



Key Skills – GCE AS/A Level Computing

This Appendix offers detailed guidance on the Key Skills evidence that a candidate might produce during their programme of study. It focuses on the evidence required to meet the criteria for the internally assessed Key Skills portfolio. For example, in producing work for assessment as evidence of C3.2 (Read and synthesise information from two extended documents about a complex subject. One of these documents should include at least one image) a candidate is required to:

- select and read material that contains the information you need;
- identify accurately, and compare, the lines of reasoning and main points from text and images; and
- synthesise the key information in a form that is relevant to your purpose.

The Key Skills and Evidence Requirements below are quoted from Part B of the QCA Key Skills specifications and, as such, are addressed to the candidate. The text below the Evidence Requirements is guidance for teachers about how the specifications might be used to provide teaching and learning opportunities and/or assessment opportunities for the Key Skill.

For further information, teachers should refer to QCA's Key Skills specifications for use in programmes starting from September 2000.

For further information about the assessment and certification of Key Skills, teachers should contact OCR.

C3 Communication Level 3

C3.1a *Contribute to a group discussion about a complex subject.*

Evidence requirements

- i. Make clear and relevant contributions in a way that suits your purpose and situation.
- ii. Listen and respond sensitively to others, and develop points and ideas.
- iii. Create opportunities for others to contribute when appropriate.

Possible opportunities

Candidates may contribute to a group discussion about complex subjects such as networking, effects of computer use and user limitations of simulations. Any learning outcomes beginning with the term “discuss” could be the result of candidates’ involvement in a group discussion.

Module 2506

Candidates could discuss the advantages and disadvantages of networking. They may categorise the characteristics of networking into ‘advantage’ and ‘disadvantage’ categories, justifying their placement. (section 5.1.6)

Module 2508

Candidates could discuss the changing trends in computer use and their effects on society. Issues of privacy and confidentiality, health and safety and environmental issues, and the social and ethical implications of access to information whose value is controversial could also be discussed. (section 5.3.6)

Module 2511

Candidates could discuss the problem of confidential data on an open network and how to address these problems. (section 5.6.4)

C3.1b *Make a presentation about a complex subject, using at least one image to illustrate complex points.*

Evidence requirements

- i. Speak clearly and adapt your style of presentation to suit your purpose, subject, audience and situation.
- ii. Structure what you say so that the sequence of information and ideas may be easily followed.
- iii. Use a range of techniques to engage the audience, including effective use of images.

Possible opportunities

Candidates may choose to make a presentation to fulfil any of the 'explain' or 'show an understanding of' learning outcomes.

Candidates also have the opportunity to develop and provide evidence for C3.1b, through the implementation section in their coursework (Modules 2507 and 2510), which requires them to document and test an implementation, and to prepare user documentation.

Module 2506

There is the opportunity to use a diagrammatic presentation to explain the features of different data structures and how they work. (section 5.1.4)

A similar opportunity arises in explaining the principle of organising interfaces in a layered fashion. (section 5.1.6)

Module 2508

In studying the characteristics of information systems, candidates could give a diagrammatic/pictorial presentation of the different categories of knowledge-based systems. (section 5.3.5)

Module 2509

Fetch/decode/execute reset cycle: the effects of the stages of the cycle on specific registers could be presented diagrammatically. (section 5.4.3)

This module presents several opportunities for candidates to demonstrate their understanding of a topic via a presentation. Searching and/or sorting: Interim solutions could be presented diagrammatically in a presentation. (section 5.4.4)

The use of a stack to handle procedure calling and parameter passing could be the focus of a presentation. (section 5.4.5)

Module 2511

Candidates may explain the use of sensors and actuators for visible, tactile, audible and other physical signals using a diagrammatic presentation. (section 5.6.3)

C3.2 *Read and synthesise information from two extended documents that deal with a complex subject. One of these documents should include at least one image.*

Evidence requirements

- i. Select and read material that contains the information you need.
- ii. Identify accurately, and compare, the lines of reasoning and main points from texts and images.
- iii. Synthesise the key information in a form that is relevant to your purpose.

Possible opportunities

Candidates have opportunities to develop C3.2 for any learning outcome beginning with the term “identify”. Considering the effect of various legal documents and generating evidence for the assessment of C3.2 is also possible while preparing coursework because candidates have to synthesise information from several sources.

