qualification design team acknowledge:

Bobby Elliot, Mandy Forte and Mary Weir
Scottish Qualifications Authority
Hanover House
24 Douglas Street
Glasgow, G2 7NQ

10 Appendix III: Details of Consultation

The qualification design team considered that it was important to undertake consultation with each of the main bodies affected by the redeveloped of the existing awards. The consultation process focussed on:

- Course Teams
- Candidates (current, previous and prospective)
- Employers
- Higher Education

10.1 Course Teams

Course Teams have been involved in consultation process from the outset of the redevelopment process.

Where applicable, Centre representatives have held detailed discussions with Course Teams in respect to the provision currently being delivered by the Centre. Through their experience of delivering the existing awards, Course Teams have been able to identify the strengths and weaknesses of the existing awards. This process involved examination of the awards and their direct relevance to the employment market and higher education. Further discussion on individual Units, Unit content and categorisation within award frameworks took place. This served to highlight redundant Units, unnecessary complexities within Units and aspects of specific Units that, while still usable, required updating.

Perhaps the single most important factor emerging from early discussions with Course Teams was the general feeling that there was a requirement to redevelopment the existing awards, bringing them in line with the expectations of candidates and employers rather than the need to introduce a completely new set of awards. There was strong feeling that both Multimedia Computing and Web Development was highly relevant vocational areas with excellent employment prospects and opportunities for candidates to further their education at degree level by means of one of several well established articulation routes to stage 3 university programmes.

In the latter stages, Course Teams have played an instrumental role in suggesting ways in which the revised content may fit into the curriculum and how best it might be delivered in terms of concepts, sequencing, assessment strategies and ensuring that content is robust and in line with the skills, knowledge and relevant expertise demanded by employers and Higher Education and thus ultimately going a considerable way to ensuring a quality student learning experience.

The input from Course Teams has been tabled by Centre representatives at meetings of the consortium, reflected upon and duly actioned.

10.2 Candidates

Input from candidates has proven invaluable to the qualification design team. The input received has provided a valuable opportunity to examine student expectations of both the existing and revised HNC and HND awards, and to further opportunities to analyse the strengths and weaknesses of the existing awards.

Centres have taken the opportunity to seek input from three categories of student:

- Previous students;
- Current students;
- Prospective students

James Watt College of Further and Higher Education is in the fortunate position of delivering stage 3 of the Napier University degree programme: BSc Multimedia Technology, at their Finnart Street Campus in Greenock. This has provided Centre representatives with the opportunity to gain valuable feedback from degree level students who had completed the 'HND Multimedia Computing with Web Development' in the previous academic year.

Degree level students were able to reflect on their stage 3 studies and provide an insight as to the difficulties experienced in the articulation process between the second year of the HND and stage 3 degree level studies.

Most students agreed that articulation was fairly smooth and that the skills and knowledge gained within the HND group award were relevant. It is significant to note that, although 'course satisfaction' surveys completed by students at the end of their HND studies in large did not detect a need for increased programming, scripting or networking skills, candidates felt that on reflection, the inclusion of such would have greatly eased the transition process between HND and stage 3 degree level studies.

The majority of students felt that Object-Oriented Programming, preferably in Java, would have been highly advantageous in aiding degree level studies for the 'Internet Programming' module. Similarly, a foundation in basic network technologies or protocols would have eased the learning curve experienced with the 'Computer Networks and Distributed Systems' (CNDS) module. Note however that the opinions expressed are biased towards to the Napier University BSc Multimedia Technology programme (stage 3) and are not necessarily reflective of the opinions held by candidates articulating to other HE institutions.

Students were asked about how successful they might have been had they decided to seek employment immediately after their HND studies. The vast majority felt that it would have been difficult to gain employment purely with the knowledge and skills from the existing Higher National Diploma awards. However, students noted that the proposed content of the redeveloped award was very much more

directly relevant to the skills demanded by employers, noting also that the proposed content would go a considerable way to bridging the gap between the HND and the degree programme.

The results, given below, of the 'student questionnaire' have been categorised into current HNC or HND (year 1) students, HND second year students, and stage 3 degree level students successful in achieving the HND Multimedia Computing with Web Development (G5DC16) group award in the 2001/2002 academic year. All responses relate to the existing HN Multimedia Computing with Web Development awards.

	HNC / HND1 (year 1)	**HND2 (year 2)**	**Former students (degree)**
Do you feel the title of the existing course reflects its content?	Agree Strongly: 0% Agree: 100% Disagree: 0% Disagree Strongly: 0%	Agree Strongly: 8% Agree: 67% Disagree: 25% Disagree Strongly: 0%	Agree Strongly: 14% Agree: 43% Disagree: 43% Disagree Strongly: 0%

Student feedback on the existing course title is given below as well as the study stage of the student committing (e.g. HNC, HND2 or degree). All comments are directed towards the existing HN awards:

- HNC: I do feel that the title of the course reflects it content
- HNC: Reflects what we've been studying through the year
- HND2: Incorporates a good variety of "Multimedia computing" and "Web development"
- HND2: Course title clearly reflects the wide range of subjects covered
- HND2: Considering the amount of content on multimedia compared to that of Web development, the course should have been called HND Multimedia Computing
- Degree: Title provides a good, descriptive indication of course content

The content of the course has lived up to my expectations?	Agree Strongly: 0% Agree: 100% Disagree: 0% Disagree Strongly: 0%	Agree Strongly: 0% Agree: 83% Disagree: 17% Disagree Strongly: 0%	Agree Strongly: 0% Agree: 86% Disagree: 14% Disagree Strongly: 0%

Student feedback on the how the existing course has lived up to their expectations is given below:

- HNC: Yes, but some units are out of date and need replacing with more up-to-date content
- HND2: There could be a little more Web content in it
- HND2: Not enough Web development content
- HND2: Bias should be more in favour of Web development rather than Multimedia
- HND2: Needs newer Web Technologies, like ASP and XML
- HND2: More Web Development content

The content of the course is well balanced?	Agree Strongly: 0% Agree: 100% Disagree: 0% Disagree Strongly: 0%	Agree Strongly: 0% Agree: 66% Disagree: 34% Disagree Strongly: 0%	Agree Strongly: 0% Agree: 57% Disagree: 43% Disagree Strongly: 0%

Student feedback on the on the balance of the existing course is given below:

- HNC: Units are planned in a good manner, providing a flow of learning.
- HND2: Needed to strike more of a balance between the two disciplines
- HND2: Not enough creative content. Too programming heavy.
- HND2: Course produces 'jack of all trades' rather than subject specialist
- HND2: Needed more Video Production/Editing rather than digital video theory
- HND2: Well balanced. Covers all aspects of multimedia.
- A 50/50 split between the Web and Multimedia would have been better
- HND2: Too much multimedia. Not enough Web.
- HND2: Too much emphasis on multimedia elements without being able to relate them to the Web (e.g. Streaming of audio, video and director content)
- Degree: Yes, but too much breadth and not enough depth
- Degree: Good balance of both practical and theory
- Degree: More practical tutorials should be included
- Degree: Needs to be more "hands-on" rather than largely theory based
- Degree: Network technologies and Internet programming (i.e. Java) were not covered
- Degree: Well balanced, but many subjects that were not so useful such as 'Introducing the Internet' and 'Marketing: An Introduction to Principles'.

The course content covered all of the areas that I hoped to study at this level?	Agree Strongly: 0% Agree: 100% Disagree: 0% Disagree Strongly: 0%	Agree Strongly: 9% Agree: 58% Disagree: 33% Disagree Strongly: 0%	Agree Strongly: 14% Agree: 72% Disagree: 14% Disagree Strongly: 0%

The content reflects current trends in the employment market?	Agree Strongly: 0% Agree: 66% Disagree: 34% Disagree Strongly: 0%:	Agree Strongly: 9% Agree: 50% Disagree: 25% Disagree Strongly: 25%	Agree Strongly: 0% Agree: 86% Disagree: 14% Disagree Strongly: 0%

Would you recommend the existing course to a prospective student?	Yes: 100% No: 0%	Yes: 91% No: 9%	Yes: 100% No: 0%

Please refer to the appendix: Do you feel that the proposed revised course, subject content and software would represent a **significant** improvement over the existing course?	Yes: 100% No: 0%	Yes: 91% No: 0% Unsure: 9%	Yes: 100% No: 0%

What are your plans for next year?	HND (Year 2): 100% Employment: 0% Other: 0%	Yes: 66% Employment: 25% Unsure: 9%	Further Study: 0% Employment: 72% Unsure: 28%

On reflection, what would have made the course more attractive to you?

- HNC: More technology related subjects including 'games development'
- HNC: More practical work
- HND2: Dynamic site creation, content management, project team working
- HND2: More relevant, up-to-date content
- HND2: More client-sever content, addressing the current market demand
- HND2: More Web design, in-depth markup languages, JavaScript, etc
- HND2: More graphical/creative content
- HND2: More up-t0-date Web practices, ASP, content management software
- HND2: More in depth audio and video (production) content
- HND2: More hands-on and package orientated
- Degree: More programming such as Java, C++ and the standards in demand by employers
- Degree: The revised course contains the subjects that I would like to have studied
- Degree: More Web development and packages
- Degree: More Web based work. Less emphasis on ITA, communications and marketing
- Degree: Existing course is obsolete. New course looks very attractive to potential students.
- Degree: Course could be a bit more related to Web development

* **Note**: Degree students are commenting on the existing HND Multimedia Computing with Web Development group award.

What other subject areas or technologies would you like to have studied as part of your HN Multimedia Computing with Web Development course?

Student feedback is given below:

- HNC: Web interface design
- HNC: Game technologies and audio
- HND2: More 3D animation
- HND2: E-commerce, Streaming, PHP, Advanced Flash/Action Scripting, Dynamic Site Creation
- HND2: Marketing (self, not corporate – small start-up business)
- HND2: Dynamic Web languages
- HND2: Legal issues and copyright
- HND2: XML/XSL, ASP, PHP, Java
- HND2: Database and SQL for dynamic sites
- Degree: 3D animation
- Degree: More graphics content and working with Photoshop
- Degree: Interactive CD Rom/web technologies
- Degree: PC assembly, CISCO professional accreditation
- Degree: More programming and networking technologies
- Degree: Database and server-side scripting
- Degree: OOPLs (Java, C++, Delphi)

* **Note**: Degree students are commenting on technologies they would like to have studied as part of their Higher National Diploma group award.

In comparison to the existing course, do you think that a revised course should include:

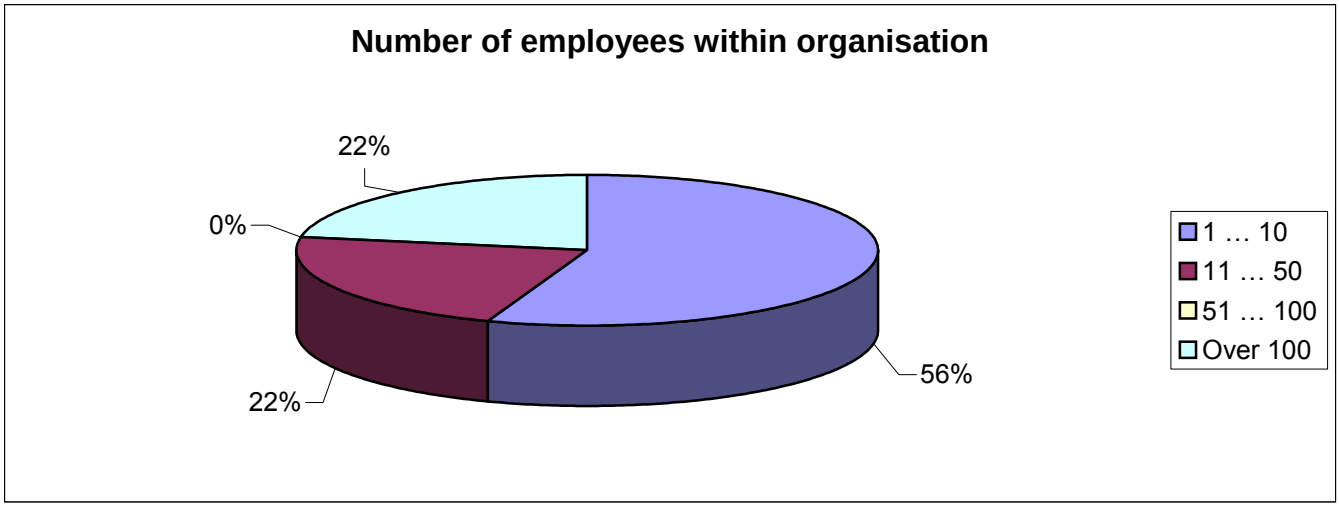
	More	About the same	Less
Multimedia Development	27%	64%	9%
Web Development	59%	41%	0%
Web Technology	37%	63%	0%
Programming/Scripting	55%	32%	13%
Graphics	36%	59%	5%
2D Animation	45%	45%	10%
3D Animation	54%	36%	10%
Digital Audio	31%	59%	10%
Digital Video	46%	36%	18%
Database Technologies	67%	23%	10%
Hardware	13%	55%	32%
Core Skills	0%	55%	45%

Please suggest a title for the new HN group awards:

- HN Web and Multimedia Authoring
- HN Interactive Multimedia and Web Technologies
- HN Multimedia Technology and Web Development
- HN Multimedia Computing and Web Development (50/50 split)
- HN Multimedia Computing with Web Development
- HN Multimedia and Web Development
- HN Web Development and Multimedia Technology
- HN Multimedia Computing with Web Technology
- HN Web Scripting and Multimedia Development
- HN Web Development and Database Management

10.3 Industry

Approximately how many people are employed by your organisation?

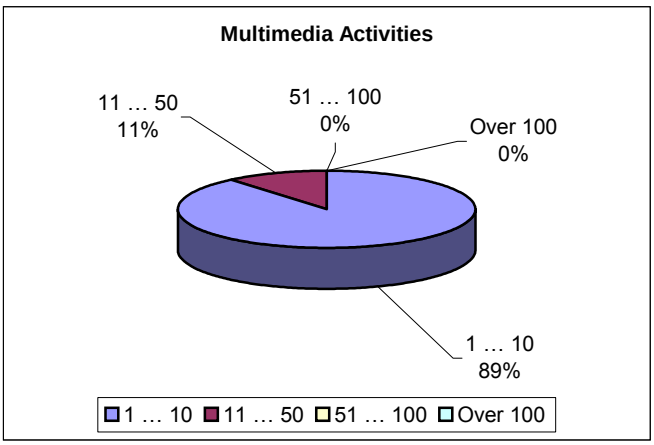


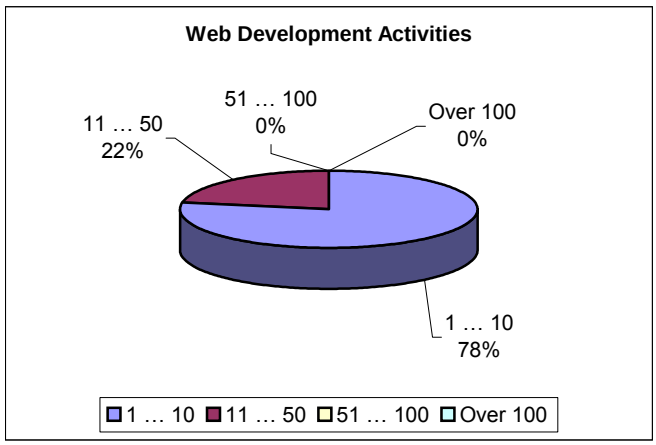
Comments:

The qualification design aimed to target a wide range of organisation including small, medium and large enterprise. The consultation process included representation from privately owned firms, public limited companies, local government and educational establishments. 56% of the respondents fell into the small enterprise category, 22% into the small-medium size enterprise, 22% were considered to be large-scale enterprises with employees in excess of one hundred.

