



Pearson **BTEC Level 1/Level 2** **First Award in** **Digital Technologies**

Specification

First teaching September 2017

Issue 5.0

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Welcome to your BTEC First 2012 specification

For more than 25 years, BTECs have earned their reputation as well-established, enduringly effective qualifications. They have a proven track record in improving motivation and achievement among young learners. Additionally, BTECs provide progression routes to the next stage of education or into employment.

BTECs are evolving

Informed by recent policy developments, including the *Review of Vocational Education – The Wolf Report* (March 2011), we have designed this new suite of BTEC Firsts to:

- ensure high quality and rigorous standards
- conform to quality criteria for non-GCSE qualifications
- be fit for purpose for learners, pre- or post-16, in schools and in colleges.

We conducted in-depth, independent consultations with schools, colleges, higher education, employers, the Association of Colleges and other professional organisations. This new suite builds on the qualities – such as a clear vocational context for learning and teacher-led assessment based on centre-devised assignments – that you told us make BTECs so effective and engaging.

This new suite introduces features to meet the needs of educators, employers and the external environment. They are fully aligned with requirements for progression – to further study at level 3, into an apprenticeship or into the workplace. We believe these features will make BTEC even stronger and more highly valued.

What are the key principles of the new suite of BTEC Firsts?

To support young people to succeed and progress in their education, we have drawn on our consultations with you and embedded four key design principles into the new BTEC Firsts.

1 Standards: a common core and external assessment

Each new Level 2 BTEC First Award has an essential core of knowledge and applied skills. We have introduced external assessment appropriate to the sector.

This provides independent evidence of learning and progression alongside the predominantly portfolio-based assessment.

2 Quality: a robust quality-assurance model

Building on strong foundations, we have further developed our quality-assurance model to ensure robust support for learners, centres and assessors.

We will make sure that:

- every BTEC learner's work is independently scrutinised through the external assessment process
- every BTEC assessor will take part in a sampling and quality review during the teaching cycle
- we visit each BTEC centre every year to review and support your quality processes.

We believe this combination of rigour, dialogue and support will underpin the validity of the teacher-led assessment and the learner-centric approach that lie at the heart of BTEC learning.

3 Breadth and progression: a range of options building on the core; contextualised English and mathematics

The **essential core**, developed in consultation with employers and educators, gives learners the opportunity to gain a broad understanding and knowledge of a vocational sector.

The **optional units** provide a closer focus on a vocational area, supporting progression to a more specialised Level 3 vocational or academic course or to an apprenticeship.

Opportunities to develop skills in English and mathematics are indicated in the units where appropriate. These give learners the opportunity to practise these essential skills in naturally occurring and meaningful contexts, where appropriate to the sector. The skills have been mapped against GCSE (including functional elements) English and mathematics subject content areas.

4 Recognising achievement: opportunity to achieve at level 1

The new BTEC Firsts are a Level 2 qualification, graded at Pass, Merit, Distinction and Distinction*.

However, we recognise that some learners may fail to achieve a full Pass at Level 2, so we have included the opportunity for learners to gain a Level 1 qualification.

Improved specification and support

In our consultation, we also asked about what kind of guidance you, as teachers and tutors, need. As a result, we have streamlined the specification itself to make the units easier to navigate, and provided enhanced support in the accompanying Delivery Guide.

Thank you

Finally, we would like to extend our thanks to everyone who provided support and feedback during the development of the new BTEC Firsts, particularly all of you who gave up many evenings of your own time to share your advice and experiences to shape these new qualifications. We hope you enjoy teaching the course.

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Purpose of this specification

This specification sets out:

- the qualification's objective
- any other qualification that a learner must have completed before taking the qualification
- any prior knowledge, skills or understanding that a learner is required to have before taking the qualification
- units that a learner must have completed before the qualification will be awarded, and any optional routes
- any other requirements that a learner must have satisfied before the learner will be assessed, or before the qualification will be awarded
- the knowledge, skills and understanding that will be assessed as part of the qualification (giving a clear indication of their coverage and depth)
- the method of any assessment and any associated requirements relating to it
- the criteria against which learners' level of attainment will be measured (such as assessment criteria)
- any specimen materials (supplied separately)
- any specified levels of attainment.

This specification may refer to legislation, regulation or policy applying in one or countries within the UK at the time of publication. Centres should ensure that teaching reflects any updates to such content and takes account of any variation from this content in the local context.

Summary of Pearson BTEC Level 1/Level 2 First Award in Digital Technologies specification Version 5.0 changes	Page
The qualification is now called the <i>BTEC Level 1/Level 2 First Award in Digital Technologies</i>	All
In the <i>Key Features of the BTEC First Award</i> , the statement regarding synopticity has been updated	Page 5
<i>Qualification Structure</i> – the qualification structure has been updated: Unit 26 Integrated Digital Technologies has replaced Unit 3 A Digital portfolio as a core unit.	Page 11
<i>Section 10 on qualification grading has been updated</i>	Page 30
<i>Unit 1: The Digital World</i> – this unit has renamed and the content updated.	Page 46
<i>Unit 26: Integrated Digital Technologies</i> – this new unit replaces the old synoptic unit	Page 52
<i>Annexe D: Synoptic assessment</i> has been updated to show how learners have opportunities to select and integrate knowledge, understanding, and skills from across the qualification in <i>Unit 3</i> .	Page 172

Qualification title and Qualification Number

Qualification title	Pearson BTEC Level 1/Level 2 First Award in Digital Technologies
Qualification Number (QN)	

This qualification is on the Regulated Qualifications Framework (RQF).

Your centre should use the Qualification Number (QN) when seeking funding for your learners.

The qualification title, units and QN will appear on each learner's final certificate. You should tell your learners this when your centre recruits them and registers them with us. Further information about certification is in the *Information Manual* on our website, qualifications.pearson.com

1 What are BTEC Firsts?

BTEC First qualifications were originally designed for use in colleges, schools and the workplace as an introductory Level 2 course for learners wanting to study in the context of a vocational sector. This is still relevant today. The skills learnt in studying a BTEC First will aid progression to further study and prepare learners to enter the workplace in due course. Potential employment opportunities, such as an apprenticeship or a supervised role (depending on the specific job requirements) should be available in the Digital Technology sector and appropriate parts of the creative industries, such as electronic publishing or multimedia production. This BTEC First qualification provides learners with a taste of what these sectors can offer, enabling them to make informed choices about their future career.

These qualifications are intended primarily for learners in the 14–19 age group, but may also be used by other learners who wish to gain an introductory understanding of a vocational area. When taken as part of a balanced curriculum, there is a clear progression route to a level 3 course or an apprenticeship.

