



Core Skills Framework: an introduction

Problem Solving

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Introduction

Core Skills enable people to put their knowledge, skills and understanding into action flexibly, adapting them to new situations. Core Skills apply to a wide range of contexts in education and training, in life, and in work. They underpin and promote the development of learning and study skills, and provide a foundation for lifelong learning and personal development.

The importance of Core Skills is widely recognised in employment and education. Lifelong learning that builds on people's Core Skills is essential if individuals are to fulfil their personal needs and meet the needs of society. In the workplace, employees at every level are increasingly expected to take responsibility for the quality of the products and services they produce or provide. Individuals who can analyse and solve problems, communicate well, use information technology, and work with others effectively, are well-equipped to assume the active, flexible and responsible roles that modern workplaces need.

A wide variety of skills and qualities are developed and used in education and training, in work and in life. Some of these are 'core' to personal development and performance.

First, there are skills for **tackling issues and problems**. These skills include being able to:

- ◆ think critically and creatively
- ◆ analyse situations and suggest courses of action
- ◆ plan and organise what is involved and carry it through to completion
- ◆ reflect on what has been done and draw conclusions for the future

Second, there are skills that are vital in enabling individuals to function effectively. **Communication**, both orally and in writing, is essential for clarifying your own thoughts, for relating to others, and for learning and working. The **numerical skills** involved in processing, interpreting, and communicating information can help you to understand, predict, and solve many types of problem. Skills in **using information and communication technology** are increasingly essential for obtaining and analysing information, for organising your ideas, and for communicating and working with others. And being able to **work with others** means having interpersonal skills that help you to co-operate with others in personal, learning and working situations to identify and achieve your shared goals.

The Core Skills

Each Core Skill, and its components, can be assessed at SCQF levels 2–6. This section gives you a brief description of each component, and describes the range of activities that its assessment will involve at the different levels.

Core Skill: Problem Solving

The three components of this skill are the stages involved in tackling issues and problems in personal, social, and work contexts. They are often used in sequence, and repeatedly. Each component can also be a focus of activity in its own right.

Component: Critical Thinking

Critical Thinking is about using analysis and reasoning to make decisions and to create or suggest ideas, courses of action, and strategies. Attainment levels range from:

- ◆ working in situations that involve a few, easily-identified factors set in familiar contexts

to:

- ◆ working in more complex situations that require a greater degree of analysis before approaches can be devised

Component: Planning and Organising

Planning and Organising is the ability to plan a task, taking account of available resources, and to manage the task to completion. Attainment levels range from:

- ◆ creating plans involving a small number of steps and using familiar resources

to:

- ◆ efficient management of a more complex plan, which may include a review of strategy and a degree of research in identifying the resources to be used to deal with difficulties

Component: Reviewing and Evaluating

Reviewing and Evaluating is the ability to reflect on and review the process of tackling issues and problems, to evaluate the outcomes, and to identify where alternative strategies might have been used. Attainment levels range from:

- ◆ identifying a strength and weakness in a strategy

to:

- ◆ identifying and gathering evaluation evidence, evaluating strategies, and making appropriate recommendations

Core Skill: Communication

Communication skills underpin almost all personal, social, learning, and working activity. They are essential in clarifying your thoughts, in interacting and conversing effectively with others, and in conveying information, feelings, and opinions.

Component: Oral Communication

Oral Communication means being able to take part in discussions and make presentations, interacting with your audience as appropriate. Attainment levels range from:

- ◆ conveying basic information and opinions through short, informal communications on familiar topics

to:

- ◆ presenting and analysing complex information and issues through more sustained discussions or presentations on complex topics, as well as listening and responding to what others say

Component: Written Communication

Written Communication is the ability to write and respond to writing (reading). Attainment levels range from:

- ◆ dealing with brief communications expressing a few basic ideas or pieces of information about familiar topics

to:

- ◆ dealing with communications which analyse and explore complex information and issues

Core Skill: Numeracy

To cope with the demands of everyday life, including work and study, people need to be comfortable with numbers and with graphs, symbols, diagrams, and calculators. The skills needed for this involved interpreting, processing, and communicating, quantifiable and spatial information.

