

Unit 1: Principles of Flower and Foliage Material Conditioning and Use

Unit code:	D/602/0883
QCF Level 3:	BTEC National
Credit value:	5
Guided learning hours:	30

● Aim and purpose

This unit aims to develop learner understanding of the principles of flower and foliage material conditioning and use and how this is applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

● Unit introduction

In this unit learners will develop an understanding of the principles and processes involved in preparing fresh floral materials for retail sale or use. Learners will need to know the botanical identification of a wide range of commercial flowers and foliage and explain scientific nomenclature. The unit develops learner understanding of the characteristics of cut materials, stem type, colour and form, vase life and commercial availability, and those materials which are poisonous and/or irritant. Learners will investigate global flower production and discuss social ethics, economical and environmental issues and to identify quality marks and standards, as used in the floriculture trade.

Fresh materials are retail florists' most valuable commodity. A business' image relies on the quality of the finished product, therefore the importance of the correct conditioning, prioritisation and storage of cut flowers and foliage cannot be overstated. Recognising quality problems with cut materials early and taking action quickly can limit adverse effects on the business. The unit considers the influence of environmental conditions, including the effects of ethylene, and the commercial methods used to limit these effects.

A suggested list of cut materials for identification is provided.

● Learning outcomes

On completion of this unit a learner should:

- 1 Know commercial cut flowers and foliage
- 2 Understand the conditioning process and associated problems.

Unit content

1 Know commercial cut flowers and foliage

Identification: the botanical identification of commercial cut materials

Description: characteristics of cut materials including variances in form and colour; effective conditioning requirements for stem structure (eg soft, woody, semi-woody, hollow and those with latex-sap); expected vase life and availability; materials which are an irritant or poisonous

Nomenclature: scientific plant nomenclature, format and purpose; the work of the International Botanical Congress (IBC), the International Code for Botanical Nomenclature and the International Code of Nomenclature for Cultivated Plants (ICNCP, Cultivated Plant Code)

Global flower production: major growing areas and materials cultivated including within the UK; ethics of flower production; corporate social responsibility; economic and environmental issues; influence of floral trade organisation eg Florverde – Colombian Flower Growers Trade Association, Horticultural Commodity Board, The European Union, the Fair-trade Foundation

Quality trademarks: improvements in quality initiated and governed by organisations such as Flora Holland Quality Control Service, MPS-Florimark and Fair Flowers Fair Plants

2 Understand the conditioning process and associated problems

Conditioning process: methods used to unwrap/unpack; post-harvest handling; the conditioning process and recommended best practices; specialist methods for hydrating materials

Problems: indicators of poor quality or evidence of premature senescence eg broken or damaged materials, wilting, sweating, evidence of botrytis, mature stamens and pollen producing anthers, a parchment like, orange peel effect in petals particularly roses and lilies, spotted or marked foliage particularly seen in exotics and abscission in *Chamelaucium* (premature flower drop)

Prioritisation of materials for conditioning: dry packed flowers and foliages, aqua packed flowers, vacuum packed foliages; length of time in transit; valuable and vulnerable materials and those for special orders

Environmental effects: high/low temperatures; high/low humidity; direct and indirect sunlight; draughts and importance of temperature control; ethylene exposure

Commercial methods used to limit effects: the use of flower food products; good standards of hygiene; storage facilities; monitoring and vigilance; use of commercial treatments for ethylene sensitive materials; benefits of ventilation

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and Grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 identify selected commercial cut flower and foliage materials, including variance in colour and form [IE, CT, SM]	M1 explain, in detail, scientific plant nomenclature as applied to commercial flower and foliage material	D1 discuss global flower production associated with the major growing regions of the world, including the UK.
P2 describe selected commercial cut flower and foliage materials, acknowledging those that are irritant or poisonous [IE, CT, SM]		
P3 outline stem structure, vase life and availability and major growing areas for selected cut flower and foliage materials [IE, CT, SM]		
P4 explain the conditioning process identifying best practice and specialist methods	M2 explain commercial methods used to limit the influence of ethylene and other adverse environmental conditions.	
P5 identify problems that can occur during the conditioning process [IE, CT, SM]		
P6 explain the prevention and/or resolution of identified problems, including optimum storage requirements [IE, CT, SM, RL]		
P7 explain prioritisation when conditioning cut flowers and foliage. [IE, CT, SM]		

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

Delivery of this unit will involve practical assessments, written assessments, independent learner research using a range of resources, books, journals and the internet, visits to suitable collections and will link to work experience placements.