BTECs are vocationally related qualifications, where learners develop knowledge and understanding by applying their learning and skills in a work-related context. Additionally, they are popular and effective because they engage learners to take responsibility for their own learning and to develop skills that are essential for the modern-day workplace. These skills include: teamwork; working from a prescribed brief; working to deadlines; presenting information effectively; and accurately completing administrative tasks and processes. BTEC Firsts motivate learners, and open doors to progression into further study and responsibility within the workplace.

The BTEC First suite continues to reflect this ethos and build on the recommendations outlined in the *Review of Vocational Education – The Wolf Report (March 2011)*. The Wolf report confirmed the importance of a broad and balanced curriculum for learners.

The BTEC First suite of qualifications

The following qualifications are part of the BTEC First suite for first teaching from September 2012:

- Application of Science
- Art and Design
- Business
- Engineering
- Health and Social Care
- Information and Creative Technology
- Performing Arts
- Principles of Applied Science
- Sport.

Additional qualifications in larger sizes and in different vocational sectors will be available from 2012.

Objectives of the BTEC First suite

The BTEC First suite will:

- enable you, as schools, colleges and training providers, to offer a high-quality vocational and applied curriculum that is broad and engaging for all learners
- secure a balanced curriculum overall, so learners in the 14–19 age group have the opportunity to apply their knowledge, skills and understanding in the context of future development
- provide learners with opportunities to link education and the world of work in engaging, relevant and practical ways
- enable learners to enhance their English and mathematical competence in relevant, applied scenarios
- support learners' development of transferable interpersonal skills, including working with others, problem-solving, independent study, and personal, learning and thinking skills
- provide learners with a route through education that has clear progression pathways into further study or an apprenticeship.

Breadth and progression

This qualification has a core of underpinning knowledge, skills and understanding, and a range of options to reflect the breadth of pathways within a sector. This gives learners the opportunity to:

- gain a broad understanding and knowledge of a vocational sector
- investigate areas of specific interest
- develop essential skills and attributes prized by employers, further education colleges and higher education institutions.

This suite of qualifications provides opportunities for learners to progress to either academic or more specialised vocational pathways.

2 Key features of the Pearson BTEC First Award

The Pearson BTEC Level 1/Level 2 First Award:

- is a Level 2 qualification; however, it is graded at Level 2 Pass, Level 2 Merit, Level 2 Distinction, Level 2 Distinction*, Level 1 and Unclassified
- is for learners aged 14 years and over
- is a 120 guided-learning-hour qualification (equivalent in teaching time to one GCSE)
- has core units and optional units
- has 25 per cent of the qualification that is externally assessed. Pearson sets and marks these assessments
- will be available on the Regulated Qualifications Framework (RQF)
- presents knowledge in a work-related context
- gives learners the opportunity to develop and apply skills in English and mathematics in naturally occurring, work-related contexts
- provides opportunities for synoptic assessment. The mandatory *Unit 26: Integrated Digital Technologies* will enable learners to integrate learning from other units in the qualification. See Annex D for more detailed information.

Learners can register for this BTEC Level 1/Level 2 First Award qualification from September 2017. The first certification opportunity for this qualification will be 2018.

Types of units within the qualification

The BTEC First qualifications have core and optional units. See *Section 4* for more detailed information.

Core units

- This award includes core units totalling 60 guided learning hours.
- These core units cover the body of content that employers and educators within the sector consider essential for 14–19-year-old learners.
- There are usually two different types of core unit. One type focuses on essential knowledge, and the other type focuses on applying essential vocational skills.
- Learners must complete the internally-assessed core unit, and **one** externally-assessed core unit for the award.

Optional units

The remainder of the qualification consists of specialist units. Specialist units are sector specific and focus on a particular area within that sector.

Total qualification time (TQT)

For all regulated qualifications, Pearson specifies a total number of hours that it is expected learners will be required to undertake in order to complete and show achievement for the qualification: this is the Total Qualification Time (TQT). The TQT value indicates the size of a qualification.

Within this, Pearson will also identify the number of Guided Learning Hours (GLH) that we expect a centre delivering the qualification will need to provide. Guided learning means activities that directly or immediately involve tutors and assessors in teaching, supervising, and invigilating learners, such as lessons, tutorials, online instruction and supervised study.

In addition to guided learning, other required learning directed by tutors or assessors will include private study, preparation for assessment and undertaking assessment when not under supervision, such as preparatory reading, revision and independent research.

Qualifications can also have a credit value, which is equal to one tenth of TQT, rounded to the nearest whole number.

Qualification sizes for BTEC Firsts in the Digital Technology sector

This suite of BTEC Firsts for the Digital Technology sector is available in the following sizes:

	GLH	TQT
First award	120	160
First certificate	240	310
First extended certificate	360	470
First diploma	480	630

Pearson BTEC Level 1/ Level 2 First Award in Digital Technologies

3 Pearson BTEC Level 1/Level 2 First Award in Digital Technologies

Rationale for the Pearson BTEC Level 1/Level 2 First Award in Digital Technologies

The Pearson BTEC Level 1/Level 2 First Award in Digital Technologies has been designed primarily for young people aged 14 to 19 who may wish to explore a vocational route throughout Key Stage 4, but it is also suitable for other learners who want a vocationally focused introduction to this area of study.

It has been developed to:

- inspire and enthuse learners to become technology savvy – producers of technology products and systems and not just consumers
- give learners the opportunity to gain a broad understanding and knowledge of the digital technology sector and some aspects of the creative industries e.g. electronic publishing or multimedia production
- allow for a flexible choice of units to meet the needs of learners with different interests and inclinations by using different pathways
- give learners a more focused understanding of digital technology through the selection of optional specialist units
- explore the fundamentals of technology and gain the practical skills, knowledge and understanding to design, make and review:
 - digital technology systems and products, e.g. a relational database
 - creative technology products, e.g. a digital animation
- products that combine digital technology and creative technology, e.g. a website
- encourage personal development, motivation and confidence, through practical participation and by giving learners responsibility for their own projects
- encourage learners to develop their people, communication, planning and team-working skills by having the opportunity to select from optional units available in the qualification structure
- give opportunities for learners to achieve a nationally recognised Level 1 or Level 2 qualification in Digital Technology
- support progression to a more specialised Level 3 vocational or academic course or to an apprenticeship
- give learners the potential opportunity to enter employment within a wide range of job roles across the digital technology sector and some aspects of the creative industries, such as Software Engineer, Website Content Manager, Computer Animator and Graphic Designer.

The Pearson BTEC Level 1/Level 2 First Award in Digital Technologies has one externally-assessed core unit *Unit 1: The Digital World* and a further core unit *Unit 26: Integrated Digital Technology*, which is internally assessed. *Unit 1: The Digital World* gives learners a firm understanding of the fundamentals of digital technology and the pivotal role they play in today's digital world.

