

Problem Solving

Tutor Guide

[INTERMEDIATE 2]

Part 1: National unit specification	3
Part 2: Introduction to the unit	7
Part 3: Introduction to this pack	9
– Assessment information	9
– Problem Solving and the Progress File	11
– Tutor evaluation questionnaire	12
Appendix 1: Sample student log book	15
Appendix 2: Interview checklist	18
Appendix 3: Interview guidelines	20

UNIT Problem Solving (Intermediate 2)

General information

Course summary

This core skills unit seeks to develop skills in solving non-routine problems. These include the ability to analyse a situation or issue, devise a plan for addressing this, carry out the plan, and evaluate what has been achieved. During the evaluation, candidates will be required to draw conclusions about the outcome of the problem-solving activity and justify these conclusions.

Outcomes

1. Analyse a non-routine situation or issue.
2. Plan, organise and carry out a non-routine task.
3. Review and evaluate a non-routine problem-solving activity.

Recommended entry

While entry is at the discretion of the centre, candidates would normally be expected to have attained Problem Solving (Intermediate 1)

Credit value

1 Credit at Problem Solving (Intermediate 2)

Core skills

Information on the automatic certification of core skills is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

The attainment of this unit will lead to the automatic award of:

- Problem Solving at Intermediate 2.

Statement of standards

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 the Scottish Qualifications Authority.

Note on range for the unit

At this level, candidates should be dealing with a non-routine problem-solving activity.

A non-routine problem-solving activity is one which is likely to involve:

- an unfamiliar context with clear relationships between factors to be analysed
- OR
- a familiar context where relationships between factors need to be clarified
 - management of a non-routine task, which may require a plan involving branching, i.e. more than one strand of activity.

OUTCOME 1: Analyse a non-routine situation or issue

Performance criteria

- a) Identify the critical factors involved in the situation or issue.
- b) Assess the relevance of these factors to the situation or issue.
- c) Develop an overall approach to deal with the situation or issue.

Evidence requirements

Oral and/or written evidence that the following analysis has been undertaken:

PC(a)

Evidence that the candidate has:

- identified at least three critical factors involved in the situation or issue
- identified the relationships between the factors.
(Factors may be variables and/or constraints which affect the situation or issue).

PC(b)

Evidence that a minimum of three critical factors have been assessed in terms of their relevance to the situation or issue.

PC(c)

Evidence that the candidate has developed an approach to deal with the situation or issue.

OUTCOME 2: plan, organise and carry out a non-routine task**Performance criteria**

- a) Develop a plan which incorporates at least four factors.
- b) Identify and obtain resources.
- c) Carry out the task, meeting all the requirements of the plan.

Evidence requirements

Evidence that the candidate has planned and organised a task as follows:

PC(a) and (b)

Oral and/or written evidence that the candidate has developed a plan, which may involve branching (more than one strand) and including at least four factors. The plan should identify resources allocated to appropriate stages of the task. Resources should include at least two unfamiliar resources and may require some searching.

Resources may be defined as any source materials, information, equipment, technology or facilities which may be used in carrying out the task.

PC(b) and (c)

Evidence of actual performance that the candidate has decided how the task will be managed and has carried out and completed the task, including obtaining and using the identified resources.

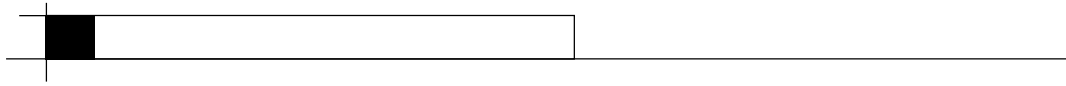
OUTCOME 3: Review and evaluate a non-routine problem-solving activity**Performance criteria**

- a) Identify relevant and sufficient criteria on which to base the evaluation.
- b) Gather relevant evidence to support evaluation.
- c) Evaluate the effectiveness of the strategy used, explaining the relevance of the evidence.
- d) Draw conclusions on the effectiveness of the strategy.
- e) Justify conclusions with reference to the evidence.

Evidence requirements

Oral and/or written evidence that the candidate has reviewed and evaluated a non-routine problem-solving activity as described in PCs (a)–(e). The candidate must evaluate all stages of the problem-solving activity, including initial analysis of the situation, planning and organising the task, and the outcome of the activity.

For PC (c), candidates must explain the relevance of the evidence to the evaluation criteria. This explanation must go beyond a mere re-statement of the evidence.



Introduction to the unit

There are no formal entry requirements for this unit. Access to the unit is at the discretion of the centre.