This unit links closely with *Unit 2: Practical Conditioning and Use of Flower and Foliage Materials*, and the delivery and assessment of the identification of materials spans both units. An extensive list of materials for identification is provided, and centres can select materials for assessment to suit availability and resources. However, learners should be familiar with as many materials on the list as possible. Learners should be given the list to study independently, as well as to identify and handle materials in taught sessions.

Tutors delivering this unit have opportunities to use as wide a range of techniques as possible. Supervised, practical floristry workshops to identify and condition materials, demonstrations of processes and conditioning methods, lectures, discussions, seminar presentations, site visits, internet and/or library-based research and the use of personal and/or industrial experience would all be suitable. Delivery should enthuse, stimulate and motivate learners' Involvement in educational projects, where learners see and handle cut flowers and foliage, will provide an excellent learning opportunity, such as in-house or national competitions (UK Skills), open days and demonstrations where learners assist designers. Relevant industry-related visiting speakers, educational visits and/or study tours, for example IPM Essen, International Hortifair and Flora Holland, will be useful.

Assessment of this unit will involve written assessment/assignments, practical assessments to identify materials, projects and presentations with images.

Work placements should be monitored regularly in order to ensure the quality of the learning experience. It would be beneficial if learners and supervisors were made aware of the requirements of this unit before any work-related activities are undertaken so that naturally occurring evidence can be collected at the time. For example, learners may have the opportunity to condition incoming materials or attend when Dutch lorry wholesalers visit the shop. Learners should ask for observation records and/or witness statements to be provided as evidence of this. Guidance on the use of observation records and witness statements is provided on the Edexcel website.

Whichever delivery methods are used, it is essential that tutors stress the importance of a safe working environment. Health and safety issues relating to working in a floristry environment must be stressed and reinforced regularly, and risk assessments must be undertaken before any practical activities.

Tutors should consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments learners are taking as part of their programme of study. This unit links with all practical units where flower materials are identified and develops practical skills and understanding further.

Learning outcome 1, looks at the formal identification of materials and the study of nomenclature. Delivery could be through practical sessions where learners are conditioning incoming materials or through formal lectures. It is important that learners observe as many live specimens of plant material as possible and do not rely on the internet or other resources for information on the characteristics of the materials. Learners are required to investigate and discuss global flower production, including areas of the UK, and the materials cultivated. They need to investigate social ethics and environmental and economic issues, and the work of trade organisations in identifying quality standards and quality trademarks. Delivery is likely to be in the form of discussions, formal lectures and independent learner research. Links with international flower farms would add relevance to the subject and learning process, as would educational visits and visiting expert speakers.

Learning outcome 2, requires learners to understand the processes and best practices involved with conditioning flower and foliage materials, that methods used to condition materials should be documented

and when to use specialist methods. Problems with quality and post-harvest handling should be recognised and learners need to understand how best to resolve or prevent problems. It is important that learners know how to prioritise materials for conditioning and optimum storage. Learners should investigate the influence of ethylene and other adverse environmental conditions on the quality and vase life of cut materials and explain commercial methods used to limit these effects. Delivery is likely to be in the form of supervised, practical floristry workshops, for example an experiment could be set up with flowers exposed to various environmental conditions and the effects monitored, formal demonstration lectures, discussions and independent learner research.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment
Introduction to the unit aims, objectives and assignments.
Identification of materials – independent research and identification of flower materials used, recording results photographically.
Discuss the botanical naming of plant materials.
Investigate global flower production, areas and the flowers cultivated and exported.
Research wholesalers/flower producers.
Discuss the social ethics surrounding flower production, economic and environmental issues.
Identify quality marks associated with flower production – Fair trade, MPS Florimark, Fair Flowers Fair Plants.
Assignment 1: Flower and Foliage Materials (P1, P2, P3)
Assignment 2: The System of Nomenclature and Discuss Production of Flower and Foliage Materials (M1, D1)
Conditioning process – theory.
Investigation into the influences of ethylene and other environmental effects on quality and vase life of cut materials.
Assignment 3: Conditioning of Cut Materials (P4, P5, P6, P7, M2)
Processes, specialist methods, problems and the importance of prioritisation.
Unit review.

Assessment

For P1, P2 and P3, learners must identify 50 cut materials and produce an illustrated training manual for floristry staff. They would need to identify the botanical name, give a description, including colour and form, and identify if the material is known to be poisonous or irritant. Learners will need to define stem structure, indicate vase life and availability and include an image. The assignment could be presented as a spiral bound manual containing information in table format, a series of PowerPoint presentations, a report including spreadsheets, e-portfolio or Photobook including text. A minimum of 50 materials should be identified across the flower and foliage lists.