How many employees regularly undertake multimedia computing related activities?

How many employees regularly undertake web development related activates?





Comments:

The results indicate that the majority of respondents typically utilise a team of between 1 and 10 people where multimedia computing and/or Web development activities take place.

11% of respondents indicated between 11 and 50 employees were regularly involved in multimedia computing, 22% indicated that between 11 and 50 employees were regularly involved in Web development activities. None of the organisation had dedicated teams of 51+.

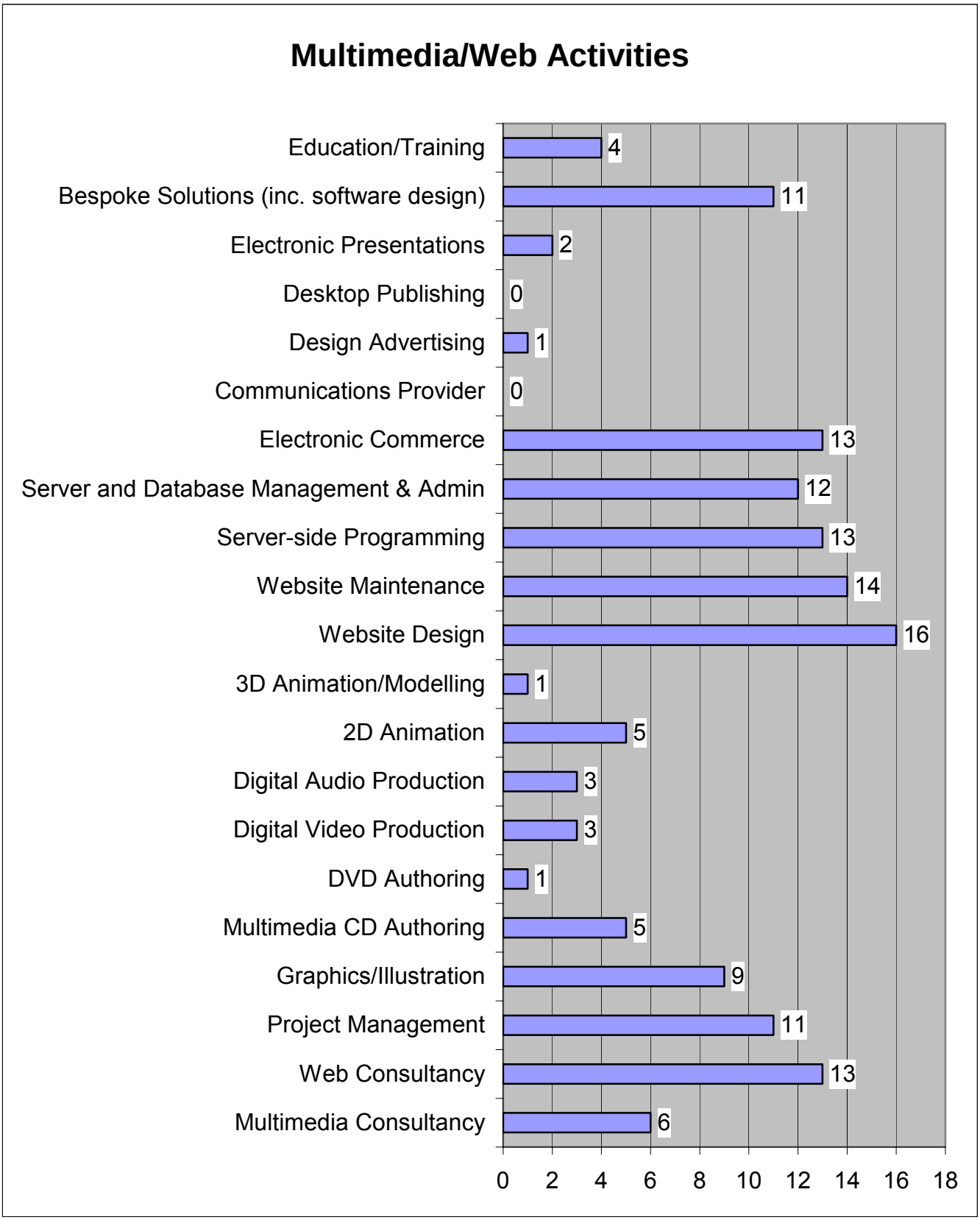
Which categories best describe the main focus of your organisation? ***(Tick all that apply)***

Comments:

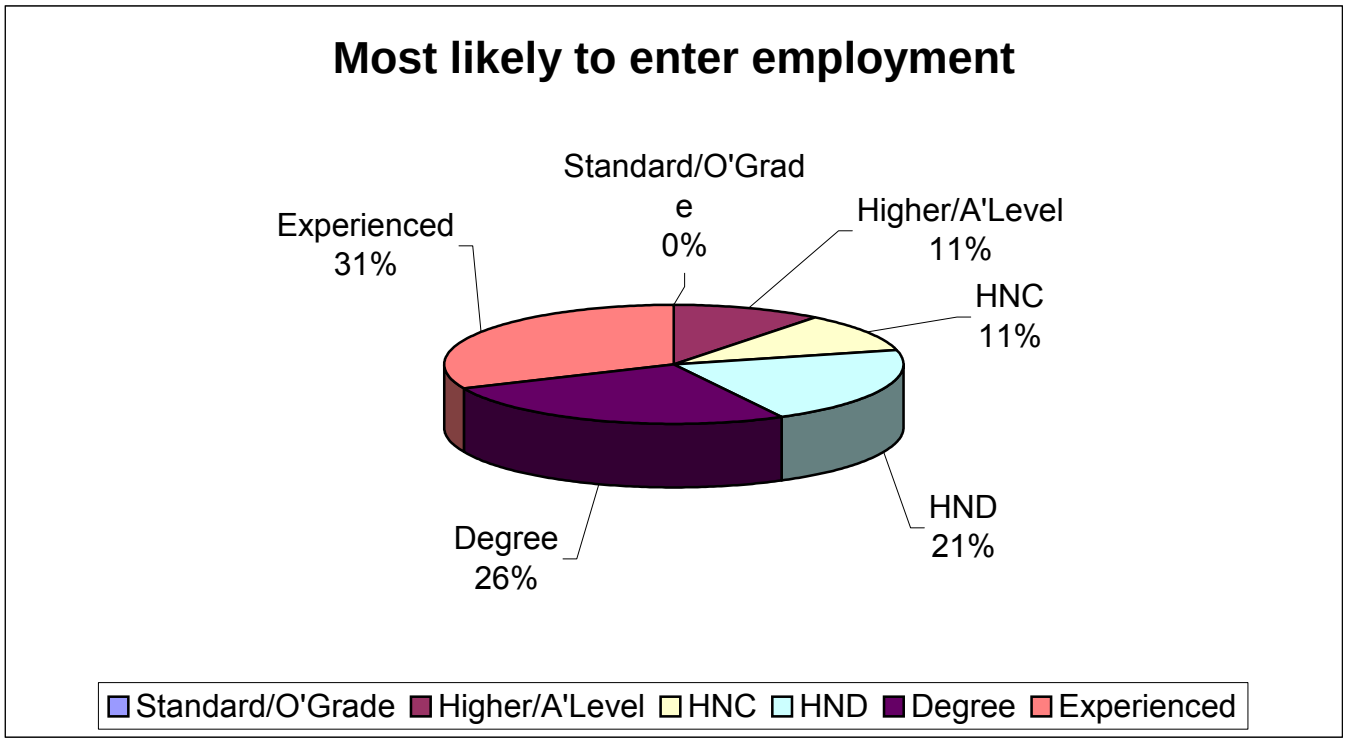
78% of respondents noted that the main focus of their organisation was on Web development. This was followed by e-commerce (50%), Marketing (39%), Software Development (39%) and Multimedia Computing (39%).

Interestingly, 22% noted other business activities including: IT systems installation and support, Web placement and optimisation, and graphic design.

If applicable, what are the main multimedia and/or Web related activities carried out by your organisation? ***(tick all that apply)***



In your opinion, at which level of qualification are employees most likely to *enter* employment within your organisation in a multimedia computing or Web development capacity?



Comments:

Research has shown that the majority of employers surveyed would seek candidates with relevant experience (31%). Typically the level of experience expected was between one and four years working with relevant technologies.

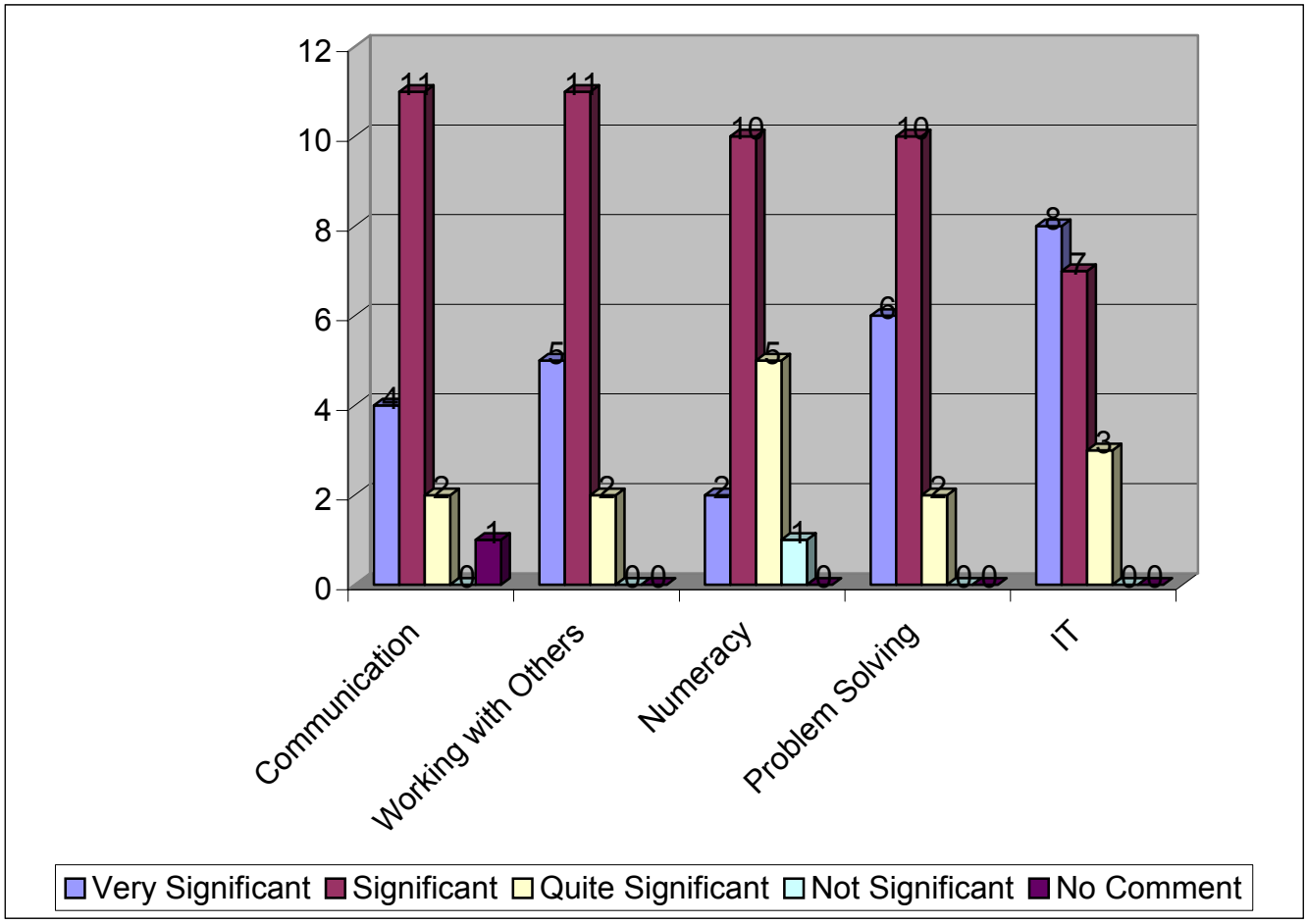
A number of employers suggested including some form of work experience within the second stage of the Higher National Diploma.

A considerable number of employers would expect candidates to be qualified to degree level or above (26%). However, employers were keen to note that experienced graduates were preferred over those newly qualified. Graduate recruitment programmes were seen as an ideal way of gaining experience.

Twenty-one percent of employers indicated that they would consider candidates with a relevant HND qualification. A number of employers noted that existing employees were qualified to HND level. Again, employers were keen to note that it's the 'experience' factor that matters.

Eleven percent of employers indicated that they would consider applicants seeking employment with relevant Higher, 'A' level or HNC qualifications. None would consider a candidate with standard grade or 'O' level qualifications – unless in an exceptional case where the candidate has the relevant skills and experience.

In your opinion, how significant are the following Core Skills to your organisation?