Outcomes

Problem Solving has three components:

- *Critical Thinking*: the ability to analyse and reason in order to make decisions.
- *Planning and Organising*: the ability to create clear plans for the completion of a task, taking into account available resources and managing the completion of the task.
- *Review and Evaluation*: the ability to reflect on and review the process, evaluate the outcomes, and identify where alternative strategies might have been used.

This study unit is one in a series of units:

Problem Solving (Access 2)
Problem Solving (Access 3)
Problem Solving (Int 1)
Problem Solving (Int 2)
Problem Solving (Higher)

Progression

At Intermediate 2 the candidate should tackle a non-routine problem, either:

An unfamiliar context with clear relationships between factors to be analysed
or

A familiar context where relationships between factors need to be clarified.

As with all core skills, candidates can achieve Problem Solving at Intermediate 2 by:

- successfully completing courses where the core skill is embedded
- successfully completing the core skill Problem Solving unit.

The aim of this pack is to enable the candidate to complete the core skill Problem Solving unit at Intermediate 2 where the core skill is not embedded.

Possible approaches to delivery

This unit is concerned with the learning process that involves analysing, planning, undertaking and evaluating problem-solving activities. The product, i.e. the candidate's presentation of findings, is not assessed. The assessment task sheets are therefore essential in providing evidence.

The tutor should offer a limited degree of support. The tutor is likely to guide candidates in the preliminary stages of the problem-solving activity, withdrawing support as the unit progresses.

Students should be encouraged as far as possible to integrate a problem-solving activity into their normal course work.

This pack supplements the guidance in the unit specification and has been designed to give valid, reliable and practicable examples of assessment. The examples provided are intended to give guidance to tutors on how this unit may be delivered, and to enable students to successfully complete core skill Problem Solving at Intermediate 2.

There are a number of assessment tasks which correspond to the three outcomes.

It is important to note that using assessments based on the examples provided does not automatically guarantee successful external moderation. It is the responsibility of each centre to make sure that all the appropriate internal quality assurance procedures are satisfactorily completed.

Before using this material you may find it useful to consult the appropriate SQA guidance materials on quality assurance.

The pack is designed in a flexible learning fashion but it is recommended that **at least** three meetings with the candidate take place (referred to as Tutor Checkpoints).

The first Tutor Checkpoint should establish that the task selected by the candidate has enough breadth and scope and is non-routine.

The second Tutor Checkpoint should be an interim interview to monitor the candidate's progress.

The third Tutor Checkpoint should check that all outcomes have been addressed and should validate and authenticate the candidate's work.

Other resources required

Students are likely to require the use of Internet facilities, the library and occasionally a telephone. Many student projects also require the organisation of external visits.

Tutors may also wish to guide students to other problem solving resources such as the excellent FETV series on Problem Solving or the SFEU Virtual Learning Centre which has a section devoted to Problem Solving.

FETV – <http://www.bbc.co.uk>

SFEU – <http://www.sfeu.ac.uk>

Assessment information: integration of assessment

The candidate should be encouraged to appreciate that the focus of this unit is the development of transferable skills.

The Higher Still Development Unit has produced advice about integrating the teaching and assessment of core skills with other activities. A wide range of opportunities exist for the integration of the problem-solving activity with other subjects. For example:

- *in Business Studies*: producing a set of marketing materials
- *in Travel and Tourism*: planning a holiday or an itinerary
- *in Care*: organising a work experience placement.

Instruments of assessment

This pack has been designed around the SQA National Assessment Bank Support materials and should generate enough evidence for the purposes of achieving the unit.

It is strongly recommended that assessors use this pack along with the observation checklist provided by SQA in the NAB pack. This checklist allows the assessor to record that the candidate has completed the necessary stages and helps to validate and authenticate the candidate's work.

Attendance/tutor contact requirements

This is likely to vary across centres. Typically the unit will take 40 hours to complete. Within that time there must be at least three meetings with the candidate. These meetings are referred to as Tutor Checkpoints.

Since many students will work in small groups during the course of this unit, group interviews may be appropriate.

Problem Solving and the Progress File

Some centres may wish to incorporate Problem Solving activities into their implementation of the Progress File. Learners tackling Problem Solving at Intermediate 2 are likely to be using the Exploring Pathways, Widening Horizons or Broadening Horizons workbook.

Why use the Progress File in combination with the Problem Solving unit?

The Progress File helps to reinforce the importance of Core Skills in general and in the workplace in particular. Using the File in this way will also help to give Problem Solving a context within the wider framework of personal and social development.

Where can the Progress File be used in combination with the Problem Solving unit?