Module 2508

Candidates are required to show understanding of the need for, and the measures contained in current legislation governing computer use, including the DPA legislation. Key legal documents including Health and Safety articles (with images) could be studied as part of the preparation for discussion/presentations. (section 5.3.6)

Module 2510

Candidates, in their ‘analysis’ section of their Computing project, will synthesise information from various sources leading them to ‘Design’.

Module 2511

Candidates have the opportunity to consult a variety of documents about methodologies, and software tools for system development. (section 5.6.2)

C3.3 *Write two different types of documents about complex subjects. One piece of writing should be an extended document and include at least one image.*

Evidence requirements

- i. Select and use a form and style of writing that is appropriate to your purpose and complex subject matter.
- ii. Organise relevant information clearly and coherently, using specialist vocabulary when appropriate.
- iii. Ensure your text is legible and your spelling, grammar and punctuation are accurate so your meaning is clear.

Possible opportunities

In all modules, candidates may be asked to write about complex subjects. Through coursework, candidates write documents for different purposes requiring different styles for example, user documentation, which will include images of the interface to their system and different sections of the report such as the design of the system, testing strategies, etc.

Module 2506

Candidates explain and describe technical aspects of network theory.

Module 2507

Candidates document and test an implementation, and prepare user documentation.

Module 2509

Candidates explain and describe programming paradigms.

Module 2510

Section 5.5.4 requires the candidate to produce two documents, a technical manual and a user manual, both of which offer opportunities to demonstrate this key skill.

Module 2511

In section 5.6.3, candidates describe and explain a simulation example.

N3 Application of Number Level 3

You must:

Plan and carry through at least one substantial and complex activity that includes tasks for N3.1, N3.2 and N3.3.

N3.1 *Plan, and interpret information from two different types of sources, including a large data set.*

Evidence requirements

- i. Plan how to obtain and use the information required to meet the purpose of your activity.
- ii. Obtain the relevant information.
- iii. Choose appropriate methods for obtaining the results you need and justify your choice.

Possible opportunities

Module 2510

The candidate's computing project may allow evidence for the assessment of N3.1. Marks are available for interpreting source documents in the Definition and Analysis Section of the computing project, but candidates would need also to input a large data set to meet all the requirements of N3.1. Careful choice of a project is therefore necessary.

N3.2 *Carry out multi-stage calculations to do with:*

- a) amounts and sizes;
- b) scales and proportion;
- c) handling statistics;
- d) rearranging and using formulae.

You should work with a large data set on at least **one** occasion.

Evidence requirements

- i. Carry out calculations to appropriate levels of accuracy, clearly showing your methods.
- ii. Check methods and results to help ensure errors are found and corrected.

Possible opportunities

Module 2507 and Module 2510 may present opportunities to use formulae for example, in Excel, size a file to estimate storage requirements. Less opportunity exists for the handling of statistics.

N3.3 *Interpret results of your calculations, present your findings and justify your methods. You must use at least one graph, one chart and one diagram.*

Evidence requirements

- i. Select appropriate methods of presentation and justify your choice.
- ii. Present your findings effectively.
- iii. Explain how the results of your calculations relate to the purpose of your activity.

Possible opportunities

Module 2507 and Module 2510 may present opportunities for interpreting results of calculations carried out in relation to N3.2 and presenting the findings for assessment.

IT3 IT Level 3

You must:

Plan and carry through at least one substantial activity that includes tasks for IT3.1, IT3.2 and IT3.3.

IT3.1 *Plan, and use different sources to search for, and select, information required for two different purposes.*

Evidence requirements

- i. Plan how to obtain and use the information required to meet the purpose of your activity.
- ii. Choose appropriate sources and techniques for finding information and carry out effective searches.
- iii. Make selections based on judgements of relevance and quality.

Possible opportunities

Module 2506

Candidates show an understanding of the hardware and software needed for a local area network (LAN) and for accessing a wide area network (WAN) for example, the Internet. (section 5.1.6)

Module 2508

Candidates discuss the social and ethical implications of access to information whose value is controversial, and research will need to be undertaken in preparation for this discussion. (section 5.3.6)

Module 2510

Candidates provide evidence for assessment of IT3.1 when identifying methods by which to investigate a problem, and then during the collection of information.

Module 2511

Candidates identify data, which has commercial value, explain why such data has its value, and discuss contemporary trends in the compilation and use of valuable databases. (section 5.6.1)

IT3.2 *Explore, develop, and exchange information and derive new information to meet two different purposes.*

Evidence requirements

- i. Enter and bring together information in a consistent form, using automated routines where appropriate.
- ii. Create and use appropriate structures and procedures to explore and develop information and derive new information.
- iii. Use effective methods of exchanging information to support your purpose.

