



National Unit specification

General information

Unit title: Network Literacy (SCQF level 5)

Unit code: H7EA 45

Superclass: CB

Publication date: July 2014

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This Unit is designed for non-specialists who want to develop their knowledge and skills in using networks, such as the internet, and network devices, such as smartphones. It aims to educate citizens in the productive, responsible and critical use of digital technologies. Learners undertaking this Unit will enhance their digital skills and become active participants in the networked society.

Network literacy relates to a range of 'hard' and 'soft' skills, and the underpinning knowledge and understanding. The 'hard' skills relate to technical competencies in using network devices and network systems; the 'soft' skills relate to skills in using software to access and use network resources, including an appreciation of their implications for the individual and groups. At this level, learners' knowledge and skills are developed to an intermediate standard.

This Unit will develop skills in using a range of network systems and network devices. It also covers the underpinning knowledge to facilitate transferable skills so that learners can apply their skills to new technologies, and to support further studies in computer science and information technology. It is suitable for most learners who want to develop their digital skills in preparation for further studies (in any subject area) or employment (in any position).

On completion of this Unit, learners will possess intermediate digital skills in using common network systems (such as the internet) and common network devices (such as smartphones), and have an appreciation of their applications and implications for the individual and groups.

National Unit specification: General information (cont)

Unit title: Network Literacy (SCQF level 5)

Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Explain the function of network systems and network devices.
- 2 Set-up a network connection.
- 3 Communicate and contribute using network systems.

Credit points and level

1 National Unit credit at SCQF level 5: (6 SCQF credit points at SCQF level 5)

Recommended entry to the Unit

Entry is at the discretion of the centre. It is recommended that the learner has achieved *Network Literacy* at SCQF level 4 or equivalent.

Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill	None
Core Skill component	Accessing Information at SCQF level 5

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

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

This Unit may be offered stand-alone or as part of the National Progression Award in *Digital Passport* at SCQF level 5. If offered as part of this Group Award, there may be opportunities to combine and integrate teaching and learning across Units. There may also be opportunities to combine Evidence Requirements and integrate assessments.

The Assessment Support Pack (ASP) for this Unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website (<http://www.sqa.org.uk/sqa/46233.2769.html>).

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account

when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

National Unit specification: Statement of standards

Unit title: Network Literacy (SCQF level 5)

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

Explain the function of network systems and network devices.

Performance Criteria

- (a) Explain the growth of networks.
- (b) Explain the value of networks.
- (c) Describe online rights and responsibilities.
- (d) Describe the services provided by network systems and network devices.
- (e) Explain the function of hardware and software components in a network.
- (f) Explanations and descriptions use the correct terminology.

Outcome 2

Set-up a network connection.

Performance Criteria

- (a) Describe the process of connecting to a computer network.
- (b) Set-up a network connection without assistance.
- (c) Explain the need for personal and network security.
- (d) Configure a network connection to match personal preferences and security needs.

Outcome 3

Communicate and contribute using network systems.

Performance Criteria

- (a) Describe the communication, sharing and discussion facilities available in a network.
- (b) Describe the personal and group uses of networks including social networks.
- (c) Communicate with individuals and groups.
- (d) Contribute constructively to an online discussion, adhering to the community norms of behaviour.
- (e) Write appropriately for specific networks and communities.
- (f) Develop a personal learning network.
- (g) Use networks safely and responsibly.

National Unit specification: Statement of standards (cont)

Unit title: Network Literacy (SCQF level 5)

Evidence Requirements for this Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used. Bloom's Taxonomy has been used to select the verb in each Performance Criterion, and this taxonomy should be referenced when applying Performance Criteria.

Evidence is required to demonstrate that learners have achieved all Outcomes and Performance Criteria. However, sampling may be used in certain circumstances (see below) where the sample is sufficiently random and robust to clearly infer competence in the full domain.

The evidence for this Unit may be written or oral or a combination of these. Evidence may be captured, stored and presented in a range of media (including audio and video) and formats (analogue and digital). Particular consideration should be given to digital formats and the use of multimedia. It is recommended that evidence is collected for the Unit as a whole and is a naturally occurring by-product of teaching and learning.