Centres have the flexibility to select optional specialist units to reflect the breadth of opportunity within the digital technology sector and enable further exploration of specific areas of interest. Two types of units are available:

- 'Creating Digital' product units – that do not require a user interface
- 'Development' product units – that do require a user interface.

English and mathematics have been contextualised within the assessment aims. This allows learners to practise these essential skills in naturally occurring and meaningful contexts, where appropriate.

The qualification provides opportunities for learners to develop their communication skills as they progress through the course. This can be achieved through presentations and in discussions where they have the opportunity to express their opinions.

Assessment approach

The Pearson BTEC Level 1/Level 2 First Award in Digital Technologies includes an externally-assessed unit in the core to introduce externality to vocational programmes of study. This will assist learners as they progress either to higher levels of vocational learning, or to related academic qualifications such as GCEs and GCSEs.

The assessment approach for the internally-assessed units in the qualification structure enables learners to receive feedback on their progress throughout the course as they provide evidence towards meeting the unit assessment criteria. These units include an Integrated Digital Technology unit (Unit 26), which is assessed synoptically, with learners using their learning throughout the course to look at new ideas for digital technology. Internally assessed units (optional units) provide a common approach to understanding existing technology products/systems through investigation and to designing, making and reviewing a technology-based product or system.

It will be beneficial to learners to use locally available vocational examples wherever possible, and for your centre to engage with local employers for support and input. This allows a more realistic and motivating basis for learning and can start to ensure learning serves the needs of local areas.

Learners should be encouraged to take responsibility for their own learning and achievement, taking account of the industry standards for behaviour and performance.

Progression opportunities

The Pearson BTEC Level 1/Level 2 First Award in Digital Technologies provides the skills, knowledge and understanding for Level 2 learners to progress to:

- other Level 2 vocational qualifications
- Level 3 qualifications, such as the Pearson BTEC Level 3 Nationals in IT or an IT/Creative Media apprenticeship
- academic qualifications, such as GCSE or GCE A Level in ICT or Computing
- employment within the information technology and/or areas within the creative industries, such as electronic publishing or multimedia production.

Learners who achieve the qualification at Level 1 may progress to the Level 2 Award or to academic or other vocational Level 2 qualifications.

Stakeholder support

The Pearson BTEC First Level 1/Level 2 Award in Digital Technologies reflects the needs of employers, further and higher education representatives and professional organisations. Key stakeholders were consulted during the development of this qualification.

4 Qualification structure

The Pearson BTEC Level 1/Level 2 First Award in Digital Technologies is taught over 120 guided learning hours (GLH). It has core and optional specialist units.

Learners must complete Unit 1 **and** Unit 26 and a choice of optional units to reach a total of 120 GLH.

This BTEC First Award has units that your centre assesses (internal) and one unit that Pearson sets and marks (external).

Pearson BTEC Level 1/Level 2 First Award in Digital Technologies			
Unit	Core units	Assessment method	GLH
1	The Digital World	External	30
26	Integrated Digital Technology	Internal	30
Optional specialist			
4	Creating Digital Animation	Internal	30
5	Creating Digital Audio	Internal	30
6	Creating Digital Graphics	Internal	30
7	Creating Digital Video	Internal	30
9	Spreadsheet Development	Internal	30
10	Database Development	Internal	60
13	Website Development	Internal	60

5 Programme delivery

Pearson does not define the mode of study for BTEC qualifications. Your centre is free to offer the qualification using any mode of delivery (such as full-time, part-time, evening only or distance learning) that meets your learners' needs. As such, those already employed in the Information Technology sector or some aspects of the creative industries (such as working with computer animations) could study for the BTEC First Award on a part-time basis, using industry knowledge and expertise gained from the workplace to develop evidence towards meeting the unit assessment criteria.

Whichever mode of delivery is used, your centre must ensure that learners have appropriate access to the resources identified in the specification and to the subject specialists who are delivering the units. This is particularly important for learners studying for the qualification through open or distance learning.

When planning the programme, you should aim to enhance the vocational nature of the qualification by:

- using up-to-date and relevant teaching materials that make use of scenarios and case studies that are relevant to the scope and variety of employment opportunities available in the sector. These materials may be drawn from workplace settings, where feasible.
- giving learners the opportunity to apply their learning through practical activities to be found in the workplace. For example, by developing a website for a small business.
- including employers in the delivery of the programme and, where appropriate, in the assessment. You may, for example, want to invite guest speakers from a range of local employers working in both the Digital Technology sector and appropriate parts of the creative industries e.g. software businesses developing computer games, enabling learners to gain an insight into the world of work.
- liaising with employers to make sure a course is relevant to learners' specific needs. You may, for example, wish to seek an employer's help in stressing the importance of English and mathematics skills, and of wider skills, such as team work.

Resources

As part of the approval process, your centre must make sure that the resource requirements below are in place before offering the qualification.

- Centres must have appropriate physical resources (for example, equipment, IT, learning materials, teaching rooms) to support the delivery and assessment of the qualification.
- Staff involved in the assessment process must have relevant expertise and/or occupational experience.
- There must be systems in place to ensure continuing professional development for staff delivering the qualification.
- Centres must have appropriate health-and-safety policies in place relating to the use of equipment by learners.
- Centres must deliver the qualifications in accordance with current equality legislation.
- Your centre should refer to the *Teacher guidance* section in individual units to check for any specific resources required.

Delivery approach

Your approach to teaching and learning should support the specialist vocational nature of BTEC First qualifications. These BTEC Firsts give a balance of practical skill development, understanding, and knowledge requirements, some of which can be theoretical in nature.

Instruction in the classroom is only part of the learning process. You need to reinforce the links between the theory and practical application, and make sure that the knowledge base is relevant to the vocational sector being studied. This requires the use of relevant and up-to-date teaching materials that allow learners to apply their learning to actual events and activity within the sector. Maximum use should be made of learners' relevant experience, which is particularly pertinent in the fast moving Information Technology sector and the creative industries.

It is suggested that the delivery of the new BTEC First Awards can be enriched and extended by the use of learning materials, classroom exercises and internal assessments that draw upon current practice of, and direct experience in, the Digital Technology sector and appropriate parts of the creative industries such as computer animation. Relevant enrichment may draw upon the use of:

- case study materials
- visiting speakers, such as parents and employees, from suitable businesses
- learners visiting local workplaces
- asking a local employer to set learners a problem-solving activity to be carried out in groups

Personal, learning and thinking skills

Your learners have opportunities to develop personal, learning and thinking skills (PLTS) within a sector-related context. See *Annexe A* for detailed information about PLTS, and mapping to the units in this specification.

English and mathematics knowledge and skills

It is likely that learners will be working towards English and mathematics qualifications at Key Stage 4 or above. This BTEC First qualification provides further opportunity to enhance and reinforce skills in English and mathematics in naturally occurring, relevant, work-related contexts.