Component: Using Graphical Information

This is the ability to interpret and communicate quantifiable information that is given in writing, diagrams, or pictures. Attainment levels range from:

- ◆ working in familiar contexts with simple, specified tables, graphs and shapes

to:

- ◆ working in more abstract contexts and with more complex graphical information which may require some analysis, and where decisions have to be made on effective ways to communicate the information

Component: Using Number

This is the ability to apply numerical and other relevant mathematical and statistical skills. Attainment levels range from:

- ◆ working confidently with basic numbers in everyday contexts

to:

- ◆ working confidently with more complex numerical concepts and techniques in more abstract contexts

Core Skill: Information and Communication Technology

Information and Communication Technology is concerned with the electronic collection, organisation, analysis, presentation, and communication of information. It encompasses all media types and formats as well as all relevant tools.

The Core Skill focuses on the ability to use information and communication technology to process information in a variety of ways which will be necessary for further learning in work and in the home. It is not about developing IT specialists who will act as first-line support for others or install specialist systems.

This is a rapidly progressing area. While the standards and examples given provide a snapshot for 2013, the framework has been designed to be flexible enough to accommodate any further digital skills deemed essential for everyday use.

Component: Accessing Information

This is the ability to use information and communication technology to support a range of information-accessing activities. Attainment levels range from:

- ◆ accessing basic information and communication technology to perform simple processing of familiar data and to select information from a local database or a simple internet search

to:

- ◆ making effective, responsible, and secure use of information and communication technology, using application software in a context requiring some analysis and evaluation, and retrieving information from a range of sources

Component: Providing/Creating Information

This is the ability to use information and communication technology to provide, create, and process information. Attainment levels range from:

- ◆ using familiar application software to carry out very simple processing tasks and providing/creating very simple information technology

to:

- ◆ using a range of information and communication technology in unfamiliar contexts, observing security procedures and the needs of other users. Evaluating and sharing information

Core Skill: Working with Others

The fact that Working with Others is a Core Skill emphasises the importance of co-operation and teamwork in social, learning, and working situations. Working with Others has two components: Working Co-operatively with Others, and Reviewing Co-operative Contribution.

While achieving a shared goal is the main focus, co-operation with others should be developed through all stages of any collaboration.

Reviewing your own contribution and learning through reflection also has a wider application to personal development.

Component: Working Co-operatively with Others

This is about using interpersonal skills appropriately, to recognise and value the roles of other people, taking responsibility for your own contribution, and supporting co-operative working in appropriate ways. Attainment levels range from:

- ◆ identifying, with support, your own role and the roles of other people, and helping to achieve a shared goal

to:

- ◆ analysing the roles and behaviour of others and adapting your own behaviour to deal with the complexity of changing and challenging dynamics

Component: Reviewing Co-operative Contribution

This is the ability to discuss the process of working co-operatively with other people, reflecting on and reviewing the collaboration. This might include commenting or resolving issues and handling other people's behaviour.

Learners should evaluate the outcomes, identify the value of their own contribution, and reflect on any personal learning and development that may be needed to enhance their contribution to future collaborative work.

Attainment levels range from:

- ◆ identifying a strength and weakness in the way you helped achieve things together, suggesting how your own contribution could be strengthened in the future

to:

- ◆ identifying and gathering evidence, critically evaluating your own contribution, and making appropriate recommendations about future learning and contributions

Core Skills certification

Since 1999, candidates for SQA qualifications have been able to show what they have achieved in Core Skills.

Candidates with Standard Grades will already have a Core Skills profile. Also, many candidates undertaking key National Courses, supporting Curriculum for Excellence, should get a Core Skills profile. The Core Skills Profile is reviewed each time they achieve a new SQA qualification. There is no need for candidates to achieve all Core Skills, or to complete a Group Award. Their profile will report their Core Skills achievements by component — so Core Skills certification is available to those who do not complete a whole Core Skill.

With increasing emphasis being placed on Core Skills in education (including higher education), training, and employment, it is important that candidates are given the opportunity to be credited for what they can do.

Candidates can achieve Core Skills through:

- ◆ any Unit, Course or Award which has been audited against the Core Skills framework and validated as fully covering one or more Core Skills component
- ◆ named Core Skills Units

In the former case, certification will be automatic. Candidates will not need to enter for the Core Skills component — the entry on the Core Skills profile will be generated automatically by SQA when they achieve the relevant Unit, Course or Award.

