

Standards Unit

Improving the teaching and learning of soils theory: a guide for teachers, trainers and managers

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Foreword

Our mission

QIA will champion and facilitate excellence and innovation in post-16 education and training services in England.

Our promise

QIA will be a critical friend to the sector, challenging sector organisations and those engaged in learning, teaching and training to achieve their potential.

We will be respected for the quality of our expertise, appreciated for the insight we offer and valued for the positive difference we make.

We will be an honest broker, creating programmes to help accelerate improvement and connecting organisations with those programmes through delivery partners.

We will work with government to ensure policies are informed by the knowledge and experience of the learning and skills sector and help organisations implement new initiatives.

I am delighted to be able to introduce these new curriculum resources developed by the Quality Improvement Agency (QIA) as part of the National Teaching and Learning Change Programme. This programme is now managed by QIA and forms a substantial part of our work. It is designed to transform teaching, training and learning in selected curriculum areas.

This new set of resources for Land-based, Soil Works, has been developed with practitioners and piloted with providers around the country. They include new approaches to designing and managing teaching, training and learning, provide practical activities for learners, stimulate professional development and will help organisations adopt approaches building on those from the earlier resources.

The programme, originally delivered through the DfES Standards Unit, has already been very successful in disseminating exciting teaching and learning resources to the learning and skills sector.

The programme has 'three enablers':

- **subject-specific teaching and learning resources**
- **subject coaching networks**
- **professional training for Subject Learning Coaches.**

Together these three enablers support teachers, trainers and managers to raise standards of practice and deliver learner success.

We are pleased to be working with the Learning and Skills Network (LSN) who we have commissioned to deliver the regional subject coaching networks and professional training for Subject Learning Coaches.

We will be working closely with LSN to ensure that Subject Learning Coaches have every opportunity to learn how to use and adapt these Teaching and Learning Resources to meet the needs of many different learners and to develop their experience and skills in the new approaches and techniques.

I hope you find these new resources of real benefit to you and your organisation. I am certain you will find they provide an excellent opportunity for your Subject Learning Coaches, tutors, trainers and managers to improve their professional development, and support QIA's mission of excellence for the sector as a whole.

Andrew Thomson

Quality Improvement Agency for Lifelong Learning
(QIA)
Chief Executive



Using the CD-ROMS

Loading Instructions

Insert the disc into the CD-ROM drive.

The first page on the CD-ROM should launch automatically.

If it does not launch automatically:

1. Launch your web browser.
2. From your web browser, select Open File from the File menu. Select your CD-ROM drive, then select the file called index.htm.

Flash player and playing video

The CD-ROM uses Macromedia Flash Player 7 as a video player. This is likely to be installed on your computer already. To install Flash Player 7 from the CD-ROM browse to the 'Flash_plugin' folder select 'Mac' or 'PC' and double-click the installer.

Flash Player 7 is also available on the Macromedia website. Go to www.macromedia.co.uk to download.

Minimum Specification

This CD-ROM has been created in HTML and should be used on a Windows 98 system (or greater), or a Macintosh G3 (or greater), with Internet Explorer 5.5 (and above) and Netscape 6.7 (and above).

The CD-ROM will run on a X24 speed CD-ROM drive with 128Mb of RAM and a 16 bit soundcard. We recommend Macintosh OSX users transfer all files from the CD-ROM to their computer hard disc to play the Flash video.

Using the DVD

Loading Instructions

The DVD is divided into sections. On the DVD you will be able to find case studies about:

Thrive!

Soil Preparation

Soils

Select what you want to watch from the DVD menu.

Copying the CD-ROMs onto your intranet

1. Locate your CD drive.
2. Copy all the files from the CD-ROM on CD drive to a new folder on your desktop (name folder as you want the site to be named).
3. Copy the folder to a location on your intranet.
4. To view the contents select the file default.htm.

NB: while the material on the CD-ROMs can be copied to a local machine or intranet, some of the folders contain .exe files which may conflict with your security settings and prevent you from copying files across. If you have any difficulties copying the contents, or do not have the relevant permissions, please consult your local technical support.

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Section 1: Getting Started

Introduction

The aim of this pack is to help teachers, trainers and managers make the best use of the resources in this pack. It will be useful for:

- **teachers in land-based colleges, general further education colleges and schools**
- **trainers and assessors in work-based learning providers, prisons and other providers**
- **curriculum or programme managers, and those responsible for continuing professional development in colleges and other providers.**

The pack comprises:

- booklet
- continuing professional development CD-ROM
- learner CD-ROM
- continuing professional development video/DVD
- card-based teaching and learning activities
- Thrive! resources CD-ROM
- resources folder

The booklet

The booklet has two main sections:

- **Section 1: Getting started**

This section describes the resources and gives practical guidance to get the most out of them.

- **Section 2: Getting better**

This section suggests ways in which you can use the resources to raise standards of teaching and learning of theory.

Continuing professional development CD-ROM

The CD-ROM for use by teachers, trainers and managers contains downloadable versions of the learning resources, resources for adaptation by teachers, and a version of the continuing professional development resources in the booklet for use by individuals or groups interested in improving their practice. There are also resources for managers to help them support the teachers and trainers in their care.

Learner CD-ROM

The CD-ROM for use by learners contains interactive versions of the card-based activities for learners to use on their own, in an informal learning situation, in the workplace, or under supervision.

Continuing professional development DVD

The accompanying DVD provides a flavour of the work in progress and includes case studies that show how teachers, trainers and managers have used the resources and other strategies to support the teaching and learning of soil structure and texture. They can be used to support continuing professional development events.

Card-based versions of teaching and learning resources

The pack includes card-based versions of the activities – **Soils, Soil Preparation** and **Thrive!**

Thrive! resources CD-ROM

This CD-ROM contains templates and photos to create and print more cards for the **Thrive!** activity.

Resources folder

This contains copies of the paper-based resources for photocopying.

About this project



The story so far

The Land-based subject (LBS) project team started work in September 2003 and the first two stages of the project, review of evidence and initial consultation with stakeholders and practitioners, were completed by January 2004.

A review of inspection reports for 2002-2003 provided a list of concerns where there are weaknesses common to much of the LBS provision. One aspect was considered the most urgent priority:

Improve the teaching/training and learning of theory

Following consultation and a practitioners' workshop held in December 2003, two subject areas were selected for the development of teaching and learning resources; animal transport, and soil texture and structure, nominally for learners working towards achievement at Level 2.

The development process for the soil resources was carried out from June-September 2004 and the modified resources and approaches were tested by 13 providers from September-November 2004. The experience gained during the process was also used to develop the continuing professional development approaches in this booklet.

The resources were then piloted more extensively with 17 providers between March and November 2005. The resources have been well received by the pilot sites and further refined in the light of comment.



The challenges we face

The teaching of theory and background knowledge is a challenge in all forms of education and training - but it is a particular challenge for land-based studies. This has been highlighted in the 2002-2003 summary of inspection findings¹, which included these statements:

'The weakest teaching was in sessions on background knowledge. This teaching was considerably worse in land-based subjects than across the area of learning as a whole.'

'The best grades were awarded to mixed theory and practical elements.'

Managing a programme to ensure effective links are made between theory and practice is also a challenge in LBS:

'...the day-to-day management of courses varied widely between colleges and subjects and was unsatisfactory in about a quarter of subjects inspected.'

'Management of training was a weakness in about a third of training providers. The most common weaknesses were poor planning of training...'

A big factor in making it difficult to teach and manage a group of learners is the range of learners. The wider the range, the harder it is to meet individual needs, particularly when teaching theory topics.

We hope you agree that planning of teaching and training should always start by considering the individuals within your group. The resources in this pack were developed by analysing LBS learner profiles, their needs, and how we might meet them. The specific topic of soil structure and texture has been chosen because it is relevant to a range of programmes, including horticulture, agriculture and environmental studies. It is also a topic that is seen as boring by many learners, and which can be hard to teach in an interesting way.

1 Summaries of inspection findings can be found on OFSTED (www.ofsted.gov.uk) and ALI websites (www.ali.gov.uk)

Meeting the challenges

This booklet and the other resources in the pack seek to help you develop more:

- **innovative approaches to the teaching and learning of theory (throughout the booklet this is referred to as priority 1: Teaching theory).**
- **creative use of specialist resources and work placements (throughout the booklet this is referred to as priority 2: Linking theory and work experience).**
- **productive links between related parts of the learner programme (such as practical activity and work experience) (throughout this is referred to as priority 3: Managing the programme).**

The pack provides flexible resources to help you teach soil structure and texture in interesting ways to students with a range of learning needs. By actively engaging them in the learning process we hope learners will see for themselves how full understanding of the topic can make a positive difference to their work.

The resources can also support you to help learners develop a wider range of learning styles and to take increasing responsibility for their own learning. Doing so encourages learners to reflect upon their performance, progress and future potential. They become informed, confident and involved in their own development and begin the move towards becoming expert learners.

It will also help you reflect on your teaching methods and consider how they might be developed. This is one of the main purposes of these resources. We hope you will be able to extend these approaches to other 'hard to teach' areas.

There are three continuing professional development priorities to consider. Each asks you first to reflect on the needs of the learner. You will find these resources in **Getting better** (see page 36).

The teaching and learning resources

This pack provides resources to support teaching, training and learning of soil structure and texture. Development of these resources was based on a detailed consideration of LBS learners' needs, characteristics and perceptions. The rationale for the development of the resources is given in Annex 3. In addition, in the sections that follow there are detailed suggestions on how each of the resources might be used. The pack includes both group and individual activities and resources suited to a classroom or the workplace.

The resources in this pack have already been trialled with a number of colleges and other providers. Some of the comments from the teachers and trainers who have used the activities include:

'Good involvement of all learners, and all learners enjoyed themselves. The session involved a good range of activities with change every 10-20 minutes.' (CovWise)

'Learners were engaged in the activities and demonstrated good levels of understanding. More learning took place and there were fewer queries than the teacher expected.' (Pershore College)

'New learners grasped concepts within a short period of time. Some prisoners felt that this approach to learning should be extended to other aspects of horticulture teaching.' (HMP Ford)

'An autistic learner joined in the activity. He would normally hold back but for this activity he joined in and contributed well.' (Shipley College)

'The Soils activity cards were particularly effective with positive comments from the learners like "Can we do it again?"' (D.A.R.T.)

'Session went well and learners were actively involved and able to show an interest in science – not easy to do!' (Pershore College)

'Learners were able to show their understanding with confidence of the topic through use of the resources.' (Pershore College)

'One very introverted learner seemed to grasp the topic very quickly. The learning style seemed to suit him.' (D.A.R.T.)