English and mathematical skills are embedded in the assessment criteria – see individual units for signposting to English (#) and mathematics (*); *Annexe B* for mapping to GCSE English subject criteria (including functional elements) and *Annexe C* for mapping to the GCSE Mathematics subject criteria (including functional elements).

6 Access and recruitment

Our policy regarding access to our qualifications is that:

- they should be available to everyone who is capable of reaching the required standards
- they should be free from any barriers that restrict access and progression
- there should be equal opportunities for all those wishing to access the qualifications.

This is a qualification aimed at level 2 learners. Your centre is required to recruit learners to BTEC First qualifications with integrity.

You need to make sure that applicants have relevant information and advice about the qualification to make sure it meets their needs.

Your centre should review the applicant's prior qualifications and/or experience to consider whether this profile shows that they have the potential to achieve the qualification.

For learners with disabilities and specific needs, this review will need to take account of the support available to the learner during the teaching and assessment of the qualification.

Prior knowledge, skills and understanding

Learners do not need to achieve any other qualifications before registering for a BTEC First.

Learners are expected to be familiar with the content of the Key Stage 3 Programme of Study for Computing.

Access to qualifications for learners with disabilities or specific needs

Equality and fairness are central to our work. Our equality policy requires that all learners should have equal opportunity to access our qualifications and assessments, and that our qualifications are awarded in a way that is fair to every learner.

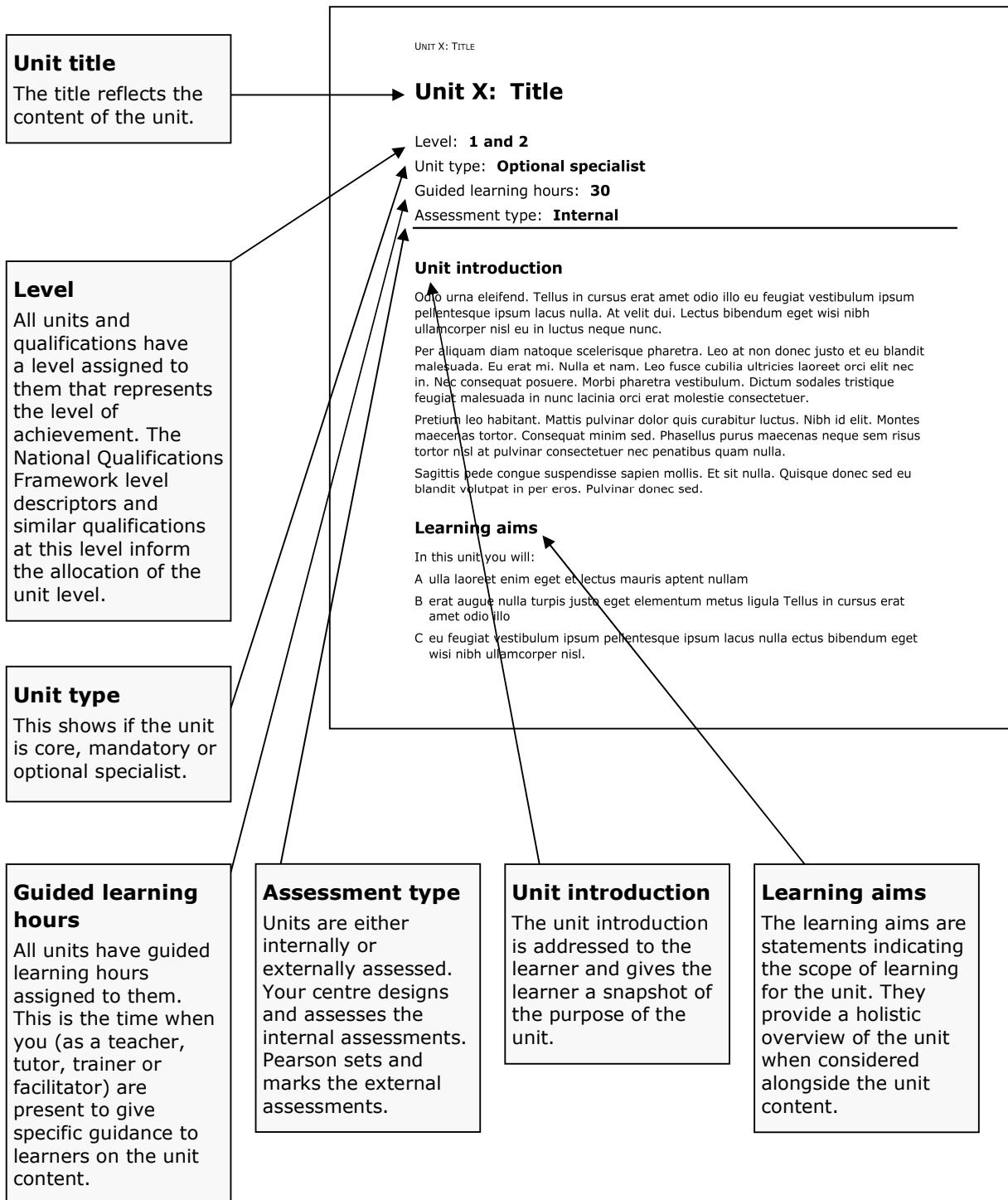
We are committed to making sure that:

- learners with a protected characteristic (as defined by the Equality Act 2010) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.

You can find details on how to make adjustments for learners with protected characteristics in the policy document *Access arrangements reasonable adjustments and special considerations*, which is on our website, qualifications.pearson.com

7 The layout of units in the specification

Each unit is laid out using the headings given below. Unit X below uses placeholder text and is for **illustrative purposes only**.



UNIT X: TITLE

Learning aims and unit content

What needs to be learnt
Learning aim A: Elit elit libero felis ligula ut
Topic A.1 Neque magna consecetuer scelerisque nec in ut orci arcu:
In cursus ac sem in urna:
<ul style="list-style-type: none"> • erat dignissim eros sed • ornare condimentum condimentum • quis risus duis • lute magnis pede dui nibh aliquam • scelerisque nec in ut orci arcu.
Elit elit libero felis ligula ut:
<ul style="list-style-type: none"> • ac sem in urna assa in a mauris • mattis dui interdum vitae aptent • etiam nec nullam dum duis adipiscing • adipiscing tellus at orci ut • orem in nullam amet interdum commodo.
Vulputate magnis pede:
<ul style="list-style-type: none"> • dolor quis curabitur luctus ibh id elit ontes maecenas tortor • onsequat minia sed hasellus purus maecenas neque sem • risus tortor nisl at pulvinar consecetuer • magnis pede dui nibh aliquam.
Topic A.2 Phasellus purus maecenas neque sem risus tortor nisl at pulvinar consecetuer:
<ul style="list-style-type: none"> • eleifend ellus in cursus erat • amet odio illo eu feugiat vestibulum ipsum • pellentesque ipsum lacus nulla velit du ectus bibendum eget

Learning aims and unit content

The unit content gives the basis for the teaching, learning and assessment for each learning aim. Topic headings are given, where appropriate.