For M1 and D1, learners are required to explain the system of nomenclature for flowers and foliage and investigate and discuss the global production of flowers and foliage, including those produced in the UK. Evidence relating to the system of nomenclature could be presented as an annotated poster or essay. The investigation into global flower production, materials cultivated, ethics, and quality marks and standards could be presented as a PowerPoint presentation, movie clip, magazine article or essay.

P4, P5, P6, P7 and M2 require learners to explain the conditioning of cut materials, covering the processes, best practice and specialist methods involved. The problems, solutions or preventive methods, and the importance of correct storage and prioritisation, should be described. Learners are also required to evidence the effects of ethylene (C₂H₄) and other environmental conditions on flower quality and vase life, explaining the commercial methods used to limit these.

Evidence could be presented as a training aid for floristry staff in the form of a podcast, journal or report. The method chosen should document the correct conditioning process, including methods of best practice, possible problems, prevention and solutions, optimum storage and prioritisation. As evidence for M2, an appendix should be added providing information on the influence of ethylene (C₂H₄) and other adverse environmental conditions on quality and vase life.

Programme of suggested assignments

The following table shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, P3	Flower and Foliage Materials	You are required to produce an illustrated training manual for floristry staff identifying 50 commercial cut materials.	PowerPoint presentation. Report. Manual. E-portfolio. Photobook.
M1, D1	The System of Nomenclature and Production of Flower and Foliage Materials	In order to promote the sale of flowers, you are required to explain the method used to classify flowers and foliage and give a presentation on global flower production, including ethical issues.	Annotated poster explaining classification. PowerPoint presentation. Movie clip. Magazine article. Essay.
P4, P5, P6, P7, M2.	Conditioning of Cut Materials	As a training aid for floristry staff produce a journal to document the conditioning process, including methods of best practice, problems and solutions, storage and prioritisation. Include an appendix which explains the effects of ethylene (C ₂ H ₄) and other environmental conditions on quality and vase life.	Journal. Podcast. Report.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Land-based sector suite. This unit has particular links with:

Level 3

Practical Conditioning and Use of Cut Flower Materials

Essential resources

Learners will need access to research resources, books, periodicals, specialist publications, CD ROMs and the internet. Classrooms with the facilities to deliver presentations to professional standards using the latest technology would motivate learners. Visits to floristry events in the UK and abroad, for example International Hortifair, IPM-Essen, and to wholesalers and growers would be useful.

Learners will need regular access to a commercial range of seasonal fresh flowers and foliage materials and access to a suitable area with a water supply for preparing and conditioning cut flowers and foliage.

Equipment needed will include flower buckets, expansion buckets or frames, vases, flower and foliage food, suitable height tables/work surfaces, and refrigerated storage facilities. Suitable arrangements should be in place to dispose of or recycle waste in accordance with legislation.

Tools needed (ensuring compliance with Criminal Justice Act 1998 and Knives Act 1997) will include floristry scissors, knives, secateurs and plastic rose thorn strippers.

Learners should have access to PPE, including aprons/tabards and protective gloves as appropriate.

Employer engagement and vocational contexts

Centres are encouraged to develop links with the floristry industry to give learners an insight into commercial methods and principles. This may be through floristry shops, wholesalers and Dutch flower lorries etc.

Indicative reading for learners

Textbooks

Batho R, Kay J and Waugh B – *The Advanced Guide to Floristry* (Murdoch Books, 1998) ISBN 9781853915178

Batho R, Kay J and Waugh B – *The Beginner's Guide to Floristry, 2nd Edition* (Murdoch Books, 2001) ISBN 9781853917875

Gelein C and Joore N – *Decorative Cut Flowers* (Cassell, 1988) ISBN 9780304322336

Nowak J – *Postharvest Handling and Storage of Cut Flowers* (Timber Press, 1990) ISBN 9780881921564

Unknown – *Foliage for Florists, 2nd Edition* (The Society of Floristry, 2006) ISBN 9780955304309

Vaughan M – *The Complete Book of Cut Flower Care* (Timber Press, 1998) ISBN 9780881924121

