



National Unit Specification

General information

Unit title: Data Citizenship (SCQF level 5)

Unit code: J890 45

Superclass: CB

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Unit purpose

The purpose of this unit is to provide an overview on the impact of data in society, how data can be used and misused, and the steps we can take to understand and use data responsibly. This unit will help learners become responsible, data literate citizens who participate in the decisions that affect people and society.

This is a **non-specialist unit**, suitable for a wide range of learners. It is suitable for learners who require an introduction to data literacy and data science, and an understanding of how these skills help them to be responsible citizens. No previous experience is required but a familiarity with computers is desirable. The themes in this unit follow on from outcomes and benchmarks in Digital Literacy and Numeracy at SCQF level 4 in the broad general education phase of the Scottish curriculum.

Learners will gain a range of practical skills and acquire relevant underpinning knowledge. They will learn how to interpret meaning from visualisations, such as graphs and charts, and to design and carry out surveys to gather data. They will learn about how data can be used in society for positive and negative effects. They will also learn about data security and their rights and responsibilities when using and storing data.

National Unit Specification: General information (continued)

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Learners will also consider the use of data in Artificial Intelligence (AI) tools that make use of large amounts of data (such as Generative Artificial Intelligence (AI) and Machine Learning) and will evaluate the quality of the output and consider how much to trust the output of AI tools.

Learners may wish to progress to the unit in Data Citizenship at SCQF level 6 or expand their data literacy with the Data Science unit at SCQF level 5. Completing the Data Citizenship and the Data Science units at SCQF level 5 as well as one optional unit will allow them to be awarded the National Progression Award in Data Science at SCQF level 5.

Learners could also progress onto other STEM qualifications such as the National Progression Award in Cyber Security (at SCQF level 5 or 6) or the Applications of Mathematics course at National 5 or 6.

Outcomes

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

1. Describe the use of data in society.
2. Describe data literacy concepts.
3. Interpret data.

Credit points and level

1 National Unit credit at Scottish Credit and Qualifications Framework (SCQF) level 5: (6 SCQF credit points at SCQF level 5).

Recommended entry to the unit

Entry is at the discretion of the centre. No previous knowledge or experience is required. Basic number skills are assumed.

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the support notes for this unit specification.

There is no automatic certification of Core Skills or Core Skill components in this unit.

National Unit Specification: General information (continued)

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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.

For example, if this unit is delivered as part of the National Progression Award in Data Science at SCQF level 5 there is overlap with other units within this award (particularly J8LW 45 Data Science) and there will be opportunities to contextualise and integrate teaching, learning and assessment across component units.

The unit may be of interest to learners who want to further develop their Information and Communication Technology (ICT) and computing skills, perhaps progressing their learning from cyber security or computer science. The unit may also be of interest to learners who wish to gain numeracy skills within a real-world setting.

Additionally, it may interest learners who are studying an area such as geography, health care, sports, or science and they wish to gain additional data literacy skills to support their studies in these other curricular areas.

This unit can be delivered stand-alone or as part of another course. For example, the Data Citizenship unit could be delivered as part of the National Progression Award in Data Science, in a digital literacy course or an additional unit in a social studies course. A wide range of examples and data visualisations can be used from a range of contexts such as business, entertainment, sports, science, health. Alternatively, the examples, case studies and visualisations can be selected from a specific context when the unit is delivered within a different course or by a subject specialist, such as delivering land use and satellite data examples within a Geography course or using health and medical examples when delivering within a health and social care context.

More information about delivery of the unit is available in the group award specification, which can be found at [SQA Home Page](http://www.sqa.org.uk) (www.sqa.org.uk).

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:

[SQA Assessment Arrangements](http://www.sqa.org.uk/assessmentarrangements) (www.sqa.org.uk/assessmentarrangements).

National Unit Specification: Statement of standards

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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

Describe the use of data in society.

Performance criteria

- (a) Describe reasons for the growth of data.
- (b) Describe how data can be both used and misused, and its impact on individuals, organisations, and society.
- (c) Describe the rights and responsibilities of data subjects.
- (d) Describe methods of keeping data secure.