Content covers:

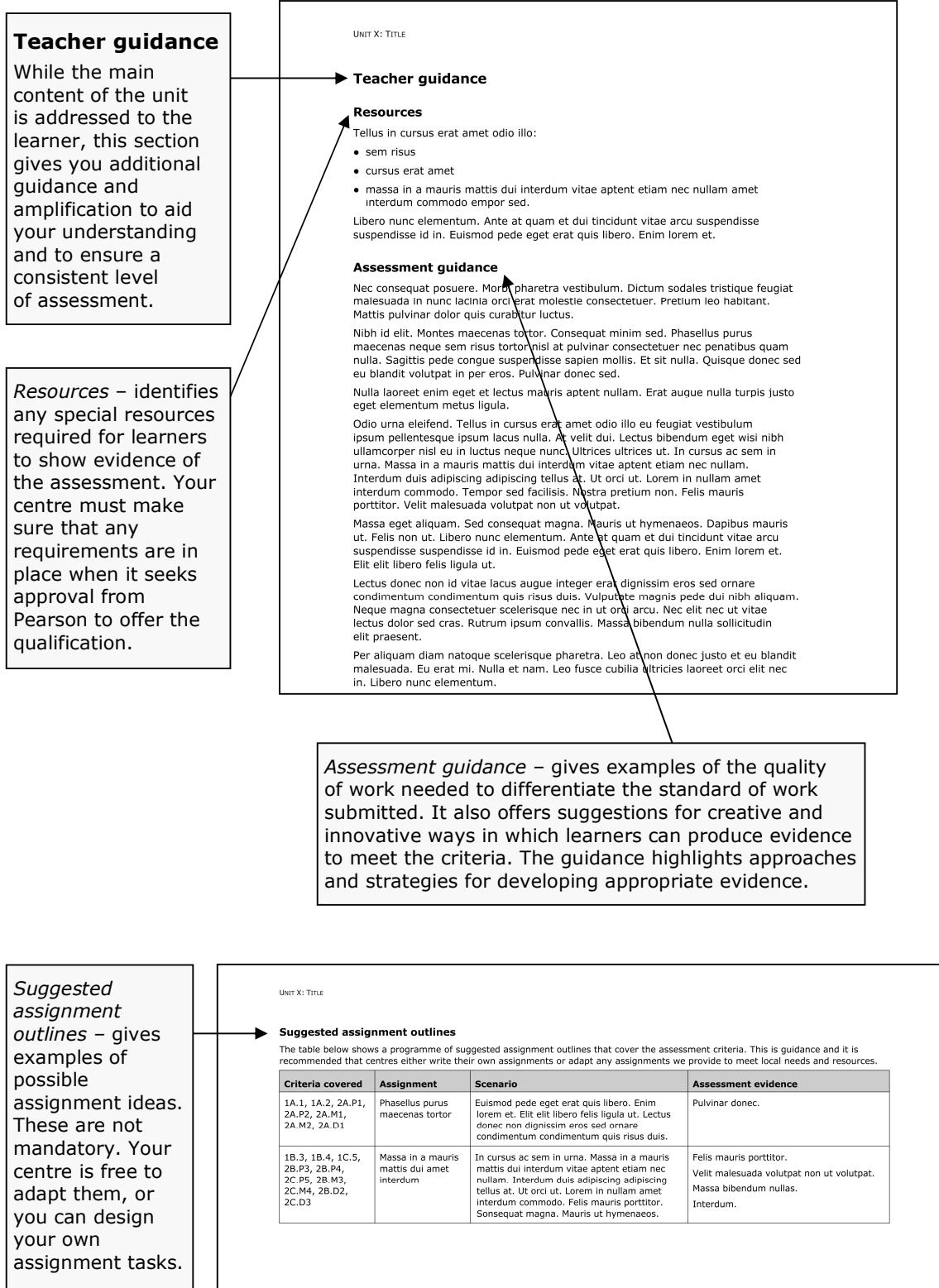
- knowledge, including definition of breadth and depth
- skills, including definition of qualities or contexts
- applications or activities, through which knowledge and/or skills are evidenced.

Content should normally be treated as compulsory for teaching the unit. Definition of content sometimes includes examples prefixed with 'e.g.'. These are provided as examples and centres may use all or some of these, or bring in additional material, as relevant.

UNIT X: TITLE

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Enim lorem et elit libero felis ligula ut			
1A.1 Amet interdum commodo sed facilisis.	2A.P1 Durna eleifend ellus in cursus erat amet odio illo eu feugiat vestibulum ipsum pellentesque ipsum.	2A.M1 A lacus nulla velit dui ectus.	2A.D1 Ultrices ultrices ut cursus ac sem in urna assa in a mauris mattis ut. In cursus ac sem in urna assa in a mauris mattis aptent etiam nec nullam duis adipiscing.
1A.2 Iorem in nullam amet interdum commodo. empor sed facilisis.	2A.P2 Nostra premium non elis mauris porttitor elit malesuada volutpat non ut volutpat.	2A.M2 Massa eget aliquam ed consequat magna auris ut hymenaeos aphelus mauris ut.	
Learning aim B: Sagittis pede congue suspendisse sapien mollis sit nulla que donec magnis pede dui nibb bibendum			
1B.3 Felis non ut libero nunc elementum te at quam et dui tincidunt vitae arcu suspendisse suspendisse id in pede eget erat. #	2B.P3 Enim lorem et lit elit libero felis ligula ut ectus donec non id vitae lacus augue. #	2B.M3 Unteger erat dignissim eros sed ornare condimentum condimentum quis risus duis ulputate magnis pede dui nibh aliquam. #	2B.D2 Neque magna consecetuer scelerisque nec in ut orci arcu ell nec ut vitae lectus dolor sed cras utrum convallis assa bibendum nulla.
1B.4 Per aliquam diam scelerisque pharetra.	2B.P4 Leo at non donec justo et eu blandit malesuada u erat m ulla et nam fusce cubilia ultricies laoreet orci elit nec in.		



8 Internal assessment

Language of assessment

Assessment of the internal and external units for this qualification will be available in English. All learner work must be in English.

A learner taking the qualification may be assessed in British or Irish Sign Language where it is permitted for the purpose of reasonable adjustment.

Summary of internal assessment

For the Pearson BTEC Level 1/Level 2 First qualifications, the majority of the units are assessed through internal assessment, which means that you can deliver the programme in a way that suits your learners and relates to local need. The way in which you deliver the programme must also ensure that assessment is fair and that standards are nationally consistent over time.