Comments:

Employers have rated the importance of Core Skills highly. When taking into consideration those who rated each skill as either 'very significant' or 'significant', the following results can be seen:

Communications: 83%

Working with Others: 89%

Numeracy: 67%

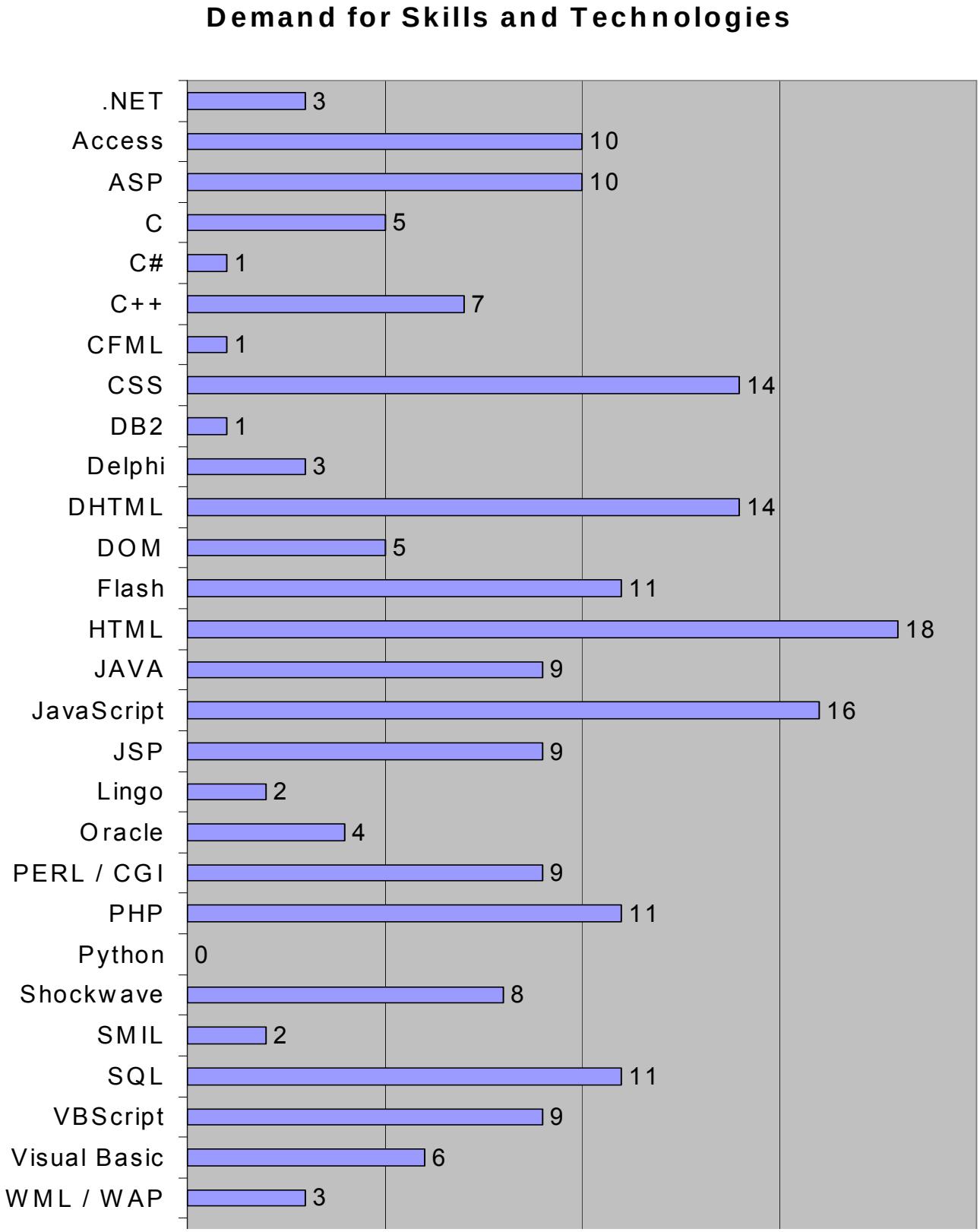
Problem Solving: 89%

IT: 83%

Employers considered that 'Working with Others' and 'Problem Solving' were the most important Core Skills for candidates to possess. This would suggest that candidates would have to have the ability to show initiative in finding solutions and be able work effectively in a collaborative development environment. The importance of good 'communication' and 'IT' skills have also been recognised.

It is interesting to note that 'Numeracy', while rated highly, was considered to be the least significant of the Core Skills. This reflects the initial consensus of the qualification design team.

If applicable, which of the following technologies are used within your organisation? ***(tick all that apply)***



Comments:

All of the employers surveyed indicated that they made use of at least one programming or scripting language. The majority indicated that their employees have a range of programming skills and that their organisation was equipped to develop solutions in a number of languages.

The demand for HTML and JavaScript skills remains the most significant and highly sough after. A number of employers have noted this in their closing comments. This is in line with the an earlier validation carried out by James Watt College of Further and Higher Education in 2001 for the HNC Web Development (G5YR15) group award.

The demand for applicants with server-side programming/scripting skills continues to increase. This can be evidenced through the demand for skills in ASP, JSP, PHP and notably in XML and DHTML. Employers have acknowledged the importance of SQL (including SQL Server and My SQL technologies), something that the qualification design team had noted was missing from the existing qualification and a skill often requested by candidates. This is supported through feedback from employers, analysis of the employment market and suggestions for improvement made by students.

General Applications	very significant	significant	quite significant	not significant	no comment
IT (advanced applications)	22%	38%	28%	6%	6%
IT (application development)	44%	33%	11%	6%	6%
Database (flat / relational)	50%	32%	6%	6%	6%

Hardware	very significant	significant	quite significant	not significant	no comment
Knowledge of Multimedia technology	27%	17%	33%	17%	6%
Knowledge of Client-side web technology	44%	33%	17%	0%	6%
Knowledge of server-side web technology	50%	27%	17%	0%	6%
Knowledge of Networking Hardware	11%	22%	44%	17%	6%
Knowledge of Hardware installation and maintenance	6%	27%	44%	23%	0%

Networking	very significant	significant	quite significant	not significant	no comment
Data Communications	18%	38%	33%	11%	0%
Network Technology	18%	38%	38%	6%	0%
Network Security and Encryption	33%	22%	28%	17%	0%

Internet: General	very significant	significant	quite significant	not significant	no comment
World Wide Web	61%	33%	6%	0%	0%
FTP	38%	38%	18%	6%	0%
E-mail	50%	28%	22%	0%	0%
Usenet / Newsgroups	11%	18%	33%	33%	6%

Internet: World Wide Web	very significant	significant	quite significant	not significant	no comment
Client-side technologies (software)	50%	44%	6%	0%	0%
Server-side technologies (software)	56%	33%	11%	0%	0%
Server-side scripting	61%	33%	6%	0%	0%
Server-side applications	44%	39%	17%	0%	0%
Web Server configuration	22%	39%	28%	11%	0%
Web Server management/admin	28%	33%	28%	11%	0%

Graphic Skills	very significant	significant	quite significant	not significant	no comment
Bitmap (Paint) Graphics	22%	33%	11%	28%	6%
Vector (Draw) Graphics (inc SVG)	22%	33%	17%	22%	6%
Graphics – 2D Animation	11%	28%	38%	17%	6%
Graphics – 3D Animation/Mod	6%	22%	33%	33%	6%
Digital Camera Techniques	6%	27%	27%	34%	6%
Digital Imaging Techniques	6%	34%	27%	27%	6%

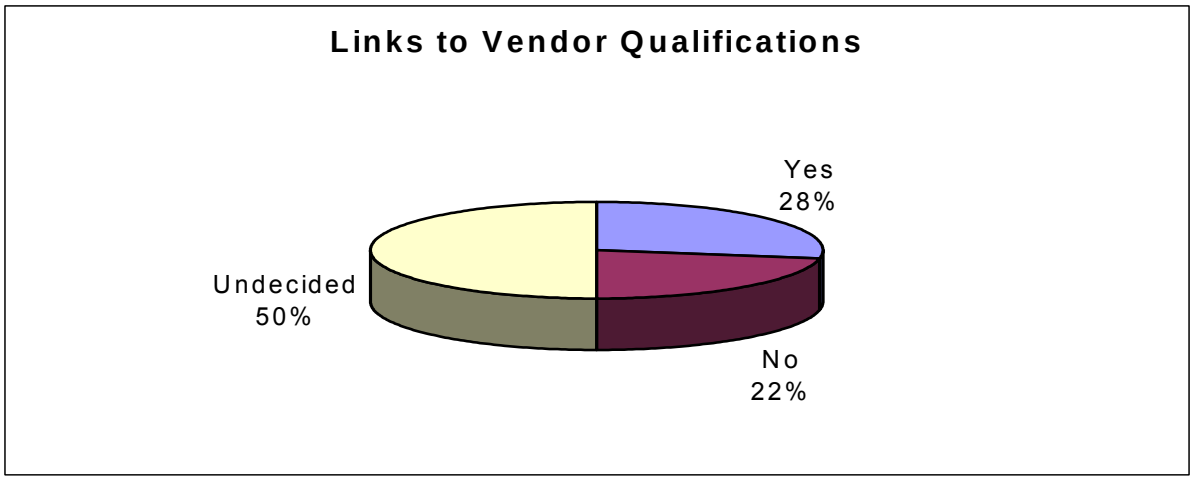
Multimedia: Digital Audio	very significant	significant	quite significant	not significant	no comment
Digital Audio Creation	0%	22%	22%	44%	11%
Digital Audio Capture	0%	22%	28%	44%	6%
Digital Audio Editing	0%	33%	17%	44%	6%
Digital Audio Manipulation	0%	33%	17%	44%	6%
Digital Audio Compression	0%	39%	11%	44%	6%
Digital Audio Streaming	0%	39%	11%	44%	6%

Multimedia: Digital Video	very significant	significant	quite significant	not significant	no comment
Digital Video Capture	0%	27%	27%	40%	6%
Digital Video Editing Techniques	0%	33%	22%	39%	6%
Digital Video Compression	0%	27%	27%	40%	6%
Digital Video Streaming	0%	33%	17%	44%	6%

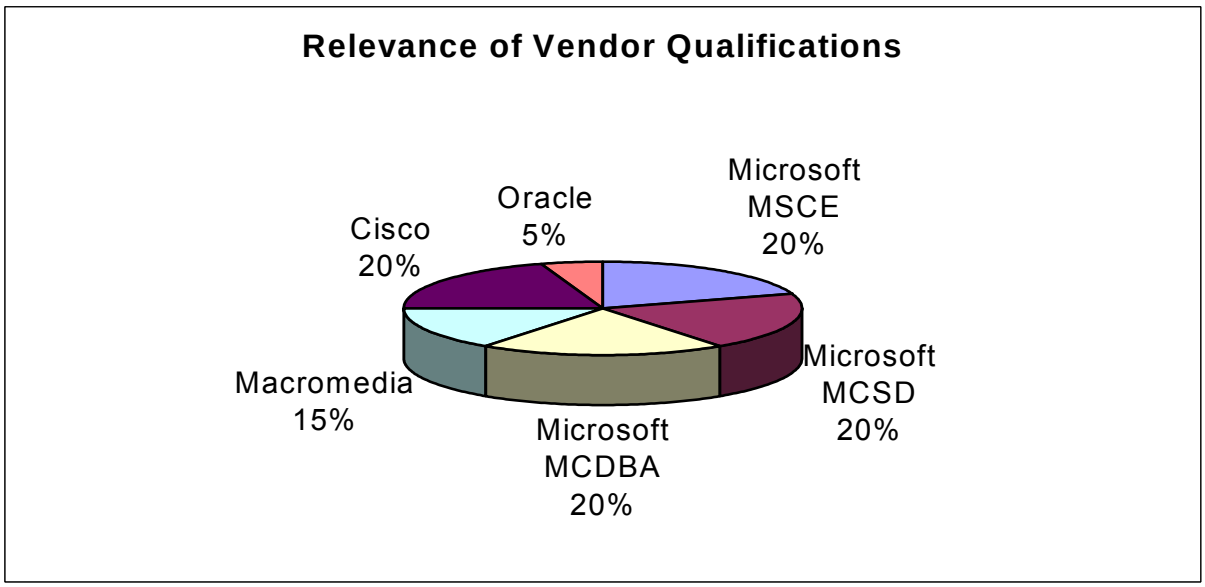
Design & Construction	very significant	significant	quite significant	not significant	no comment
Human Computer Interface	22%	44%	22%	0%	12%
Multimedia Design	17%	17%	27%	22%	12%
Multimedia Authoring	11%	17%	22%	33%	17%
Web Page Design	39%	39%	11%	0%	11%
Data Analysis & Database Design	39%	39%	11%	0%	11%
Electronic Presentations	0%	17%	33%	28%	11%
Desktop Publishing	0%	11%	38%	40%	11%

Programming & Scripting	very significant	significant	quite significant	not significant	no comment
Procedural Programming	23%	39%	11%	18%	11%
Event-driven Language	23%	44%	11%	11%	11%
Object-orientated Language	33%	28%	17%	11%	11%
Scripting Language	55%	39%	0%	0%	6%
Mark-up language (HTML/XML/WML)	72%	17%	11%	0%	0%
Graphics Programming	17%	28%	22%	33%	0%

Do you feel that computing based HN qualifications should encompass vendor qualifications?



If you answered "Yes" to the previous questions, please rate how relevant each of the following vendor qualification are to your organisation:



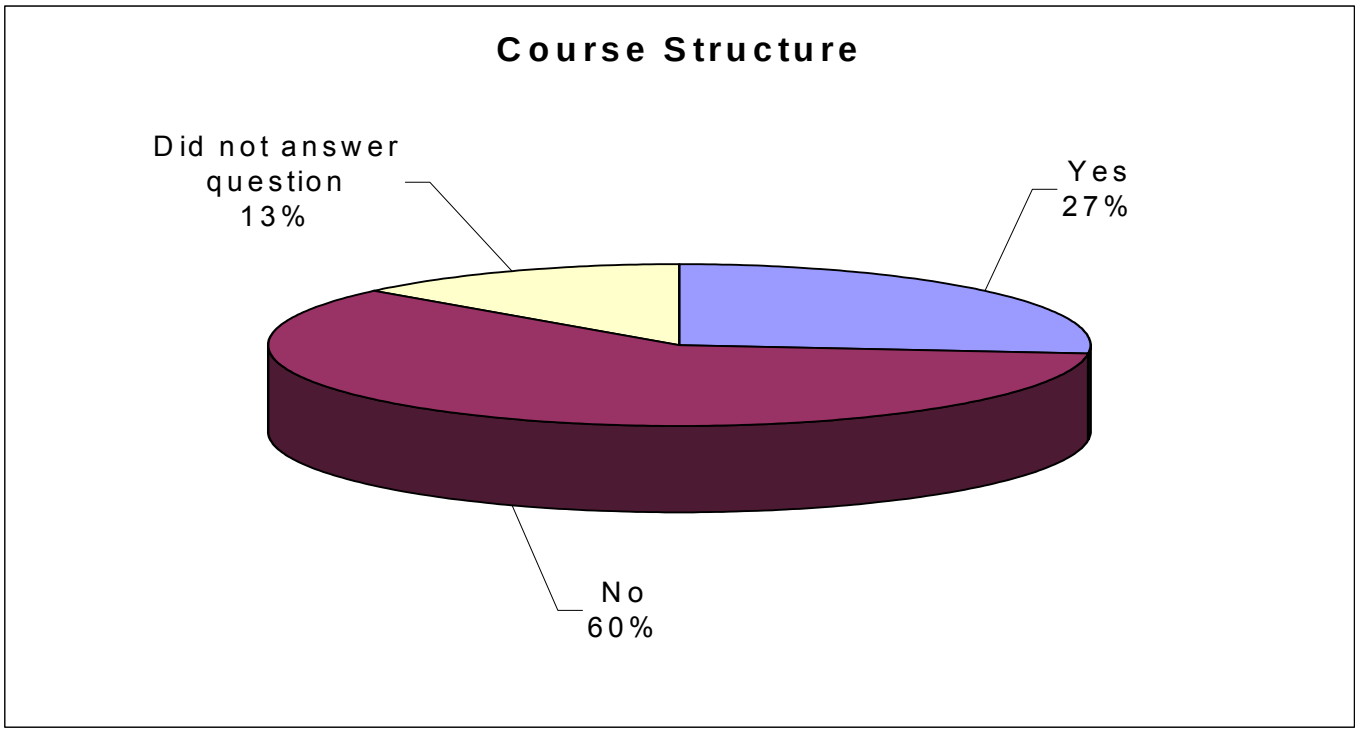
Comments:

50% of respondents were unsure about linking or embedding specific vendor qualifications to HN courses.

28% felt that linking HN Courses to vendor qualifications would be beneficial to a candidates employment prospects. In contrast, 22% felt that they should not be linked.

