



PROBLEM SOLVING
SCQF Level 4
40 Hour Unit

CORE SKILLS UNIT

ASSESSMENT SUPPORT PACK

Part 1: Information for tutors

What is involved?

Problem Solving at SCQF level 4 is about using skills to solve problems in personal, workplace, social and educational situations. The focus of the Unit is on transferable problem solving skills:

- ◆ critical thinking;
- ◆ planning and organising;
- ◆ reviewing and evaluating;

This unit is designed for delivery in schools, colleges, workplaces, community and other learning environments.

At this level, learners are expected to be able to work with straightforward problems and will require limited support to carry out the activities. The Unit is designed for those who have experience in solving simple and routine problems.

Learner motivation can be maximised by making the problem solving activities as relevant as possible to the learner's likely uses for problem solving. The activities should be drawn from the learner's personal, workplace, social or educational situation. Additionally, integration of the problem solving activities with those of other SQA qualifications being undertaken should be explored. For example, where a learner is undertaking other National Qualifications, motivation for problem solving can be increased if the activities are related to these National Qualifications and the learner can see the direct relevance of the problem solving. If you do decide to adopt this approach, separate records of assessment decisions must be kept for this Unit and evidence for this Unit should be clearly accessible.

Assessment and evidence

Learners at SCQF level 4 are required to deal with finding a solution for a situation or issue which is straightforward and familiar to them. They will need your support with identifying problem solving strategies and with identifying suitable evaluation criteria when they have completed their problem solving activity. You should try to identify naturally-occurring opportunities for assessment where possible. For learners who are also working towards vocational Units or subject specific Units, opportunities for assessment of problem solving skills could arise while completing tasks which provide evidence for both the vocational/subject specific Unit and this Unit. Some of the exemplars in this pack could be used or contextualised for this purpose.

Assessment is likely to be by one or more of:

- ◆ written tasks;
- ◆ oral questioning;
- ◆ observation.

Assessment of the unit should be based as far as possible on the everyday activities of the learner. You can find guidance in Part 2 of this pack on suitable assessment activities

When assessing by observation, it is essential to keep a detailed checklist. When you are assessing by oral questioning, you must keep a copy of the questions asked and the answers given.

All items of evidence must be signed and dated by you.

Part 3 of this pack supplies exemplar forms which you can use to record successful completion of each of the unit tasks. You can sign and date these as the learner achieves each task to keep a record of the learner's progress.

Critical Thinking

Learners will recognise and analyse the main factors affecting a straightforward situation or issue in a context which is familiar to them. There will be a small number of variables and the relationships between them will be clear to the learners. The learners will then evaluate the situation by summarising, explaining or drawing conclusions. From this evaluation the learners will devise a strategy to deal with the situation. There may be several possible strategies/approaches and with your support the learners will devise

the most appropriate solution. Approaches should be obvious, straightforward and may include making a simple change to a known process.

Planning and Organising

Learners will decide on a course of action in which they work out a sequential action plan to deal with a problematic situation or issue. The relationships between the component activities should be clear. The plan will be linear and will include appropriate resources familiar to the learners. These might include sources of information, set procedures, people, equipment, accommodation and physical resources. The learners should identify in the plan any limitations and where permission may be required to undertake activities. Once the action plan has been devised the learners will carry out the activities as planned and check the implementation of activities allocated to others.

Reviewing and Evaluating

On completion of the action plan the learners will decide on a small number of criteria to identify the strengths and weaknesses of their action plan. Examples of these criteria include operating within a timescale, using appropriate resources and keeping within a budget. The learners will apply the selected criteria to all the activities in the action plan. The learners will consider the evidence of the evaluation and resulting from this will suggest modifications or alternatives for improving future problem solving activities.

Evidence from the learners for each of the problem solving skills will take the form of a log of the activities undertaken. You should retain other supporting evidence, notes of discussions, minutes or records of meetings for example, and observation checklists. Examples are available in Part 3.

Planning

You should work out where opportunities for meeting the standard are likely to arise. Where possible this should be built into the assessment process. You should discuss this assessment process with the learners so that they are quite clear about what is expected from them.