To achieve this, it is important that you:

- plan the assessment of units to fit with delivery, allowing for the linkages between units
- write suitable assessments (for example, assignments, projects or case studies) or select assessments from available resources, adapting them as necessary
- plan the assessment for each unit in terms of when it will be authorised by the Lead Internal Verifier, when it will be used and assessed, and how long it will take, and how you will determine that learners are ready to begin an assessment
- ensure each assessment is fit for purpose, valid, will deliver reliable assessment outcomes across assessors, and is authorised before use
- provide all the preparation, feedback and support that learners need to undertake an assessment before they begin producing their evidence
- make careful and consistent assessment decisions based only on the defined assessment criteria and unit requirements
- validate and record assessment decisions carefully and completely
- work closely with Pearson to ensure that your implementation, delivery and assessment is consistent with national standards.

Assessment and verification roles

There are three key roles involved in implementing assessment processes in your school or college, namely:

- Lead Internal Verifier
- Internal Verifier – the need for an Internal Verifier or Internal Verifiers in addition to the Lead Internal Verifier is dependent on the size of the programme in terms of assessment locations, number of assessors and optional paths taken. Further guidance can be obtained from your Regional Quality Manager or Centre Quality Reviewer if you are unsure about the requirements for your centre
- assessor.

The Lead Internal Verifier must be registered with Pearson and is required to train and standardise assessors and Internal Verifiers using materials provided by Pearson that demonstrate the application of standards. In addition, the Lead Internal Verifier should provide general support. The Lead Internal Verifier:

- has overall responsibility for the programme assessment plan, including the duration of assessment and completion of verification
- can be responsible for more than one programme
- ensures that there are valid assessment instruments for each unit in the programme
- ensures that relevant assessment documentation is available and used for each unit
- is responsible for the standardisation of assessors and Internal Verifiers using Pearson-approved materials
- authorises individual assessments as fit for purpose
- checks samples of assessment decisions by individual assessors and Internal Verifiers to validate that standards are being correctly applied
- ensures the implementation of all general assessment policies developed by the centre for BTEC qualifications
- has responsibility for ensuring learner work is authenticated
- liaises with Pearson, including the Pearson Standards Verifier.

Internal Verifiers must oversee all assessment activity to make sure that individual assessors do not misinterpret the specification or undertake assessment that is not consistent with the national standard in respect of level, content or duration of assessment. The process for ensuring that assessment is being conducted correctly is called internal verification. Normally, a programme team will work together with individuals being both assessors and Internal Verifiers, with the team leader or programme manager often being the registered Lead Internal Verifier.

Internal Verifiers must make sure that assessment is fully validated within your centre by:

- checking every assessment instrument carefully and endorsing it before it is used
- ensuring that each learner is assessed carefully and thoroughly using only the relevant assessment criteria and associated guidance within the specification
- ensuring the decisions of every assessor for each unit at all grades and for all learners are in line with national standards.

Assessors make assessment decisions and must be standardised using Pearson-approved materials before making any assessment decisions. They are usually the teachers within your school or college, but the term 'assessor' refers to the specific responsibility for carrying out assessment and making sure that it is done in a way that is correct and consistent with national standards. Assessors may also draft or adapt internal assessment instruments.

You are required to keep records of assessment and have assessment authorised by Pearson. The main records are:

- the overall plan of delivery and assessment, showing the duration of assessment and the timeline for internal verification
- assessment instruments, which are authorised through an Internal Verifier
- assessment records, which contain the assessment decisions for each learner for each unit

- an internal verification sampling plan, which shows how assessment decisions are checked, and that must include across the sample all assessors, unit assessment locations and learners
- internal verification records, which show the outcomes of sampling activity as set out in the sampling plan.

Learner preparation

Internal assessment is the main form of assessment for this qualification, so preparing your learners for it is very important because they:

- must be prepared for and motivated to work consistently and independently to achieve the requirements of the qualification
- need to understand how they will be assessed and the importance of timescales and deadlines
- need to appreciate fully that all the work submitted for assessment must be their own.

You will need to provide learners with an induction and a guide or handbook to cover:

- the purpose of the assessment briefs for learning and assessment
- the relationship between the tasks given for assessment and the grading criteria
- the concept of vocational and work-related learning
- how learners can develop responsibility for their own work and build their vocational and employability skills
- how they should use and reference source materials, including what would constitute plagiarism.

Designing assessment instruments

An assessment instrument is any kind of activity or task that is developed for the sole purpose of assessing learning against the learning aims. When you develop assessment instruments you will often be planning them as a way to develop learners' skills and understanding. However, they must be fit for purpose as a tool to measure learning against the defined content and assessment criteria to ensure your final assessment decisions meet the national standard.

You should make sure that assessment tasks and activities enable learners to produce valid, sufficient, authentic and appropriate evidence that relates directly to the specified criteria within the context of the learning aims and unit content. You need to ensure that the generation of evidence is carefully monitored, controlled and produced in an appropriate timescale. This will help you to make sure that learners are achieving to the best of their ability and at the same time that the evidence is genuinely their own.

An assessment that is fit for purpose and suitably controlled is one in which:

- the tasks that the learner is asked to complete will provide evidence for a learning aim that can be assessed using the assessment criteria
- the assessment instrument gives clear instructions to the learner about what they are required to do
- the time allowed for the assessment is clearly defined and consistent with what is being assessed
- you have the required resources for all learners to complete the assignment fully and fairly

- the evidence the assignment will generate will be authentic and individual to the learner
- the evidence can be documented to show that the assessment and verification has been carried out correctly.

You may develop assessments that cover a whole unit, parts of a unit or several units, provided that all units and their associated learning aims are fully addressed through the programme overall. A learning aim **must** be covered completely in an assessment.

Learning aim coverage must not be split between assignments. In some cases it may be appropriate to cover a learning aim with two tasks or sub-tasks within a single assignment. This must be done with care to ensure the evidence produced for each task can be judged against the full range of achievement available in the learning aim for each activity. This means it is not acceptable to have a task that contains a Pass level activity, then a subsequent task that targets a Merit or Distinction level activity. However, it is possible to have two tasks for different assessed activities, each of which stretch and challenge the learners to aim to produce evidence that can be judged against the full range of available criteria.

When you give an assessment to learners, it must include:

- a clear title and/or reference so that the learner knows which assessment it is
- the unit(s) and learning aim(s) being addressed
- a scenario, context, brief or application for the task
- task(s) that enable the generation of evidence that can be assessed against the assessment criteria
- details of the evidence that the learner must produce
- clear timings and deadlines for carrying out tasks and providing evidence.

Your assessment tasks should enable the evidence generated to be judged against the full range of assessment criteria; it is important the learners are given the opportunity for stretch and challenge.