Possible opportunities

Module 2510

In each stage of their project, candidates manipulate data to arrive at computer solutions to problems.

Module 2511

Candidates identify situations in which the transmission of data, for example on the Internet, has created or could create new opportunities for businesses and individuals. (section 5.6.1)

IT3.3 *Present information from different sources for two different purposes and audiences. Your work must include at least one example of text, one example of images and one example of numbers.*

Evidence requirements

- i. Develop the structure and content of your presentation using the views of others, where appropriate, to guide refinements.
- ii. Present information effectively, using a format and style that suits your purpose and audience.
- iii. Ensure your work is accurate and makes sense.

Possible opportunities

Candidates may be asked to make a presentation to fulfil the evidence requirements.

Module 2507

Candidates could make a presentation about their Structured Practical Computing Tasks.

Module 2508

Candidates identify suitable common generic applications software for particular applications, and areas for which common applications is not appropriate, and describe the purpose and impact of different types of applications software for example, Word processing, spreadsheet, databases, DTP and graphics. This information would be presented to two different audiences for example, school children aged 11 and adults new to using PCs. (section 5.3.2)

Candidates discuss the need for a variety of output formats according to the target audience. (section 5.3.4)

Module 2510

Candidates document their project with two audiences: a technical manual for maintenance and development purposes, and a user guide. Information will be derived from two sources: the third party user; and the results of the candidates' own development work. (section 5.5.4)

WO3 Working with Others Level 3

You must:

Provide at least **one** substantial example of meeting the standard for WO3.1, WO3.2 and WO 3.3. (you must show you can work in both one-to-one and group situations).

WO3.1 *Plan complex work with others, agreeing objectives, responsibilities and working arrangements.*

Evidence requirements

- i. Agree realistic objectives for working together and what needs to be done to achieve them.
- ii. Exchange information, based on appropriate evidence, to help agree responsibilities.
- iii. Agree suitable working arrangements with those involved.

Possible opportunities

In the course of Module 2510: Computing Project candidates learn to work with others, namely the users of the system which they create.

Module 2510

A successfully completed project will involve working to an agreed specifications and schedules with the user. The user will be closely involved with testing and evaluating the solution.

WO3.2 *Seek to establish and maintain co-operative working relationships over an extended period of time, agreeing changes to achieve agreed objectives.*

Evidence requirements

- i. Organise and carry out tasks so that you can be effective and efficient in meeting your responsibilities and produce the quality of work required.
- ii. Seek to establish and maintain co-operative working relationships, agreeing ways to overcome any difficulties.
- iii. Exchange accurate information on progress of work, agreeing changes where necessary to achieve objectives.

Possible opportunities

In the course of Module 2510: Computing Project candidates learn to work with others, namely the users of the system which they create.

If candidates tackle problems in groups, Module 2507 and Module 2510 present opportunities for candidates to demonstrate skills in organising their own work in order to meet the requirements of users. For assessment purposes, however, the candidates work alone on Module 2507, although Module 2510 is dependent upon the candidates establishing working relationships with users, with whom they must set agreed objectives.

WO3.3 *Review work with others and agree ways of improving collaborative work in the future.*

Evidence requirements

- i. Agree the extent to which work with others has been successful and the objectives have been met.
- ii. Identify factors that have influenced the outcome.
- iii. Agree ways of improving work with others in the future.

Possible opportunities

In the course of Module 2510: Computing Project candidates learn to work with others, namely the users of the system which they create.

Candidates must evaluate their work with regard to agreed objectives. This should involve user views on the effectiveness of their solutions to problems.

The evaluation of the Computing Project should include reference to weaknesses and strengths of their solution and proposals for future improvement.

LP3 Improving Own Learning and Performance Level 3

You must:

Provide at least one substantial example of meeting the standard for LP3.1, LP3.2 and LP3.3.

LP3.1 *Agree targets and plan how these will be met over an extended period of time, using support from appropriate people.*

Evidence requirements

- i. Seek information on ways to achieve what you want to do, including factors that might affect your plans.
- ii. Use this information to agree realistic targets with appropriate people.
- iii. Plan how you will effectively manage your time and use of support to meet targets, including alternative action for overcoming possible difficulties.

Possible opportunities

All modules can provide opportunities for generating evidence for LP3.1.