Named Core Skills Units are available for use by schools, colleges, higher education institutions, and training providers, and in the workplace.

The purpose of this document

The remainder of this document provides detailed technical specifications for each Core Skill for use by those designing programmes of learning and teaching in Scotland. This document should support practitioners in the teaching and learning of Core Skills, this does not always have to be tied to certification. It can also be used for auditing Units, Courses, Awards, assessment programmes, and Group Awards, and by SQA staff.

The document gives definitions of the Core Skills at each level and the specific skills in each. It also gives details of how the skills could be applied by the candidate. The further information section should be interpreted in the context of the Unit/Course. The section is not a list of mandatory requirements. It gives examples of how a candidate can show the development of the specific skills.

Problem Solving

Examples of tasks might include:

- ◆ **Level 2:** Organise a birthday or other celebration for a friend, classmate, or colleague, taking account of individual preferences and resources available.
- ◆ **Level 3:** Troubleshoot a flat tyre, methodically checking the parts to identify the source of the problem.
- ◆ **Level 4:** Cleaning and decorating a bedroom, bed-sit, or shared accommodation.
- ◆ **Level 5:** Draw up, implement, and review a personal revision and study plan for an exam subject.
- ◆ **Level 6:** Devising and implementing a first-day induction programme for a new member of staff.

Critical Thinking

SCQF 2

General skill

Analyse a very simple familiar situation or issue.

Specific skills

The candidate must:

- ◆ recognise some main features of the situation or issue
- ◆ identify a process to deal with the situation or issue, prompted by reference to previous experience

Further information

The candidate can show this through:

- ◆ dealing with a routine situation or issue in a context which is familiar. There will be a small number of variables and/or relationships — these will be identified for the candidate
- ◆ recognising which of these variables and/or relationships are of most importance to the situation
- ◆ suggesting a routine, familiar course of action to address the situation based on their previous experience, with prompting

Critical Thinking

SCQF 3

General skill

Analyse a simple situation or issue.

Specific skills

The candidate must:

- ◆ recognise the main features of the situation or issue
- ◆ identify a process to deal with the situation or issue

Further information

The candidate can show this through:

- ◆ dealing with a situation or issue in a context which is familiar to them. There will be a small number of obvious variables and the relationships between these will be clear to the candidate. In a less familiar situation, the variables and/or relationships should be already identified and understood by the candidate
- ◆ identifying the main variables and the relationships between them
- ◆ suggesting a routine, familiar course of action to address the situation based on their previous experience

Critical Thinking

SCQF 4

General skill

Analyse a straightforward situation or issue.

Specific skills

The candidate must:

- ◆ identify the main features of the situation or issue
- ◆ select an approach to deal with the situation or issue

Further information

The candidate can show this through:

- ◆ dealing with a situation or issue in a context which is familiar to them. There will be a limited number of variables and the relationships between these will be clear
- ◆ identifying the variables and the relationship between them
- ◆ evaluating the situation — this might include summarising, explaining, or drawing conclusions — or devising a strategy (ie a technique, procedure, or a course of action) to deal with the situation. There may be several, obvious straightforward approaches to select from, including making a simple modification to a known process

Critical Thinking

SCQF 5

General skill

Analyse a situation or issue.

Specific skills

The candidate must:

- ◆ identify the factors involved in the situation or issue
- ◆ assess the relevance of these factors to the situation or issue
- ◆ develop an approach to deal with the situation or issue

Further information

The candidate can show this through:

- ◆ dealing with a situation or issue in a context which is familiar to them where the relationship between the variables requires to be clarified
OR
- ◆ dealing with a situation in an unfamiliar context where relationships between variables are clear
- ◆ identifying the variables and the relationship between them
- ◆ evaluating the situation — this might include summarising, explaining, or drawing conclusions — or devising a strategy (ie a technique, procedure, or course of action) to deal with the situation. They may devise a new approach or select and/or modify an existing approach

Critical Thinking

SCQF 6

General skill

Analyse a complex situation or issue.