Outcome 2

Describe data literacy concepts.

Performance criteria

- (a) Describe reasons for poor quality data and its impacts.
- (b) Describe types of common data visualisations and state where each is most appropriate.
- (c) Describe how data visualisations can be interpreted and misinterpreted.
- (d) State methods of gathering data using a survey.

Outcome 3

Interpret data.

Performance criteria

- (a) Create and carry out a survey to investigate a problem.
- (b) Interpret data visualisations to identify patterns and trends.
- (c) Describe data visualisations in terms of quality and trust.
- (d) Describe data generated from AI in terms of quality and trust.
- (e) Draw conclusions from data.
- (f) Make recommendations based on conclusions and communicate findings.

National Unit Specification: Statement of standards (continued)

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Evidence requirements for this unit

Evidence is required to demonstrate that learners have achieved all outcomes and performance criteria.

Learner must provide **knowledge** and **product** evidence.

The **knowledge evidence** relates to outcome 1 and outcome 2. The knowledge evidence may be written or oral or a combination of these. Evidence can be gathered in an 'open-book' situation, with learners able to refer to their notes or online resources if necessary.

Evidence can be in the form of short answer text, or oral (bullet points or short paragraph, depending on the performance criterion), a poster, presentation, audio file, informal short video, or similar creative work. This can be as part of small group work, with each group member contributing to a larger piece of work such as a presentation with one slide per learner, or each group member writing bullet point notes that need to be included in a short video segment. An audience for this work could be given to the learners, such as teaching relatives, or friends keep data safe or giving advice to a local business about the impacts of poor quality data.

The amount of evidence may be the minimum required to infer competence across both outcomes. For example, in outcome 1, at least 2 reasons for the growth of data need to be described (performance criterion (b)); and at least 2 data security methods need to be described (such as multifactor authentication; biometrics; wiping drives prior to disposal; firewalls; virtual private networks (VPNs); software upgrades) (performance criterion (c)). In outcome 2, at least two reasons for low-quality data need to be described (performance criterion (a)).

The **product evidence** relates to outcome 3. The evidence must demonstrate that learners can:

- create an online survey.
- interpret at least two visualisations produced from the survey's result.
- describe the visualisations.
- draw conclusions from the visualisations.
- make recommendations based on the conclusions.

The evidence for performance criterion (d) must take the form of describing at least one output of a generative AI tool (which may be textual or visual) in terms of relevance and accuracy.

National Unit Specification: Statement of standards (continued)

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The evidence must be produced by the learner with limited assistance. It may be produced in lightly controlled, open-book conditions, over an extended period of time, at times and places at the discretion of the learner. Evidence can be gathered in an 'open-book' situation, with learners able to refer to their notes or online sources if necessary. The amount of evidence may be the minimum required to infer competence across the outcome.

The SCQF level of this unit (level 5) provides additional context on the nature of the required evidence and the associated standards. Appropriate level descriptors should be used when making judgements about the evidence.

When evidence is produced in loosely controlled conditions it must be authenticated. The guide to assessment provides further advice on methods of authentication.

The support notes section of this specification provides specific examples of instruments of assessment that will generate the required evidence.



National Unit Support Notes

Unit title: Data Citizenship (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

This is a mandatory unit for NPA Data Science at SCQF level 5. On successful completion, it will allow progression to Digital Citizenship at SCQF level 6. There is an emphasis on both the development of practical skills as well as gaining relevant knowledge and understanding.

Please note that the following guidance, relating to specific outcomes, does not seek to explain each performance criterion. It seeks to clarify the statement of standards where it is potentially ambiguous. It also focuses on non-apparent teaching and learning issues that may be over-looked, or not emphasised, during unit delivery. As such, it is not representative of the relative importance of each outcome or performance criterion.