We have amended and added to the resources in light of comments from teachers, trainers and learners. This section should help you make the most of the resources so that you can cover soil structure and texture in a thorough but stimulating way.

Key skills, literacy, language (including ESOL¹) and numeracy

The resources have some scope for use in developing and practising key skills where these form part of a learner's programme or entitlement, though it is important to stress that they are designed to **support teaching and learning rather than evidence collection**.

They may also be used to develop literacy, language and numeracy skills with learners who have been identified as needing support to improve these skills and may be working towards *Skills for Life* achievements, provided they are appropriate to their needs and interests.

Literacy, language and numeracy skills are a fundamental part of achieving the vocational requirements of a course or programme. If these are not addressed there is a danger that learners will fail to achieve their main learning goals. Some learners working towards achievements at Level 2 – even those not working towards literacy, language or numeracy qualifications – may need support with literacy and numeracy to complete their programmes successfully. Vocational tutors should be aware of the literacy and numeracy skills demanded for successful completion of a course or programme. More specifically, they should have a clear idea of the literacy or numeracy required to carry out specific learning activities.

Teaching literacy, language and numeracy skills is a specialist area. It is common practice for specialists to work alongside vocational teachers and trainers to plan and implement appropriate teaching and learning strategies to support learners. Vocational teachers and trainers can, however, make the most of the opportunities to practise or develop these skills when they occur naturally in the learning programme. For each of the resources in this pack there are suggestions for how you might use them to support learners' development of key skills, literacy, language and numeracy.

Embedded learning teaches relevant literacy, language and numeracy skills as part of other courses in a planned and explicit way. The development of these skills should be part of a planned and well-coordinated approach involving the whole course/programme team, including key skills, literacy, language and numeracy specialists to map out logical, staged, teaching and learning opportunities that develop vocational and literacy, language and numeracy skills in tandem. This will ensure that learners can see the relevance, and have the opportunity of, gaining the literacy, language and numeracy skills which underpin the successful completion of many vocational activities which also fit well with the Government's initiative. Where appropriate, planned developments should be clearly identified in schemes of work and session plans. You may find it helpful to discuss this with your programme manager (see the section Mainly for Managers, page 50).

1 ESOL = English for Speakers of Other Languages

Learning objectives

Typical learning objectives for soil structure and texture are for learners to:

- **describe how a plant gets most of what it needs from the soil**
- **recognise that soil is made up of different components with different characteristics – for example, particle size, water holding capacity and others**
- **explain how the proportion of these components affects texture and structure of the soil**
- **give examples of how different plants thrive in different soils**
- **explain how the gardener, farmer or horticulturalist can influence the soil by preparing it to make it work better for the plants.**

How to use the teaching and learning resources



In the rest of this section we give guidance on using each resource. All of the resources can be used in a variety of ways. For each resource there are three sections.

- **What it is** describes the resource.
- **Tips** gives examples of how the teachers and trainers used the resource.
- **How to use the resource** gives more detailed guidance. However, please be innovative to meet your learners' needs.

Think about how long the activity might take bearing in mind how you intend to use it. In particular consider:

- how you will introduce the activity
- what prior knowledge might be needed for learners to complete it effectively
- possible extension activities for early finishers
- possible follow-on work.

The relevance to the continuing professional development priorities in **Getting better** are also noted for each resource.

Annex 1 gives possible overall subject plan and session plans. These show ways of using the resources to help you plan for your learners, taking account of their own specific needs.

Handouts

(in the resources folder)

What it is

The pack contains a number of handouts:

What's in soil? shows the main components of soil:

- clay particles
- silt particles
- sand particles
- living organisms (invertebrates and plant roots)
- organic particles (partially decomposed and completely decomposed soil organisms)
- water
- air.

Note that a larger version of the **What's in soil** handout is also in the pack as a **poster** that could for example be displayed in the workplace. There is space on this to enter relevant workplace information such as:

- timing of work experience activities
- timing of soil preparation and planting work.

Testing soil shows the main steps involved in a hand test to decide whether a soil principally contains clay, sand or silt.

Soil components summarises the information about soil components from the **Soils** cards.

Types of soil describes some of the main types of soil.

Soil water defines some terms about soil water.

What makes a plant grow? shows the importance of soil to plants.





Tips

Teachers and trainers have used the handouts in several ways.

Early in the learning process teachers and trainers found that they were useful to accompany the initial teaching of the topic. You can use the handouts to introduce the topic and to help learners acquire and develop their knowledge of soil structure and texture. This is particularly true of the handouts **What makes a plant grow?**, **What's in soil?** and **Testing soil**.

Other teachers and trainers used the handout **Soil components** to support the **Soils** activity, or gave out the handouts at the end of a session for background information. The handout **Testing soil** is also useful for linking practical and theory work together.

Later in the learning process you could use the handouts on **Types of soil** and **Soil water** to extend knowledge after, for example, the **Soils** activity.

You could adapt the handouts for your own purposes. You could, for example, create gapped handouts from the **Soil components** handout.

'I plan to put the What's in soil? handout onto an OHP.'
(Trainer, CovWise)

Note: the handouts are most relevant to **Priority 1**: How you teach theory, and **Priority 2**: How you relate theory to work experience.

How to use the handouts

Use them as:

- handouts during or after a session
- the basis for making gapped handouts
- posters for a notice board or a training room wall
- resources to give to workplace supervisors.

The guidance below provides examples of where opportunities throughout the materials exist to teach literacy, language and numeracy. It is recommended that, where appropriate, vocational teachers and trainers, key skills practitioners and literacy, language and numeracy teachers work together to plan and implement suitable teaching and learning strategies to enable learners to get the best from these sessions.

Key skills:

You may be able to use certain handouts to support key skills development. For example, if you used the 'Testing soil' and 'Soil components' to help plan cultivation and planting, this may be relevant to WO1.1 and WO2.1. If you encourage learners to use textbooks to extend their knowledge, this may be relevant to C1.2 or C2.2.

Literacy, language and numeracy:

The handouts 'What makes a plant grow?' and 'Testing soil' could be a useful resource for reading for learners at entry Levels 1 and 2. The fact that they have a limited amount of text makes them accessible and easy for learners to obtain and understand information. The handouts 'What is soil' and 'Soil components' and 'Types of soil' may prove demanding for learners who have not yet reached Level 1 in literacy, while 'Soil water' contains more technical terms and is likely to require Level 2 in literacy. It may be helpful if you read the handouts aloud first, and keep them on display.

Soils activity



What it is

Soils is a card activity for 2-6 players designed to help learners understand the characteristics of the main components of soil. It comes as a pack of cards organised into five suits, each of which has 13 cards. The suits are:

- clay
- silt
- sand
- living organisms
- organic particles



The **Soils** activity uses a specially devised pack of cards to help learners understand the components and properties of soils. The cards can be used to play games such as Rummy and Sevens. Please check that card games are culturally acceptable to and understood by all your students. See page 20 and 21 for how to use the cards.



'I enjoyed using the cards, it's a different way to learn.'
(Learner, D.A.R.T.)

'The cards got us thinking.' (Learner, Pershore College)

'...enjoyable; worked quite hard and learnt quite a lot.'
(Learner, Pershore College)

Tips

You can use the cards at different stages in the learning process, and you could use them more than once to support progressive development of your learners.

Early in the learning process

If you use them **to help learners acquire and develop their knowledge of the topic**, then you may wish to do some preparatory work before the activity such as:

- spending some time organising the cards into suits to check basic knowledge of the different components of soil. You could do this by putting all the cards on the table and picking out the ace of sands, silts etc. Learners then allocate each card to one of these, making a line of cards under each ace. Learners could work in small groups, discussing any unfamiliar terms or concepts
- using copies of one or more of the handouts beforehand – in particular the handout **Soil components** provides a full list of cards which learners can use as a preparation or crib sheet
- having a practical session beforehand to familiarise learners with the different components of soil. The handout **Testing soil** may be useful for this
- a quiz, word search or gapped handout to check understanding of technical terms. One of the organisations who helped to develop the materials with their learners used the 'hangman' approach to help learners to become familiar with technical terms. One learner (or group) indicated how many letters there were in the word – the other learners then suggested letters. Where the word contained these letters the first learner wrote this in the appropriate place in the word. Where it did not belong, the learner drew part of the hanging man.

'We used a modification to the activity at the start where the suits are laid out and the learner has to pick a card and say which suit it belongs to. This helped the learners to become familiar with the concepts before playing the rummy activity.' (Teacher, CovWise)

'It was useful for the learners to carry out the hand test prior to using the cards.' (Teacher, CovWise)





Later in the learning process

You can also use the cards to help **learners revise or deepen their knowledge of the topic**. For example, you could use the activity as a basis for discussing good and bad practice.

'Take care with the time allocated to the activity. 'Fast' learners may complete it quite quickly.' (Teacher, Shipley College)



'Time allocated to activities is critical. You must have an alternative activity available if the learners complete the first one more quickly than expected.' (Teacher, Shipley College)

Note: the activity is most relevant to **Priority 1**: How you teach theory.

How to use the activity

You can use the cards in many different ways. Here we provide three suggestions which have all been used successfully.

Option 1 - Rummy

- Shuffle the cards and decide who will deal.
- Dealer gives out six cards per player in clockwise direction. He or she places the remaining cards face down in the centre of the table and turns over the first card to create a discard pile.
- The first player decides whether to take the discarded card or the card on the top of the pile. He or she then throws away one of his or her cards.
- When a player has three cards from one suit he or she creates a 'set' and puts this on the table face up.
- The winner is the first to make two sets. The game may then continue or finish at that point.

'It may be worth teaching learners to play rummy (perhaps with ordinary cards), in order to get full value from the activity.'

(Teacher, Shipley College)

'Two 'rounds' of the rummy activity took about 30 minutes to complete.' (Trainer, D.A.R.T.)

'The rummy activity provides more of a challenge than a simple matching activity.' (Teacher, Shipley College)

'We used an adjudicator in each group, who had the answers. The adjudicator monitored the activity and organised the corrections, and issued answers to each learner to include in their notes.' (Teacher, Myerscough College)



Option 2 - Sevens

Note that you can do the full version of this activity by using all five suits – or you can simplify the activity by using just three suits: sand, silt and clay.