Specific skills

The candidate must:

- ◆ identify the factors involved in the situation or issue
- ◆ assess the relevance of these factors to the situation or issue
- ◆ provide and justify an approach to deal with the situation or issue

Further information

The candidate can show this through:

- ◆ dealing with a situation or issue where variables may be relatively complex or unfamiliar, relationships need to be clarified and the context may be unfamiliar
- ◆ identifying the variables and the relationships between them, analysing the significance and relevance of each variable
- ◆ evaluating the situation — this might include summarising, explaining, or drawing conclusions — or identify a strategy (ie a technique, procedure, or a course of action) to deal with the situation. They may devise a new approach or select and/or modify an existing approach. The approach must be justified, for example, by accounting for the factors or evidence involved, by referring to the resources and time available, and/or by comparison with other possible approaches

Planning and Organising

SCQF 2

General skill

Plan, organise, and complete a very simple, familiar task.

Specific skills

The candidate must:

- ◆ identify some very simple steps in the plan
- ◆ select appropriate resources to carry out the plan
- ◆ carry out the task

Further information

The candidate can show this through:

- ◆ completing a task with a small number of given, clear steps. The resources will be appropriate to the task and might include information, set procedures, people, equipment, or physical resources
- ◆ deciding with support, how the task will be carried out and then complete it. At all stages, the candidate may need some prompting, referring to previous experience

Planning and Organising

SCQF 3

General skill

Plan, organise, and complete a simple task.

Specific skills

The candidate must:

- ◆ identify the sequence of steps in the plan
- ◆ select appropriate resources to carry out the plan
- ◆ carry out the task

Further information

The candidate can show this through:

- ◆ completing a familiar task with a small number of steps. If the task is less familiar, the steps should be given and clear
- ◆ selecting resources from a familiar range of common resources or from a given range of familiar resources. The resources will be appropriate to the task and might include sources of information, set procedures, people, and equipment/physical resources
- ◆ deciding how the task will be managed and carry it out — this could include allocation of tasks to others

Planning and Organising

SCQF 4

General skill

Plan, organise, and complete a straightforward task.

Specific skills

The candidate must:

- ◆ develop a plan
- ◆ identify and ensure you have the resources to carry out the plan
- ◆ carry out the task

Further information

The candidate can show this through:

- ◆ completing a task in a familiar context. The task may have several obvious possible approaches or involve modifying a known plan, with a limited number of steps/variables, where relationships are clear. The plan is likely to be linear. The resources should be appropriate to the task, and might include sources of information, set procedures, people, and physical resources such as equipment or accommodation
- ◆ selecting the resources from a range of familiar sources
- ◆ deciding how the task will be managed and carry it out — this could include allocation of tasks to others

Planning and Organising

SCQF 5

General skill

Plan, organise, and complete a task.

Specific skills

The candidate must:

- ◆ develop a plan
- ◆ identify and ensure you have the resources to carry out the plan
- ◆ carry out the task

Further information

The candidate can show this through:

- ◆ completing a task in an unfamiliar context where relationships are clear
Alternatively, if candidates are working in a familiar context, the relationships between variables should be unfamiliar
- ◆ developing a plan which might involve branching (more than one concurrent strand)
- ◆ identifying and ensuring they have the necessary resources, selecting these from a wide range of familiar and unfamiliar sources, possibly involving a search. The resources will be appropriate to the task and might include sources of information, set procedures, people, and equipment/physical resources
- ◆ deciding how the task will be managed and carry it out — this could include allocation of tasks to others

Planning and Organising

SCQF 6

General skill

Plan, organise, and complete a complex task.

Specific skills

The candidate must:

- ◆ develop a plan
- ◆ identify and ensure you have the resources to carry out the plan
- ◆ carry out the task

Further information

The candidate can show this through:

- ◆ dealing with a task with complex features such as a large number of variables in an unfamiliar context where relationships may be unfamiliar
- ◆ involving more than one concurrent strand and a review or opportunity to adjust the strategy
- ◆ identifying and ensuring they have resources, selecting these from a range of familiar and unfamiliar sources, possibly involving a search. The resources will be appropriate to the task and might include sources of information, set procedures, people, equipment, and physical resources
- ◆ deciding how the task will be managed and carry it out — this could include allocation of tasks to others

Reviewing and Evaluating

SCQF 2

General skill

Review and evaluate a very simple, familiar problem solving activity.

Specific skills

The candidate must:

- ◆ identify the strengths and weaknesses of the solution to the problem (given some simple criteria)

Further information

Candidates are likely to be dealing with a familiar activity, set in a familiar context, involving a small number of obvious variables.

