Route map through assessment

Course: Computing Science   Level: National 5

This document is intended to assist staff in planning and delivering the overall vision for Curriculum for Excellence.

The vision for the new national qualifications is to create assessment opportunities that follow and support learning and teaching. This follows the principles laid out in *Building the Curriculum 5* and makes assessment a natural part of learning and teaching.

This route map aims to signpost all of the relevant material that is available to support your subject. Your professional judgement is vital and the documents listed below are intended to support you in deciding the most appropriate ways to generate evidence and assess learners.

Education Scotland has produced a professional focus paper for computing science, and this is a good starting point as it provides support to help develop learning and teaching approaches that take forward the purposes and principles of Curriculum for Excellence through Computing Science National 5.
http://www.educationscotland.gov.uk/Images/PFPcomputingScienceN5_tcm4-741152.doc

Computing Science National 5 course content

The main SQA computing science page is found at http://www.sqa.org.uk/sqa/48477.html, with pages specifically related to National 5 at http://www.sqa.org.uk/sqa/56923.html. Staff should also regularly check the updates and announcements section of this page.

The course specification can be found at
http://www.sqa.org.uk/files_ccc/CfE_CourseSpec_N5_Technologies_ComputingScience.pdf.

There are two units: Software Design and Development, and Information System Design and Development.

Software Design and Development key topics: Computational constructs, data structures and types, testing and documenting solutions, algorithm specification, design notations, low-level operations and computer architecture.

Information System Design and Development key topics: Database structures and links, web-based structures and links, user interfaces, media types, coding, testing, purpose, features, functionality and users, technical implementation (software, hardware, storage, networking/connectivity), security, legal implications and environmental impact.

More detail on course coverage can be found in the course support notes.
http://www.sqa.org.uk/files_ccc/CfE_CourseUnitSupportNotes_N5_Technologies_ComputingScience.pdf

Further mandatory information on course coverage is found on page 10 of the course assessment specification. This breaks each unit down into sections and topics.
http://www.sqa.org.uk/files_ccc/CfE_CourseAssessSpec_N5_Technologies_ComputingScience.pdf
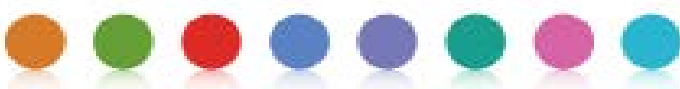
A course comparison from National 3 to National 5 is also available.
http://www.sqa.org.uk/sqa/files_ccc/Computing_Science_Course_comparison.pdf

Course assessment

At National 5 added value will be assessed in a course assessment, which consists of a question paper and an assignment. The course will be graded A–D.
http://www.sqa.org.uk/files_ccc/CfE_CourseAssessSpec_N5_Technologies_ComputingScience.pdf

Question paper
There will be a question paper of 1 hour 30 minutes worth 90 marks, which will be carried out under exam conditions and marked by SQA. It will test knowledge, understanding and skills with greater emphasis on knowledge and understanding. There will be two sections: a short answer section predominantly testing knowledge and some calculations (20 marks), and a structured question section focusing on the application of knowledge (70 marks). Approximately 50% of the marks will be allocated to test knowledge and application of skills from each unit.

Questions relating to programming will be presented using SQA standardised pseudocode:
http://www.sqa.org.uk/files_ccc/ComputingSciencepseudocodespecificationforSQPNational5.pdf

Specimen question paper and marking scheme: http://www.sqa.org.uk/files_ccc/ComputingScienceSQPN5.pdf.

Assignment
The assignment is worth 60 marks, representing 40% of the marks available. (Similarly to Intermediate 2 and Higher the assignment score is used in conjunction with the question paper to assign a grade for the course.)

A range of tasks with marking instructions will be set by SQA for delivery to learners. Completed assignments are marked internally but can be externally verified by SQA.

Learners will be expected to use their learning from both units to demonstrate that they can apply their knowledge to solve a practical task. Learners will be expected to analyse the given problem, design and implement a solution, test the solution and then report on their solution.

Unit assessment

Units are mandatory when taken as part of the Computing Science National 5 course but they can be taken independently. Unit support notes follow on from the course support notes.
http://www.sqa.org.uk/files_ccc/CfE_CourseUnitSupportNotes_N5_Technologies_ComputingScience.pdf

Each individual unit also has a National 4 unit specification. Each unit specification gives details of the outcomes and assessment standards.

Software Design and Development
http://www.sqa.org.uk/files_ccc/CfE_Unit_N5_ComputingScience_SoftwareDesignandDevelopment.pdf
There are three outcomes in this unit: outcome 1 focuses on explaining how programs work, with reference to programming constructs, concepts and low-level representation, outcome 2 focuses on practical implementation and outcome 3 focuses on reporting on two software development languages/environments.