Candidates may benefit from learning to touch-type, and would benefit from exploring facilities offered by software packages which are available to them, but are not explicitly part of their course. This could be done in a variety of ways using a number of packages and thus demonstrate the Key Skill of Improving Own Learning Performance.

Module 2510

In this module the candidates go through the stages of analysing and defining a problem and working through the stages in its solution. In this process, candidates may plan targets and dates for their achievement including action points and checks on progress.

LP3.2 *Take responsibility for your learning by using your plan and seeking feedback and support from relevant sources, to help meet targets.*

Improve your performance by:

- studying a complex subject;
- learning through a complex practical activity;
- further study or practical activity that involves independent learning.

Evidence requirements

- i. Manage your time effectively to complete tasks, revising your plan as necessary.
- ii. Seek and actively use feedback and support from relevant sources to help you meet your targets.
- iii. Select and use different approaches to learning to improve your performance, adapting approaches to meet new demands.

Possible opportunities

All modules can provide opportunities for generating evidence for LP3.2.

Candidates may benefit from learning to touch-type, and would benefit from exploring facilities offered by software packages which are available to them, but are not explicitly part of their course. This could be done in a variety of ways using a number of packages and thus demonstrate the Key Skill of Improving Own Learning and Performance.

Module 2510

In this module candidates go through the stages of analysing and defining a problem and working through the stages in its solution. In this process, candidates may plan targets and dates for their achievement including action points and checks on progress.

On-going evaluation of achievement, as well as evaluation to satisfy Section 5.5.5 Evaluation, will naturally cause revisions to be made as a result of progress checks.

LP3.3 *Review progress on two occasions and establish evidence of achievements, including how you have used learning from other tasks to meet new demands.*

Evidence requirements

- i. Provide information on the quality of your learning and performance, including factors that have affected the outcome.
- ii. Identify targets you have met, seeking information from relevant sources to establish evidence of your achievements.
- iii. Exchange views with appropriate people to agree ways to further improve your performance.

Possible opportunities

All modules can provide opportunities for generating evidence for LP3.3.

Candidates may benefit from learning to touch-type, and would benefit from exploring facilities offered by software packages which are available to them, but are not explicitly part of their course. This could be done in a variety of ways using a number of packages and thus demonstrate the Key Skill of Improving Own Learning and Performance.

Module 2510

In this module candidates go through the stages of analysing and defining a problem and working through the stages in its solution. In this process, candidates may plan targets and dates for their achievement including action points and checks on progress.

On-going evaluation of achievement, as well as evaluation to satisfy Section 5.5.5 Evaluation, will naturally cause revisions to be made as a result of progress checks.

Module 2510 involves work with the system user, who should be closely involved in the evaluation of the final solution. This feedback would be likely to be both by way of dialogue with the user and as a written report.

PS3 Problem Solving Level 3

You must:

Provide at least one substantial example of meeting the standard for PS3.1, PS3.2 and PS3.3.

PS3.1 *Explore a complex problem and come up with three options for solving it and justify the option selected for taking forward.*

Evidence requirements

- i. Explore the problem, accurately analysing its features, and agree with others on how to show success in solving it.
- ii. Select and use a variety of methods to come up with different ways of tackling the problem.
- iii. Compare the main features of each possible option, including risk factors, and justify the option you select to take forward.

Possible opportunities

Modules 2507 and 2510 require candidates to solve problems. Assessment Objective 2 outlines the problem solving process (see Section 3).

PS3.2 *Plan and implement at least one option for solving the problem, review progress and revise your approach as necessary.*

Evidence requirements

- i. Plan how to carry out your chosen option and obtain agreement to go ahead from an appropriate person.
- ii. Implement your plan, effectively using support and feedback from others.
- iii. Review progress towards solving the problem and revise your approach as necessary.

Possible opportunities

Modules 2507 and 2510 require candidates to solve problems. Assessment Objective 2 outlines the problem solving process (see Section 3).

PS3.3 *Apply agreed methods to check if the problem has been solved, describe the results and review your approach to problem solving.*

Evidence requirements

- i. Agree, with an appropriate person, methods to check if the problem has been solved.
- ii. Apply these methods accurately, draw conclusions and fully describe the results.
- iii. Review your approach to problem solving, including whether alternative methods and options might have proved more effective.

Possible opportunities

Modules 2507 and 2510 require candidates to solve problems. Assessment Objective 2 outlines the problem solving process (see Section 3).