Evidence is required for two types of competence: evidence of cognitive competence (knowledge and understanding) and evidence of practical competence (practical abilities). In certain circumstances, the evidence of cognitive competence may be sampled; the sample must be sufficiently random and robust to clearly infer competence in the entire knowledge domain. For example, if a traditional test is used to assess a candidate's knowledge and understanding, this test may sample across the knowledge domain; however, if a portfolio approach is taken then it would not be appropriate to sample, and evidence of **every** cognitive competence would be required. Evidence of practical competence cannot be sampled; however the amount of evidence is left to the professional judgement of the assessor and should be the minimum compatible with the requirements of this Unit. For Outcome 3, Performance Criterion (g) competence may be evidenced by exception. In this circumstance, there is no requirement to provide evidence of competence; evidence is only required to demonstrate the absence of competence (unsafe or irresponsible use of networks).

Evidence must be produced under controlled conditions. However, the amount of control will vary from context to context. For example, evidence of cognitive competence could take the form of a test, which would permit highly controlled conditions (which would include closed-book assessment). Alternatively, evidence could be generated through the use of web log, written over an extended period of time at varying locations, which would not permit such close control. In every case, assessment must be controlled to some extent. Where the amount of control is low, the amount of authentication should rise. It is not acceptable to produce evidence in lightly controlled conditions with little authentication.

Authentication may take various forms including, but not limited to, oral questioning and plagiarism checks. Some forms of evidence generation (such as video recordings) have intrinsic authentication and would require no further means of verification. Where evidence is not generated under closely controlled conditions (for example, out of class) then a statement of authenticity should be provided by the candidate to verify the work as their own, and also state any necessary sources and permissions. The *Guide to Assessment* provides further advice on methods of authentication.

National Unit specification: Statement of standards (cont)

Unit title: Network Literacy (SCQF level 5)

Evidence of practical competence may be produced over an extended period of time, notwithstanding any Performance Criteria relating to duration or time. Consideration should be given to the use of e-portfolios.

The gathered evidence must span a range of device types and types of information. The precise number of types is left to the discretion of the assessor but it would not be acceptable to generate evidence of competence (cognitive and practical) on one network device (such as a smartphone) using one type of information (for example, textual information).

Competence should be demonstrated using a number of network devices (such as a smartphone, tablet and desktop PC) and information types (such as text, audio and video).

It is recommended that the evidence is generated naturally, as a by-product of teaching and learning, and integrated into as few assessment tasks as possible. The *Guidelines on Approaches to Assessment* (see the Support Notes section of this specification) provide specific examples of instruments of assessment that seek to do this.



National Unit Support Notes

Unit title: Network Literacy (SCQF level 5)

Unit Support Notes are offered as guidance and 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

The general context for this Unit is the 'network society', which we are presently experiencing. Young learners (Prensky's 'digital natives') may not have experience of the pre-network age; more mature learners (Prensky's 'digital immigrants') may not appreciate the scale of networking that is presently taking place; neither demographic may appreciate the effects of these changes at an individual, group or societal level. Using historical context for each Outcome may reinforce the scale of change currently taking place.

The purpose of this Unit is to deliver intermediate knowledge and skills in the use of network systems and network devices. This Unit is intended for non-specialists and should be delivered in that context.

Throughout the Unit, terminology such as 'network system' is used to stand for common communication systems such as the internet or the telephone network, and 'network device' is used to stand for common communication devices such as smartphones, laptops or wearable technology. 'Set-up a network connection' can be as simple as setting up a smartphone on a telecommunication network, such as a 3G or 4G network.

At this level (SCQF level 5) treatment of **every** topic should be straight-forward, without too many technical complexities.

It is important that the more subjective topics (such as the social implications of networking) are presented in a balanced and objective manner, neither over-emphasising the advantages nor disadvantages. It should be left to the learner to decide if the benefits outweigh the actual (or potential) drawbacks.

Outcome 1: This Outcome is designed to provide an understanding of network systems and network devices. It should be presumed that the learner has limited prior knowledge.

A key aspect of this Outcome is for learners to appreciate that they use network systems and network devices daily; that common devices such as smartphones, smart TVs and smart watches are network devices; and that their home, school, workplace and local shopping centre provide network infrastructure.

In the context of this Outcome, the network systems studied should be the most common ones in current use. At the time of writing, this is the internet and telecommunication (3G/4G) systems. Similarly, the network devices studied should be the most common devices in current use. At the time of writing, this would be smartphones, tablets and traditional PCs.