Information System Design and Development
http://www.sqa.org.uk/files_ccc/CfE_Unit_N5_ComputingScience_InformationSystemDesignandDevelopment.pdf
There are two outcomes in this unit: outcome 1 focuses on the implementation of information systems, and outcome 2 focuses on factors involved in designing and implementing information systems.

Learners must meet all the outcomes and assessment standards, and staff should read the documentation carefully. Evidence should be generated through learning and teaching. Assessment evidence can be drawn from a variety of activities and presented in a variety of formats. All of the evidence does not have to be generated from one activity but can be from several tasks and assessments carried out throughout the course. Learners should have access to resources to complete the assessment task and no time restrictions should be imposed. Staff should use their professional judgment when looking at the assessment evidence and ensure that minimum competency is met. They should undertake quality assurance regularly.

Two different ways of gathering evidence have been suggested by SQA. The most traditional approach is unit by unit. A portfolio approach is also suggested, in which evidence is gathered and collated from everyday learning using key classroom tasks. Many staff will move towards the portfolio approach as their confidence grows. Three unit assessment support packs are available on the SQA Secure website.

Verification

The verification process is designed to be supportive and not onerous.

Internal verification is the process of ensuring standards are applied uniformly and consistently within a school in line with national standards. External verification is the process of ensuring that national standards are maintained consistently across all schools.

Quality assurance: http://www.sqa.org.uk/sqa/58448.html.

Prior verification
http://www.sqa.org.uk/files_ccc/Prior%20Verification%20Centre%20Guidance%20FINAL.pdf

Staff who devise their own assessments can send them to SQA for prior verification, free of charge. This is only necessary where significant changes have been made to the unit assessment provided. It gives departments confidence that their proposed assessment is fit for purpose and meets national standards.

Internal verification
http://www.sqa.org.uk/sqa/files_ccc/InternalVerificationGuideforSQAcentres.pdf

As a matter of course staff should be quality assuring their assessments by carrying out activities that they have always done for NABs, for example double marking and blind marking. A sample of learners' work should be marked by more than one staff member in a department, and in single-person departments an arrangement should be made with another local authority school.

External verification

In computing science schools will submit a sample of learners' evidence for scrutiny by subject-specialist qualification verifiers. SQA intend that every school will be verified over the first few years. Verification will take place in November, February and May. Twelve samples will be asked for.
http://www.sqa.org.uk/sqa/files_ccc/Evidence_required_for_verificationevents.pdf

Schools must retain the evidence until 31 July of each academic year.
http://www.sqa.org.uk/sqa/files_ccc/SQA_Evidence_retention_requirements_A3_table.pdf

Key messages from verification will be put up on the SQA website.

Recognising positive achievement
http://www.sqa.org.uk/files_ccc/Recognising_Positive_Achievement_N4N5.pdf

This is only applicable to National 5, **not** Higher. A learner who achieves 'No Award' in a National 5 course assessment will be able to gain a National 4 course award as long as he/she has passed all the internally assessed units of the National 5 course **and** has passed the National 4 Added Value Unit.

Further information on presenting National 5 learners at National 4 is available on page 4 of the computing science common questions document: http://www.sqa.org.uk/sqa/files_ccc/ComputingScienceCommonQuestions.pdf.

Results services
http://www.sqa.org.uk/sqa/files_ccc/FA6669_SQA_Results_Services_A5_8pp_brochure_web.pdf
http://www.sqa.org.uk/sqa/65427.html

There are no longer any appeals. The SQA offers two services: (1) Exceptional Circumstances Consideration Service (within ten days of sitting external assessment) and (2) Post Results Service. The latter consists of either a clerical check or a marking review. It is likely that these will be carried out in conjunction with the school SQA co-ordinator.

Education Scotland support materials

Advice and support for new national qualifications (Glow password required):
http://www.educationscotland.gov.uk/nqcoursematerials/subjects/computingscience/coursematerials.asp
http://www.educationscotland.gov.uk/nqcoursematerials/subjects/computingscience/learningandteaching.asp

Other useful websites

A quick guide to finding vital information about Curriculum for Excellence:
http://www.educationscotland.gov.uk/keycfesupport/index.asp

This appears under three headings
- the latest guidance, updates and plans for embedding Curriculum for Excellence
- information on assessment
- information on the new qualifications.

The BBC has pulled together all its learning content in a new Knowledge and Learning Beta site that includes Class Clips:
http://www.bbc.co.uk/education/subjects/zfs3kqt

Information and resources are also shared informally on the Scottish Computing Science Teachers' Forum at http://www.compednet.com.