Publications and audio-visuals

Care and Handling video – *Flower Council of Holland*

Cut Flower booklet – *Flower Council of Holland*

Cut Flower Care booklet – *Flower Council of Holland*

Websites

www.floraholland.com

www.flowercouncil.org

www.flowers.org.uk

Flora Holland

Flower Council of Holland

The Flowers and Plants Association

Flower and Foliage Materials Lists

BASIC COMMERCIAL MATERIALS

FLOWERS

Aconitum napellus

Agapanthus

Allium

Alstroemeria

Anemone coronaria

Anigozanthus

Anthurium andreaeanum

Aster spp

Bouvardia

Bupleurum griffithi

Campanula spp

Carthamus tinctorius

Celosia argentea cristata

Chamelaucium uncinatum

Chrysanthemum indicum

Cymbidium Orchid

Dahlia

Delphinium ajacis

Dendrobium

Dianthus caryophyllus

Eremurus

Eryngium

Euphorbia fulgens

Eustoma russellianum

Freesia

Gerbera

Gladiolus

FOLIAGES

Arachnoides adiantiformis

Asparagus setaceus

plumosus

Asparagus umbellatus

Aspidistra elatior

Buxus sempervirens

Chamaecyparis lawsoniana

Eucalyptus cinerea

Eucalyptus parvifolia

Fatsia japonica

Galax aphylla

Gaultheria shallon

Hedera spp

Hosta

Hypericum

Ilex spp

Myrtus communis

Philodendron 'Xanadu'

Pittosporum tobira

Pittosporum tenuifolium

Prunus spp

Ruscus hypophyllum

Salix babylonica 'Tortuosa'

Viburnum tinus

Xerophyllum tenax

FLOWERS

Gloriosa rothschildiana
Gypsophila paniculata
Helianthus annuus
Hippeastrum
Heliconia caribaea
Hyacinthus orientalis
Iris hollandica
Lathyrus odoratus
Liatris spicata
Lilium (Asiatic hybrids)
Lilium longiflorum
Lilium (Oriental hybrids)
Limonium sinuatum
Mathiola incana
Molucella laevis
Narcissus
Nerine bowdenii
Ornithogalum thyrsoides
Phlox
Ranunculus
Rosa
Scabiosa caucasica
Scilla
Sedum spectabile
Solidago
Syringa vulgaris
Trachelium caeruleum
Triteleia corrina
Tulipa spp
Veronica
Zantedeschia

FOLIAGES

CUT FLOWERS – EXTENDED COMMERCIAL MATERIALS

Achillea filipendulina	Leucadendron
Acacia dealbata	Lilium (5xAsiatic hybrids)
Ageratum	Lilium (5xOriental hybrids)
Alchemilla mollis	Limonium hybrids
Allium sphaerocephalon	Lunaria annua
Alstroemeria (8x Cultivars)	Lysimachia clethroides
Amaranthus caudatus	Mentha
Ammi majus	Monarda
Asclepias tuberosa	Muscari
Astilbe	Narcissus hybrids
Astrantia major	Nigella damascene
Banksia	Oenothera
Calendula officinalis	Oncidium Orchid
Callistephus chinensis	Origanum vulgare
Campanula glomerata	Ornithogalum arabicum
Cattleya Orchid	Paeonia lactiflora
Celosia argentea plumosa	Papaver somniferum
Centaurea cyanus	Papaver nudicaule
Chrysanthemum indicum (x10 Cultivars)	Paphiopedilum
Convallaria majalis	Physalis
Craspedia	Physostegia virginiana
Crocosmia	Polianthes tuberosa
Curcuma	Protea
Delphinium hybrids	Ranunculus
Dianthus barbatus	Rosa (15x Cultivars)
Dianthus caryophyllus (8x Cultivars)	Rudbeckia
Digitalis	Sandersonia
Eustoma russellianum (6x Cultivars)	Saponaria
Forsythia intermedia	Scabiosa
Freesia (8x Cultivars)	Scilla
Fritillaria meleagris	Sedum spectabile
	Solidaster luteus
	Spirea
	Stephanotis floribunda

CUT FLOWERS – EXTENDED COMMERCIAL MATERIALS

Genista fragrans	Stillingia
Gerbera (8x Cultivars)	Strelitzia reginae
Gladiolus colvillei	Tagetes
Gloriosa rothschildiana	Tanacetum parthenium
Godetia grandiflora	Trollius
Gomphrena globosa	Tulipa (10x Cultivars)
Helenium	Vanda Orchid
Helichrysum bracteatum	Viburnum opulus
Heliconia pendula	Zantedeschia (5x Cultivars)
Helleborus niger	Zinnia elegans
Hydrangea macrophylla	
Ilex verticillata	
Ixia	
Kniphofia	
Lavandula	
Leucospermum	