National Unit Support Notes (cont)

Unit title: Network Literacy (SCQF level 5)

At this level, the recommended pedagogy should combine teacher-led tuition with learner-centred discovery. It is likely that tutors will have to provide introductory knowledge and skills before the learner is able to commence self-learning. Peer learning should be possible. A wide range of online resources are available that cover most of the knowledge involved in this Unit. However, in most cases, learners will need an introduction before being expected to learn in this way.

The descriptions and explanations should be high level and straight-forward, avoiding technical complexity whenever possible. However, an important part of this Outcome is that learners develop their technical vocabulary (Performance Criterion (f)). Learners must use terminology correctly and in context and should be encouraged to use the appropriate terminology at every opportunity.

Only routine descriptions are required. For example, the description of the services provided by network systems (Performance Criterion (d)) should be little more than their names and functional descriptions.

The treatment of online rights and responsibilities (Performance Criterion (c)) should be straight-forward. It is important to discuss this topic in a balanced and objective manner, neither over-emphasising threats nor opportunities. At this level, learners may have little grasp of their online rights or responsibilities. Young learners, in particular, may be unaware of fundamental aspects of network systems such as their potential to easily copy and share comments and media (such as photographs), which are subject to the same legal constraints as other publishing media. Learners are expected to simply state the basic legal requirements that constrain their use of network systems as part of this Performance Criterion. There is an opportunity here, particularly for young learners, to discuss issues such as cyberbullying and online safety (see also Outcome 3, Performance Criterion (g)). At the time of writing, there is a global debate about online privacy and state/corporate surveillance: learners' rights to privacy, or lack thereof, would be an important part of this Outcome.

Performance Criterion (a) relates to the rapid growth of computer networks (and network devices such as smartphones) and the associated exponential growth in information that this has facilitated. At this level, learners are expected to know not only the scale of this growth but also the technological, economic and societal reasons for it. This Performance Criterion is linked to the next one (Performance Criterion (b)), which relates to the value of networks. Many learners will be unaware of the value of networks (Performance Criterion (b)), in particular the 'network effects' that are realised once a network gets to a certain size and how this can be leveraged for social or business intelligence (such as crowd sourcing). At this level, only the general principles of this should be introduced but enough to ensure that learners appreciate the unique opportunities provided by large network systems and the huge increase in network devices. An example of the latter (the growth of network devices) is 'big data', which is facilitated by real-time capture of huge amounts of data. There is an opportunity here to discuss the emergence of the Internet of Things (IoT), which will cause a huge rise in the number of networked devices, and has significant implications for society.

There is scope within this Outcome to discuss contemporary issues relating to networks such as network neutrality.

National Unit Support Notes (cont)

Unit title: Network Literacy (SCQF level 5)

Outcome 2: This Outcome is designed to provide the knowledge and skills to set-up a network connection. This is not intended to be a highly technical Outcome. It could be as simple as connecting a new smartphone to the telecommunication system or connecting a Smart TV to a home network. The critical aspect of this Outcome is that learners see both of these tasks as essentially the same thing — connecting a network device (such as a Smart TV) to a network (their home wi-fi network).

The descriptions and explanations should be straight-forward. For example, the description of the process of connecting to a network (Performance Criterion (a)) would simply list the stages involved in connecting a device (such as a laptop computer) to a network (such as the internet).

Learners are required to actually establish network connections (Performance Criterion (b)). The sort of connections that should be explored include: PC connection to a local-area network; laptop connection to the internet; tablet connection to a cloud service; smartphone connection to a 3G telecommunication network.

At this level, learners may not appreciate the importance of security (Performance Criterion (c)), either for themselves or network systems, and case studies could be used to illustrate why security is needed by individuals and networks. Data security is becoming an important issue (with growing job prospects). The value of data, hence the importance of cyber security may need to be carefully explained.

The configuration settings (Performance Criterion (d)) should not be complex; they should be the routine settings customised to match user preferences or protect the connection. This Performance Criterion has some underpinning knowledge (the meanings of some of the common security settings) that learners need to understand.

Outcome 3: This Outcome is designed to show learners how to communicate and contribute using network systems such as social networks and online forums.