The candidate can show this through:

- ◆ identifying a strength and weakness of a solution, with some prompting and directive support, referring to previous experience — eg what went well / not so well
- ◆ using given simple criteria, which might be in the form of questions on the effectiveness of time, resources, people, etc

Reviewing and Evaluating

SCQF 3

General skill

Review and evaluate a simple problem solving activity.

Specific skills

The candidate must:

- ◆ identify the strengths and weaknesses of the solution to the problem
- ◆ use given simple criteria

Further information

Candidates will be dealing with an activity set in a familiar context, involving a small number of obvious variables and simple task management.

The candidate can show this through:

- ◆ identifying the strengths and weaknesses of the solution to the problem — in a simple activity the solution or outcome is likely to be the main or only source of evidence for the evaluation
- ◆ using given simple criteria, which might include questions — eg appropriateness of action, resources used, or workability of the solution or outcome

Reviewing and Evaluating

SCQF 4

General skill

Review and evaluate a straightforward problem solving activity.

Specific skills

The candidate must:

- ◆ identify the strengths and weaknesses of all stages the problem solving strategy
- ◆ draw a conclusion

Further information

Candidates will be dealing with an activity set in a familiar context, involving a limited number of factors and straightforward task management.

The candidate can show this through:

- ◆ identifying the strengths and weaknesses of all stages of the problem solving strategy — ie analysing the situation, planning and organising the task and the outcome of the activity
- ◆ clearly referring to evidence on aspects of the strategy such as whether all factors were identified; effectiveness of the strategy and planning; suitability of resources; or appropriateness of the outcome
- ◆ drawing a conclusion — this should refer to, and consider, the evidence. The conclusion might involve suggesting an alternative or modification to the strategy or plan, making a prediction or a generalisation

Reviewing and Evaluating

SCQF 5

General skill

Review and evaluate a problem solving activity.

Specific skills

The candidate must:

- ◆ evaluate the effectiveness of all stages of the problem solving strategy and assess or explain the relevance of the evidence
- ◆ draw conclusions and justify them with reference to the evidence

Further information

The candidate can deal with an activity in an unfamiliar context where the relationships between factors are clear. Alternatively, the candidate can deal with an activity in a familiar context where relationships need to be clarified. In both cases, the plan is likely to involve more than one strand and the resources used will be less familiar.

The candidate can show this through:

- ◆ evaluating all stages of the problem solving strategy — ie analysing the situation, planning and organising the task and the outcome of the activity. They may do this using criteria which they have devised. Alternatively, candidates could select evaluation criteria from a range provided or adopt, or adapt, a set of established criteria
- ◆ explaining the supporting evidence — this must include some assessment or explanation which goes beyond a mere re-statement of the evidence
- ◆ drawing conclusions — this might involve suggestions for alternative or modified strategies or further work; or making predictions or generalisations. The conclusions should be appropriate and supported by the available evidence

Reviewing and Evaluating

SCQF 6

General skill

Review and evaluate a complex problem solving activity.

Specific skills

The candidate must:

- ◆ evaluate the effectiveness of all stages of the strategy/strategies
- ◆ identify and gather appropriate evidence
- ◆ draw conclusions and make recommendations

Further information

Candidates will be dealing with an activity where the factors involved may be numerous, complex or unfamiliar, where relationships need to be clarified and where the task management itself is complex.

The candidate can show this through:

- ◆ analysing the effectiveness of all aspects of a problem solving strategy — ie analysing the situation, planning and organising the task and the outcome of the activity. Evaluation should include reference to any modifications to the strategy during the course of the activity or to alternative strategies considered. Candidates may devise their own criteria for evaluation or adopt, or adapt, a set of established criteria
- ◆ identifying and gathering appropriate evidence to support the evaluation — sources of evidence might include use of qualitative/quantitative methods; comparisons with other systems or products; impact studies; product testing; or market research
- ◆ drawing conclusions — candidates should consider all the evidence coherently with no major aspect omitted
- ◆ making recommendations — the full set of conclusions should be drawn on in making recommendations. Recommendations could include suggestions for improvements to a product, process, system, or event; the need for further evidence or in-depth investigation; use of an alternative strategy in future