Guidance on the Unit

What learners need to know or be able to do

The Unit states that on completion the learner will know how to:

- ◆ identify the main factors affecting a straightforward situation or issue (eg What are the causes of the problem? Why has the situation arisen? Who is involved?);
- ◆ consider what could be done and then decide on an approach to solve the problem, asking for information and help from others, if appropriate (eg their tutor; other learners)
- ◆ work out an action plan to deal with the problem (eg What are the activities involved? In which order should the activities be done? Who should do each activity? Are there any limitations they must work within? Do they need permission to carry out any activities in their action plan?);
- ◆ choose and obtain the resources they will need to carry out the action plan (eg equipment, information, money, input from other people);
- ◆ carry out the action plan, checking it is complete;
- ◆ identify the strengths and weaknesses of their problem solving activity (eg Did they identify the causes of the problem? Did the action plan run to time? Did everyone carry out their allotted activities? Did they identify the correct resources and ways of getting them?);
- ◆ based on their experience with their problem solving activity, consider possible alternative ways of solving similar problems in the future.

Assessment guidance, together with some suggested activities, is contained in Part 2.

The Unit can be broken down into the following three stages:

- ◆ critical thinking
- ◆ planning and organising
- ◆ reviewing and evaluation

The notes contained in the following paragraphs provide general guidance on the steps involved in meeting the requirements for these three stages.

Critical Thinking

Learners will be able to demonstrate their ability to apply critical thinking as the first stage of the problem solving process. They will be able to investigate and analyse a straightforward situation or issue to identify the main factors which affect the problem. These factors may include identifying causes of the problem, looking at why the situation has arisen and identifying who is involved. Learners will ask for information or help from others, for example, the tutor, and will be able to decide on an approach to solve the problem. Learners may need some support with deciding on an approach.

Planning and Organising

Learners will be able to use the results of their critical thinking to work out a sequential action plan to deal with the problem. In this learners will be able to clearly identify what activities need to be done, who needs to do them, the order in which activities need to be carried out and if permission is required for any of the activities. Learners will be able to identify any limitations that may affect their plan for example financial constraints or availability of personnel. Learners will be able to choose and obtain any resources needed to carry out the action plan and will indicate a time scale to be followed. When the action plan is complete the learners will be able to put it into practice and either undertake activities themselves or oversee the completion of activities where they have been allocated to others. At this stage learners will be able to demonstrate some task management skills in deciding who does what and checking this process.

Reviewing and Evaluating

Once all the activities specified in the action plan are complete and the solution to the problem has been reached, the learners will be able to decide on the effectiveness of their solution to the problem. The learners, with the support of the tutor, will be able to decide on simple criteria for evaluating the success of the action plan. They may choose, for example, criteria such as keeping to a time schedule, allocating resources and allocating activities to others. The learners will then apply the selected criteria to each stage of the action plan, ie analysing the situation and planning and organising the activity. The learners will then be able to focus on the strengths and weaknesses of the stages of the action plan. Having carried out this evaluation the learners will be able to suggest improvements and alternative ways of dealing with problems in the future.

Gathering evidence

It may be appropriate for you to gather written evidence produced by the learners while carrying out the practical activities. However, written evidence is not essential for this Unit and is inappropriate if it disadvantages the learners. You may wish instead to use oral questioning. This requires you to create and complete record sheets comprising a checklist, questions asked and learner's responses.

From the learner's point of view, it is useful to have the means of keeping all the work of this Unit together. You can help here by creating and providing a workbook which includes all the evidence-gathering items. An alternative would be to provide worksheets which can be made into a portfolio.

If you have chosen to integrate the problem solving work with that of other Units being undertaken by the learners, it may be possible to assess the problem solving as part of a larger single activity. In this case you must keep separate records for this Unit.

The Unit requires learners to investigate a problem in a personal, workplace, social or educational situation, draw up and carry out an action plan to solve the problem and finally review how effective their problem solving activity has been.

