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National Unit specification: general information

Unit title: Innovative Prototype (SCQF level 6)

Unit code: H2TT 12

Superclass:	TD
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Source:	Scottish Qualifications Authority
Version:	02

Summary

In this Unit, candidates will develop knowledge and understanding of innovative prototyping processes, strategies and materials and why they are used for particular products. Candidates will attempt to substitute materials with properties that simulate the intended final material and use a variety of processes. This Unit is suitable for candidates who wish to extend their basic knowledge and skills in the use of prototype in design process.

This is an optional Unit in the National Certificate (NC) in Architecture and Art at SCQF level 6 and the NC in Architecture and Interior Design at SCQF level 6, but is also available as a freestanding Unit.

Outcomes

1   Research and plan an innovative prototype in response to a given brief.
2   Develop, produce and present a prototype for a specific brief.
3   Test and evaluate the design process and prototype.

Recommended entry

While entry is at the discretion of the centre, candidates would benefit from previous experience of an art or design course or Units.

Credit points and level

1 National Unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6*)

SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.

General information (cont)

Unit title: Innovative Prototype (SCQF level 6)

Core Skills

Achievement of this Unit gives automatic certification of the following:

Complete Core Skill   Problem Solving at SCQF level 5

Core Skill component   None

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of the Unit Specifications for this Course.

National Unit specification: statement of standards

Unit title: Innovative Prototype (SCQF level 6)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Research and plan an innovative prototype in response to a given brief.

Performance Criteria

(a) Identify the main requirements of the brief.
(b) Select a variety of research material with identified development potential.
(c) Develop a range of initial ideas.
(d) Explore a range of prototyping materials and techniques.
(e) Produce a plan for completing a prototype in response to the given brief.

Outcome 2

Develop, produce and present a prototype for a specific brief.

Performance Criteria

(a) Identify prototype material and techniques used in a selected prototype approach.
(b) Produce progressive innovative experimentation using appropriate selected techniques, materials and processes effectively.
(c) Produce a sample/mood board for the prototype.
(d) Produce and present a prototype design specification.
(e) Demonstrate effective handling of media and materials in the production of a prototype.

Outcome 3

Test and evaluate the design process and prototype.

Performance Criteria

(a) Analyse the success of the prototype with reference to the brief's requirements.
(b) Analyse areas of weakness in the prototype with reference to the brief's requirements.
(c) Analyse the effectiveness of the design process with reference to strengths and areas for future improvement.

National Unit specification: statement of standards (cont)

Unit title: Innovative Prototype (SCQF level 6)

Evidence Requirements for this Unit

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

Written and/or oral and product evidence will be produced under open-book conditions throughout delivery of the Unit, with progress monitored by the tutor on an ongoing basis. Candidates will produce a folio of evidence which will include:

♦ collated annotated research material that demonstrates an understanding of the innovative prototype techniques used in design processes
♦ collated visual research material relating to the brief
♦ progressive development studies demonstrating the investigation of selected prototype approaches, materials and techniques used during the development of the design ideas
♦ development work that shows the creative exploration and use of a variety of materials, techniques and processes appropriate to the prototype discipline (with a minimum three lines of development)
♦ a mood/sample board showing the selection of materials and techniques for the final prototype
♦ production and presentation of a prototype. This will include the production of a prototype specification. The final prototype will demonstrate a creative response to the task and the development and effective use of selected media and materials in the production of the prototype.
♦ a written or oral evaluation of the prototype and the innovative process
♦ a list of sources of research material

Candidates' work may be presented in a sketchbook, workbook or display board format and all assessment evidence must be retained along with a copy of the brief.

National Unit specification: support notes

Unit title: Innovative Prototype (SCQF level 6)

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

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This is an optional Unit in the National Certificate (NC) in Architecture and Art at SCQF level 6 and the NC in Architecture and Interior Design at SCQF level 6, but is also available as a freestanding Unit.

The Unit introduces candidates to the process of designing prototypes for preparing a final production. It is expected that candidates know the difference between a prototype and the final production in terms of materials, processes and lower fidelity, stages involved in designing for prototype, from initial brief through to design, test, evaluation and then modifying the design based on the analysis of the prototype. It is preferable that they understand the basic prototype categories in the context of design, including — form study prototype, user experience prototype, rapid prototype, visual prototype and functional prototype.

Guidance on learning and teaching approaches for this Unit

This Unit introduces candidates to the prototype methods and processes used by designers in the development of their design work for manufacturing production.

The tutor should provide demonstrations, exemplars and class discussion, and may also consider the use of industrial visits to reinforce prototype working practices and methods. These approaches could be used to provide a stimulating visual launch to this Unit.