The unit could cover the following knowledge and skills:

Knowledge	Skills
<ul style="list-style-type: none">• Reasons for the growth of data:• Increased number of data-generating devices; Internet of Things (IoT) and cloud computing; faster and wider internet availability, including 5G; increased demand; increase in use of AI, Machine learning and Generative AI.• How data is used and misused and impact on individuals, organisations, and society	<ul style="list-style-type: none">• Create and carry out a survey to investigate a problem.• Design and carry out a survey to investigate a problem using data gathering tools or manual data capture.• Interpret data visualisations to identify patterns and trends:

National Unit Support Notes (continued)

Unit title: Data Citizenship (SCQF level 5)

Knowledge	Skills
<ul style="list-style-type: none"> • Role of data in decision-making at home, in the community, in government, business, industry, sport, etcetera. • Give examples of success stories from use of data, and examples of data disasters. • Rights and responsibilities of data subjects: • GDPR Rights: Informed, Access, Rectification, Erasure, Restrict processing, Portability, Object, Automated Decisioning. • GDPR Responsibilities: Provide accurate and up-to-date data; be responsible when using their GDPR rights and consider impact of their request on organisations; be aware of risks of sharing personal data; secure devices and accounts from unauthorised access. • Methods of securing data: • Multifactor authentication; Biometrics; Wiping drives prior to disposal; Firewalls; VPNs; Software upgrades. • Reasons for poor quality data: • Duplicate data; Inaccurate data; Outdated information; Missing values; Non-standardised data; Data security and privacy. • Impacts of poor-quality data: • Analysis rework; organisational inefficiencies; customer dissatisfaction; opportunity cost of missed sales; reputational costs from loss of trust; and compliance costs or fines from incorrect reporting. 	<ul style="list-style-type: none"> • Read a selection of different chart types, such as: types covered in SCQF level 4 (frequency tables, dot plots, bar charts, pie charts, line graphs, stacked and grouped bar charts, bubble plots treemaps), scatter plots, heat maps, time series line graphs, and stacked area charts. • Describe the displayed data: describe what was measured; be quantitative; use descriptive vocabulary; be consistent with the data as shown; describes the variability in the data. • Evaluate data visualisations in terms of quality and trust: • Evaluate a data visualisation: Graph type fits the problem; Axes visible and scaled correctly; Axes are labelled clearly; units are given; Data plotted accurately; Legend present, if required; Graph is overall neat and legible; Title or caption present; Trend line shown, if required; Graph helps answer the question. Discuss the source of the data and creator of the visualisation. • Draw conclusions from data to investigate a problem: • Can cover points from SCQF level 4 (a claim is made about what the graph shows which is consistent with the graph as drawn / shown; the reasoning is explained, is logical and supported by evidence). In addition, the interpretation should be complete and correct, and discuss several aspects of the graph, including variability. For example, it may probe uncertainties in the data; suggest an extended reason or explanation for variability; or raise a new question.

National Unit Support Notes (continued)

Unit title: Data Citizenship (SCQF level 5)

Knowledge	Skills
<ul style="list-style-type: none"> • Types of data visualisations and the best use of each type: • Format / appearance of a selection of different chart types, such as: types covered in SCQF level 4 (frequency tables, dot plots, bar charts, pie charts, line graphs, stacked and grouped bar charts, bubble plots and treemaps), scatter plots, heat maps, time series line graphs, and stacked area charts. • Choice of graph dependent on the type of question being asked: Variability; Comparison; Relationship; Time-series; Proportion; or Geographic (spatial) distribution. • How data visualisations can be interpreted and misinterpreted: • Read plots (identify the name of the plot, interpret the axes, identifying information, look for trends, identify confounding factors). • Identify factors in misleading graphs, such as proportions not adding up to 100%, axes not starting at zero, missing data points, too many colours or segments. • Methods of gathering data using a survey: • Manual data capture: Face-to-face / telephone, postal, internet. • Online data gathering tools (such as Google Forms or Microsoft Forms, SurveyMonkey or Typeform). 	<ul style="list-style-type: none"> • Make recommendations and communicate findings: • Make recommendations based on data interpreted from one or more visualisations (such as automatic graphs generated from survey tools, or a visualisation sourced by the teacher). • Communicate findings: Present findings with an audience in mind (such as peers, family, school management, community groups, organisations, or local government) with a purpose, such as to inform or persuade. • Evaluate data generated from AI in terms of quality and trust: • Use AI tools such as Generative AI tools to generate text, images, video, sound, music, or other content. Evaluate the output in terms of quality and trust.