This may be achieved in many ways. Some typical activities might be:

- ◆ The learner wants to redecorate their bedroom. They decide which activities need to be done by themselves or trades people; choose materials; work out a timetable and budget.
- ◆ The learner wants to learn how to speak Spanish for their holiday next year. They research the types of courses available to them; the costs, locations, level of difficulty, class timings etc and decide on the option which is most suitable for them.
- ◆ The learner keeps running out of the parts required for a particular repair job in their work placement. They look at the reasons for this and set up a system for re-ordering parts which makes sure that they are always available.
- ◆ The learner is deciding on their course choices for the next school session. They research what subjects would prepare them best for the career or further/higher education which they wish to take up on leaving school and make their choice of subjects on the basis of the information they have gathered.

Learners must use only one problem situation to prove that they can do all of the tasks in this Unit. They should not gather evidence from different problem situations for different tasks.

Part 2: Assessment guidance

You can use the exemplar assessments given in this section in several ways:

- ◆ to help identify the type and amount of evidence which the learner needs to produce;
- ◆ to help identify the level of complexity in evidence required for the Core Skill at this level;
- ◆ to help you to create an assessment task related to the learner's own situation;
- ◆ to use as an off-the-shelf assessment.

At this level learners are expected to be able to investigate a straightforward problem, decide on an approach to solve the problem, draw up and carry out an action plan to solve the problem and finally review how effective the problem solving activity has been. The learner may have written evidence, such as notes of discussions, the action plan itself, records of activities undertaken and thoughts on how well things went. In addition the tutor may ask questions and make notes or a recording of what the learner has said.

Learners must complete all three stages of the problem solving task. These are:

- ◆ Critical thinking;
- ◆ Planning and organising;
- ◆ Reviewing and evaluating.

Learners must use only one problem solving situation to prove they can do all the tasks in the Unit. At this level learners may need some support with deciding on a problem solving approach and identifying criteria for reviewing and evaluating.

Some possible contexts for the task are suggested overleaf. Part 3 contains generic exemplar record sheets which you may use as they are. However, you may also adapt these to reflect the detail of the activities you decide to set.

Task – Using skills to solve a straightforward problem

Personal/social context

The learner is asked to solve the following problem:

A popular neighbour is leaving the area and you are organising a farewell meal for approximately 20 people. You will need to find a venue for this event taking into account cost, location, suitability of premises, and variety of menus to cater for different tastes and cultural requirements.

Here are some of the tasks which the learner might have to carry out:

- 1 Contact neighbours to find out preferences and cultural requirements.
- 2 Summarise what they have found out and decide how best to proceed.
- 3 Make a list of restaurants in their area.
- 4 Contact restaurants for details of costs, menus, premises, and availability.
- 5 Make a note of their findings and reject any that are unavailable or unsuitable.
- 6 Contact neighbours with their findings to find most popular choice.
- 7 Contact restaurant to book meal.
- 8 Inform neighbours of time/place.
- 9 Collect deposit.
- 10 Confirm numbers with restaurant and pay deposit.

Educational Context

The learner is asked to solve the following problem:

You will soon complete a National Qualification at your local college, but have found the travelling very time consuming. Research the types of courses available to you when you have completed your present course, looking at the subjects available, levels of difficulty, costs, equipment needed and assessment requirements. Choose the option which is most suitable for you.

Here are some of the tasks which the learner might have to carry out:

- 1 Use internet to find which colleges offer distance learning versions of the types of courses they might be interested in following.
- 2 Make a note of the information on each course – cost, enrolment dates, support provided, resources they would need such as a computer etc.
- 3 Contact friends to find if any have experiences of distance learning.
- 4 Draw up a short list of five courses which look most suitable for them.
- 5 Contact colleges for further details of these five courses.
- 6 Think about questions they will need to ask –eg support available, assessment procedures, software requirements.
- 7 Arrange to call in to or telephone colleges and discuss with course tutors the details of their chosen course.
- 8 Find out if funding is available for them.
- 9 Decide which they would most like to do.