FOLIAGES, BERRIES AND FRUITS

Ananas comosus
Anthurium andreaeanum
Asparagus asparagoides
Asparagus densiflorus
Asparagus virgatus
Brassica oleracea
Brunia albiflora
Callicarpa
Camellia japonica
Capsicum annuum
Chamaecyparis
Chamaedorea
Chamaerops
Cornus alba
Corylus avellana
Cotinus coggyria
Cyperus glaber
Cyperus papyrus
Dracaena sanderiana
Equisetum hyemale
Gossypium
Grevillea
Hibiscus trionum
Laurus nobilis
Ligustrum
Liriope muscari
Mahonia
Malus
Panicum grass
Pennisetum
Phormium tenax
Photinia fraseri
Pinus strobes
Pistacia
Prunus laurocerasus
Quercus
Rhododendron
Rosmarinus officinalis
Ruscus hypoglossum
Setaria grass
Skimmia japonica
Sphagnum
Strelitzia reginae
Symphoricarpos
Tillandsia usneoides
Triticum grass
Tsuga heterophylla
Typha latifolia
Weigela florida
Zea

Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
Independent enquirers	<ul style="list-style-type: none"> researching cut flower materials studying the nomenclature of plants explaining global flower production and social ethics explaining the conditioning process identifying problems with the conditioning process and suggesting remedial action
Creative thinkers	<ul style="list-style-type: none"> producing a portfolio to identify cut materials connecting own and others' ideas to resolve problems adapting ideas as requirements change
Reflective learners	<ul style="list-style-type: none"> reviewing progress with their assignment work setting goals with success criteria working within time constraints to complete tasks communicating their learning in relevant ways to different audiences through varied presentations
Self-managers	<ul style="list-style-type: none"> organising time and resources, prioritising tasks when working towards assignments anticipating, taking and managing risks as appropriate.

Although PLTS opportunities are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	taking part in discussions and peer evaluation, exploring global flower production issues and influences
Creative thinkers	planning and sourcing information
Reflective learners	evaluating processes during the conditioning process
Team workers	taking part in peer evaluation and group discussions, working to resolve problems
Self-managers	managing their time and producing completed work in the required format for assessment.
Effective participators	working in a group as required, and contributing to peer evaluation and discussions.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	<ul style="list-style-type: none"> formulating evidence of understanding planning and completing portfolios, including images, text and number
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	<ul style="list-style-type: none"> using PowerPoint for presentations using software for the production of a Photobook for their cut materials portfolio using spreadsheets to identify global flower production using programmes to format images (Photoshop) saving work in progress
Manage information storage to enable efficient retrieval	<ul style="list-style-type: none"> using USB and other removable storage devices organising information into files on computer hard drive
Follow and understand the need for safety and security practices	<ul style="list-style-type: none"> using software for internet security researching health and safety regulations controlling the computer use following good practice such as setting up their workstation well and taking breaks in intensive work
Troubleshoot	<ul style="list-style-type: none"> using task manager and control panel using the help function
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	<ul style="list-style-type: none"> using a camera card or USB storage device for images of cut materials using spellchecker, thesaurus and research functions.
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	<ul style="list-style-type: none"> carrying out multiple internet searches for cut materials, global flower production and other information

Skill	When learners are ...
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • Records 	<ul style="list-style-type: none"> formulating photographic evidence producing tables to show information producing PowerPoint presentations including images creating Photobook for their identification of materials portfolio producing spreadsheets to discuss global flower production producing tables or spreadsheets to record information
Bring together information to suit content and purpose	producing assignments to include ICT formulated evidence
Present information in ways that are fit for purpose and audience	presenting assignment work and portfolios
Evaluate the selection and use of ICT tools and facilities used to present information	evaluating the use of ICT as part of the conclusion in their assignment work
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	<ul style="list-style-type: none"> sending/receiving email with attachments as evidence of contacts with flower growers and suppliers demonstrating they know data protection regulations and how to store sensitive material safely and securely
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	<ul style="list-style-type: none"> costing materials calculating retail flower prices from wholesale invoices applying percentage formula for VAT and profit margins
Identify the situation or problem and the mathematical methods needed to tackle it	<ul style="list-style-type: none"> calculating different methods of costing calculating VAT/profit margins
Select and apply a range of skills to find solutions	<ul style="list-style-type: none"> calculating percentages using a calculator and by mental arithmetic. using formulae to calculate retail cost of materials
Use appropriate checking procedures and evaluate their effectiveness at each stage	<ul style="list-style-type: none"> using a calculator effectively using IT programmes to produce spreadsheets with formulae to calculate costs
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	showing all workings to reach final costings
Draw conclusions and provide mathematical justifications	evaluating the commercial viability of materials

Skill	When learners are ...
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	participating in discussion and presentation of ideas with peers evaluating and asking questions and offering solutions to others listening and formulating conclusions modifying their attitudes to subjects previously not understood.
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	researching information through books, the media and the internet identifying relevant information and summarising it in a way relevant to its purpose
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	producing reports, assignment essays, PowerPoint presentations, spreadsheets and tables to communicate information sourced previously.