National Unit Support Notes (continued)

Unit title: Data Citizenship (SCQF level 5)

Outcome 1: Describe the use of data in society.

This outcome is based on the current use of data in society. This includes the use of data for social benefit, the ethical (and unethical) use of data, such as the use of false or deliberately misleading data.

A variety of real examples can be used to illustrate why data is used and has grown, but also the limitations and effect it can have on decision making in society, and the impact on individuals. The role of data in decision-making in areas like home, community, government, industry, entertainment, and sport could be discussed. Learners could study examples of success stories from use of data, and examples of data disasters.

Learners should understand their rights under GDPR but also how they can be responsible when using the internet and sharing data. They should explore more advanced data security (building on from strong passwords and password managers in SCQF level 4) such as multifactor authentication; using biometrics; wiping hard drives prior to disposal; using firewalls and VPNs; and ensuring software and security updates are installed.

It is hoped that learners will get a balanced view of the use of data in society, that although privacy and security can impact on individuals, there are many examples of data being used for social good and impacting positively on individuals and communities.

There are lessons available online at [Learn Data Science \(https://dataschools.education/learndata\)](https://dataschools.education/learndata) covering some of the topics in this unit as well as in the Data Science unit (J8LW 45), such as data security, data quality, caring for data and data misuse. The lessons come with PowerPoint presentations, lesson plans, activities in a choice of format (either Excel workbook or interactive Python notebook).

There is a Trello board of teaching resources on data and data security available at [Data Science Resources and links](#).

Outcome 2: Describe data literacy concepts.

This outcome is centred around basic data literacy. This would include areas such as how to use and gather data, when not to use different sources of data, identifying possible poor-quality data, strategies for securing personal data, and different ways to visualise data.

National Unit Support Notes (continued)

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The reasons for poor-quality data should be explored, for example duplicate data; inaccurate data; outdated information, missing values; non-standardized data; data security and privacy. Learners will learn how to design survey questions that avoid gathering poor-quality data themselves. They will also find out about the impacts of using poor quality data, such as needing to rework analysis; organisational inefficiencies; customer dissatisfaction; opportunity cost of missed sales; reputational costs from loss of trust; and compliance costs or fines from incorrect reporting.

Learners should recognise that visualisations can represent different types of data and be able to justify why certain visualisations are more suitable than others for given scenarios. Learners will extract meaning from graphs and charts, including discussion about which visualisations are best for which purpose. The aspects of different types of visualisations might include the anatomy of graphs: Data (dots or bars), scales and coordinates (detailed along the x-axis and y-axis), and annotations (such as title and axis labels).

Data visualisations that could be explored include those in SCQF level 4 (frequency tables, dot plots, bar charts, pie charts, line graphs, stacked and grouped bar charts, bubble plots and treemaps) as well as scatter plots, heat maps, time series line graphs, and stacked area charts. Not all of these need to be covered by learners, and other types of visualisations may be explored too, if suitable.

Learners should be able to interpret what different types of visualisations show as well as the limitations and possible misinterpretations. For example, the use of graphs where the axis does not begin at zero, proportions not adding up to 100%, missing data points, too many colours or segments. Factfulness 'dramatic instincts' ([Gapminder](#)) and 'Rules of Thumb' ([Gapminder](#)) could be used to help identify misleading aspects and interpret trends and patterns.

There is a Trello board of suitable data visualisation available at [Data Visualisation Examples](#) grouped by visualisation type and complexity. There is also a Trello board of 'Bad Graphs' available at [Bad Graphs](#) grouped by visualisation type and complexity. These are collated by Data Education in Schools ([Data Education in Schools](#)) and contributions from educators and learners are welcomed.