Workplace Context

The learner is asked to solve the following problem:

The canteen in your workplace has recently introduced a new range of healthy menus; unfortunately the response to this has not been as good as expected. You have been asked to publicise the new menus within the workplace.

Here are some of the tasks which the learner might have to carry out:

- 1 Find out about the new range of foods.
- 2 Decide how they can best market the new range of food.
- 3 Decide where to distribute/display publicity.
- 4 Devise publicity materials.
- 5 Organise any resources they may need.
- 6 Create publicity materials.
- 7 Distribute publicity materials.
- 8 Evaluate the success of their campaign.

As the tutor, you might find it useful to think about these elements when you are managing the activity:

Critical Thinking: Stage 1 of the problem solving activity

- ◆ you encourage the learner to think of situations where they have been called upon to solve problems;
- ◆ you explain the problem solving process in the light of the learner's prior experiences;
- ◆ you explain how the Unit will be assessed, eg by learners keeping logs and/or providing written notes; you observing and asking questions;
- ◆ the learner considers the problem solving task and identifies at least three factors which affect the situation, eg what are the causes of the situation, who is involved, why the situation has arisen?
- ◆ the learner, with your support and help/information from any others involved, identifies at least three approaches to solve the problem and decides on one.

Planning and Organising: Stage 2 of the problem solving activity

- ◆ the learner works out an action plan of activities to help them solve the problem;
- ◆ the learner identifies and obtains any resources needed;
- ◆ the learner works through the activities in the action plan or monitors any other person who has been allocated an activity;
- ◆ the learner checks the activity in the action plan have been completed.

Reviewing and Evaluating: Stage 3 of the problem solving activity

- ◆ you help the learner to decide how effective the action plan has been by suggesting criteria such as did the plan keep to time, did everyone carry out their allocated activities and did you allocate appropriate resources?
- ◆ the learner reviews the action plan focusing on its strengths and weaknesses;
- ◆ the learner uses the results of the review and evaluation to suggest alternative ways of solving similar problems in the future.

Part 3: Exemplar recording documentation

This section provides sample forms which can be used by the learners and tutor to gather evidence and record assessment decisions.

Record sheets

Record sheets are provided for each of the three tasks

- ◆ Task 1: Critical Thinking
- ◆ Task 2: Planning and Organising
- ◆ Task 3: Reviewing and Evaluating

The learners can provide written answers on these forms. Alternatively, if you use oral questioning, you may use them to write down the learners' answers.

Assessment Checklists

You can use these to record the learner's achievement through each task: each checklist identifies the skills which learners must demonstrate.

Summary Checklist

The summary checklist enables you to record the results from the assessment checklist on a single form.

Assessment Record Sheets

Learner:	
Tutor:	Date:
Stage 1: Critical thinking — Investigating a problem	
What is the problem you have been given to solve?	
What are the main factors affecting your problem? You should give at least four factors such as what are the causes of the problem, why has the problem arisen and who is involved.	
What approaches can you take to solve the problem? Suggest at least three and indicate which you think is the best approach to take.	
Who will you need to help you with this?	
Tutor comments:	
Tutor signature:	Date:

Learner:	Tutor:	Date:
Stage 2: Planning and Organising — Work out an action plan		
<p>Work out an action plan to solve your problem. You should use the appropriate row of the sheet below to record what you do. You should show what activities need to be done in the order they should be carried out and you should identify who needs to carry out each activity. This could be you or someone else. Note any limitations, such as time or cost, to your plan. Also identify the resources you will need to use. When your plan is complete, check with your tutor before putting the plan into action. Keep a record of what you and others do as the different activities are completed.</p>		
What needs to be done?		
Who will do it and/or will help?		
What resources are needed?		
Limitations		
Record of what is done		
Tutor's comments		
Tutor signature:		Date:

Learner:	Tutor:	Date:
Stage 3: Review and Evaluate — decide how effective your action plan has been		
<p>Now you have completed your action plan to solve your problem, decide how effective your action plan and solution have been. Decide on criteria to assist you with your review and evaluation. Identify the strengths and weaknesses of each part of your plan and how it worked out. Your criteria might be keeping to a timescale, using correct resource and/or everyone working effectively at their allocated activities. Your tutor can help you with this.</p> <p>When you have finished your review and evaluation think about how you can improve your problem solving skills for any future problems you need to solve. There is a section at the end for you to record this.</p>		
Your criteria and stage of plan		
Strengths		
Weaknesses		
Tutor's comments		
Suggest improvement for future problem solving activities:		
Tutor signature:		Date:

Assessment checklist

Learner:	
Checklist for Stage 1: Critical Thinking	
Skills	Achieved
Identify the main factors affecting a straightforward situation or issue	
Consider what could be done and then decide on an approach to solve the problem, asking for information and help from others, if appropriate	
Tutor signature:	Date:

Learner:	
Checklist for Stage 2: Planning and Organising	
Skills	Achieved
Work out an action plan to deal with the problem	
Choose and obtain the resources you will need to carry out the action plan	
Carry out the action plan, checking it is complete	
Tutor signature:	Date:

Learner:	
Checklist for Stage 3: Reviewing and Evaluating	
Skills	Achieved
Identify the strengths and weaknesses of your problem solving activity	
Based on your experience with the problem solving activity, consider possible alternative ways of solving similar problems in the future	
Tutor signature:	Date:

Summary checklist

Learner:	
Learner number:	
Centre:	
Problem Solving SCQF 3	Date achieved
Task 1: Critical Thinking	
Task 2: Planning and Organising	
Task 3: Reviewing and Evaluating	
Tutor signature:	Date:

Part 4: Information for learners

As you work through this Unit, your tutor will need to gather evidence to prove that you have demonstrated all the problem solving skills.

This can be done by:

- ◆ your tutor asking you questions;
- ◆ you writing a short report;
- ◆ you filling in a work book, worksheet or diary;
- ◆ you keeping records of any relevant activities such as discussions.

By the end of the Unit you must show that you can:

- ◆ identify the main factors affecting a straightforward situation or issue (eg What are the causes of the problem? Why has the situation arisen? Who is involved?)
- ◆ consider what could be done and then decide on an approach to solve the problem, asking for information and help from others, if appropriate (eg your tutor; other learners);
- ◆ work out an action plan to deal with the problem (eg What are the activities involved? In which order should the activities be done? Who should do each activity? Are there any limitations you must work within? Do you need permission to carry out any activities in your action plan?);
- ◆ choose and obtain the resources you will need to carry out the action plan (eg equipment, information, money, input from other people);
- ◆ carry out the action plan, checking it is complete;
- ◆ identify the strengths and weaknesses of your problem solving activity (eg Did you identify the causes of the problem? Did the action plan run to time? Did everyone carry out their allotted activities? Did you identify the correct resources and ways of getting them?);
- ◆ based on your experience with your problem solving activity, consider possible alternative ways of solving similar problems in the future.

These are some of the things you might do to provide the evidence:

- ◆ You want to redecorate your bedroom. You decide which activities need to be done by yourself or trades people; choose materials; work out a timetable and budget.
- ◆ You want to learn how to speak Spanish for your holiday next year. You research the types of courses available to you: the costs, locations, level of difficulty, class times etc and decide on the option which is most suitable for you.
- ◆ You keep running out of the parts required for a particular repair job in your work placement. You look at the reasons for this and set up a system for re-ordering parts which makes sure that they are always available.
- ◆ You are deciding on your course choices for the next school session. You research what subjects would prepare you best for the career or further/higher education which you wish to take up on leaving school and make your choice of subjects on the basis of the information you have gathered.

Learners with disabilities and/or additional support needs

The additional support needs of individual learners should be taken into account when planning learning experiences, selecting the most appropriate assessment activity and considering any reasonable steps which might be necessary to allow the learner to meet the assessment standard.

Further advice can be found in SQA's Assessment Arrangements' web pages (www.sqa.org.uk)



ADMINISTRATIVE INFORMATION

Credit Value

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