Candidates should have the opportunity to explore a wide range of available media, materials and processes within a selected prototype discipline. They should also have the opportunity to explain the development of their work in preparation for summative assessment. This process could be carried out on an individual basis with the tutor or in small group settings where appropriate. This should be carried out before the presentation of the product specification and the production of the prototype.

The folio of evidence should show the research, exploration and progressive development of candidates' innovative experimentation in a selected prototype approach. The folio should also show their ability to apply their skills in manipulating the media, materials and processes before final production.

National Unit specification: support notes (cont)

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Guidance on approaches to assessment for this Unit

A suitable Instrument of Assessment for this Unit would be a practical exercise. The Outcomes may be assessed individually or via a combined assessment. If holistic assessment is used, the given innovative prototype brief/assignment should indicate the scope of the prototype activity, realistic timescales for completion of the activity and the stages will provide candidates with some flexibility in the personal choice and development of a prototype.

Outcome 1

Candidates will need to demonstrate that they understand the requirements of the given brief. This understanding could be demonstrated through annotation of the collated research material and the overall suitability and innovative potential demonstrated in the collated research. All collated research should be reviewed prior to assessment and candidates encouraged to critically review this with reference to the brief's requirements, before they produce their project plan. In this way, candidates should be more able to identify and plan for effective development in later Outcomes. The project plan need not be complex but should include interim and final completion dates for key project stages, reference to an initial list of potentially useful resources, media, materials and techniques that could be used with development potential to meet the stated project requirements.

Candidates are required to explore and experiment with a range of prototype techniques and approaches relevant to the selected design discipline. The selection of techniques, media and materials should be informed by the earlier review of the collated research and its potential and suitability for development in Outcome 1. This Outcome must show the progressive refinement and experimentation with selected media, materials and techniques and for this reason the earlier experimentation is likely to be less effective in instances than the final examples. All development work produced during this stage should be retained to show the full extent of their development journey.

Outcome 2

Candidates will need to provide evidence to demonstrate their knowledge and skills by presenting their prototype specification. This will involve the selection and use of suitable media, materials and techniques, a process that should be informed by their earlier research and investigation. Candidates should present their work in a suitable format related to the selected design discipline. The presentation of the prototype specification could include interactive question and answer sessions with the tutor and peer group, replicating industry sector practice, or may be carried out as an informal group activity. It would also be of benefit to include reference to the sample/mood board for coherence and continuity of the innovative process.

Alternatively, candidates could present their specification visually after completion of the prototype. The prototype should show compliance to the requirements of the task and the effective use of selected prototype approach, media and techniques developed.

National Unit specification: support notes (cont)

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Outcome 3

Candidates need to complete a test and evaluation of both the prototype and the innovative process. The prototype should be critically analysed with reference to the given brief, with candidates commenting on how effective the prototype was in meeting any stated aims or project requirements. In addition, candidates are expected to reflect on areas where the product is less effective with reference to the project requirements. This evaluation, whether presented in written or oral/visual format must include more than a simple description of the product showing the use of critical reflective thought. The final component of this process will involve candidates in considering their role as a creative practitioner. They are expected to look at areas where they performed well on a personal and innovative level during the project, and to identify areas for improvement in their working methods and practices that can be used to inform future learning.

Holistic delivery and assessment is recommended. Through open questions and group discussion prototype approaches could be deconstructed exploring all the processes involved from the initial planning and experimentation to the finished prototype. Key deadlines for stages of the Unit assessment should be set by the tutor allowing candidates to develop time management skills within set deadlines.

Although group work may be used as part of the learning and teaching approach, any work that contributes to a candidate's assessment evidence must be carried out on an individual basis to ensure authenticity. Tutors must be satisfied that evidence submitted is the work of individual candidates.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Opportunities for developing Core Skills

Candidates may have opportunities to develop aspects of the Core Skill of *Communication* through tutor led group discussions, and the description of practitioners' working methods and practices in Outcome 1 may help develop and reinforce communication skills in written and/or oral contexts.

Candidates may have opportunities to develop aspects of the Core Skill of *Problem Solving* during the production and presentation of the prototype and in the final evaluation. Outcome 3 may offer opportunities to develop critical thinking skills and reflective practice in the structuring of the evaluation.

National Unit specification: support notes (cont)

Unit title: Innovative Prototype (SCQF level 6)

This Unit has the Core Skill of Problem Solving embedded in it, so when candidates achieve this Unit their Core Skills profile will be updated to show that they have achieved Problem Solving at SCQF Level 5.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**

History of changes to Unit

Version	Description of change	Date
02	Core Skill Problem Solving at SCQF level 5 embedded.	04/02/2013