National Unit Support Notes (continued)

Unit title: Data Citizenship (SCQF level 5)

Outcome 3: Interpret data.

This outcome is based around applying learner's knowledge of, and competency in, basic data literacy from outcome 2.

Interpret data visualisations:

Data visualisations that could be interpreted include those introduced at SCQF level 4 (frequency tables, dot plots, bar charts, pie charts, line graphs, stacked and grouped bar charts, and tree maps) as well as scatter plots, heat maps, time series line graphs, and stacked area charts.

Learners could be observed interpreting three visualisations of different types. This can be as part of small group discussions, as long as the learner is contributing sufficiently (such as commenting at each stage of the process). Data visualisations can be chosen by educator or learner. The number of visualisations will depend on how well learners contribute to the discussion. Alternatively, learners can interpret two visualisations and present their work as a document, poster, presentation, audio file, informal short video, or similar creative work.

Learners should describe the displayed data by stating what was measured in the visualisation. Learners should be able to read several different types of visualisations (for example, identify the name of the visualisation, interpret the axes, identifying information, look for trends). Encourage learners to be quantitative, to use descriptive vocabulary, and to be consistent with the data as shown and to describe the variability in the data.

When interpreting a visualisation, learners might comment on some of the following: the graph type fits the problem / context; the axes are visible, labelled and scaled correctly; units of measurement are given; the data is plotted accurately; there is a legend present, if required; the graph is overall neat and legible (and using accessible colours); there is a title or caption; a trend line is shown, if required; and the graph helps answer the question or contributes to the topic being investigated / discussed. Learners at SCQF level 5 could also discuss the source of the data and creator of the visualisation, and how much they trust the source.

The 'I notice, I wonder, What's going on in this graph' approach ([What's going on in this graph](#)) could be taken when interpreting visualisations. This can be as part of small group discussions, such as a regular lesson starter task. Individual learners can be assessed on occasions that they are contributing sufficiently (such as commenting at each stage of the 'I notice, I wonder' process).

National Unit Support Notes (continued)

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When evaluating graphs in terms of quality and trust for performance criterion (c), the visualisations selected can be good quality graphs or 'bad graphs' where learners might have more to discuss about the poor data quality, the misleading nature of the visualisations and whether how much they trust the source.

Evaluate data generated from AI:

Learners should use AI tools such as Generative AI tools to generate text, images, video, sound, music or other content. This could be commenting on appropriateness, accuracy or usefulness of the response to the prompt.

Care should be taken to ensure the Generative AI tool selected is suitable for the age of learners taking this unit, based on the terms of use of the service. For example, OpenAI (who provide DALL-E and Chat-GPT) have a minimum age of 13 to use their tools, and people under 18 year old must have parent or legal guardian's permission to use the services ([OpenAI](#))

Suggested free tools include:

Images: [Image creator](#) (Bing Images uses DALL-E to generate images free to signed in Microsoft users. Microsoft provides an initial number of 'boosts' (currently 15) that can be used to generate images. These 'boosts' refresh over time, but the initial supply is enough to cover learning about how to use the service and carrying out the practical work required for this unit.)

Chat: [Chat](#) (which provides ChatGPT-4 free to signed in Microsoft users).

These may be available to learners using their educational Microsoft / GLOW accounts, although this depends on individual local authorities, colleges and centres allowing this functionality.

Generative AI tools are in an early stage of development yet are now commonly being used in industry and by individuals. One aspect of these systems is that there is little transparency about how they have been trained. As a result, there is a chance that unsuitable or upsetting content might be generated. It is advised that centres and educators discuss child protection and online safety with learners, and procedures to follow if learners encounter material online that upset or concern them.

An alternative to using AI tools 'live', or if learners do not have access to Generative AI tools, then text or art created using AI tools could be supplied to the learners, along with the prompts used to create the results.