- Shuffle the cards and decide who will deal.
- The dealer deals out all the cards in a clockwise direction. Each player makes an initial attempt at sorting their cards into suits.
- The player with the 7 of silt goes first and lays the card face up on the table.
- The next person then checks their cards to see if they can go. They can place either a 6 or 8 of silt or another 7 of any suit. Cards are placed down in rows of the same suit (sand, silt or clay), starting with a 7, working down to ace (7, 6, 5, 4, 3, 2, ace) or up from the 7 to the king (7, 8, 9, 10, J, Q, K)
- The next player then lays down a card if they can go. If they cannot go they pass to the next player.
- The winner is the first to go out, by using up all their cards.



Option 3 - Soilitaire

Note that you can simplify this activity by using just three suits – sand, silt and clay. Explain to learners in advance that they need to watch the activity carefully so that they start to know where different cards are on the table.

- Lay out all the cards face down on the table. Decide who will play first.
- The first player picks up three cards. If they are all from one suit they place them as a set in front of them. If they are not from one suit they put them back in the same places they took them from.
- The next player does the same thing, using memory to help match the cards.
- Continue round the table.
- The winner is the first player to make two sets.

You could also use the cards:

- for matching activities – in small groups or one-to-one with work-based learners
- for background information
- to help with key skills and language, literacy and numeracy (LLN) skills – for example, by focusing on spellings of technical terms.

Extension activities

You could extend this activity by :

- introducing concepts such as cation exchange
- discussing ways of modifying soil for a particular purpose – this could lead into the **Soil Preparation** activity.

Differentiation

You could introduce other differentiation into use of the Soils activity in several ways.

- You could do the activity with just three suits of cards – clay, sand and silt (as in the interactive version).
- You could reduce the number of cards in a suit by taking out more complex concepts.
- You could colour code the cards in each suit to make the task easier for learners who find the topic difficult.
- You could add additional cards for learners capable of more challenging work.

'At the end of the session the learner suggested that he take the Soils cards to the 'mess room' so that he could use the cards with his colleagues.' (Trainer, D.A.R.T.)

Soils – interactive version

There is an interactive version of **Soils** on the continuing professional development CD-ROM and learner CD-ROM.

Instructions

The aim of **Soils** is to become familiar with the characteristics of sand, silt and clay.

The dealer deals one of each soil type. The players must match the upturned card with one of the soil suits. The activity continues until all the cards have been placed correctly.

Key skills:

Soils is particularly relevant to communication and working with others. You can encourage learners to discuss which suit the cards belong to and to seek agreement – this may be relevant to C1.1 and C2.1a and to WO1.2 and WO2.2. You could also ask learners to refer to other sources such as the handouts or textbooks, which may be relevant to C1.2 and C2.2.

Literacy, language and numeracy:

This activity can provide opportunities for learners to engage in discussion. Bear in mind that the cards contain technical terms such as 'particle' and 'humus'. These could provide opportunities to reinforce spellings but you may need to give individual help to some learners. The IT activities may be particularly appropriate for learners at entry Levels 1–3 who respond well to IT-based approaches because they can work at their own pace and any errors they make are not 'public'. You will need to be available, however, to provide individual help and support if they have difficulty with any of the reading.

Soil Preparation activity

What it is

This activity is designed to help learners investigate how best to prepare soil for planting different plants. There are two versions, one for agriculture and one for horticulture.

Soil Preparation is essentially a sequencing activity. You could use a similar approach elsewhere in the curriculum where the ability to put tasks into a sequence is useful such as growing a crop, carrying out a risk assessment or planning an event.

Tips

It can be used in three ways.

- **To link with and support practical work** If learners are working on a real site they can complete the data sheet when visiting the site and discussing with the teacher. In pairs or groups they then use the preparation activity cards to plan how to prepare the soil for planting.
- **During work experience** Learners could complete the data sheet with employers, using a site in the workplace. They could then use the preparation activity cards to plan how to prepare the soil for planting either near or off-the-job.
- If a real site is unavailable, then it could be used **to prepare for or simulate practical work** – learners can complete the data sheet fully for a scenario which the tutor gives them (or that they give each other). Again, they decide in pairs/small groups how to prepare the soil for planting. A photograph of a possible site might help add realism.

'I learnt ways to prepare a site properly and in the correct order.'
(Learner, Pershore College)

'Some prisoners felt that this approach to learning should be extended to other aspects of horticulture teaching. During the summary session the teacher focused on preparing land for production. Prisoners stated that they were learning far more than they expected using this approach.' (HMP Ford)





Early in the learning process

Some learners may need to do some preparatory work to define terms or to ensure they are familiar with the operations involved and the effect they have on the soil.

Later in the learning process

More experienced learners may be able to work more independently and carry out the extension activity below.

Note: the activity is most relevant to **Priority 1:** How you teach theory and **Priority 2:** How you relate theory to work experience.

You may need to adapt the activity to local conditions by removing cards that are not relevant to your area, or by using the cards most useful for your learners.

How to use the activity

The activity has three stages.

1. The first stage is to fill in the data sheet by ticking the relevant information for your site, including:

- plants to be established
- soil type
- previous crop/plants
- topography
- ground condition.

If the weather is poor or you can't access a real site you could give the learners a scenario that includes this information. They can then complete the activity.

2. Learners, individually, in pairs or small groups, choose the cards that describe what they will need to do to get the soil ready for planting. Note that they may choose to carry out one activity more than once. They should then discuss their choices with the teacher or trainer. Add cards as necessary by writing on blank cards (supplied).
3. Learners then put the preparation cards in what they consider to be the best order to carry them out. They can justify their choice in discussion with other groups and/or the teacher or trainer.

Extension activity

You could ask learners to record their chosen sequence, and justify why each task is carried out – and possibly the effect on the soil of performing that activity. They could also discuss this with the work supervisor. You could also ask learners to justify why they rejected the other tasks.

Task (in sequence)	Reason why the task is needed at this stage	Effect of this task on the soil

There is also an IT version of the **Soil Preparation** activity on the CPD CD-ROM and the Learner CD-ROM.

It is recommended that learners complete the data sheet while working on a real site. This can then be used to create a sequence of soil preparation activities on the interactive version. Learners can print their selected sequence, add notes to justify their choices and discuss their choices with each other and the teacher or trainer. They can also learn from each other. Ask learners to describe and/or explain to their peers how and why they have settled upon their final sequence of cards. Reflecting and justifying choices will help develop expert learner skills.

Soil Preparation – interactive version

This version of **Soil Preparation** is intended to be used in conjunction with practical activities and is essentially a sequencing exercise.

Differentiation

You could introduce differentiation into your use of the **Soil preparation** activity in several ways:

- You could reduce the number of items to consider on the data sheet to reduce the range of factors to consider.
- You could add additional factors such as more specific pH levels.
- You could create scenarios of differing levels of difficulty. For example, in a simple scenario you could write a description using the same terms as those on the data sheet so learners have a relatively straight forward matching exercise. For a more complex scenario you could provide a range of resources such as map and crop records so that learners have to find information and make judgements.

Key skills:

You can use the activity to encourage learners to identify problems (relevant to PS1.1 and PS2.1) and to try out alternative approaches (relevant to PS1.2 and PS2.2). You can also use the activity to promote discussion and debate (relevant to C1.1 and C2.1a). If learners record their sequence with their reasons for their choices this may be relevant to C1.3. There are also opportunities to develop skills of planning and working together that are relevant to WO1.1 or WO1.2.

Literacy, language and numeracy:

Soil preparation is relevant to speaking and listening and reading in the national standards for adult literacy. At Levels 1 and 2 the opportunities are similar to those for key skills. At Entry Levels 1 to 3 they will be relevant to listening and responding, speaking to communicate, engaging in discussion and reading and understanding. However, care should be taken to avoid placing learners who lack confidence in reading in situations where they are required to read aloud to a group as this can be a demoralising and frightening experience for them. If you have learners in this position you may need to pair them with others with better reading skills, or read the questions to the group yourself.

Thrive! activity

What it is

This activity aims to help learners develop their understanding of the relationship between the plant and the soils in which they grow. It can also help to develop communication (and other) skills.

There are two versions of **Thrive!**, one for agriculture and one for horticulture.

The aims of the activity are for users:

- to select plants that will thrive in each of the plots or fields on their board
- to suggest how to manage the soil to encourage the chosen plants to thrive.

Thrive! is essentially a matching activity. You could use a similar approach elsewhere in the curriculum where the ability to match is useful such as symptoms of disease or maintenance of parts of a machine.



Contents

Horticulture version	Agriculture version
■ 6 boards, each with six different plots to be planted	■ 6 boards, each with six different fields to be planted
■ 82 plant cards giving details of site and soil preferences	■ 82 crop cards giving details of site and soil preferences
■ Score cards	■ Score cards

There is one board for each team of up to three players. It is good to have more than one per board to stimulate discussion. It can be played by up to 18 participants (or more if more boards and cards are used).

'Two groups continued to use the Thrive! resources even when asked to stop. The teacher had to be quite firm in order to stop the learners working.' (Shipley College)

'Please can I have a copy of the activity to take home and play over Christmas?' (Learner, Chichester College)

'Plant resources considered excellent.' (Teacher, HMP Lindholme)



Tips

'Using the resources helped the group to work as a team and gel together.' (Mature learner, Shipley College)

The activity can be played by teams of up to three players per board. It involves choosing appropriate plants for specific soils and sites. If done as a competitive activity, the winning player/team is the one to successfully plant all plots or fields on their board. It is an activity which will greatly **benefit from planning well in advance**.

Early in the learning process it will be useful to start to build understanding of the terms and concepts involved. For example:

- use just the cards for sorting into plant types (alpines or cereals), soil preferences (sandy), or other qualities, to become familiar with plants, terms and information on the cards or other sources of information
- use just the boards to discuss terms such as pergola, poor drainage or names for soils, to clarify understanding
- use just the boards, perhaps along with other farm or garden plans, to discuss planting areas and types of planting.

Later in the learning process, some of the extension activities will help learners progress further. Consider:

- using the activity as described below, completing the first part of the score card (up to the column 'reason this crop/plant was chosen'). Encourage discussion before reasons are written down
- revisiting the activity again soon afterwards to complete the remainder of the score card. Discuss with learners soil management options consistent with responsible environmental practice and Cross Compliance.

'Prisoners enjoyed the board activity – they now would like to see more examples of this teaching style.' (Teacher, HMP Ford)

Note: The activity is most relevant to **Priority 1**: How you teach theory, **Priority 2**: How you relate theory to work experience and **Priority 3**: Programme management.

How to use the activity

It is important that you prepare the activity for your learners before you use it with them. You may wish to remove certain crops or plants that are not appropriate to your area.

Select the version you will use – horticulture or agriculture.