Given the large degree of uncertainty as to the benefits of linking vendor qualifications, the design team have decided not to follow the through with this proposal. There may however be scope to follow-up PDA qualifications post-validation, should there be sufficient demand from candidates and/or employers at a future date.

Looking at the proposed course structure, are there any areas that you feel are missing?



Comments:

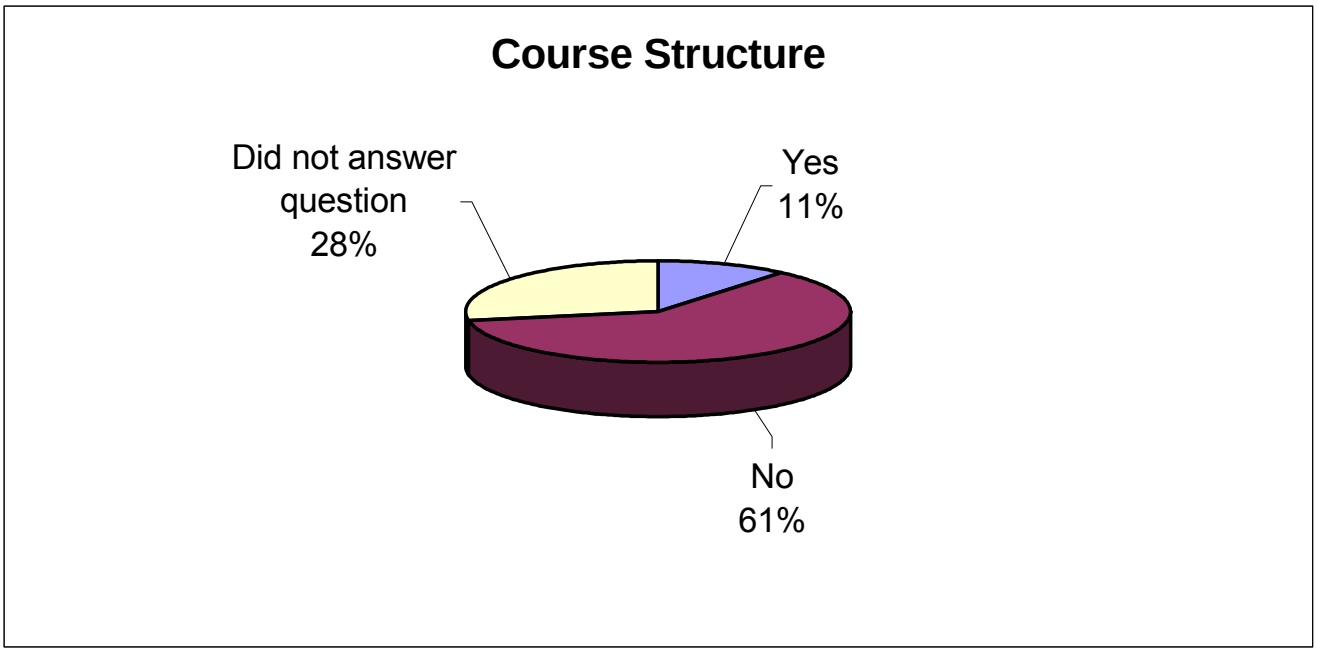
60% of industry respondents felt that the structure of the proposed HNC and HND awards covered all of the essential skills expected of candidates at each respective level.

27% of industry respondents felt that the structure of the proposed HNC and HND awards lacked some of the essential skills. These are summarised below:

- **Marketing**
  - Actively seeking relevant *enterprise* Unit from HN national catalogue.
- **Search engine placement**
  - Covered within 'Internet: Web Development', and reinforced in the Unit: 'Internet: Web Technology & Security'
- **Customer Service**
  - The HN unit 'D76K 34: Providing Support to Users' is now proposed for inclusion as an option on both HND frameworks.
    - Final recommendations will be made by the validation panel
- **Industrial placements / Work experience**
  - Structure includes the HN Unit: 'Employment Experience 2'. However, it is recognised that this is targeted more towards those already in employment.

13% of respondents did not answer this question.

Looking at the course structure, do you feel that any of the Units included in the proposed mandatory section should instead be made optional?



Comments:

61% of respondents were satisfied with the proposed *mandatory* section of each group award.

11% felt that some of the *mandatory* Units were not significant enough to justify them being included in this section and felt that they should become optional Units:

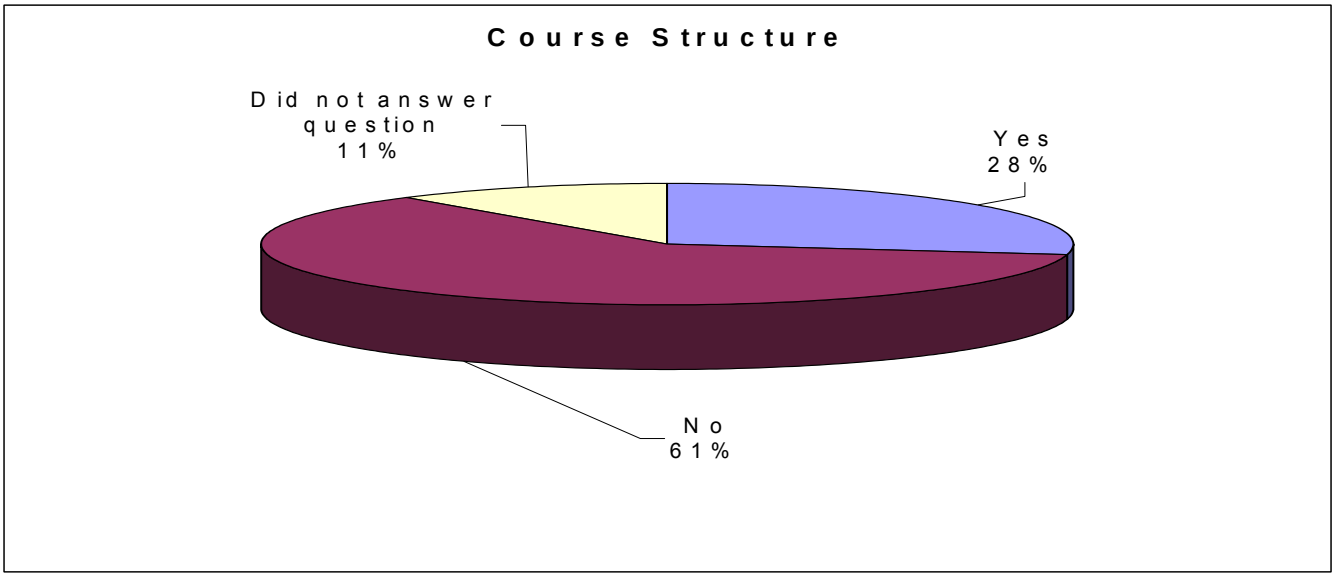
- **Digital Content: Animation 2**
  - 11% felt that this should not be mandatory for the 'HND Multimedia Computing' route, noting that it was a particularly specialist area and would have been better as an option.

- **Human Computer Interface**
  - 11% felt that this should not be mandatory for either of the proposed HND year two routes. One respondent quoted HCI as "sociological nonsense".

- **Professional and Legal Issues for Web and Multimedia Developers**
  - 6% felt that the Unit should be optional. No reason specified.

28% of respondents did not answer this section.

Looking at the course structure, do you feel that any of the Units included in the proposed *optional* sections should instead be made *mandatory*?



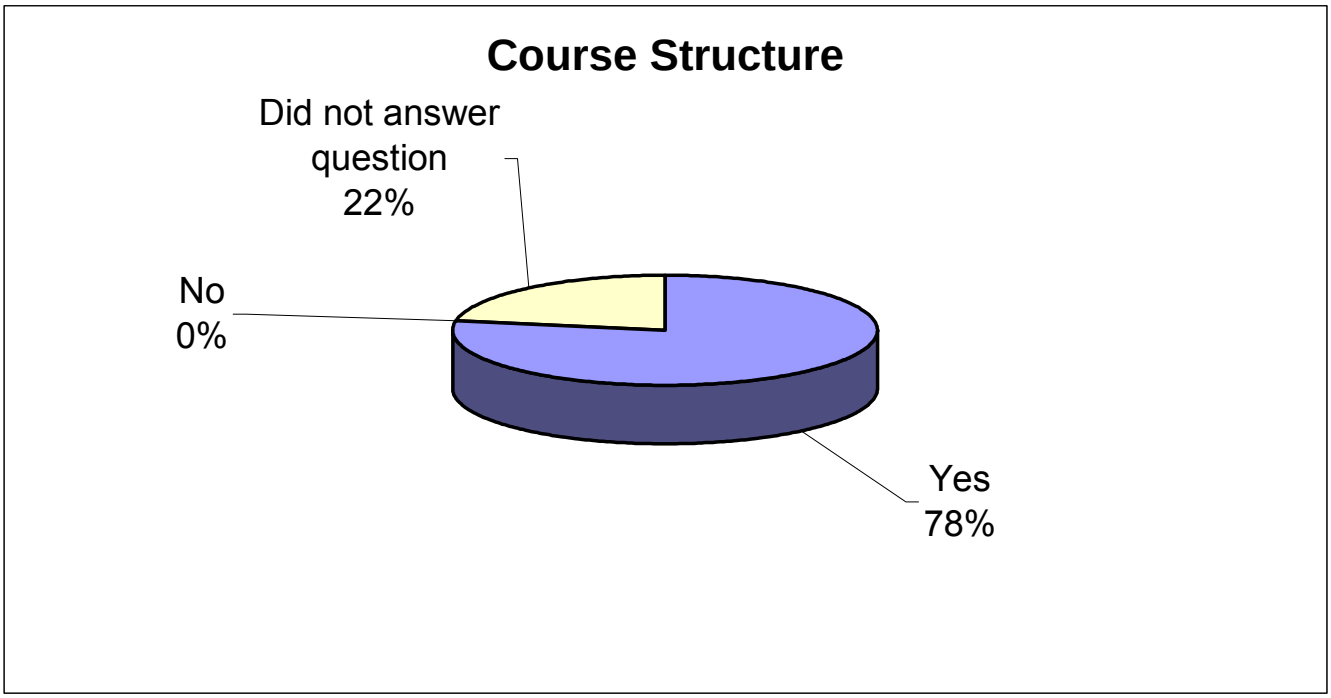
Comments:

Sixty-one percent of industry respondents felt that the proposed course structure was appropriate and acceptable as it stood. This includes the returns from Higher Education. However, one HE institution noted concern that the course proposal may not facilitate enough in the way of mandatory in-depth study within each of the HND2 streams.

Twenty-eight percent felt that the following Units should become mandatory. Group award level and specific streams are indicated in parenthesis:

- **Relational Database Systems (HND – Web Development)**
  - The qualification design team agree with this feedback and have amended the proposed course structure to make this Unit a mandatory requirement for the stream.
- **Project Management (HND - both)**
  - The qualification design team agree with this feedback and have amended the proposed course structure to make the Unit a mandatory requirement for the HND group award.
- **Scripting (HNC - both)**
  - The qualifications design team would prefer to leave this in the mandatory for HND Multimedia Computing: Web Development, and as an option at HNC level.
- **Introduction to E-commerce (HNC – both)**
  - The qualification design team felt that this should remain an optional unit as to include it as a mandatory Unit would restrict candidate choice and candidates may feel that the introductory Unit is may detract from their main area of interest.
- **Software Development: Object Orientated and/or EDL (HND - both)**
  - Most Centres represented by the qualifications design team indicated that they are likely to deliver at least one of these Units as part of their HND2 programme – especially for candidates planning to articulate to stage 3 of a degree programme. However, Centres felt that, while very relevant, the course would become overly programming heavy if either were to become mandatory.

In your opinion, and based on the options that you have selected, do you feel that on completion of this course at HNC level that the employment prospects of a candidate would be enhanced?



Comments:

Feedback from industry overwhelmingly supports the proposed HNC group award (78%) and felt that it was relevant and will enhance the employment prospects of a candidate.

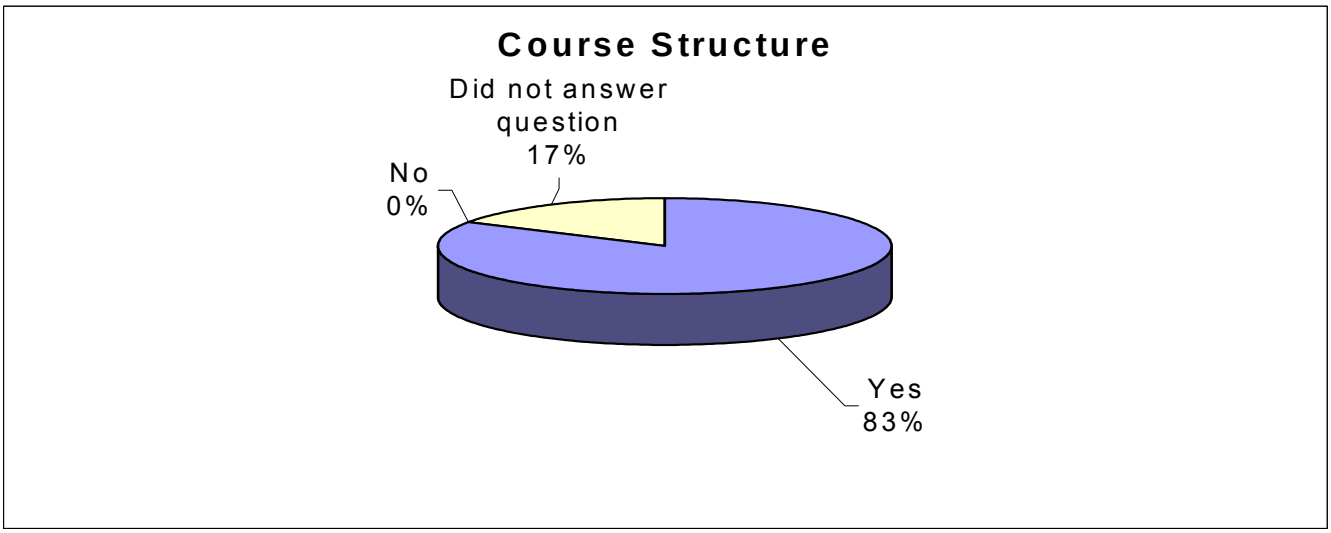
No negative feedback was received (0%).

A number of respondents did not answer this question (22%). Follow-up telephone communication discovered that the question was not answered because their organisation would generally not offer employment to candidates qualified to HNC level.

If 'Yes', what type of employment do you anticipate a successful HNC candidate may gain?

- Junior Web Developer
- Web Developer (if talented)
- Trainee Web Developer / Designer
- Unable to comment in any detail
- Web Programmer (depending on modules selected)
- Basic Web Developer, with the emphasis more on the graphics side
- Interactive multimedia applications / interface developer (graphics)

In your opinion, and based on the options that you have selected, do you feel that on completion of this course at HND level that the employment prospects of a candidate would be enhanced?