National Unit Support Notes (continued)

Unit title: Data Citizenship (SCQF level 5)

Carry out a survey, draw conclusions and communicate findings:

Learners will design and carry out a survey to investigate a problem using data gathering tools or manual data capture. They can then use visualisations from the survey (such as those automatically created by tools such as Microsoft Forms and Google Forms), or use visualisations created by learners or the educator from the gathered data. Alternatively, learners can use visualisations provided by the educator on a different topic in order to demonstrate drawing conclusions from different types of data visualisations or to provide further opportunity to demonstrate skills.

If this unit is being delivered concurrently with the Data Citizenship unit at SCQF level 4, then SCQF level 4 learners could be provided the same or similar data to the data that is gathered in performance criterion (a) and investigated in performance criterion (e) and (f). At SCQF level 4 learners are not expected to gather their own data, but it is hoped that the topic of the visualisation chosen would be relevant to the learners interests and environment. The visualisation might be on a topic such as food eaten at breaktime, amount of exercise taken during the week, method of travelling to school.

Learners should then draw conclusions about the information in the visualisation and present their findings. Learners can present their views in oral or written form, as a document, poster, presentation, audio file, informal short video, or similar creative work. Learners should present findings with an audience in mind (such as peers, family, school management, or community) and with a purpose, such as to inform or persuade.

Draw conclusions from data to investigate a problem.

Ideally the evidence for performance criterion (e) should be based on a visualisation from the data gathered in performance criterion (a) using responses from the learners and their peers. This can be a visualisation generated automatically by an online survey tool, or created in Excel or another tool using the data that has been gathered. Alternatively, performance criterion (e) can be based on the same data visualisation from performance criteria (b) and / or (c) or an unrelated visualisation selected by the learner or the educator.

Learners could cover points from SCQF level 4 (a claim is made about what the graph shows which is consistent with the graph as drawn / shown; the reasoning is explained, is logical and supported by evidence). In addition, the interpretation should be complete and correct, and discuss several aspects of the graph, including variability. For example, it may probe uncertainties in the data; suggest an extended reason or explanation for variability; or raise a new question.

National Unit Support Notes (continued)

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Make recommendations and communicate findings.

Make recommendations based on data interpreted from one or more visualisations (such as automatic graphs generated from survey tools, or a visualisation sourced by the teacher).

Communicate findings: Present findings with an audience in mind (such as peers, family, school management, community groups, organisations, or local government) with a purpose, such as to inform or persuade.

Guidance on approaches to delivery of this unit

Learners should have opportunities to examine real life examples throughout the unit. For example, they can examine a range of issues in their local area and investigate how data is used to make decisions. They could use data to examine where a new community facility could be opened or where a new school situated. They should be encouraged to consider examples from the news and to discuss these in class.

The following distribution of time is suggested.

Outcome 1: 10 hours.

Outcome 2: 10 hours.

Outcome 3: 20 hours.

With regards to the order of teaching the three outcomes, it is suggested that some of outcomes 2 and 3 could be delivered together. This is to allow learners the opportunity to firstly learn about a type of data visualisation then demonstrate their ability to interpret examples of that type of visualisation. Learners can then learn about other types of data visualisations before again moving onto applying these skills in outcome 3.

Guidance on approaches to assessment of this unit

The following are suggestions only. There may be other methods that would be more suitable to learners and the type of learner assessment activities will vary depending on the resources available.

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.

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The product evidence could be assessed through the observation of learner's activity throughout the duration of the unit and recorded in an appropriate manner, such as on an observation checklist. Such as checklist would include a brief description of the task carried out by the learner.

An alternative approach to assessment could involve the use of a portfolio, which would contain knowledge and product evidence. If this approach is taken, evidence for all performance criteria would be required. The portfolio would include all of the evidence necessary to satisfy every performance criterion. Valid artefacts would include screenshots, digital photographs, audio and video recordings, annotated presentation slides, posters, etcetera. Some form of authentication would be required, such as a statement signed and dated by learner and assessor.