The critical aspect of this Outcome is Performance Criteria (d)–(g): that learners can effectively, and safely, contribute to online discussions, whether this is a discussion in a social network or a debate in a traditional online forum, writing appropriately and adhering to social or communal norms. The nature of the discussion is not critical and may reflect the learner's personal interests (such as a music forum or event page).

Among the sharing facilities covered in Performance Criterion (a) should be cloud services since these (at the time of writing) are becoming an important platform for sharing information.

With respect to learner contributions (Performance Criterion (d)), the **engagement pyramid** provides a useful reference framework for explaining the sorts of contributions that can be made (ranging from 'Watching' to 'Curating'). At this level, learners would be expected to contribute up to, and including, the 'Comment/Discuss' level in this framework.

National Unit Support Notes (cont)

Unit title: Network Literacy (SCQF level 5)

Learners are required to develop their personal learning network (PLN) (Performance Criterion (f)). At this level, learners are expected to use their PLN for more sophisticated learning activities than required in the lower level Unit. For example, the questions asked, at this level, would be more sophisticated than simple queries, and would require a significant degree of interaction and discussion from fellow learners. So, for example, instead of 'Who killed Archduke Ferdinand?', which would be acceptable at SCQF level 4, a more appropriate learning experience would be prompted by the question: 'Was Archduke Ferdinand's assassination the cause of World War One?'

This Outcome encompasses online safety and online responsibility (Performance Criterion (g)). It is anticipated that this will constitute a significant part of this Outcome. Young learners, in particular, may require education about online threats. However, it is important to discuss this topic in a balanced and objective manner, neither over-emphasising threats nor opportunities. Their responsibilities encompass the legal constraints on their use of networks, which, at the time of writing, include data protection, intellectual property and privacy. At this level it is sufficient to explain these in functional, rather than legalistic, language.

Guidance on approaches to delivery of this Unit

A practical, hands-on approach to learning should be adopted in order to engage learners and exemplify key concepts. However, all practical activities should be underpinned with appropriate knowledge before learners commence these activities. Learners should acquire transferable skills so all teaching should be delivered with this in mind and not made too specific to a single network device or network system.

At this level, it is expected that learning will be a mix of tutor-led and self- or peer-learning. New concepts will need to be introduced by the tutor. Self- or peer-learning will have to be carefully devised and monitored. Opportunities should be taken to motivate learners through the use of engaging technology such as multimedia (eg music and video), social media (social networks and blogs) and computer games. For many young people, music can be a great motivator and many of the competencies in this Unit can be delivered in that context (for example, through online music services, such as Spotify™, that permit network sharing and collaboration). For more mature learners, motivational activities include music, movies and special interest online groups.

The distribution of time over the three Outcomes is at the discretion of the centre and thus will be influenced by a number of factors such as the actual technologies utilised. However a possible distribution is as follows:

- ◆ Outcome 1: 10 hours
- ◆ Outcome 2: 8 hours
- ◆ Outcome 3: 22 hours.

Throughout this Unit learner activities should relate to their personal or vocational interests. Learners should be encouraged to become confident with as wide a range of digital technologies as possible. It may be appropriate that learners' activities relate to their personal interests, and the use of case studies is recommended.

National Unit Support Notes (cont)

Unit title: Network Literacy (SCQF level 5)

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

The Outcomes can be assessed in a variety of ways. A traditional approach would involve the testing of knowledge through a selected response test. It is recommended that if this approach is adopted then all of the knowledge and understanding in this Unit is combined into a single test that samples from the knowledge domain, with an appropriate pass mark. The remaining practical competencies could be assessed through observation of candidate activity throughout the duration of the Unit (and recorded on an observation checklist).

Another approach to assessment would be the creation and maintenance of a web log, which would record candidate activity throughout the Unit. This would log, on a daily or weekly basis, what candidates learn and what they do. However, their posts would have to satisfy the relevant Performance Criteria. So, for example, the post that relates to Outcome 1, Performance Criterion (a), would have to provide an adequate explanation of the growth of networks. Practical activities could also be recorded *via* the blog. For example, the post relating to Outcome 2, Performance Criterion (d), would describe how a network connection was made secure.