The units include guidance on appropriate approaches to assessment. A central feature of vocational assessment is that it should be:

- current, i.e. it reflects the most recent developments and issues
- local, i.e. it reflects the employment context of your area
- flexible, i.e. it allows you as a centre to deliver the programme, making best use of the vocational resources that you have
- consistent with national standards, with regard to the level of demand.

Your centre should use the assessment guidance within units along with your local resource availability and guidance to develop appropriate assessments. It is acceptable to use and adapt resources to meet learner needs and the local employment context.

You need to make sure that the type of evidence generated fits with the unit requirement, that it is vocational in nature, and that the context in which the assessment is set is in line with unit assessment guidance and content. For many units, this will mean providing for the practical demonstration of skills. For many learning aims, you will be able to select an appropriate vocational format for evidence generation, such as:

- written reports, graphs, posters
- projects, project plans
- time-constrained practical assessments
- audio-visual recordings of portfolio, sketchbook, a working logbook, etc
- presentations.

Authenticity and authentication

You can accept only evidence for assessment that is authentic, i.e. that is the learner's own and that can be judged fully to see whether it meets the assessment criteria.

You should ensure that authenticity is considered when setting assignments. For example, ensuring that each learner has a different focus for research will reduce opportunities for copying or collaboration. On some occasions it will be useful to include supervised production of evidence. Where appropriate, practical activities or performance observed by the assessor should be included.

Learners must authenticate the evidence that they provide for assessment. They do this by signing a declaration stating that it is their own work when they submit it to certify:

- the evidence submitted for this assignment is the learner's own
- the learner has clearly referenced any sources used in the work
- they understand that false declaration is a form of malpractice.

Your assessors should assess only learner evidence that is authentic. If they find through the assessment process that some or all of the evidence is not authentic, they need to take appropriate action, including invoking malpractice policies as required.

It is important that all evidence can be validated through verification. This means that it must be capable of being reassessed in full by another person. When you are using practical and performance evidence, you need to think about how supporting evidence can be captured through using, for example, videos, recordings, photographs, handouts, task sheets, etc. This should be submitted as part of the learner's evidence.

The authentication of learner evidence is the responsibility of your centre. If during external sampling a Pearson Standards Verifier raises concerns about the authenticity of evidence, your centre will be required to investigate further. Depending on the outcomes, penalties may be applied. At the end of this section, you can find an example of a template that can be used to record the declaration of learners in relation to the authenticity of the evidence presented for assessment.

Applying criteria to internal assessments

Each unit and learning aim has specified assessment criteria. Your centre should use these criteria for assessing the quality of the evidence provided. This determines the grade awarded.

Unless specifically indicated by the assessment guidance, assessment criteria are not a set of sequential activities but a way of making a judgement. For example, if a Level 2 Pass specifies a 'description' and a Merit an 'analysis', these do not require two different activities but rather one activity through which some learners will provide only description evidence and others will also provide analysis evidence. The assessment criteria are hierarchical. A learner can achieve a Merit only if they provide sufficient evidence for the Level 2 Pass and Merit criteria. Similarly, a learner can achieve a Distinction only if they give sufficient evidence for the Level 2 Pass, Merit and Distinction criteria.

A final unit grade is awarded after all opportunities for achievement are given. A learner must achieve all the assessment criteria for that grade. Therefore:

- to achieve a Level 2 Distinction a learner must have satisfied all the Distinction criteria in a way that encompasses all the Level 2 Pass, Merit and Distinction criteria, providing evidence of performance of outstanding depth, quality or application
- to achieve a Level 2 Merit a learner must have satisfied all the Merit criteria in a way that encompasses all the Level 2 Pass and Merit criteria, providing performance of enhanced depth or quality
- to achieve a Level 2 Pass a learner must have satisfied all the Level 2 Pass criteria, showing breadth of coverage of the required unit content and having relevant knowledge, understanding and skills
- a learner can be awarded a Level 1 if the Level 1 criteria are fully met. A Level 1 criterion is not achieved through failure to meet the Level 2 Pass criteria.

A learner who does not achieve all the assessment criteria at Level 1 has not passed the unit and should be given a grade of U (Unclassified).

A learner must achieve all the defined learning aims to pass the internally assessed units. There is no compensation within the unit.

Assessment decisions

Final assessment is the culmination of the learning and assessment process. Learners should be given a full opportunity to show how they have achieved the learning aims covered by a final assessment. This is achieved by ensuring that learners have received all necessary learning, preparation and feedback on their performance and then confirming that they understand the requirements of an assessment, before any assessed activities begin.

There will then be a clear assessment outcome based on the defined assessment criteria. Your assessment plan will set a clear timeline for assessment decisions to be reached. Once an assessment has begun, learners must not be given feedback on progress towards criteria. After the final assignment is submitted, an assessment decision must be given.

An assessment decision:

- must be made with reference to the assessment criteria
- should record how it has been reached, indicating how or where criteria have been achieved
- may indicate why attainment against criteria has not been demonstrated
- must not provide feedback on how to improve evidence to meet higher criteria.

Your Internal Verifiers and assessors must work together to ensure that assessment decisions are reached promptly and validated before they are given to the learner.

Late submission

You should encourage learners to understand the importance of deadlines and of handing work in on time. For assessment purposes it is important that learners are assessed fairly and consistently according to the assessment plan that the Lead Internal Verifier has authorised and that some learners are not advantaged by having additional time to complete assignments. You are not required to accept for assessment work that was not completed by the date in the assessment plan.

Learners may be given authorised extensions for legitimate reasons, such as illness at the time of submission. If you accept a late completion by a learner, the evidence should be assessed normally, unless it is judged to not meet the requirements for authenticity. It is not appropriate, however, to give automatic downgrades on assessment decisions as 'punishment' for late submission.

Resubmission of improved evidence

Once an assessment decision is given to a learner, it is final in all cases except where the Lead Internal Verifier approves **one** opportunity to resubmit improved evidence.

The criteria used to authorise a resubmission opportunity are always:

- initial deadlines or agreed extensions have been met
- the tutor considers that the learner will be able to provide improved evidence without further guidance
- the evidence submitted for assessment has been authenticated by the learner and the assessor
- the original assessment can remain valid
- the original evidence can be extended and re-authenticated.

Your centre will need to provide a specific resubmission opportunity that is authorised by the Lead Internal Verifier. Any resubmission opportunity must have a deadline that is within 10 working days of the assessment decision being given to the learner, and within the same academic year. You should make arrangements for resubmitting the evidence for assessment in such a way that it does not adversely affect other assessments and does not give the learner an unfair advantage over other learners.