Comments:

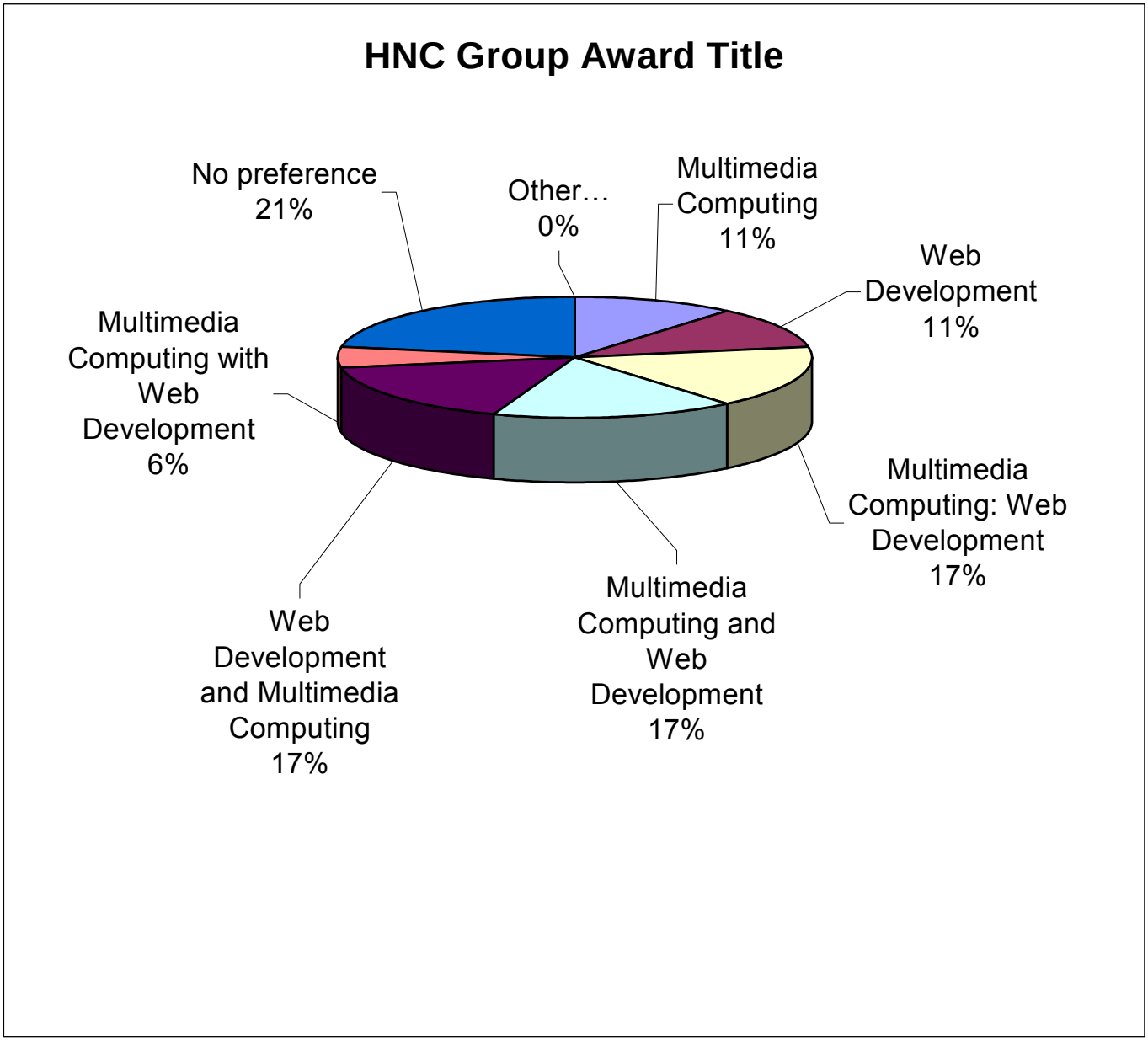
83% of respondents felt that gaining the proposed HND group awards would enhance the employment prospects of a candidate. It is significant to note that a number of employers were keen to specify that employment within certain roles would come down to actual Units studied and their content – rather than the group award itself.

17% of the replies received did not answer this question.

If 'Yes', what type of employment do you anticipate a successful HND candidate may gain?

- Web Developer / Designer
- Web applications programmer
- Software Engineer (depending on modules selected)
- Basic Web Developer, with the emphasis more on the coding side
- Database Administrator
- Systems Developer
- IT Applications Software Developer
- IT Applications Support
- CD / DVD / offline / shocked applications developer (depending on stream)

Based on the options that you have selected, please choose an HNC group award title that in your opinion best reflects the content of the course from the list below – or suggest a title of your own:



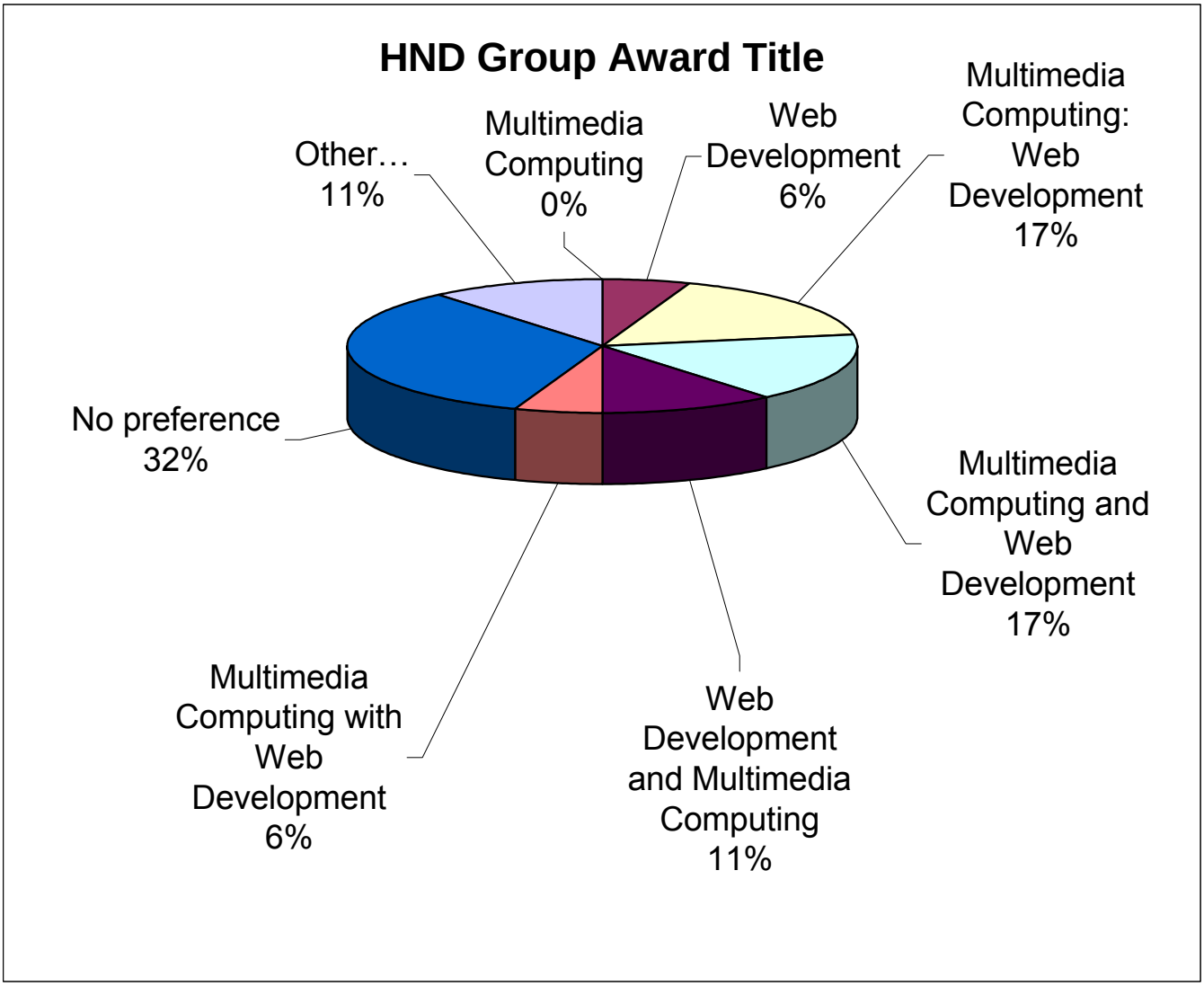
Comments:

No alternative titles were suggested for the HNC group award.

No clear forerunner is evident either, with three of the listed titles each receiving 17% of the vote.

It is, however, interesting to note that 21% of the respondents did not have a title preference. This perhaps adds weight to the fact that it's the Units chosen and the actual content of those Units that is likely to be of interest to employers rather than the award title.

Based on the options that you have selected, please choose an HND group award title that in your opinion best reflects the content of the course from the list below – or suggest a title of your own:



Comments:

The majority, 32%, noted no specific title preference. Only 6% voted for the existing HND title.

40% suggested that both 'Multimedia Computing' and 'Web Development' should be in the title.

11% of respondents made alternative HND title suggestions:

- Multimedia and Web Programming
- Group award titles should alter to reflect group of Units studied. For example: "HND Computing - Multimedia Development"; "HND Computing – Web Design"; "HND Computing - Web Programming", etc

10.4 Higher Education

The support of Higher Education is critical to the success of the proposed awards. Representatives from the three main universities from which students of the existing awards can articulate have been consulted over the proposed redevelopment of the award.

Dr. Chris Halsall, Associate Head of School for Information and Communication Technologies at the University of Paisley has provided valuable and encouraging feedback through the Industrial Market Research survey and has kindly agreed to be Chair of the Validation Panel on 15th May 2003.

Iain Stewart, Programme Leader for the BSc Multimedia Technology award at Glasgow Caledonian University and Dr. Sandra Cairncross, Senior Lecturer in the School of Computing at Napier University have both agreed to become Validation Panel Members and will provide further representation and valuable input from Higher Education.

Strong articulation agreements are in existence between each of represented Higher Educational institutions and Centres delivering the existing awards. It is of the utmost importance that each of the existing articulation agreements be maintained through the redeveloped provision.

The qualification design team has given careful consideration to feedback from Higher Education and have taken steps to action the advice given. Feedback from post-HND stage 3 university students has also been taken into consideration with measures taken to address the issues raised and weaknesses identified with the existing awards. Feedback from post-HND students for the redevelopment proposal has received overwhelming support as can be evidenced in section 10.2 – Candidates.

Please refer to section 12.2 - Articulation agreements from Universities for evidence of support.

11 Appendix IV: SCQF Level Descriptors

The Scottish Credit and Qualifications Framework (SCQF) will be of significant value to all who have an interest in learning in Scotland: learners, providers and employers. It will assist in widening access for students from all backgrounds to education and training at all levels and encourage increased participation and progression by mapping out clearly the routes within the system.

Overall it will

- make the overall system of qualifications easier to understand by clarifying entry and exit points and relationships between the various qualifications
- provide a framework of progression to promote lifelong learning by building credit links between qualification streams and enabling learners to build up credit from different routes
- provide a basis for future national education and training initiatives, establish a harmonised format for all records of achievement and transcripts in Scotland and offer an enhanced means of setting national learning targets and monitoring progress towards these
- assist with cross-border and international comparisons

More specifically it will:

- show employers and selectors how qualifications relate to each other
- assist providers to develop articulated programmes and to give credit at an appropriate level for assessed learning which is not part of the formal system of qualifications
- help learners to see progression possibilities and to capitalise on previous attainment
- provide a common format for describing all qualification streams to support information and guidance services, particularly IT based services
- help to establish compacts involving further education, higher education and employment based learning to deliver education and training packages which meet local needs and lead to national qualifications

11.1 SCQF: Key concepts

Level

Units, courses and other programmes of study will be set at levels in the SCQF to provide guidance for users on its relative demand. This will make it easier to compare learning undertaken in different contexts such as the workplace and formal classroom study. Levels will be determined with reference to characteristics such as: subject knowledge, skills and practices, complexity and depth of learning, cognitive and practical skills, learner autonomy, working with others and other core skills. and possible progression.

The levels of the SCQF will incorporate the levels of each of the individual qualification streams which go to make it up. There will be both generic and subject-specific level descriptors to provide a basis for this process. Levels will not be intrinsically related to years of full-time study and some programmes of study (egg group awards) may include learning at more than one level.

Credit

SCQF points, will allow users to quantify learning and compare the amount of learning achieved at the same or at different levels. To be measured in this way, learning must be assessed by valid and reliable methods and subject to appropriate quality assurance.

In SCOTCAT, the amount of credit for a given programme of learning, module or unit is based on an estimate of the notional time it would take an average learner to achieve the assessed outcomes. The SCQF will use the same unit of credit as SCOTCAT i.e. a notional 10 hours of learner effort giving 1 SCQF point.

SCQF points will not be awarded for “time serving”. They will be allocated on the basis of notional learner effort, shown by the achievement of assessed learning outcomes. A similar system is already used for SQA National and Higher National qualifications, but the hours allocated to the units and courses are more closely associated with programmed/timetabled learning time than with self-directed study.

Learner effort

This will include: all formal teaching or training; seminars and tutorials; practical work in laboratories or other locations; related IT activities; information retrieval in libraries; private study and revision; work-based activities which lead to assessment; all forms of assessment; programme planning; counselling, mentoring and coaching; and reflection.

A standard notional learner year

SCQF calculations of credit at the different levels will be based on a notional learner's year of 1200 hours of learner effort – as currently with SCOTCAT. Points for qualifications will be calculated by considering what might reasonably be undertaken in a year of full-time study – e.g. 5 Highers or 15 Higher National units. The resulting points allocations should reflect the balance between formal instruction and independent study which is associated with different subjects or disciplines.

General credit and specific credit

As in SCOTCAT general credit will be the total amount of credit – expressed as SCQF points - allocated to programmes of learning, units or modules on a national basis. Specific credit, which can be counted towards a further programme or qualification (in effect exemption for previous attainment) will be allocated by the institution or organisation which runs the programme or the qualification.

SCQF Level 6 - (Higher, SVQ 3)

NB: The descriptors set out the characteristic generic outcomes of each level. They are intended to provide a general, shared understanding of each level and to allow broad comparisons to be made between qualifications and learning at different levels. They are not intended to give precise nor comprehensive statements and there is no expectation that every qualification or programme should have all of the characteristics. The descriptors have been developed through a series of consultations and are offered as a first working guide and will be revised in the light of feedback on their use.