1. Each player or team takes a board with six different types of plot or field
2. Shuffle the plant labels and place them face down on a table
3. Players take turns to collect a plant card from the pile
4. They then try to match the plant with one of the plots or fields on the board (discuss their choice within their teams). They can use the information on the board and on the plant cards to help them
5. There are then two choices:
 - place the card on the chosen plot or field on the board. This is then 'planted'
 - to return the card to the bottom of the pile, and collect another card. They may do this only once each turn.

On the next turn, the player collects another card and evaluates it in the same way for another plot or field. The activity continues in this way until all agreed plots or fields have an attempted planting.

If played competitively, the winning team is the one with the most successfully planted plots or fields.

Players can use the score card to keep a record of the reasons for their choice of planting, and what they will do to the soil to help ensure the plant thrives. This might help when they come to justify their planting choices.





Evaluating the choices

When a player/team has matched a plant to each plot or field on their board, discuss as a whole group:

- the reasons for their choices, and why they think the plant will thrive there
- what they will do to the soil to help the plant thrive
- how to manage fields (in the agriculture version) in an environmentally responsible way
- related issues such as Cross Compliance, maintenance and budgeting implications.

The board is counted as correctly planted when either:

- their peers agree they have made a satisfactory case or,
- the teacher agrees they have made a satisfactory case.

Extension activities

The activity can be extended and adapted in a number of ways. For example:

Using blank boards with a dice

The Thrive! resources CD-ROM contains boards with blank fields and plots. To use these, add an extra stage after stage 2 of the activity. The teacher chooses two or three aspects for learners to determine the level in each plot, by rolling a dice; for example:

- drainage (1 or 2 = wet, 3 or 4 = good, 5 or 6 = dry)
- sun to shade (1 or 2 = full sun, 3 or 4 = partial shade, 5 or 6 = total shade)
- previous crop or planting (1: cereals / 2: grass / 3: potatoes / 4: sugar beet / 5: legume / 6: brassica or similar).
- degree of acidity (1 or 2 = acid, 3 or 4 = neutral, 5 or 6 = alkali)
- nutrient levels (1 or 2 = low, 3 or 4 = medium, 5 or 6 = high)

If you do this you will obtain some unlikely combinations. But it will also present useful opportunities for discussion about why they are unlikely, and what might result if it occurred. If the teacher agrees the combination is not credible, roll the dice again to obtain a different combination. Record the 'set up' information for each plot or field on the score card. After each roll of the dice, discuss as a group and with the teacher, the implications for the plot or field.

You can use the dice to emphasise factors that may be relevant to the level of learners, the subject area, the experience of the group and even local ground and climate conditions. The dice can also be used to adapt the activity to meet individual learning needs.

Timed activity

All the cards could be dealt out and players have to find a plant for each plot from their hand within a stated time limit.

Trading

The plant cards are dealt out to teams so that each has just enough cards to 'plant' each of their plots/fields. Each team must then either use the cards they have been dealt, or trade with other teams to obtain the best possible planting for their board. This is an opportunity to develop group interaction and communication skills.

Real fields, plots and plants

The activity can also be used with plans of actual fields or plots such as from the learners' workplaces. Real crop/plant seed labels (or other information) could be incorporated into the activity – the selection can be varied to be most relevant to the learners. In this case, they may also be able to bring actual information on acidity/nutrient status/other factors and so help to link what they do at work with what they learn in theory sessions.

Environment and conservation

Once planting is complete, learners can discuss where possible hedge planting or other conservation measures might best be placed, or how the management of the soil affects soil conservation, compaction, water retention/runoff, erosion, nutrient loss/pollution. A plan can be drawn up to detail how best to manage the areas to minimise adverse environmental effects, paying particular attention to Cross Compliance issues (Agricultural version).





Consideration of soil and crop rotations (agricultural version)

The activity could be played using only two fields on each board (using the 'blank' fields available on the CD-ROM), where the learners must collect all the cards needed for their fields for a complete rotation, playing in turns and evaluating their choices as described above.

Discuss soil management and conservation, biodiversity, soil fertility, disease control, efficiency of cultivation, the relationship between soil management and soil air and water (preventing compaction, managing runoff, managing soil to optimise moisture availability without waterlogging), and the relationship between these things and optimum cropping sequence. Learners' completed score cards should reflect sound environmental management as well as good crops.

Links with other parts of the curriculum

The activity can be used to link work on soils to other topics forming part of the programme. Learners could research the availability of each plant chosen, cost the proposed planting, calculate gross margins or the machinery required to grow the crop, plan the maintenance requirements of the planted areas.

Developing language, literacy and numeracy (LLN) and key skills

Debate different planting options (communication), calculate field areas, work rates of machinery or estimate labour needed (number) or plan the planting work (working with others). You could also link to possible assignment work, using a real garden or farm.

Use of supplementary information

Learners could use reference books or other sources of information to identify and justify suitable crops.

Blank cards

Blank cards are supplied in the resources folder so that the selection of plants can be made more relevant to the learners.

Differentiation

The extension activities offer considerable scope for differentiation within a group. Other possibilities would include:

- reducing or extending the range of options on the cards – for instance in the horticultural version you could choose to take into account the pH and the height and spread of a plant; in the agriculture version you may wish to add planting times relevant to your local area as a further variable, or remove pH as a variable.
- reducing or increasing the number of plant or crop options - by taking cards out of the pack or adding new ones in.

Key skills:

When learners discuss and evaluate their choices, this will help them develop their discussion skills (C1.1 or C2.1a). If they record their reasons for their choices, this may be relevant to C1.3 while a more extensive written plan could be relevant to C2.3. Planning work may be relevant to W01.1 or W02.1. If you ask learners to calculate field areas, work out rates of machinery or cost out a planting activity this could be relevant to N1.2 or N2.2.

Literacy, language and numeracy:

At Level 1 and 2 the opportunities for speaking, listening and writing are similar to those for key skills. At Entry Level 1 to 3 they will be relevant to listening and responding, speaking to communicate, and engaging in discussion.

To understand some of the pH details (e.g. 6.5) learners will need a basic understanding of decimals. Bear in mind also that the cards contain plant names in both English and Latin, and technical terms such as 'waterlogging' or 'calcareous' and you may need to offer some learners individual help with reading or spelling these.

Section 2: Getting Better

Introduction

Reflecting on your own and your organisation's practice is an essential part of getting better. It involves:

- reviewing where you are now
- deciding where you want to get to
- planning how to get there
- reflecting on your progress.

This can be done by:

- continuing professional development for groups within or between providers
- working on your own. A key element of this process is reflecting on your practice.

This section contains resources to help to do this in four main parts:

- 1 **The learners' entitlement** (relevant to everyone).
- 2 **Mainly for teachers and trainers** (to inform your own continuous professional development).
- 3 **Mainly for programme managers** (to help you reflect on how you can better support teachers and trainers in meeting the learners' entitlement, and to support your own professional development).
- 4 **Mainly for the continuing professional development manager** (to help you improve practice across the organisation).

Each part suggests how the resource might be used to support improvements in three priorities:

Priority 1: Teaching theoretical topics

Priority 2: Linking theory and work experience

Priority 3: Managing the programme

Note that priority 1 is particularly relevant to the Common Inspection Framework (CIF), in particular to key question 2: How effective are teaching, training and learning?

Work experience (see priority 2) can include estate, farm, garden and other equivalent duties which take place at college as well as periods of work experience completed as part of a full or part-time course or apprenticeship, or other programme. A workplace supervisor can therefore include horticultural unit, farm, or other enterprise managers irrespective of location.

Many programmes will also include formal timetables, practical training sessions for which a session plan with detailed objectives has been prepared in the same way as for theory sessions. Although weaknesses exist in such practical teaching (relating mainly to the management of the sessions), these sessions have not been prioritised for attention in this set of resources.

Effective links between theory and practical training sessions are covered in priority 1 and priority 3.

Also, don't forget that your organisation may well have a person designated as a Subject Learning Coach who will be able to help you get the most out of your learning resources and will also help you, through peer coaching, to build on and improve your teaching skills.

The learners' entitlement



Programme planning starts with a clear picture of learners – who they are, their needs, interests and motivation for their course or programme. The teaching and learning resources in **Getting started** have been developed to take account of likely characteristics of learners studying this topic, and uses approaches to which learners like this have been shown to respond well.



It is equally important to consider what learners can expect from their learning experience, and this section sets out some of these aspects. These underpin the **Getting better** section, which looks at the ways different people – teachers and trainers, managers and continuing professional development managers – can help fulfil this entitlement.

This section looks at what the learner can expect under three priorities.

- Teaching theoretical topics (see table, page 39)
- Linking theory and work experience (see table, page 40)
- Managing the programme (see table, page 41)



Each table describes some things the learner can reasonably expect to experience, and gives examples of how the teachers and trainers have used the resources to help them gain this.

You can use these checklists:

- to help design lesson plans
- to reflect on individual teaching sessions
- to help evaluate a course or programme.

Priority 1. Teaching theory: what the learner can expect

This table focuses on what the learner can reasonably expect from theory sessions – for example, increased variety of approaches, increased activity and involvement of the learner, and creative use of specialist resources. Use this to reflect on your current practice. Are they all relevant to your learners? Are there others you would like included?

The learner can expect	Comments from teachers and trainers
<p>A working environment that:</p> <ul style="list-style-type: none"> ■ is conducive to learning ■ promotes active learning ■ gives opportunities to compare, analyse, and evaluate ideas ■ allows them to achieve the learning objectives made clear at the start. 	<p><i>'Learners were all involved and engaged and did the activities with enthusiasm – and showed an interest in the topic (and science).'</i></p> <p><i>'Good levels of discussion and checking/reinforcing learning amongst the groups.'</i></p>
<p>Individual attention so they can:</p> <ul style="list-style-type: none"> ■ work at a pace suited to their needs; challenged, but not overwhelmed ■ practise and improve their listening and numeracy skills ■ be clear about how well they are progressing ■ develop themselves to become expert learners. 	<p><i>'Learners lacking confidence benefited by being paired with other learners and by working in small groups.'</i></p>
<p>To see how theoretical topics relate to other parts of the programme:</p> <ul style="list-style-type: none"> ■ the vocational relevance of theory ■ the role of work placements ■ LLN and key skills. 	<p><i>'I learnt to work with others, communicating and discussing decisions.'</i></p> <p><i>'There was good teamwork within the group by working in pairs which allowed consultation in deciding which cards to put down.'</i></p>
<p>Knowledgeable, approachable teachers who:</p> <ul style="list-style-type: none"> ■ recognise the literacy and numeracy demands of the topics they need to teach ■ use teaching approaches that promote motivation and interest in the subject ■ respect and encourage them to give ideas and feedback ■ use good teaching and learning approaches and resources ■ manage learner behaviour ■ provide regular constructive feedback to learners. 	<p><i>'The session involved a good range of activities with change every 10–20 minutes.'</i></p>
Space to add your own ideas	

Priority 2. Linking theory and work experience: what the learner can expect

This table focuses on the need for clear links between theory and work experience, between on- and off-the-job training, between theory sessions and training on employers' premises. Use this to reflect on your current practice. Are they all relevant to your learners? Are there others you would like included?