When practical activity is recorded on a blog, authentication could involve a photograph or video of candidate activity or a screenshot illustrating the criterion (such as a screen shot of a smartphone's security settings). Not every practical task would require authentication; at this level it is acceptable for some posts to be a simple description of appropriate practical activities. When necessary, separate authentication (such as oral questioning) could be used for verification purposes. The critical aspect is that the blog is an **overall** accurate reflection of the practical activities (and, therefore, the associated skills) carried out by the learner during the life of the Unit.

Another approach would involve the creation and maintenance of an e-portfolio. The e-portfolio would include all of the descriptions and explanations necessary to satisfy the criteria relating to cognitive competencies (in this case, there is no justification for sampling), together with digital artefacts that provide evidence of their practical abilities. The latter [digital artefacts] would include screenshots, digital images, digital audio and video recordings, etc. that collectively evidence candidates' practical competencies. Some form of authentication would be required for a significant proportion of the gathered items. But this could be as simple as a statement of originality, signed by the candidate, and counter-signed by the assessor, or a digital audio recording of a brief question-and-answer session between the candidate and the assessor.

National Unit Support Notes (cont)

Unit title: Network Literacy (SCQF level 5)

Opportunities for 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 social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

National Unit Support Notes (cont)

Unit title: Network Literacy (SCQF level 5)

Opportunities for developing Core and other essential skills

This Unit provides opportunities to deliver some of the following Core Skills:

- ◆ *Information and Communication Technology (ICT)* (SCQF level 4)
- ◆ *Information and Communication Technology (ICT)* (SCQF level 5)

There is limited coverage of this Core Skill. Security risks, and counter measures, are covered in Outcome 2 and Outcome 3.

Some other *Information and Communication Technology (ICT)* Core Skills may be covered, depending on delivery. At SCQF level 5, there are opportunities in this Unit to cover the selection and start-up of software (when using networks), using help facilities, and entering and editing data (when using networks for social or learning purposes).

In addition, at SCQF level 4, there are opportunities in this Unit to cover the use of (network) tools, naming and organising folders (both local and network folders), and searching and selecting information (as part of their network activities).

In addition to Core Skills, this Unit provides opportunities to develop citizenship skills.

This Unit has the Accessing Information component of Information and Communication Technology embedded in it. This means that when candidates achieve the Unit, their Core Skills profile will also be updated to show they have achieved Accessing Information at SCQF level 5.

History of changes to Unit

Version	Description of change	Date

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General information for learners

Unit title: Network Literacy (SCQF level 5)

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit aims to educate you in the productive, responsible and critical use of digital technologies.

You are expected to have some previous experience of computers and networks before undertaking this Unit. The Unit seeks to develop these skills. It covers important knowledge and skills about network devices, such as smartphones and PCs, and network systems, such as the telephone network and the internet, so that you are able to confidently use these devices on a daily basis for personal, social or community purposes.

The Unit covers a wide range of knowledge and skills including:

- ◆ how network devices and network systems work
- ◆ what you can use networks for
- ◆ social networks (such as Facebook™ and Twitter™)
- ◆ how to create your own personal learning network
- ◆ how to behave on a network
- ◆ how to set-up a network
- ◆ how to protect your privacy
- ◆ the importance of cyber security
- ◆ how to set-up security on a range of devices
- ◆ how to customise your smartphone, tablet or PC
- ◆ how to use a network to communicate and collaborate
- ◆ how to participate in an online discussion

This Unit is designed for learners with previous experience of computers who want to develop their existing skills to make them more effective users. It is particularly suitable for the ‘digital citizen’ — the person who needs to learn about computers to participate in modern society.

The assessment may take different forms. It will be straight-forward and not take much time away from your learning. It may involve a short test of your knowledge and some practical tasks, or it may simply be a record of your activities during the Unit. But the focus of the Unit is on learning — not assessing.

The key goal of this Unit is to teach you to be a knowledgeable, responsible and active user of digital technologies so that you can confidently use them for personal, social, educational or community purposes. **On completion of this Unit you will be able to use smartphones, tablets, PCs and other digital devices for a wide range of personal and social purposes, including accessing and using a variety of internet services.**

This Unit is part of a series of Units on network literacy. You may progress to the next Unit in the series (*Network Literacy* at SCQF level 6) on completion of this Unit if you wish to improve your knowledge and skills in this area.