Knowledge and Understanding	Practice: Applied knowledge and understanding	Generic Cognitive Skills	Communication, ICT and numeracy skills	Autonomy, accountability and working with others
Characteristic outcomes of learning at each level include the ability to:				
Demonstrate and/or work with: ◦ generalised knowledge of a subject/discipline ◦ factual and theoretical knowledge ◦ a range of facts, ideas, properties, materials, terminology, practices, techniques about/associated with a subject/discipline Relate the subject/discipline to a range of practical and/or everyday applications	Apply knowledge and understanding in known, practical contexts Use some of the basic, routine practices, techniques and/or materials associated with a subject/discipline in routine contexts which may have non-routine elements Plan how skills will be used to address set situations and/or problems and adapt these as necessary	Obtain, organise and use factual and theoretical information in problem solving Make generalisations and predictions Draw conclusions and suggest solutions	Use a wide range of skills – for example: ◦ *produce and respond to detailed and relatively complex written and oral communication in both familiar and unfamiliar contexts* ◦ *select and use standard applications to process, obtain and combine information* ◦ *use a wide range of numerical and graphical data in routine contexts which may have non-routine elements*	Take responsibility for the carrying out of a range of activities where the overall goal is clear under non-directive supervision Take some supervisory responsibility for the work of others and lead established teams in the implementation of routine work Manage limited resources within defined and supervised areas of work Take account of roles and responsibilities related to the tasks being carried out and take a significant role in the evaluation of work and the improvement of practices and processes

SCQF Level 7 - (SHE level 1, Cert HE, HNC, Advanced Higher)

NB: The descriptors set out the characteristic generic outcomes of each level. They are intended to provide a general, shared understanding of each level and to allow broad comparisons to be made between qualifications and learning at different levels. They are not intended to give precise nor comprehensive statements and there is no expectation that every qualification or programme should have all of the characteristics. The descriptors have been developed through a series of consultations and are offered as a first working guide and will be revised in the light of feedback on their use.

Knowledge and Understanding	Practice: Applied knowledge and understanding	Generic Cognitive Skills	Communication, ICT and numeracy skills	Autonomy, accountability and working with others
Characteristic outcomes of learning at each level include the ability to:				
Demonstrate and/or work with: ◦ a broad knowledge of the subject/discipline in general ◦ knowledge that is embedded in the main theories, concepts and principles ◦ an awareness of the evolving/changing nature of knowledge and understanding ◦ an understanding of the difference between explanations based in evidence and/or research and other forms of explanation and of the importance of this difference	Use some of the basic and routine professional skills, techniques, practices and/or materials associated with a subject/discipline Practise these in both routine and non-routine contexts	Present and evaluate arguments, information and ideas which are routine to the subject/discipline Use a range of approaches to addressing defined and/or routine problems and issues within familiar contexts	use a wide range of routine skills and some advanced skills associated with the subject/discipline – for example: ◦ *convey complex ideas in well-structured and coherent form* ◦ *use a range of forms of communication effectively in both familiar and new contexts* ◦ *use standard applications to process and obtain a variety of information and data* ◦ *use a range of numerical and graphical skills in combination* ◦ *use numerical and graphical data to measure progress and achieve goals/targets*	Exercise some initiative and independence in carrying out defined activities at a professional level Take supervision in less familiar areas of work Take some managerial responsibility for the work of others within a defined and supervised structure Manage limited resources within defined areas of work Take the lead in implementing agreed plans in familiar or defined contexts Take account of own and others' roles and responsibilities in carrying out and evaluating tasks Work with others in support of current professional practice under guidance

SCQF Level 8 - (SHE level 2, Dip HE, HND, SVQ 4)

NB: The descriptors set out the characteristic generic outcomes of each level. They are intended to provide a general, shared understanding of each level and to allow broad comparisons to be made between qualifications and learning at different levels. They are not intended to give precise nor comprehensive statements and there is no expectation that every qualification or programme should have all of the characteristics. The descriptors have been developed through a series of consultations and are offered as a first working guide and will be revised in the light of feedback on their use.

Knowledge and Understanding	Practice: Applied knowledge and understanding	Generic Cognitive Skills	Communication, ICT and numeracy skills	Autonomy, accountability and working with others
Characteristic outcomes of learning at each level include the ability to:				
Demonstrate and/or work with: ◦ a broad knowledge of the scope, defining features, and main areas of a subject/discipline ◦ detailed knowledge in some areas ◦ understanding of a limited range of core theories, principles and concepts ◦ limited knowledge and understanding of some major current issues and specialisms ◦ an outline knowledge and understanding of research and equivalent scholarly/academic processes	Use a range of routine skills, techniques, practices and/or materials associated with a subject/discipline, a few of which are advanced or complex Carry out routine lines of enquiry, development or investigation into professional level problems and issues Adapt routine practices within accepted standards	Undertake critical analysis, evaluation and/or synthesis of ideas, concepts, information and issues which are within the common understandings of the subject/discipline Use a range of approaches to formulate evidence-based solutions/responses to defined and/or routine problems/issues Critically evaluate evidence-based solutions/responses to defined and/or routine problems/issues	Use a range of routine skills and some advanced and specialised skills associated with a subject/discipline, for example: ◦ *convey complex information to a range of audiences and for a range of purposes* ◦ *use a range of standard applications to process and obtain data* ◦ *use and evaluate numerical and graphical data to measure progress and achieve goals/targets*	Exercise autonomy and initiative in some activities at a professional level Take significant managerial or supervisory responsibility for the work of others in defined areas of work Manage resources within defined areas of work Take the lead on planning in familiar or defined contexts Take continuing account of own and others' roles, responsibilities and contributions in carrying out and evaluating tasks Work in support of current professional practice under guidance Deal with ethical and professional issues in accordance with current professional and/or ethical codes or practices under guidance

SCQF Level 9 - (SHE level 3, Ordinary degrees)

NB: The descriptors set out the characteristic generic outcomes of each level. They are intended to provide a general, shared understanding of each level and to allow broad comparisons to be made between qualifications and learning at different levels. They are not intended to give precise nor comprehensive statements and there is no expectation that every qualification or programme should have all of the characteristics. The descriptors have been developed through a series of consultations and are offered as a first working guide and will be revised in the light of feedback on their use.

Knowledge and Understanding	Practice: Applied knowledge and understanding	Generic Cognitive Skills	Communication, ICT and numeracy skills	Autonomy, accountability and working with others
Characteristic outcomes of learning at each level include the ability to:				
Demonstrate and/or work with: ◦ a broad and integrated knowledge and understanding of the scope, main areas and boundaries of a subject/discipline ◦ a critical understanding of a selection of the principal theories, principles, concepts and terminology ◦ knowledge that is detailed in some areas and/or knowledge of one or more specialisms that are informed by forefront developments	Use a selection of the principal skills, techniques, practices and/or materials associated with a subject/discipline Use a few skills, techniques, practices and/or materials that are specialised or advanced Practise routine methods of enquiry and/or research Practise in a range of professional level contexts which include a degree of unpredictability	Undertake critical analysis, evaluation and/or synthesis of ideas, concepts, information and issues Identify and analyse routine professional problems and issues Draw on a range of sources in making judgements	Use a range of routine skills and some advanced and specialised skills in support of established practices in a subject/discipline, for example: ◦ *make formal and informal presentations on standard/mainstream topics in the subject/discipline to a range of audiences* ◦ *use a range of IT applications to support and enhance work* ◦ *interpret, use and evaluate numerical and graphical data to achieve goals/targets*	Exercise autonomy and initiative in some activities at a professional level Take some responsibility for the work of others and for a range of resources Practise in ways which take account of own and others' roles and responsibilities Work under guidance with qualified practitioners Deal with ethical and professional issues in accordance with current professional and/or ethical codes or practices, seeking guidance where appropriate

12 Appendix V: Evidence of Support

12.1 Letters to Universities

16th April 2003

Dr Chris Halsall
BSc (Hons) Media Technology
BSc (Hons) Media Systems
University of Paisley
High Street
Paisley
PA1 2BE

Dear Dr Halsall

HN Multimedia Computing / Web Development: Redevelopment of award

The Multimedia Computing and Web Development consortium is formed of representatives from a number of Scottish Further and Higher education colleges. The consortium is nearing completion of the redesigned Higher National awards in Multimedia Computing and Web Development.

I would appreciate it very much if you would look at the enclosed course layout document and let me know if students successfully completing the HNC or either of the proposed HND awards would be suitable candidates for articulation to your programmes.

Please reply on your institutions headed notepaper, confirming the name of the degree programme(s) and the anticipated point of entry. I have enclosed an SAE for your convenience.

Thank you very much for your time and support, and should you require further information, please do not hesitate to contact either Mary Hainey, Chair of Consortium on 01475 553060 or myself on 01475 553066.

Yours sincerely

Scott Campbell
HN Multimedia Computing and Web Development Consortium

Encs. Proposed framework

16th April 2003

Dr M. Davison
BSc (Hons) Multimedia Systems
University of Paisley
High Street
Paisley
PA1 2BE

Dear Dr Davison

HN Multimedia Computing / Web Development: Redevelopment of award

The Multimedia Computing and Web Development consortium is formed of representatives from a number of Scottish Further and Higher education colleges. The consortium is nearing completion of the redesigned Higher National awards in Multimedia Computing and Web Development.

I would appreciate it very much if you would look at the enclosed course layout document and let me know if students successfully completing the HNC or either of the proposed HND awards would be suitable candidates for articulation to your BSc Multimedia Systems programme.

Please reply on your institutions headed notepaper, confirming the name of the degree programme and the anticipated point of entry. I have enclosed an SAE for your convenience.

Thank you very much for your time and support, and should you require further information, please do not hesitate to contact either Mary Hainey, Chair of Consortium on 01475 553060 or myself on 01475 553066.

Yours sincerely

Scott Campbell
HN Multimedia Computing and Web Development Consortium

Encs. Proposed framework

16th April 2003

Dr Iain Stewart
BSc/BSc (Hons) Multimedia Technology
Glasgow Caledonian University
70 Cowcaddens Road
Glasgow
United Kingdom
G4 0BA

Dear Dr Stewart

HN Multimedia Computing / Web Development: Redevelopment of award

The Multimedia Computing and Web Development consortium is formed of representatives from a number of Scottish Further and Higher education colleges. The consortium is nearing completion of the redesigned Higher National awards in Multimedia Computing and Web Development.

I would appreciate it very much if you would look at the enclosed course layout document and let me know if students successfully completing the HNC or either of the proposed HND awards would be suitable candidates for articulation to your programme.

Please reply on your institutions headed notepaper, confirming the name of the degree programme and the anticipated point of entry. I have enclosed an SAE for your convenience.

Thank you very much for your time and support, and should you require further information, please do not hesitate to contact either Mary Hainey, Chair of Consortium on 01475 553060 or myself on 01475 553066.

Yours sincerely

Scott Campbell
HN Multimedia Computing and Web Development Consortium

Encs. Proposed framework

16th April 2003

Dr Sandra Cairncross
Room C41
Napier University
School of Computing
Merchiston Campus
Edinburgh
Scotland

Dear Dr Cairncross

HN Multimedia Computing / Web Development: Redevelopment of award

The Multimedia Computing and Web Development consortium is formed of representatives from a number of Scottish Further and Higher education colleges. The consortium is nearing completion of the redesigned Higher National awards in Multimedia Computing and Web Development.

I would appreciate it very much if you would look at the enclosed course layout document and let me know if students successfully completing the HNC or either of the proposed HND awards would be suitable candidates for articulation to your direct entrant suite of programmes.

Please reply on your institutions headed notepaper, confirming the name of the degree programme(s) and the anticipated point of entry. I have enclosed an SAE for your convenience.

Thank you very much for your time and support, and should you require further information, please do not hesitate to contact either Mary Hainey, Chair of Consortium on 01475 553060 or myself on 01475 553066.

Yours sincerely

Scott Campbell
HN Multimedia Computing and Web Development Consortium

Encs. Proposed framework

12.2 Articulation agreements from Universities

UNIVERSITY of PAISLEY

University of Paisley
Paisley PA1 2BE Scotland

School of Information and Communication Technologies
Tel: 0141-848-3401/3601 Fax: 0141-848-3404/3616

Direct Line: 0141 848 3423

Date: 28 April 2003

Mr Scott Campbell
HN Multimedia Computing &
Web Development Consortium
James Watt College
Finnart Campus
Finnart Street
GREENOCK
PA16 8HF

Dear Scott

HN Multimedia Computing/Web Development

I am pleased to advise you that holders of the above award would satisfy the academic entry requirements for the third year of the following programmes:

BSc(Hons) Media Technology
BSc(Hons) Multimedia Systems
BSc(Hons) Computer Animation & Multimedia*

Yours sincerely

Dr C L Halsall

* Offered subject to approval

NAPIER UNIVERSITY
EDINBURGH

Scott Campbell
James Watt College of Further & Higher Education
Finnart Campus
Finnart Street
Greenock
PA16 8HF

29 April 2003

Dear Scott

HN Multimedia Computing/Web Development: Redevelopment of award

I am pleased to confirm that candidates who have completed the following redeveloped awards:

HND Multimedia Computing

Would satisfy the entry requirements of our Direct Entrant Suite. Successful diplomates could normally enter stage three of our BSc in Multimedia Technologies.

However, diplomates wishing to change direction could also be considered for our BSc in Software Technology or Network Computing.

Yours sincerely,

Dr Sandra Cairncross
Programme Director
Direct Entrant Suite

INVESTOR IN PEOPLE

School of Computing
10 Colinton Road, Edinburgh EH10 5DT, Scotland, UK Tel: (44) 0131 455 2700 Fax: (44) 0131 455 2727
Web: http://www.soc.napier.ac.uk
Professors in the School of Computing
David Benyon; Elisabeth Davenport; Jessie Kennedy; Jon Kerridge (Head of School); Peter Ross

12.3 Evidence of support from industry

Please refer to the industrial market research analysis contained within section 10.3 – Industry Consultation.

- 78% of respondents agreed that the proposed HNC Multimedia Computing: Web Development group award would enhance a candidates employment prospects and suggested that candidates may gain employment in positions such as Junior Web Developer, Web Developer, Trainee Web Developer / Designer, Web Programmer (depending on modules selected), Basic Web Developer, with the emphasis more on the graphics side, Interactive multimedia applications / interface developer (graphics)

- 83% of respondents agreed that the proposed HND Multimedia Computing group award would enhance a candidates employment prospects. 83% of respondents agreed that the proposed HND Multimedia Computing: Web Development group award would enhance a candidates employment prospects and suggested that candidates may gain employment in positions such as Web Developer / Designer, Web applications programmer, Software Engineer (depending on modules selected), Basic Web Developer with the emphasis more on the coding side, Database Administrator, Systems Developer, IT Applications Software Developer, IT Applications Support, CD / DVD / offline / shocked applications developer (depending on stream).

- 60% of employers felt that the proposed course content was fine as it stood

- 27% of employers suggested additional areas
    - each of the suggestions has been actioned. Details are contained within section 10.3

- Analysis of the current job market provided additional supporting evidence for the demand for skills and qualification level. Please refer to section 12.4 – Job advertisements.

12.4 Job advertisements

3D Studio Max, Photoshop Television Graphics Artist **jobsearch.co.uk**

Job posted on: 25/04/2003

Contract: Permanent

Salary: Up to £30,000 (£30,000 per year)

Agency Ref: MMC_3060, Agency: Crescere Resourcing

3D Studio Max Television Graphics Artist required by my client in Buckinghamshire. Working for the postproduction / play out centre you will be responsible for designing bespoke graphics against clients requirements.