The learner can expect	Comments from teachers and trainers
<p>Good links between the theoretical and practical elements of their programme so they:</p> <ul style="list-style-type: none"> ■ see how their off-the-job learning relates to their work placement ■ know how well they are progressing in their work placement. 	<p><i>'The practical session before the Soils card activity worked particularly well as the learner could relate the statements on the cards to what he had seen, felt and discussed whilst outside.'</i></p>
<p>To make the most of workplace opportunities:</p> <ul style="list-style-type: none"> ■ for learning ■ for assessing/accrediting their progress at work. 	<p><i>'The resources were easy to use. The main benefit was that they provided a good working record to complete the practical operations and for revision.'</i></p>
<p>Employers/supervisors who are:</p> <ul style="list-style-type: none"> ■ clear about their role and responsibilities including those relating to health and safety and equal opportunities ■ participating as fully as possible in supporting the learning ■ communicating with teachers and trainers about relevant off-the-job learning. 	<p><i>'We were able to use the resources to make a firm link between the theory lessons and our learners' work experience, and to provide supporting evidence for their portfolios.'</i></p>
Space to add your own ideas	

Priority 3. Managing the programme: what the learner can expect

This table focuses on the need for a coherent programme and coordination of the different topics and components. Use this to reflect on your current practice. Are they all relevant to your learners? Are there others you would like included?

The learner can expect	Comments from teachers and trainers
<p>A coherent programme with:</p> <ul style="list-style-type: none"> ■ complete coverage of the subject ■ a logical sequence to learning activities ■ no unnecessary duplication ■ clear and explicit links and cross-referencing ■ equality of opportunity in all aspects of the programme ■ appropriate emphasis on health and safety. 	<p><i>'Learners enjoyed the activity and felt that it could be extended into other aspects of their programme such as concrete mixes, building and landscaping activities. Could also include examples of plants that could be grown in the specific soil conditions as a precursor to the Thrive! activity.'</i></p>
<p>A varied approach which includes:</p> <ul style="list-style-type: none"> ■ a balanced range of learning opportunities ■ clear and appropriate opportunities for working on their own ■ appropriate exposure and practical applications, for example, talks and visits. 	<p><i>'Using the resources has kindled a number of ideas where similar resources could be used to teach topics and scientific principles.'</i></p> <p><i>'Learners were confident in their answers and about what they had learnt.'</i></p>
<p>A planned approach to assessment with:</p> <ul style="list-style-type: none"> ■ regular and constructive feedback on progress ■ opportunities for additional help ■ opportunities for additional work to address weaknesses and/or extend understanding ■ scheduled opportunities to formally review progress. 	<p><i>'Activities helped learners to study the topic in depth and provided a good working record to complete the practical operations and for revision.'</i></p> <p><i>'Learners were able to show their understanding with confidence of the topic through use of the resources.'</i></p>
Good co-ordination with partner organisations such as employers.	<i>'The teacher plans to share his experiences with supervisors in a team meeting.'</i>
Space to add your own ideas	

Mainly for teachers and trainers



This is written for practitioners – the teachers and trainers who work most closely with learners. It looks at some specific ways in which you can help support learner entitlement, organised under the three continuing professional development priorities from the previous section.

You may like to work through the following priorities, either as part of a coordinated continuing professional development programme, or on your own, to help you assess how you fare on some of the important issues which affect learners' experience.

There is no need to do this all at once.

- It may be more useful to try and set aside a little time each week to work through each priority.
- It will be useful to compare your results with another teacher or trainer, even if they are from a different subject area.
- You may be able to use the examples from other teachers and trainers to help with your planning. These can be found after each chart in the booklet and on the DVD and CD-ROM.

You can also use these checklists:

- to help design lesson plans
- to reflect on your individual teaching sessions
- to help evaluate your course or programme.

The aspects relate closely to the **Common Inspection Framework (CIF)**. For example:

- The first aspect of **Priority 1**: "Having a clear, documented understanding of each individuals' needs and progress", reflects Question 2 of the CIF, which as it is related to learners' needs states, "With learners, develop individual learning plans, informed by initial assessment, that are reviewed and updated regularly."
- The second aspect of **Priority 1**: "Establishing the access requirements and other needs of disabled learners", is directly related to Question 1 of the CIF regarding suitable resources and accommodation to allow full participation of learners.

Priority 1. Teaching theory: teachers and trainers

Use the table below to review your current practice and check progress.

Aspect	Award yourself a grade (1 = Outstanding 4 = Oh dear!)			Comments/examples for your practice (Please discuss with colleagues)
	Now (date)	Later (date)	Later (date)	
Do you: have a clear, documented understanding of each individual's needs and progress? establish the access requirements and other needs of disabled learners? create a clear session plan, including: clear learning objectives and clear links to the overall subject plan and related areas of work? identify the literacy and numeracy demands of the subject? provide a structured introduction linking to other work, stating aims and checking prior knowledge? provide frequent and well-chosen references to the vocational relevance of the session; including practical work, work placement, learner's experience? provide regular checks on all learners' understanding? provide a variety of group size and activity, including opportunities for learners to work on their own? provide a structured summary at the end, which also checks understanding and links to future work?				

Aspect	Award yourself a grade (1 = Outstanding 4 = Oh dear!)			Comments/examples for your practice (Please discuss with colleagues)
	Now (date)	Later (date)	Later (date)	
<p>Do you:</p> <p>plan how to manage learner behaviour and deal with late and disruptive learners?</p> <p>use language and visual resources appropriate to learners' level of understanding?</p> <p>use learning support to ensure disabled learners have access to the curriculum?</p> <p>provide structured opportunities for learners to develop their LLN, key, personal and study skills, and their understanding of health and safety and education and development?</p> <p>provide opportunities for learners to view different ideas, to stimulate comparison and evaluation?</p> <p>manage discussions with all learners effectively to ensure involvement, develop understanding and check learning?</p> <p>ensure you are up-to-date and well informed about the subject?</p> <p>use up-to-date, relevant, high quality teaching and learning resources?</p>				
Space for others you want to add				

How the resources can help

Here are three examples of how the resources were used to teach and review theory.

Pershore College

The group played **Soils**. Learners split into groups of six and started with just sand, silt and clay suits but later added organic matter and living organisms even though this had not been covered in previous sessions. The teacher moved around the groups checking answers and developing discussion to enhance and check understanding.

The teacher went through answers and gave further explanations. The teacher realised at this stage that it was possible to teach this topic through the resources as most learners had successfully classified the cards under organic matter and living organisms.

Learners analysed their own soil samples to assess soil composition and classification.

Bicton College

Learners worked in groups of three or four and worked with the **Soils** cards that had already been sorted by the teacher into subgroups: clay and sand, sand and silt, living organisms and organic, silt and clay. Each group of learners separated the cards between the two categories and checked their assessment against the full list on the handout. Differences were identified and debated. The completed handouts were collected to be used again at the end of the soil module to assess progress.

The **Soils** card activity was used most effectively to encourage the learners to reflect and apply knowledge gained. Working in small groups, learners discussed each descriptor and this prompted useful discussion about the characteristics. Playing the activity by restricting the choices to just two categories kept it fairly simple. This is an appropriate strategy for a group of learners new to the topic, and is an activity that can be repeated using all the categories when the learners have developed greater understanding.

CovWise

A trainer created a very stimulating variation of the **Soils** activity based upon Sevens. Learners were in pairs and it took about 20 minutes to play the activity once everyone was clear about the rules.

As these were entry-level mature learners, the trainer had taken out the organic matter and soil organisms suits to make it easier. However, suits for the two missing components could be incorporated for other learners. The trainer used the blank **Soils** cards to place numbers on the suits, which helped with the rules of the activity.

It was noted that it was useful for the learners to carry out the hand test prior to using the cards. For the hand test, the trainer used two handouts. Another trainer will also use visual aids including sand, silt and clay examples to do tests with a pH testing kit.

Priority 2. Linking theory and work experience: teachers and trainers

Use the table below to review your current practice and check progress.

Aspect	Award yourself a grade (1 = Outstanding 4 = Oh dear!)			Comments/examples for your practice (Please discuss with colleagues)
	Now (date)	Later (date)	Later (date)	
<p>Do you:</p> <p>provide opportunities to give and exchange information to the employer/workplace supervisor:</p> <ul style="list-style-type: none">■ on the programme - so understand how they fit in■ about learner progress? <p>involve the workplace supervisor in:</p> <ul style="list-style-type: none">■ planning on-the-job learning and assessment■ supporting the learning and assessment■ helping learners understand theory? <p>plan regular reviews of progress at work with the learner?</p> <p>advise learners how to develop their practical skills to complement their work in theory sessions?</p>				
Space for others you want to add				

How the resources can help

Here is how two providers used the resources to help link theory and practice.

Waverley Training

Learners worked in two groups, using the **Soil Preparation** cards to plan how to deal with a patch of derelict ground that was to be reclaimed and made suitable for herbaceous plants. Each group established an appropriate sequence and developed additional cards as required. The answers from the two groups were compared and the learners debated the reasons for the differences.

The learners visited off-site locations typical of the local area, for example, improved soil in a suburban garden; a large garden set in woodland and on sandy soil; a large garden around a farmhouse which had a clay subsoil. At each site the learners, working in two groups, were required to assess the site, describe the soil, undertake a pH test and identify possible work to improve the site. The learners returned to the centre to feed back their assessment of each site.

Most learners brought in soil samples and this encouraged their interest and involvement in assessing each soil type and testing the pH. The **Soil Preparation** sequence activity stimulated a good level of interest. A good debate between the two groups encouraged the learners to review and justify their choices.

D.A.R.T.

The learner did the **Soil Preparation** activity during a work place visit, relating the activities noted on the cards to work the learner was undertaking on a golf course. The learner filled in some blank cards with soil preparation activities that were not already noted on the cards. The learner was thinking of the sequence of activities that the learner follows whilst at work. The learner enjoyed the activity and would be happy to do it again in the future.