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 [SQA e-Assessment](http://www.sqa.org.uk/Guide%20to%20best%20practice.pdf). (www.sqa.org.uk/Guide to best practice.pdf).

Opportunities for developing Core and other essential skills

Learners will be provided with ample opportunity to develop the following Core Skills:

- **Information and Communication Technology (ICT):** The unit provides the opportunity to use ICT and further develop digital literacy skills while exploring data and interpreting data visualisations. Depending on the types of visualisations explored, learners may have the opportunity to handle numerical and graphical information.
- **Communication:** Learners will develop and practice both oral and written communication throughout this unit via individual and group exercises.
- **Numeracy:** Through interpretation of data, learners will have several opportunities to develop numeracy skills throughout this unit.
- **Problem Solving:** The type of activities, assignments, and assessment experienced throughout this unit will require learners to apply critical thinking, plan, organise and review and evaluate both their results and the work of others.

National Unit Support Notes (continued)

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Opportunities within this unit to develop broader skills in the areas of enterprise, employability, sustainable development and citizenship.

- Teamwork and collaboration skills.
- Communication skills.
- Problem-solving skills.
- Locating information skills.
- Observation skills.

History of changes to unit

Version	Description of change	Date

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Additional copies of this unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Business Development and Customer Support team, telephone 0303 333 0330.

Unit template: February 2024

General information for learners

Unit title: Data Citizenship (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 will introduce you to the world of data. The unit is about developing your data citizenship skills that are extremely useful in life and society. You will develop your knowledge of how to interpret data, as well as exploring how data is used in the world you live in today. It is not necessary for you to have studied data citizenship before.

Data has an increasing importance in our everyday lives, and data is used in all aspects of our society. Data can be used by organisations to increase performance and profit. Football clubs and sports teams now use data to get the best out of their players. Musicians use data to find out how their tracks are performing in different parts of the world and being shared on different social networks. Data can also be misused by organisations, such as influencing people about important topics such as climate change or the spread of diseases.

In outcome 1 you will find out about how data is used in different places such as in the community, in education, sports and leisure, music and entertainment. You will learn how data is used, why more people and organisations are using data, and how it can benefit society. You will also find out about how companies have misused data and about data disasters.

You will learn about how data about you is used and shared by different organisations, and how you can gain some control over how they use your data. You will find out how to protect data (and yourself) using tools like multi-factor authentication, firewalls and VPNs (virtual private networks).

In outcome 2 you will gain a range of practical skills in interpreting data visualisations such as graphs and charts, and how these are used for positive and negative effects. You will also learn how to spot when people are trying to mislead or confuse you with 'bad graphs'. You will find out how to make survey questions to gather data and learn about what can happen when poor quality data is gathered.

In outcome 3 you will demonstrate what you have learned about different types of data visualisations by interpreting and evaluating different types of graphs. You will create a survey to gather data from your family, friends or community to investigate an issue in your local area. You will also evaluate how well Generative AI tools use data to make new text or images.

General information for learners (continued)

Unit title: Data Citizenship (SCQF level 5)

The unit covers the following knowledge and skills:

Knowledge	Skills
<ul style="list-style-type: none">• Reasons for the growth of data.• How data is used and misused and impact on individuals, organisations and society.• Rights and responsibilities of data subjects.• Methods of securing data.• Reasons for poor quality data.• Impacts of poor-quality data.• Types of data visualisations and the best use of each type.• How data visualisations can be interpreted and misinterpreted.• Methods of gathering data using a survey.	<ul style="list-style-type: none">• Create and carry out a survey to investigate a problem.• Interpret data visualisations to identify patterns and trends.• Evaluate data visualisations in terms of quality and trust.• Draw conclusions from data to investigate a problem.• Make recommendations and communicate findings.• Evaluate data generated from AI in terms of quality and trust.

You can be assessed in a variety of ways such as writing answers to questions, making a poster or presentation, speaking to answer questions, making a short video or audio recording or working in a group with other learners.