You will posses strong skills in 3D Studio Max, Adobe Photoshop and an understanding of virtual reality television. This commercial experience will be backed up by a HND or higher in a design/graphic/media subject. Preference.. 3D Studio Max Television Graphics Artist required by my client in Buckinghamshire. Working for the postproduction / play out centre you will be responsible for designing bespoke graphics against clients requirements. Preference will be given to candidates that have knowledge of Digisuite and Speed Razor. Skills inc, 3d Studio Max and Photoshop version 7

Web Designer **jobsearch.co.uk**

Contract: Ongoing contract

Salary: Maximum £20 p/h (£20 per hour)

Agency Ref: A2784HID, Agency: Kelly Services

Web Designer required to support integration and migration of Intranet websites. You should have a sound background of programming using ASP, VB, JavaScript and HTML (Knowledge of Dreamweaver Ultradev is an advantage)

Experience of database driven websites, primarily using SQLServer backend, also, some experience of Graphic Design packages (Photoshop/Flash)

This is an ongoing contract, c37 hours per week, excellent working environment.

Web based software developer **jobsearch.co.uk**

Salary: Neg

Agency Ref: EW 469/251, Agency: Hawtal Whiting Ltd

· Web Designer required to support the integration and migration of All Powertrain Intranet websites.

· Should have a sound background of programming using ASP, Visual Basic, Javascript and HTML.

· Knowledge of Dreamweaver Ultradev an advantage.

· Experience of database driven websites, primarily using a SQL Server backend.

· Some experience of Graphic design packages (Photoshop/Flash).

· Good communication skills.

· Candidate should be able to fully document all work to coincide with company procedures.

· Ability to work in a team but also be able to manage own time/workload is required.

· Any examples of live URLs would be useful.

Multi-Media Engineer **jobsearch.co.uk**

Contract: Permanent

Salary: Negotiable

Agency Ref: 1595d, Agency: BJ Consultants

Multi-Media Engineer with at least 3 years experience in the development and production of complex multimedia for use within the Training and/ or Aircraft industry, or other technical industry.

Knowledge of various illustrator graphics design, CAI and CBT development packages (specifically 3D Studio Max, Adobe Illustrator, Adobe Photoshop). Familiarity with engineering drawings, technical systems and working to defined standards and specifications.

Web / internet Developer (HTML,illustrator,photoshop,dream..) **jobsearch.co.uk**

Contract: Permanent

Salary: to £18K Bens (£18,000 per year)

Agency Ref: JTRACK_dph/1999/HTML, Agency: Project People

Are you an aspiring Junior developer with 18 months+ HTML hand coding experience if so I may have the role for you!!

My client is a reputable, continually expanding, long term established software house which provides a wide range of products and services including, web development consultancy, all hardware / network equipment for the business user, Training, Project Management, Multimedia development and Accounting services. This is an excellent career opportunity for JUNIOR talented web developers to join the existing expanding team, candidates will have at least 18 months commercial experience of hand coding in HTML, and must also have experience of SOME OF, photoshop, illustrator, dreamweaver and fireworks. There is therefore the opportunity to train in new technologies. Please apply immediately with a CV to learn more about this exciting opportunity. IMPORTANT, Please note candidates MUST have AT LEAST 18 MTHS experience of hand coding HTML to be considered !!

WEB DEVELOPER **jobsearch.co.uk**

Contract: Permanent

Salary: £17,000 (£17,000 per year)

Agency Ref: jtrack/ss/web/dev/notts, Agency: Dart Resourcing Group

WEB DEVELOPER / NOTTINGHAM / SALARY £17,000. Preferred experience but not essential in .net, c++, c/sharp. Any experience in Macromedia Director or lingo will you give you a distinct advantage. This is relatively Junior/Trainee role but will also suit someone who has all the experience. Great promotional prospects, for someone who is young ie 20-25, energetic and keen to learn. Immediate start for the right person. Great prospects

Web Developer **jobsearch.co.uk**

Contract: Permanent

Salary: Negotiable

Agency Ref: VOGON2604, Agency: Roebuck Electronique Ltd

A vacancy has arisen within our busy web development team for a conscientious and technically capable web developer. Vogon maintains a number of web sites in several languages and competes in a highly competitive and niche area of the web.

The successful candidate must be able to:

· Work to tight deadlines

· Work to a high degree of accuracy

· Operate within a highly dynamic and diverse environment.

· Balance a number of projects and prioritise work effectively

· Understand the importance of both production and promotion of sites

The personal qualities we are looking for include:

· a firm commitment to maintaining standards of work at all times.

· self-motivated, hard working with a keen attention to detail.

· ability to work within a small development team

· ability to motivate others to achieve and maintain high standards.

· Good communication skills with a good standard of English

· Knowledge of German or a second language useful but not essential.

Reporting to the Operations Director, the role requires that realistic and achievable time estimates can be provided and attained.

The successful candidate will be able to:

· Effectively integrate a solid understanding of HTML and other web based programming languages with creative acumen.

· Produce professional corporate web sites that reflect the high standards of quality of service and professionalism that the company offer.

· Demonstrate a track record of high achievement.

For the candidate able to consistently deliver to the appropriate standard, this very challenging role has good scope for financial advancement.

Multimedia/Web Designer/Developer **reed.co.uk**

Type: Permanent

Salary: Up to £35000 per annum

REF: 455-696

Our client is an established, independent, Internet marketing, website and multimedia production company. Their operational profile is an engineered balance of four cornerstones of expertise.

1. Business Management experience.
2. Sales & Marketing craftsmanship
3. Creative and technological excellence
4. Result orientation

By harnessing these strengths they are able to place at their client's disposal custom products and services that, in combination with a maturing partnership, successfully achieve one primary directive... the realisation of their specific business objectives.

Established near Winchester, Hampshire. Ideally any applicant will require to be based within reasonable commuting distance. If you live outside this area but are still convinced that you can make a difference please give us a brief outline of any relocation plans or intentions.

Requirements:

Experience here is the key. A thorough understanding of multimedia and website design/development and the ability to accept responsibility for quality and accuracy of work is a prerequisite. You will have a proven track record and the ability to take a written brief from concept to front-end construction. All web development for our client will be required to work on a majority of platforms and be exceptional in terms of functionality and design.

The ideal candidate will be proficient in the use of, Flash, Photoshop, Dreamweaver, HTML and a working knowledge of the following would be beneficial: JavaScript and Active Server Pages.

As well as your cv and personal details it is very useful to include 3-4 lines of why you feel you are suitable for this position and include salary requirement and notice period.

Middleweight Graphic Designer **reed.co.uk**

Type: Permanent

Salary: Up to £26000 per annum

REF: 02, Agency: Top Banana Recruitment Ltd

Our client is a leading supplier of e-business solutions to a broad range of clients worldwide.

By combining the specialist skills of graphic designers, programmers and project managers they deliver bespoke Internet/multimedia/printed solutions, and have become renowned within the industry for quality, creativity and innovation.

The Role: We are looking for a Middleweight Graphic Designer to join our creative team to work on a variety of New Media & print projects.

You will be responsible for the development of graphic design from initial concept to final completion, working with the New Business Development, Account Management and Programming teams to ensure the smooth delivery of all projects.

You will work with Junior Designers to assist them and ensure their continued development and keep up to date with all emerging technologies and design techniques.

Education: Graduate with 2:1 or equivalent in relevant course

Technical Abilities: Mac and PC literate

Expert level knowledge with the following software: Adobe Photoshop ver. 6.0+, Adobe Illustrator ver.8.0, Macromedia Flash 5+, Quark Xpress, Macromedia Director

Core Skills: You will have a sound understanding of design for interactive media & printed media. You will be able to manage your own time to ensure delivery of project within defined timescales; You will have excellent communication skills (graphical, verbal and written); You will be a major team player and also able to work alone when required; You will have a keen eye for quality and pay strict attention to detail; You will have a flexible approach and be able to cope with several projects at any one time; You will maintain professionalism at all times.

Disc Editor - Graduate **reed.co.uk**

Type: Permanent

Salary: Up to £18000 per annum

REF: 28566, Agency: The Graduate Recruitment Company

National organisation is currently in search of a Disc Editor to join their team within their Bath office. Responsibilities will include co-ordinating and compiling the cover discs. You will be responsible for maintaining the content and quality of the disc each month. You will liase with software companies on the production of the disc. Building key relationships with contacts at software companies. You will be responsible for securing software for the discs and at all times attempt to secure exclusive software.

Essential Knowledge:

General knowledge of the software market

Essential Work Experience:

Sofware Industry / web design / multimedia

Essential Skills and Competencies:

Keen to take on the responsibility that this role demands

Personality - should be keen and eager to get on with people in the industry. This is a role that is very heavily dependent on key relationships.

Preferred Skills and competencies:

Proficient in HTML

Proficient in Director

CD/DVD production knowledge

3D Animator **reed.co.uk**

Type: Contract - Initial 12 weeks

Salary: Up to £negotiable (£180 per week minimum)

Video production company assists corporate clients to develop integrated communications package. Video is supplied in a variety of medium incl. multimedia, CD-Rom & Powerpoint. Equipment used incl. Beta SP player; Broadcast Edit Suite 'Stratsphere'; Sound room; Encoding Hardware & Software (Matrox); DVD Authoring software etc. Seeking 3D Animator to assist in development of a presentation to secure contracts with established clients in the construction industry. There may also be an opportunity to re-vamp the company's website to reflect the new direction the company is taking. Additional activities & opportunities may present themselves depending on productions underway at the time. Suitable candidates need sound knowledge of 3D Animation software and have ability to produce virtual reality animations of infrastructure designs such as roads, bridges, tunnels etc.

ASP/VB developer **Abrecco**

Salary: Negotiable

Location: Edinburgh

With sustained growth over the last 2 years, my client, a Scottish based software house, now requires an addition Software Developer to join their existing team. The ideal candidate will have a minimum of 12 months experience of developing web applications using ASP, VB and SQL. Additional knowledge of .NET would be advantageous though not essential. This is an excellent opportunity to join a young expanding company at an exiting time in their development.

Contact Instructions: Please email your CV to job325252@websalvo.com

Contact Name: Gary Davenport-Owens, Phone No: 0131 226 7331.

Abrecco45A George Street, Edinburgh EH2 2HT

Reference No: GDO 1226

Graduate Developer HTML / XML **Abrecco**

Salary: £17,000 (From £15000.00 to £17000.00 per annum)

Location: Central Belt

Our client based in Dundee is looking to recruit a hands and technically competent Graduate developer. Candidates will have a degree (will consider HNC/HND) in computer and/or numerical subjects. Duties will include write code, write unit test plans, test execution, man helpdesk. You must have strong skills in HTML and XML. Ideally candidates will also have some experience with Quark.

Contact Instructions: Please email your CV to job326013@websalvo.com

Contact Name: Tim Hagger, Phone No: 0131 226 7331

Abrecco45A George StreetEdinburgh EH2 2HT

Reference No: TH/1217

Consultant **KPR**

Salary: £25,000

Location: Lothian

My client is looking for a very strong VB6 developer. You will be tested on your skills and those candidates who do not meet an exceptionally high standard need not apply. HTML, ASP, VB.NET and ASP.NET would be an advantage coupled with a great personality and dedicated work ethos.

The position will attract a strong developer with excellent client facing skills and technical design skills that are second to none. In return you can work on a large project, with a small talented team who like to have fun.

Contact Instructions: Please e-mail your CV ASAP to - jdonaldson@kpr.uk.com

Contact Name: Jennifer Donaldson, Phone No: 01312259595, Fax No: 01312255558

KPR - Reference No: JD132

VB Analyst/Programmer **Abrecco**

Salary: £35,000 (From £30000.00 to £35000 per annum)

Location: North East

Due to recent company re-structure I have an urgent requirement for a Senior Analyst/Programmer to lead my client's team of developers. You will have in depth knowledge of all aspects of the software development life-cycle; analysis, design, specification, programming and testing.

You will be part of a team in the development of software applications using VB, SQL and WEB technologies. While these are essential, additional knowledge of VAX Basic and Corvision would be highly beneficial. This is an excellent opportunity to join a well-established company offering a good salary and benefits package. The closing date for this vacancy in Wednesday 16th April, so please hurry.

Contact Instructions: Please email your CV to job325964@websalvo.com

Contact Name: Gary Davenport-Owens, Phone No: 0131 226 7331

Benefits: flexitime, paid holidays, pension

Abrecco45A George Street Edinburgh EH2 2HT

Reference No: GDO 1230

Web Developer **Search Consultancy Ltd.**

Salary: £28,000

Location: Edinburgh

Web DeveloperVB/SQl/ASP/XML/MTL

Software Consultancy Central Scotland £23K - £28K + Benefits

You'll need VB development experience inc Microsoft toolkit (ASP and XML) ,SQL, OO development and MTS. Experience with Visual SourceSafe (VisualInterdev) & other web technologies such as Flash, Fireworks and Java would be a distinct advantage but not essential. For a Microsoft Certified Partner working on e-enablingprojects for financial public & retail sector clients throughout central Scotland.

To apply please email your CV in the first instance to fkydd@search.co.uk quoting ref itd/fk/93489Contact Instructions: Contact Search Contact Name: FREDK, Search Consultancy Ltd. Reference No: /FREDK/ITD/93489

VB Developer **Melville Craig**

Salary: Negotiable

Location: Glasgow

Closing date: 22 April 2003

VB Developer with first class technical skills required for a 3 month fixed term contract. Essential technical skills: Visual Basic, SQL Server, XML, ASP, and IIS. This role is urgent and requires someone who is available immediately.

Contact Name: Jane Ross, Phone No: 0141 221 8182, Fax No: 0141 248 6008

Melville Craig

Reference No: S1JR138

Junior Web Developer **monster.co.uk**

Salary: up to 15k

Position Type: Permanent

Ref Code: CF314679

My market-leading client based in Peterborough / Cambridgeshire is seeking a Junior Web Developer for their organisation. You would be involved with graphical and code changes to their current and future websites, also updating and enhancing their Intranet system.

The primary skill for this role is HTML, but a working knowledge of Visual Basic, ASP, Java, Access, SQL Server, Photoshop, Visual Interdev and Dreamweaver would be advantageous. Duties also include liaising with external clients and providing reports on web access, hence good communication skills are required.

This position is ideally suited to a new graduate. A fantastic position to increase your skills and obtain valuable commercial experience, to become a valuable member of their Web Development team. Send me an up-to-date CV ASAP, including salary and expectations.

Browser Developer **monster.co.uk**

Location Scotland

Salary TO £ 40,000+BENS

Type Permanent

Our Client, who specialise in applications for Mobile Devices are looking for a strong C programmer with extensive knowledge of wide range of Internet technologies, including DOM, CSS, HTML, XML, Javascript, HTTP, SSL.

The role will be to develop the enabling technology for a full browser on small devices-PDA's mobile devices, the work required includes object based document model, Javascript reflection, HTML parsing, CSS styling, caching and other enablers of browser solutions.

Web Developer **monster.co.uk**

Salary: up to £35k + benefits, dependant on experience

My established client based in Birmingham, are seeking a strong developer for their Web Development Team. You would be designing and developing applications (Internet, Intranet, Extranet), but focus mainly on programming to deliver key solutions in accordance to requirements.

Skills required - .NET, HTML, ASP, XML, Java, VB Script, CSS coding. Experience with DBA programming, security issues, application development and client facing skills are required. If you feel that you would be suitable to work in a fantastic company and team, and are able to give 100% effort to improve and grow within the organisation, have the relevant skills, send me an up-to-date CV ASAP!!