This proved to be a very effective activity that engaged the learner to such an extent that the learner began to write out his own cards. The level of challenge was about right for this particular learner. If it was more difficult the learner may well have become bored. The learner completed the activity on his own with little help from the teacher.

Priority 3. Managing the programme: teachers and trainers

Use the table below to review your current practice and check progress.

Aspect	Award yourself a grade (1 = Outstanding 4 = Oh dear!)			Comments/examples for your practice (Please discuss with colleagues)
	Now (date)	Later (date)	Later (date)	
<p>Do you:</p> <p>design comprehensive learning and delivery plans for each discrete topic, which include:</p> <ul style="list-style-type: none"> ■ logical subject development ■ clear links with related aspects ■ variety of learning opportunities <p>design detailed session plans with:</p> <ul style="list-style-type: none"> ■ clear learning objectives for technical and core aspects ■ clear links to the delivery plan ■ clear links to related areas of work, which are built on in an overt way? <p>plan assessment carefully:</p> <ul style="list-style-type: none"> ■ using assessment schedules that ensure a balanced load ■ making sure learners know about their assessment arrangements ■ giving learners constructive and supportive feedback ■ make adjustments needed to provide disadvantaged learners with equal opportunity? <p>exploit opportunities to develop the following in line with the team plan, and specify these in session plans.</p> <ul style="list-style-type: none"> ■ LLN and key skills ■ health and safety ■ equality of opportunity? 				

How the resources can help

Here is how two providers used the resources to help with managing the curriculum:

Shipley College

Using **Thrive!** the teacher split the group of 10 into five pairs and gave each group a score card to note reasons for their choices. The tutor circulated, giving guidance and reassurance to each pair. After 25 minutes a 'winner' emerged having found plants to grow in each 'plot'.

The teacher asked the winners to go through their choice of plants. This led to some very good discussions amongst the group before doing a second round of the activity.

The teacher introduced some plant dictionaries which the learners used to help complete their plots. Much discussion followed as to the benefit or otherwise of having certain plants in certain plots which the teacher linked to the pH topic she had been discussing earlier that morning. The learners showed a good knowledge of the topic.

Chichester

For the **Thrive!** activity a time limit of 15 minutes was imposed, followed by group discussion.

Learners were challenged to consider plant suitability, for example, whether lavender should be grown in a pot. The teacher was able to give individual and group support appropriately.

Learners' recording sheets ranged from incomplete to very detailed with plant characteristics and reasons to support selection. Learners were competitive and keen to 'win' the activity. The teacher advised learners to discuss their answers.

The tally sheet of correct answers showed clear progression from the previous session. One learner requested a copy of the activity to take home and play over Christmas. Scorecards show that plant choices are now more firmly justified.

Mainly for programme managers

This suggests ways you can help support learners, their teachers and trainers and your own professional development. The resources are organised under the three priorities explained earlier.

You can use the checklist to:

- Help you plan and design courses and programmes
- Evaluate your provision
- Identify possible improvements

You may like to work through the following sections, either as part of a structured continuing professional development programme or on your own, to help you assess your effect on learners' experience. **There is no need to do this all at once.**

- It may be better to set aside a little time each week to work through each section.
- It will be useful to discuss this with a teacher or trainer (ideally one you manage), and also to compare your results with another manager, even if they are from a different subject area.

Priority 1. Teaching theory: programme managers

Use the table below to review your current practice and check progress.

Aspect	Award yourself a grade (1 = Outstanding 4 = Oh dear!)			Comments/examples for your practice (Please discuss with colleagues)
	Now (date)	Later (date)	Later (date)	
Do you: provide clear, documented information on individual's needs and progress? make delivery plans, session plans, assessment schedules and targets readily available to all staff who need them? provide a clear structure for identifying literacy and numeracy needs, and for developing and assessing key skills, literacy, numeracy and personal and study skills? provide an appropriate learning environment and specialist resources? encourage staff to develop the 'expert learner'? provide regular opportunities for staff to compare and discuss ideas, approaches and share resources? ensure that your Subject Learning Coaches and regional networks are being used to best effect?				
Space for others you want to add				

Priority 2. Linking theory and work experience: programme managers

Use the table below to review your current practice and check progress.

Aspect	Award yourself a grade (1 = Outstanding 4 = Oh dear!)			Comments/examples for your practice (Please discuss with colleagues)
	Now (date)	Later (date)	Later (date)	
<p>Do you:</p> <p>provide clearly documented roles and responsibilities for workplace supervisors?</p> <p>provide clear points of contact?</p> <p>provide training for staff, learners and workplace supervisors in the use of on-the-job training plans to effectively link theory and work experience?</p> <p>regularly monitor progress towards completion of on-the-job training plans, involving staff, learner and workplace supervisor?</p> <p>coordinate assessment to fully involve workplace supervisors in appropriate ways?</p> <p>provide structured opportunities for the learner and workplace supervisor to review work experience and progress?</p> <p>ensure issues relating to health and safety and equal opportunities are emphasised and coordinated?</p>				
Space for others you want to add				

Priority 3. Managing the programme: programme managers

Use the table below to review your current practice and check progress.

Aspect	Award yourself a grade (1 = Outstanding 4 = Oh dear!)			Comments/examples for your practice (Please discuss with colleagues)
	Now (date)	Later (date)	Later (date)	
<p>Do you:</p> <p>provide clear leadership of key aspects, including overall programme, core technical areas, LLN and key skills, assessment?</p> <p>ensure that allocation of topics to teachers and trainers is clear and appropriate (and regularly reviewed)?</p> <p>coordinate session plans, delivery plans and other programme documentation to ensure comprehensive and coherent coverage?</p> <p>make delivery plans, session plans and assessment schedules readily available to all staff that need them?</p> <p>coordinate assessment effectively to provide appropriate load and coverage, ensure adjustments are made for disabled learners and outcomes are regularly fed back to teachers and trainers, and learners?</p> <p>provide timetables/allocations of time which allow flexible approaches to learning and link resources to teaching and learning needs?</p> <p>cont.</p>				

Aspect	Award yourself a grade (1 = Outstanding 4 = Oh dear!)			Comments/examples for your practice (Please discuss with colleagues)
	Now (date)	Later (date)	Later (date)	
<p>Do you:</p> <p>support effective communication through:</p> <ul style="list-style-type: none"> ■ team meetings, minuted and actioned ■ comprehensive information on individual learner progress ■ coordinating the technical aspects common to a number of subjects (for example science) to ensure their structured development? <p>coordinate LLN and key skills to ensure they are developed in a structured and progressive way?</p> <p>monitor equality of opportunity effectively and ensure that teachers and work placement providers are clear about their responsibilities?</p> <p>monitor health and safety effectively and ensure that teachers, trainers and workplace supervisors are clear about their responsibilities?</p>				
Space for others you want to add				

How the resources can help: programme managers

There are a number of examples of how the resources can help in **Getting started**, including how teachers and trainers have used the resources to develop key skills and links across the curriculum; check learning; encourage higher level learners to advance their knowledge by preparing questions for other learners; and provide inspiration for quizzes and team challenges. The activities have stimulated development of understanding of health and safety, and use of workplace experience in learning theory topics.

You may also wish to explore

Delivery plans can be reviewed, links with related topics identified and a logical sequence developed. Activities embedding key skills, LLN and assessment opportunities can be included, and copies sent to teachers in the team with requests for session plans. Team members can then discuss these with reference to appropriate sequence of delivery.

The modified delivery plan can be used in the introductory session to ensure learners are clear about content, outcomes, assessment schedule, work placement links, etc. It can be used to discuss (especially work-related) elements with employers.

The session plan can show links to key skills, LLN and to the work placement, including where learners can investigate workplace examples to help understanding.

There are several suggestions in **Getting started** of ways in which you can prepare learners for the activities or extend their work into other parts of the curriculum or with work experience. For example, you could encourage learners to use reference texts to support use of **Thrive!** to provide more information on the plants.

The handouts and poster can encourage employer involvement in helping their learners understand why tasks are undertaken.

The printable version of the cards on the **Thrive!** resources CD-ROM may be used for other topic areas, and links between topics explored using this medium.

The single learner version of the card activity may be used to make this available to learners on employers' premises, or through an intranet. Account may be taken of this independent learning opportunity when constructing delivery and session plans.

The lists in **Mainly for teachers and trainers** can be used to support them in reflection and improvement activities, and can also be used in discussion by the programme team to identify ways of sharing good practice and further employer involvement.

Mainly for the continuing professional development manager

The best practice characteristics listed under each continuing professional development priority can be used to help deliver a one-off event, or a longer term programme. This section gives a sample programme for a session covering priority 1 which can be adapted to the needs of your staff and for the priorities you wish to cover.

(In the Animal Transport pack, launched in September 2005, there is a DVD that relates the CPD event outlined below. You might like to view this DVD to help with your planning of the event.)

Outline programme for a continuing professional session for teachers and trainers based on Priority 1: Teaching theory

First session: Getting started [Whole group]

'The teaching of theory and background knowledge is a challenge in all forms of education and training - but it is a particular challenge for Land-based studies.'

'The skill of the tutor is still the main factor influencing the effectiveness of the learning resources.'

Discuss as a whole group the challenges involved in teaching soil theory (or similar subjects); see **About this project**, page 8, for further information. You may wish to collate/summarise responses on a flip chart. The following points may emerge.

- The subject is complex and detailed and there is a tendency to try to cram too much in at once.
- Teaching staff make the content more complex by introducing details at too early a stage, for example pH, cation exchange, and this distracts from the main messages.
- The topic needs to be addressed as a spiral curriculum – revisiting aspects later on and introducing new theory on the basis of an established understanding of the main concepts.

- Teaching theory. Many LBS learners have a much more practical focus and can find research and study skills hard.
- Handling mixed ability and experience. Even if they are all studying for Level 2 qualifications, variation between learners calls for skilled teaching.

'Planning should start with a clear picture of learners - who they are, their needs, their interests, their motivation for their course or programme. What are the characteristics of learners you teach?'

Use question and answer with the whole group, again possibly summarising responses on a flip chart. Responses might include the following.

- Age varies widely, with more mature learners than in animal sectors. Gender varies somewhat between sectors – for example, there may be more females on garden design courses and more males in agriculture.
- In colleges and work-based learning most learners are white. Cultural traditions influence choice of topics studied. Wider ethnic mix in prisons.
- Educational background varies. Many mature learners are well qualified but often lack a scientific background. Learners in prisons may have no qualifications but have the ability to learn.
- Young learners tend to have less practical experience than mature learners who may have started as a hobby.
- Motivators include career change, turning a hobby into a job, quality of life, enjoyment, creativity, working outside, practical work.
- Learners like to learn in practical ways – theory must appear relevant to the practical work. Many prefer to learn in 'short bursts'.