Areas within the progress file which are particularly relevant to Problem Solving include:

The Self-Assessment and Reviewing Progress sections identify areas of strength and weakness and may help to place students at the correct core skill level. This exercise may also help students to identify areas where there is a particular development need and so help the student to relate the Problem Solving unit to their own personal situation.

Research/action planning

Arranging a work experience placement is a worthwhile project for students to undertake in itself but can also help them gain credit for Problem Solving. This Problem Solving pack could be used alongside some of the support materials in the Progress File which help students to identify vocational goals, prepare them for and help them to plan their placement.

The end product of the Problem Solving activity

In some cases the inclusion of the end product of a Problem Solving activity may be a useful addition to the Progress File portfolio. Examples of such end products may include student newsletters, information leaflets or a supervisor's workplace reports.

Tutor evaluation questionnaire

Learning and Teaching Scotland is interested in the views of tutors who have used these learning materials with students. Your feedback and comments will assist us in evaluating and, where necessary, improving this pack for future student and tutor use.

Please answer all of the questions as fully and frankly as possible and return this form to Learning and Teaching Scotland at the following address: Gardyne Road, Dundee, DD5 1NY.

Thank you for your assistance.

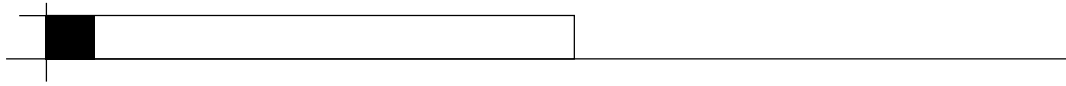
- | | | | | | |
|---|---|---|-----------------------------------|--------------------------------------|--|
| 1 | The content is pitched at the appropriate level for the target student | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 2 | The content is accurate and up-to-date | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 3 | The content meets the requirements of the stated outcomes/aims/objectives | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 4 | The content is sufficient to allow the student to achieve the stated outcomes/aims/objectives | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 5 | The learning approaches are appropriate | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |

contd overleaf

- | | | | | | |
|----|---|---|-----------------------------------|--------------------------------------|--|
| 6 | The language is suitable for the target student | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 7 | Sufficient and significant Activities, SAQs and Tutor Assignments are included | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 8 | Appropriate feedback has been included | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 9 | The assessment methods are appropriate | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 10 | The standards of assessment are acceptable | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 11 | The pack is structured in such a way as to allow students to find their way through the materials | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |
| 12 | Overall I would rate this pack as | Agree
Strongly
<input type="checkbox"/> | Agree
<input type="checkbox"/> | Disagree
<input type="checkbox"/> | Disagree
Strongly
<input type="checkbox"/> |

Name _____ School/College _____ Date _____

Thank you once again for your assistance.



Student Log Book

Core Skill: Problem Solving

Intermediate 2

Student Name:

Tutor Name:

Date:

The log book

Planning – recording personal contributions to the task

Whether working alone or in a group, students must keep a record of their individual contribution to the Problem Solving activity. A blank diary sheet has been provided for this purpose. Other ways of providing this evidence may be agreed – perhaps by using e-mail for example.

What the student should do:

- agree their recording documents with you (examples which you could adapt are provided)
- maintain the record as appropriate – it is likely that a weekly record will be kept
- entries should be brief but frequent and you must ensure that these are meeting all the requirements of their plan.

Task record

Date: _____

Activities:

Have you encountered any problems? _____

How have you addressed these problems? _____

How far have you achieved your goals? _____

Tutor Checklist – Core Skill Problem Solving (Intermediate 2)

Student Name: _____ Tutor Name: _____

Tutor Checkpoint One

Date: _____

Has the student successfully achieved Outcome 1? Yes/No

Comments _____

Tutor Checkpoint Two

Date: _____

Has the student successfully achieved Outcome 2? Yes/No

Comments _____

Tutor Checkpoint Three

Date: _____

Has the student successfully achieved Outcome 3? Yes/No

Comments _____

Has the student successfully achieved the unit? Yes/No

Comments _____

Student Signature: _____ Tutor Signature: _____

Date: _____

Interview guidelines

Outcome 1

Has the student identified a problem which is non-routine?

Is the scope of the problem adequate for the purpose of this unit?

Have all required resources been identified?

Outcome 2

Is the plan specific, measurable, achievable, realistic and time-bound?

Does the student carry out the solution according to their plan?

Does the student show any particular strengths or weaknesses in the way in which they carry out the plan/deal with problems and difficulties?

Outcome 3

Has the student identified suitable evaluation criteria?

Has the student made an accurate evaluation?

Has the student identified alternative strategies?