This role would involve some travel for specific projects. You would be an active key member of the team, involved with working within teams to deliver quality solutions to address current and future requirements. MN CF0433 D1804 BEMC4597

Additional Information

Position Type: Permanent Ref Code: CF314597

Web Developer, HTML / Dreamweaver, Bristol **monster.co.uk**

Salary: to GBP 20,000.00 per year

My client is currently seeking a talented Web Developer (HTML / Dreamweaver) to join their 1st class design team in Bristol. The company has secured a major new client and is therefore seeking to expand its team to complete the extra workload. Candidates will ideally be degree educated with experience of HTML Coding and Dreamweaver, and a knowledge of Macromedia product suite, and SQL would be beneficial. Candidates must have demonstratable examples of the web sites that they have personally worked on, and be expected to complete technical test to show their level of creativity and knowledge. Please contact me for full details on these roles.

Position Type: Full Time, Permanent

Ref Code: GKMONHTML01

Graduate Programmer **monster.co.uk**

Salary: from GBP 16,000.00 per year

An exciting opportunity has arisen within a major Scottish based publishing house for a graduate programmer. The successful applicant must be educated to a degree level (will consider HND) within a computing related subject.

The main duties will be: writing code, write unit test plans ,test execution and man the helpdesk. The following technical skills are desirable: Microsoft Windows, word, Excel, Access, HTML, XML and related tools. Training will be provided to the successful candidate where required. However, the following are very desirable technical skills. Understanding of DTD, Python, Java/JavaScript, Perl, Zope, Photoshop, Freehand, MySQL etc. Great opportunity for 1st career since graduation

Position Type: Full Time, Permanent Ref Code: MSTR/IF/graduate

Web Developer **monster.co.uk**

Status: Full Time, Employee

Reference Code: Req# 54-03

The primary focus of the Client Service Site Developer (SD) is to coordinate the deployment of the CCBN client's Investor Relations Internet Package. The Site Developer works directly with members of the customer organization (Investor Relations-Corporate Marketing-Web services) to effectively and efficiently tailor CCBN's IR Online products and service solutions to the needs of the client; Manage the build-out of IR Online (CCBN's product which serves as the Investor Relations portion of clients' corporate websites) products and services; Provide IR Online consultative services to clients and address their questions and concerns about preparing the site for launch; Custom HTML page design, implementation, and integration into our IR Online service; Participate in corporate projects and campaigns; Take an active part in the ongoing evolution of CCBN's core products and services, by submitting clients' suggestions and recommendations to the product management team.

A Bachelor's degree, Web certification or 2+ years experience in designing or building dynamic Web Sites (for Mac and PC) will also be considered. Excellent knowledge of HTML, DHTML, JavaScript, CSS, are required; Proficient in XML, XSLT; Familiar with ASP and other web technologies; Excellent communication skills, both verbal and written, are required; Each Site Producer will have multiple clients for which they are responsible, so project management and client service skills are a must. · Financial knowledge is a plus.

Web / GUI Programmer **monster.co.uk**

Position Type: Full Time, Permanent

Ref Code: HAR/1115

Are you an Expert with: HTML ?? CSS ?? JAVASCRIPT ?? DHTML ?? and PHP, ASP or SSJS ?? Have you also got a knowledge of SQL / Database??

We are currently recruiting for a Web / GUI Programmer to join a leading IT Software Solutions Company based local to the Harrow area. You will be joining a development team to work on developing HTML/DHTML interfaces for the company's applications.

Excellent package - Salary depending on experience. Email me your CV Today!!

Salary: Dependant on experience. This vacancy is based in the United Kingdom. A fundamental part of our service is that you will be required to make a personal visit to the local branch to finalise any application made on line or for any further information. Brook Street only operates in the UK and can only process applications from candidates who are currently resident and eligible to work in the UK.

www.brookstreet.co.uk

Web Editor **monster.co.uk**

Salary: GBP 24,672.00 to GBP 25,000.00 per year

Position Type: Full Time, Permanent

The main purpose of the post is to maintain and co-ordinate development of Cancer BACUP web presence. The Web Editor will liase with key staff from across the organisation, co-ordinating uploading activities and ensuring content is up to date and of a high quality. The web editor will also manage external agencies employed on a freelance basis including the tendering process. To manage the website development budget. To work as part of the marketing and communications teams on specific events, as required.

Educated to degree level or equivalent with knowledge and understanding of web usability, navigation and accessibility principles. Knowledge of www consortium web accessibility guidelines, Knowledge of www consortium HTML Standards, Knowledge and understanding of website content management systems including their advantages and limitations, Experienced in the creation of web graphics, Experienced in hand-coding HTML and cascading styleSheets are essential.

WEB/GUI Graphic Designer **monster.co.uk**

Position Type: Full Time, Permanent

Ref Code: HAR/1114

We are currently recruiting for a Web/GUI Graphic Designer to join an IT development team that has a a good eye for commercial quality graphic design to create graphic elements that will be used within numerous GUI interfaces presented in both web and standard windows application interfaces.

Expertise with any of the top graphic design applications like Adobe Photoshop on a PC platform is essential. In addition to this, you will need proficient in Macromedia Flash and /or Director to produce animated product demonstrations/presentations that will be deployed on the company's website to support their marketing activities. You will be working as part of the development team which will include web and non-web programming skills however, basic technical skills in HTML / DHTML and Javascript would be a distinct advantage for this role.

If this sounds relevant to your experience please email me your CV today and we can discuss this further.

Salary: dependant on experience.

This vacancy is based in the United Kingdom. A fundamental part of our service is that you will be required to make a personal visit to the local branch to finalise any application made on line or for any further information. Brook Street only operates in the UK and can only process applications from candidates who are currently resident and eligible to work in the UK.

www.brookstreet.co.uk

Multimedia Graphic Designer **monster.co.uk**

Salary: up to £20,000

Position Type: Permanent

Ref Code: CF314813

My north-east client is now looking for a Senior Designer to join their development team. My client works with a number of Blue Chip organisations designing and implementing business to business creative solutions for areas such as corporate reports and presentations. You must have experience in Adobe Photoshop, Freehand or Illustrator. You must have an open and creative mind with portfolio to substantiate your work. Experience of Brand development across a range media is also essential. Please apply online and submit a pdf portfolio.

Application Developer **monster.co.uk**

Salary: £25,000 - £40,000

Position Type: Permanent Ref Code: MG21464

Do you have a strong background with either music or audio technologies? My client is the world largest musical instrument manufacturer and currently seek a C++ engineer for the development of music related applications primarily on Windows platforms but Macintosh experience as well would be ideal. You'll work in a small and energetic environment, and should be confident, self motivated and pro-active with knowledge of music/audio software.

Successful candidates will have experience with C++, COM, ATL and ideally; experience with XML and Core Foundation and Multimedia services under MacOS X. However, less experienced candidates will also be considered. Excellent company benefits and opportunity to work fromhome.

It would be preferable that CVs are submitted in Word format

Games Junior Developer **monster.co.uk**

Position Type: Permanent

Ref Code: CF308127

My client leads world markets with a range of the very latest high technology, high productivity systems for the television and film industries. A position has arisen for a junior programmer to join their busy development department.

Applicants should have a degree 2:1 or above in an IT related subject gained at a red brick university in addition you will need to possess excellent communication skills, both verbal and written. You will also have experience in DirectX, Multimedia or Games.

The successful candidate will be joining a dynamic and growing team and will receive full on going training and the opportunity to progress their career. If you are interested in starting a career with a Company at the leading edge of technology please e-mail your CV in word format.

Creative Lead **monster.co.uk**

Salary: GBP 30,000.00 to GBP 35,000.00 per year

Position Type: Full Time, Permanent

Ref Code: CR51

Experienced, enthusiastic hands on web designer required. Must have proven track record of delivering highly professional creative solutions to tight timescales. Solid background in visual and information design, plus very good client facing skills and ability to turn complex requirements into elegant solutions.

You will be required deliver creative concepts and visual solutions either as the sole design member of a multi discipline team, or to manage a design team to create and deliver complex, unique design solutions.

Your approaches and experience should demonstrate an understanding and ability to deliver user centered design solutions.

Your role will include the following responsibilities:· Create innovative design ideas and concepts to satisfy customer requirements; Where appropriate, specify & delegate the development of the design solutions to design team; Manage the creative direction of the design team in line with the overall concept; Liase with usability and information architecture specialists to ensure that their design requirements are incorporated into the overall design solution; Write creative specification and design guideline documents; Ensure any requests for design changes are agreed with the Project manager; Responsible for obtaining sign-off from the customer and Project manager to the final visual design; Ensure all visual design work is delivered within budget, on time, and to the quality assurance standards; When required work closely with the pitch team to develop sales support material and attend & deliver the design element of sales pitches.

The ideal candidate will have the following qualities:· Graduate or equivalent in graphic design, fine art or multimedia; Detailed experience of using a wide range of design application software to a high standard; Good understanding of the issues and constraints of designing for interactive digital media; Knowledge of accessibility and usability issues relating to web development; Customer focus; Excellent Communications; Planning and forecasting skills; Team worker; Results focus.

Web Designer **monster.co.uk**

Salary: To 25k

Position Type: Permanent

Ref Code: CF314669

This is a great opportunity for a web designer to join an expanding team in North Buckinghamshire. You will be responsible for developing intranet and internet sites for this global player using Macromedia Dreamweaver, as well as Microsoft .NET.

This is a great opportunity to gain real hands-on experience with .NET, as well as to develop your skills within a small and supportive team. You will ideally have circa 1 years web development experience using Dreamweaver and IIS, and any .NET experience would be advantageous. Extensive future opportunities exist for you within this organisation, as well as a comprehensive benefits package and a fun working environment.

Web Manager **monster.co.uk**

Salary: GBP 15,000.00 to GBP 18,000.00 per year

Position Type: Full Time, Permanent

A small but extremely ambitious publishing, promotions and Media Company, Aston are the founders and organisers of the £50,000 National QuizAlympics competition in association with the "Daily Mirror" and also the publishers of "Sundeck" for Sunseeker International Yachts, "Excel" magazine and "Cosmetic and Toiletries Manufacture Worldwide".

Aston Media Group are seeking a person to design, develop and manage its websites and design print material where required. Editorial skills a plus, Dreamweaver, Flash, HTML and Photoshop skills essential. Reporting to the managing editor, the ideal candidate will be equally at home working within a team or taking full responsibility for the content and operation of at least three websites. Knowledge of web optimisation, submission and e-marketing techniques would be an advantage.

Junior ASP Developer **monster.co.uk**

Salary: £17-19K + BENEFITS

Position Type: Permanent

Ref Code: CF314500

We are looking for a junior developer in Aberdeen experience in ASP development and any other web technologies such as HTML and Javascript. The ideal candidate should have excellent communication skills.

This position is working for a software company who develop internet services. Candidates should be educated to a degree level and be extremely motivated. Excellent career progression for the right candidate as well as the opportunity to work in new technologies.

Please send your CV in the first instance to west2.scotland.perm@computerfutures.com or contact Ally MacDonald on 0131 247 3333.

Web Developer **monster.co.uk**

Position Type: Temporary / Contract / Project

Ref Code: CF314797

My client require a Web Developer with over 3 years commercial experience. You WILL have experience in the following Audio Visual, ASP, D/HTML, Real Networks and Web administration experience. Please do not apply if you do not have experience with Visual/video audio on the web. The contract will be on an Ad-hoc basis and will require working between 2-3 days each week.

Web Front-End Developer **Kenmuir Professional Recruitment**

Location Scotland

Salary 22k to 23k Annual

Type Permanent

Young, award-winning technology company is looking to recruit a talented front-end web developer. The ideal candidate will have 2 years experience of DHTML, Javascript objects and Photoshop and must have experience of writing behaviours. There is a lot of hand-coding involved here - this is not a design role, but it offers a real challenge for a dedicated developer.

Web Developers x 2 **Monarch Recruitment**

Salary 27000-32000 Per Annum 1st Class Benefits

Type Permanent

New role qualified today. As a preferred Supplier to a truly unique Blue Chip Co. based in West London we are urgently shortlisting for 2 x Web Developers to form part of a new high profile team. In this exciting & dynamic role you will be required to develop web applications using either Livelink or ASP and work with Business Analysts to develop the Architecture & timescales of the project. Full off-site training will be provided in Livelink and as such it is essential that candidates are committed to cross-training.

FOR INTERVIEW NEXT WEEK, you will be a graduate with experience of developing Websites and Website System Design in ASP. You will also experience in Javascript, Oracle 8 Databases, XML, VB and VSS (CSS). Must be a self-starter with strong communication skills. Any previous experience with Livelink is advantageous.

FLASH Web designer **Monarch Recruitment**

Salary 18000-22000 Per Annum

Type Permanent

Exciting new media consultancy in Berkshire is looking for a new web designer to join their team. You must have at least 18 months interactive and digital design experience, full understanding of Flash, HTML and EDM as well as experience designing and building web-site front ends, email marketing and Flash animations.

The team is young, dynamic and extremely talented. You will be able to display artistic flair and have a true creative eye!! This is an excellent opportunity to use your creativity and technical skills to their best potential.

Web Support (Dreamweaver/MX) **COMPUTER FUTURES - LONDON**

Location London (excl city)

Salary NEG

Type Contract

Reference ITJB-CF310937

I am urgently seeking a web support candidate qualified to at least HND level with experience of Dreamweaver MX and Microsoft Access. The role will involve Building Templates and intergrating databases, also you will be involved in training users on a one on one basis as well as user support. If you have the skills required and are available now, then please send me your latest CV.

13 Appendix VI: Examples of degree articulation

A key objective of the qualification design team was to ensure that all existing articulation routes to second and third year degree level programmes be maintained.

The qualification design team noted that colleges offering the any of the existing James Watt College locally devised HN Multimedia Computing awards generally enjoyed an excellent working relationship with one or more Higher Education institutions. The qualification design team noted also that the third year direct entrant programmes offered by the University of Paisley, Glasgow Caledonian University and Napier University had proven especially popular with candidates wishing to articulate to degree level study on completion of the HND award.

University of Paisley

Candidates who are successful in achieving either of the proposed HND group awards can articulate directly to stage 3 of the following programmes being delivered at the University of Paisley:

- BSc (Hon) Media Technology
- BSc (Hons) Multimedia Systems
- BSc (Hons) Computer Animation & Multimedia*

* offered subject to approval

Glasgow Caledonian University

It is expected that it will remain possible for candidates holding either of the revised HND group awards to articulate directly to stage 3 of the BSc Multimedia Technology programme. It has been suggested that other opportunities to articulate to other programmes may also become available to students focussing on the HND2 Web stream.

Napier University

The Direct Entrant suite of degrees (Multimedia Technology, Software Technology and Network Computing) has been designed to allow candidates with a relevant HND to articulate directly to stage 3 of a degree programme.

Normally students with an HND in Multimedia Computing discipline would articulate to stage 3 of the BSc Multimedia Technology programme. Consideration, however, would be given to candidates wishing to change direction. It is expected that it this articulation route will remain in place for students possessing either of the revised HND awards.

14 Appendix VII: Unit specifications and Graded Units

This section has been published separately.