'The approach we are going to use starts with your learner. First we will agree a 'learner entitlement' that you can use to analyse your own practice. Then, look at how you as teachers and trainers [and managers - if applicable] might take your practice forward by considering what your learners need.'





Second session: The learner

Now divide the group into pairs, and ask them to consider/record:

'What do you think learners could reasonably expect during a good theory session?'

You can use the table **Priority 1: Teaching theory: what the learner can expect** (page 39) as a prompt for this session.



Bring the group back together for a summary session; take contributions from each pair and develop a list of learner entitlements; double check them against the table of entitlements from page 39, and add as required.

Third session: Teachers and trainers

Now divide the group into pairs, and ask them to consider/record:

Teachers and trainers:

'What can you do to meet the reasonable expectations of the learner developed in the previous session?'

Or, programme managers:

'What can you do to help teachers and trainers meet the reasonable expectations of the learner developed in the previous session?'

Use the table *Priority 1: Teaching theory: teachers and trainers* (page 43) as a prompt for this session. If managers are also present, use the equivalent table from page 51.

In a summary session take contributions from each pair and develop a list of 'How teachers and trainers can help', or 'What managers can do to help'.

Fourth session: Getting better

Discuss with the group how they could use the list(s) developed in the third session to help plan teaching and reflect on performance. Discuss ways the list could be used with programme managers to improve performance.

Finish the session by getting agreement that staff will use the list(s).

If the event is to be used as the starting point for a longer term approach to continuing professional development, use this session to link to follow-on work.

Some ideas for follow-on work (strategy for getting better).

The list developed in the third session of the event can be used:

- by individuals to plan and reflect on performance (as outlined in the fourth session)
- by line managers to support teachers and trainers to improve their performance, using it as a basis to identify individual training needs
- as a provider-wide approach to improving performance. The checklist can be used when preparing session and delivery plans, or as a basis for observing teaching.

You could also work towards a common understanding on what constitutes the higher 'grades' for the checklist items and use this to disseminate good practice. As these centre on learner experience and are agreed by staff, there is likely to be a degree of ownership for the process.

Other resources

National Learning Network resources (www.nln.ac.uk)

In the Amenity Horticulture section:

- Preparing the ground
- Introduction to soils
- Soil formation processes
- Weathering processes
- Soil analysis
- Climate

In the Environmental Health and Safety section:

- Arable farming and the environment
- LBC resources
- ADAS leaflets
- Video (e.g. Soil – the basis for life)

Websites

DEFRA: www.defra.gov.uk

Health and Safety Executive: www.hse.gov.uk

Soil net: <http://www.soil-net.com>

Horticulture embedded learning resources can be found at: www.dfes.gov.uk/readwriteplus/embeddedlearning

Learning and Skills Council:
Learners' entitlements (Good Practice) is available from LSC website. Publication reference: MISC/0341/03 www.lsc.gov.uk

Farming And Countryside Education www.face-online.org.uk

Glossary

Aims

Clear and concise statements that describe what the tutor, teacher or trainer hopes to achieve in a learning session.

CPD

Continuing Professional Development, sometimes referred to as staff development. Any activity that helps tutors, teachers and trainers maintain, improve or broaden their knowledge, understanding and skills, and become more effective in their role.

Differentiation

Differentiation is about identifying and addressing the different needs, interest and abilities of all learners to give them the best possible chance of achieving their goals.

ESOL

English for Speakers of Other Languages.

Expert learner

A learner who is encouraged and supported by their teachers/trainers and programme of study to develop a range of effective learning styles and to be confident, informed and inquisitive, taking on responsibility for managing their own learning.

The Quality Improvement Agency (QIA) is working with other agencies across the schools and learning and skills sectors, to develop a definition of and standards for the 'expert learner'.

ILT

Information and Learning Technology. Supporting and delivering effective learning supported by technology.

Initial assessment

The overall process of assessing individual learners' needs, aptitudes, preferences and prior learning in order to plan and provide an appropriate learning programme to meet their needs.

KS

Key Skills

LBS

Land-based studies

Learning outcomes

Statements indicating what a learner should know/be able to do at the end of a given period.

Learning programme

Strategic programme for learning including schemes of work and session plans that ensure coherence and continuity across the learning experience.

LLN

Language, literacy and numeracy.

Objectives

Precise and measurable statements describing what you intend a learner to learn in the time specified.

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Reflection

The process whereby a learner takes time to consider an experience they have been involved in or any new learning experience and reflect on how it has been done. It may also refer to teachers' and trainers' consideration of their own work.

Self-assessment

The type of assessment undertaken by the keener in order to evaluate his or her performance, strengths and weaknesses. It may also refer to teachers' and trainers' consideration of their own work.

Session plan

A timed plan for a learning session that specifies aims, learning objectives, learning activities, resource and support needs.

Acknowledgements

Thanks to staff and learners at each of the providers who worked with us to develop and pilot resources.

Thanks also to:

Land Based Colleges National Consortium (who developed the initial resources)

Many others have also helped, in informal discussion, formal consultation or other ways; thank you, too.

Annex 1: Overall subject plan and session plans



This annex contains examples originating from teachers and trainers that may help you plan how you will use the resources.

- The overall subject plan suggests factors to consider when planning your approach to teaching soils. It is a subject-based plan, and will need to be converted to session plans to meet the individual needs of your learners.
- The session plans show how teachers and trainers designed sessions based around the resources. They show possible formats and approaches.

Well-documented plans can help address a common weakness highlighted in the 2002-3 inspection summary poor programme management. (Summaries of inspection findings can be found at www.ofsted.gov.uk and www.ali.gov.uk, the Ofsted and ALI web sites).

Note: The overall subject plan and session plans are particularly relevant to **Priority 3:** Programme management



The overall subject plan

The delivery plan will need to be developed to suit your particular situation. It is a subject-based plan, and will need to be converted to session plans to meet the individual needs of your learners. It contains five sections:

- Introduce the topic
- Build understanding and knowledge
- Practical experience
- Reflect on learning
- Apply learning

The session plans

Sample session plans show some ways of planning and organising practical and theory sessions.

N.B. The plans do not constitute exemplars incorporating all aspects of good practice, they are provided to give you some ideas and to adapt for your learners and your circumstances.

Overall subject plan for development to meet your need

This provides a possible framework for learners working towards achievement at Level 2 – regardless of the qualification learners are working towards. It is a subject-based plan, and will need to be converted to session plans to meet the needs of your learners.

Overall subject plan for development to meet your need

Stage of learning	Purpose of this stage	Key content	
Introduce the topic	Overview of the job and why it is important. Ascertain learners' prior knowledge and experience of work with soil	<p>The plant gets most of what it needs – minerals, light, water, air, anchorage – from the soil</p> <p>Soil is full of life It is the basis of our work We can damage it or nurture it</p>	
Build understanding and knowledge	More detailed information about the topic and good working practices	<p>Components of soil (or growing medium): Sand, silt, clay, organic particles, water, air, invertebrates, roots</p> <p>Characteristics of soil components (size, water-holding etc.)</p> <p>Impact of components on texture and structure</p>	
Practical experience	Put theory into practice	Reinforce principles	
Reflect on learning	During this stage learners can reflect on what they have learned from experience	<p>How theory is applied in the workplace</p> <p>What else has been learned from experience</p>	
Apply learning	Help learners reinforce learning and apply their learning in other contexts	<p>Different plants thrive in different soils</p> <p>Reinforce what plants need</p> <p>How you can help plants thrive by working with the soil/media?</p> <p>Matching plants to soil and site</p> <p>Improving the soil to help plants thrive</p>	

	Example teaching approaches	Resources	Curriculum links/ differentiation
	Group discussion or one-to-one discussion, relate to practical work	Soils and plants Cards from Soils for preparation Handout What makes a plant grow and Testing soil	List/discuss what soil does (to encourage thought on soil as a natural resource to protect, and a provider of environmental services)
	Define terms Cake metaphor Compare different components Particle sizes Use the soil triangle to show the impact of different components on soils	Handout: What's in soil? and Soil components Soils card activity to develop knowledge	Discussion on soil formation. Link to what a plant needs. Lead into the need for photosynthesis and soils contribution to this.
	Use soil samples from workplace, college or own garden to do tests (finger and thumb, listening, pH tests) Use soil testing kits	Soil Preparation activity to prepare for practical work	Cultivation techniques and their effect on the soil. Extension activity for Soil Preparation
	Ask probing questions to encourage learners to reflect on their experiences Group discussion – where learners share experiences and compare approaches Group quiz – learners answer questions in small groups. The group with the most correct answers wins	Poster: What's in soil? Soils as a revision exercise Thrive! to make links to other subjects e.g. cultivation	Improving own learning and performance Extension activity to Soils Different adaptations of Thrive! to help meet individual learning needs
	Give examples of cultivated and indigenous plants Discuss local plants Select preparation activities for given scenarios Select appropriate plants for soils and sites	Plants Handout: Soil water Soil Preparation activity to reinforce learning Thrive! activity	Cultivation Maintenance Plant selection (Use Thrive! extension activities)

Sample session plan for horticulture

Aim: To revise and extend knowledge of constituents of soils	
Course: First Diploma Horticulture Date, venue:	
Objectives: <ul style="list-style-type: none"> Define terms used in definitions of soil Explain the role of the main soil components List seven characteristics of the different soil types 	Resources, equipment: "What's in soil" handout/poster "Soils" activity cards and glossary of terms Time available: 50 minutes Learning activities: Interacting, some group work. Opportunities for ILT: Use websites to view crop information. Start from www.face-online.org.uk for photos, www.defra.gov.uk for agricultural information, www.nln.ac.uk for NLN information and resources Accessibility / H&S / other: <ul style="list-style-type: none"> Can they all see / use the different coloured boards? Consider having soil samples on hand to view. Ensure hands washed at end of session
Prior knowledge / activities: Will have used activity previously Will have looked at soil types in situ	
KS / LLN links / support: Communication, C1.1, C2.1a Problem solving, PS1.1, PS2.1 (Avoid placing learners who lack confidence in reading in "read aloud" situations.)	
Time: 10 min 30 min 5 min 5 min	Introduction: <ul style="list-style-type: none"> Register, absences, objectives of lesson. Link back: Knowledge of soil and field terms, issue glossary of terms previously covered, discuss. Development: In groups, look at the "what's in soil" handout/poster and discuss how each item is relevant to soil types, plants and planting. Note discussions and give feedback. Group work: Explain the Soils activity, gather back the glossary of terms already issued, split into groups – each group to choose a method of using the activity. Options include; matching, sevens, rummy, "Soitaire". (For early completing groups consider using the extension and differentiation suggestions for the Soils activity described in the booklet.) Conclusion: Check understanding of technical terms. (Consider preparing a gapped handout to use as final check.) Ask learners for their reactions to the session Link forward: Next lesson; link to soil improvement and soil water Private study: An interactive version of the activity can be found on the learner CD-ROM. Provide the learner with the CD or, if it's on the local intranet, ensure the learner knows how to gain access.
Reflection on session	
Teacher/trainer (consider which parts of the session were effective and why)	Learners (consider whether the activities were suitable for all learners and the session helped to develop the expert learner)

Sample session plan for agriculture

Aim: To develop understanding of the relationship between crop and the soil in which it grows	
Course: First Diploma Agric. Date, venue:	
Objectives: <ul style="list-style-type: none"> • Explain information on crop information labels • Suggest appropriate cropping for fields of different soil types, conditions and aspects • Describe actions to help improve the soil for cropping 	Resources, equipment: Thrive! resources; text books; glossary of terms. 'Blank' boards from CD-ROM Time available: 1 hour Learning activities: Need to be doing, interacting, where possible. Some motivated by element of competition. Opportunities for ILT: Use websites to view crop information. Start from www.face-online.org.uk for photos, farm information, other site links? Accessibility / H&S / other: Can they all see / use the different coloured boards? Reinforce safe planting techniques: manual handling, hand hygiene.
Prior knowledge / activities: Soils activity (understand soil characteristics). Introduction of Thrive! boards (discuss factors affecting cropping decisions (pH, topography, drainage) Use of reference texts / websites.	
KS / LLN links / support: Communication / problem solving Two mature learners (briefed in advance) to work with learners for reading support / English as second language	
Time: 10 mins 10 mins 30 mins 5 min 5 min	Introduction: <ul style="list-style-type: none"> • Register, absences, objectives of lesson. • Link back: Knowledge of soil and field terms (use Thrive! boards to prompt and act as 'warm up'). Issue glossary of terms previously covered, discuss. • Development: Use version of Thrive! which requires score cards / boards to be set up (includes use of dice as more active introduction to match learning styles). • Issue score cards: Explain (Q&A) examples of information to put on score card. Use to revise soil type knowledge and introduce concept of soil improvement. • Issue crop information cards. Re-cap on soil terms while learners view example cards. • Explain rules of play. • Group work: Three to a board. Go round groups, helping individuals as needed. Question individuals in each group to check understanding and share knowledge among the whole group, on: range of possible cropping options / appropriate matching of crop to fields / understanding of reasons for matching / discussion of soil improvement to help plant thrive. Look for: thoughtful completion of score card up to and including 'reason chosen' column (early completing groups to attempt final column as an extension activity). • Conclusion: Which groups have planted all their plots? Q&A session to whole group to check / share understanding. Check score card completion. • Ask learners for their reactions to the session • Link forward: Next lesson, further work on the other columns of the score card; link to soil improvement. • Private study: Suggest view appropriate websites (see above) for farm studies and crop photos / information; bring crop photos in to next session if they can be printed.

Reflection on session	
<p>Teacher/trainer (consider which parts of the session were effective and why)</p>	<p>Learners (consider whether the activities were suitable for all learners and the session helped to develop the expert learner)</p>

Annex 2: Example links to external qualifications

Level 2 NVQ programmes; relevant units:

- Agriculture: Unit AgC4 Prepare and cultivate sites for planting extensive crops
- Horticulture: Unit 002 Establish plants outdoors and in particular Element 002.1 Prepare ground for establishing plants
- Environmental Conservation: Unit CU86 Establish habitats and in particular Element CU86.1 Prepare sites for habitat establishment
- Edexcel Level 2 BTEC First Diploma in Agriculture: Unit 3 Introduction to husbandry and Unit 8 Crop production
- Edexcel Level 3 BTEC National Diploma in Horticulture: Unit 1: Principles of plant and soil science

Further links at other levels, such as for Edexcel Level 3 BTEC National qualifications may also be useful.

Key skills and LLN; opportunities for all six key skills and in particular:

- communication, problem solving and working with others are central to planning use of soil
- there is scope for application of number in costing and calculating quantities
- using the approaches in this development plan and reflecting on learning involve improving own learning and performance.

Links to external bodies

City and Guilds	www.city-and-guilds.co.uk
NPTC	www.nptc.org.uk
Edexcel	www.edexcel.org.uk
QCA	www.qca.org.uk
LANTRA	www.lantra.co.uk

Guidance

For key skills: the Key Skills Support Programme provides a wide range of support and guidance including training, materials, consultancy and newsletters. See its website on www.keyskillssupport.net.

In particular, the programme has produced good practice guides with ideas about how to support each of the key skills. There are versions for both work-based providers and for colleges. See <http://www.ksspforwork.org.uk/guides.php> and <http://www.keyskillssupport.net/supporting/publications/>

You can also download a number of resources for use with learners, including worksheets and assignments which are tailored to different vocational sectors and which can be adapted for other groups of learners. See <http://www.ksspforwork.org.uk/resources.php>

For literacy, language and numeracy: the *Employer Toolkit*, developed under the Skills for Life programme, includes techniques for identifying literacy and numeracy needs within an organisation, recommendations on developing the most appropriate training and resources for use within the workplace. It is available on CD-ROM (ref: ETKV1/CD20020) or in hard copy (ref: ETKV1-2002) and can be ordered free by calling learndirect on 0800 100 900. See www.dfes.gov.uk/readwriteplus

Also within the Skills for Life programme, literacy and numeracy booklets have been produced under the *readwriteplus* brand, covering basic skills entry Level 1, 2 and 3 and Levels 1 and 2. The materials can be found at http://www.dfes.gov.uk/readwriteplus/Document_Bank. In addition, the materials for embedded learning, which cover over 20 vocational and community contexts and are mapped to core curricula for literacy and numeracy, include some resources for horticulture. See www.dfes.gov.uk/readwriteplus/embeddedlearning. See also the skills for work information, advice and guidance at www.dfes.gov.uk/readwriteplus/skillsforwork.

Annex 3: Rationale for development of teaching and learning resources

This annex outlines the rationale behind the resources, based on considering the needs, characteristics and perceptions of LBS learners. It draws on the messages provided by a consultative group drawn from colleges and other providers who attended the initial specification meeting in July 2004.

The learners

The consultative group identified the following key points about the target audience.

- Age varies widely, with more mature learners than in animal sectors.
- Gender varies somewhat between sectors – for example, there may be more females on garden design courses and more males in agriculture.
- In colleges and work-based learning most learners are white. Cultural traditions influence choice of topics studied. Wider ethnic mix in prisons.
- Educational background varies. Many mature learners are well qualified but often lack a scientific background. Learners in prisons may have no qualifications but have the ability to learn.
- Young learners tend to have less practical experience than mature learners who may have started as a hobby.
- Motivators include career change, turning a hobby into a job, quality of life, enjoyment, creativity, working outside, practical work.
- They like to learn in practical ways – theory must appear relevant to the practical work. Prefer to learn in 'short bursts'.

The consultative group agreed that the resources should be broadly for learners working towards achievement at Level 2, but form the basis for extending to Level 3 work. Some of the resources must be capable of use at Level 1.

Rationale for the resources chosen

The resources were developed for the following reasons.

- To provide appropriate resources for a target audience of learners who tend to prefer a practical, kinaesthetic approach to learning. For example, **Soils** and **Thrive!** both offer kinaesthetic experiences to learners.
- To help learners get the 'whole picture' in terms of understanding soil. The subject is complex and detailed and there is a tendency to try to cram too much in at once. The resources are designed to provide a range of learning opportunities, building towards the 'whole picture'. Some of the resources can be used to introduce new topics and help learners develop their knowledge, for example, **What makes a plant grow?**, **What's in soil?** and **Testing soil**; others can be used to extend knowledge, for example the handouts on **Types of soil** and **Soil water** could be used after, the **Soils** activity.
- To support active learning in a topic area that is often seen as boring by many learners and where the consultative group felt that teaching methods tend to be dull. **Soils** and **Thrive!** both provide opportunities for active learning.
- To encourage participative learning by supporting group activity. For example, **Soils**, **Soil Preparation** and **Thrive!** all provide opportunities for a highly active approach to learning.
- To encourage links with practical work and work experience. For example, during work experience learners could complete the **Soil Preparation** data sheet with employers, using a site in the workplace. They could then use the preparation activity cards to plan how to prepare the soil for planting either near- or off-the-job.
- To support the spiral curriculum – the resources need to be useable at different stages, with scope for revisiting aspects later on and introducing new theories on the basis of an established understanding of the main concepts. For example, **Soils** could be introduced early in the learning process, to help learners acquire and develop their knowledge of the topic. It could also be used later in the learning process to help learners revise or deepen their knowledge of the topic.
- To support links to other parts of the curriculum. For example, **Thrive!** can be used to link work on soils to other topics forming part of the programme and to LLN and key skills. Learners could research the availability of each plant chosen, cost the proposed planting, calculate gross margins or the machinery required to grow the crop, or plan the maintenance requirements of the completed planting.
- To support learning in a wide range of settings. Horticulture in particular is studied in prisons and programmes for the unemployed as well as in colleges and work-based providers. Learners on some programmes might aspire to reach Level 1 as their highest achievement, on others, may only start at Level 2 or higher. The resources can be used in the full range of providers, and across full- and part-time provision, young people and adults.

Annex 4: CPD CD-ROM contents

- **Home**
Introduction and shortcuts to the sections on the CD-ROM.
- **About this project**
Information on why and how the resources were developed together with an outline of what's in the pack.
- **Getting started**
Links to the three main activities, tips from teachers and trainers on how to use them, together with links to all the downloadable resources. Also links to the interactive (CD-ROM-based) activities.
- **Trainers and teachers**
Case studies from organisations that used the activities. Reflections from teachers, trainers and learners about using the activities.
- **Programme managers**
Introducing the three priorities and how they are linked to learner entitlement and the improvement of the learners' experiences. Comments from teachers, trainers, managers and learners.
- **Getting better**
A more detailed look at the three priorities with downloadable self-reflection charts for teachers, trainers and managers. A description of a continuing professional development event that can be used to introduce the resources to colleagues in the organisation.