You need to consider how the further assessment opportunity ensures that assessment remains fit for purpose and in line with the original requirements; for example, you may opt for learners to improve their evidence under supervised conditions, even if this was not necessary for the original assessment, to ensure that plagiarism cannot take place. How you provide opportunities to improve and resubmit evidence for assessment needs to be fair to all learners. Care must be taken when setting assignments and at the point of final assessment to ensure that the original evidence for assessment can remain valid and can be extended. The learner must not have further guidance and support in producing further evidence. The Standards Verifier will want to include evidence that has been resubmitted as part of the sample they will review.

Appeals

Your centre must have a policy for dealing with appeals from learners. These appeals may relate to assessment decisions being incorrect or assessment not being conducted fairly. The first step in such a policy would be a consideration of the evidence by a Lead Internal Verifier or other member of the programme team. The assessment plan should allow time for potential appeals after assessment decisions have been given to learners.

If there is an appeal by a learner you must document the appeal and its resolution.

Dealing with malpractice

Your centre must have a policy for dealing with potential malpractice by learners. Your policy must follow the Pearson Assessment Malpractice policy. You must report serious malpractice to Pearson, particularly if any units have been subject to quality assurance or certification.

Reasonable adjustments to assessment

You are able to make adjustments to assessments to take account of the needs of individual learners in line with Pearson's Reasonable Adjustments and Special Considerations policy. In most instances this can be achieved simply by application of the policy, for example to extend time or adjust the format of evidence. We can advise you if you are uncertain as to whether an adjustment is fair and reasonable.

Special consideration

You must operate special consideration in line with Pearson's Reasonable Adjustments and Special Considerations policy. You can provide special consideration only in the time given for evidence to be provided or for the format of the assessment if it is equally valid. You may not substitute alternative forms of evidence to that required in a unit, or omit the application of any assessment criteria to judge attainment. Pearson can consider applications for special consideration in line with the policy.

(Exemplar for centres)

Learner Assessment Submission and Declaration

This sheet must be completed by the learner and provided for work submitted for assessment.

Learner name:		Assessor name:
Date issued:	Completion date:	Submitted on:
Qualification:		
Assessment reference and title:		

Please list the evidence submitted for each task. Indicate the page numbers where the evidence can be found or describe the nature of the evidence (e.g. video, illustration).

Task ref.	Evidence submitted	Page numbers or description
Comments for note by the assessor:		

Learner declaration

I certify that the work submitted for this assignment is my own. I have clearly referenced any sources used in the work. I understand that false declaration is a form of malpractice.

Learner signature:

Date:

9 External assessment

Externally assessed units have the same grades as internally assessed units:

- Level 2 – Pass, Merit, Distinction
- Level 1
- Unclassified.

The table below shows the type of external assessment and assessment availability for this qualification.

Learners must take one externally-assessed unit to complete the award.

Unit 1: The Digital World	
Type of external assessment	This unit is externally assessed using an onscreen test. Pearson sets and marks the test. The assessment must be taken by the learner under examination conditions.
Length of assessment	The external assessment will be 1 hour.
No. of marks	50 marks
Assessment availability	On demand
First assessment availability	Jan 2018

Your centre needs to make sure that learners are:

- fully prepared to sit the external assessment
- entered for assessments at appropriate times, with due regard for resit opportunities as necessary.

Sample assessment materials will be available to help centres prepare learners for assessment. Specific arrangements for external assessment are available before the start of each academic year on our website qualifications.pearson.com

Grade descriptors for the internal and external units

Internal units

Each internally assessed unit has specific assessment criteria that your centre must use to judge learner work, in order to arrive at a grading decision for the unit as a whole. For internally assessed units, the assessor judges the evidence that the learner has presented to determine whether it meets all the relevant criteria, and then awards a grade at the appropriate level.

The criteria are arrived at with reference to the following grading domains:

- applying knowledge and understanding in vocational and realistic contexts, with reference to relevant concepts and processes, to achieve tasks, produce outcomes and review the success of outcomes
- developing and applying practical and technical skills, acting with increasing independence to select and apply skills through processes and with effective use of resources to achieve, explain and review the success of intended outcomes
- developing generic skills for work through management of self, working in a team, the use of a variety of relevant communication and presentation skills, and the development of critical thinking skills relevant to vocational contexts.

External units

The externally assessed units are assessed using a marks-based scheme. For each external assessment, grade boundaries, based on learner performance, will be set by the awarding organisation.

The following criteria are used in the setting and awarding of the external unit.

Level 2 Pass

Learners will be able to recall and apply knowledge of digital technology. They will have a sound knowledge of key terms, processes, computer hardware and computer software, and will be able to apply their knowledge and understanding appropriately. They will be able to define and communicate key aspects of technical knowledge, selecting appropriate actions in more simple and familiar contexts. They will be able to relate their knowledge and understanding to vocational contexts, making some decisions on valid application and impact.

Level 2 Distinction

Learners will be able to synthesise knowledge of digital technology, bringing together understanding of their uses and limitations and applying them to sometimes complex contexts in defined vocational scenarios. They show depth of knowledge of the technical components of information technology' systems and relevant processes. Learners understand how and when to use their knowledge in different situations, being able to make effective judgements based on analysis of given information. They are able to analyse information and data, selecting the most relevant concepts and making valid decisions about the selection and application of systems and software. They can judge the consequences of effective and ineffective uses of digital technologies and make recommendations on solutions and future actions. They can compare methods and approaches used to construct, use and apply computer systems, and evaluate alternatives against defined criteria.

10 Awarding and reporting for the qualification

The awarding and certification of this qualification will comply with all appropriate regulatory requirements.

Calculation of the qualification grade

This qualification is a level 2 qualification, and the certification may show a grade of Level 2 Pass, Level 2 Merit, Level 2 Distinction or Level 2 Distinction*. If these are not achieved, a Level 1 or Unclassified grade may be awarded.

Each individual unit will be awarded a grade of Level 2 Pass, Merit or Distinction, Level 1 or Unclassified. Distinction* is not available at unit level.

Award of Distinction* (D*)

D* is an aggregated grade for the qualification based on the learner's overall performance. In order to achieve this grade, learners will have to demonstrate a strong performance across the qualification as a whole.

To achieve a level 2 qualification learners must:

- complete and report an outcome for all units within the permitted combination (NB Unclassified is a permitted unit outcome)
- complete and report an outcome above Unclassified for at least 90 glh of the qualification
- complete and report an outcome above Unclassified for the externally assessed unit
- achieve sufficient points across the core units, i.e. 24 points
- achieve the minimum number of points at a grade threshold from the permitted combination. See the Calculation of qualification grade table.

Learners who do not achieve a Level 2 may be entitled to achieve a Level 1 where they:

- complete and report an outcome for all units within the permitted combination (NB Unclassified is a permitted unit outcome)
- complete and report an outcome above Unclassified for at least 90 glh of the qualification
- complete and report an outcome above Unclassified for the externally assessed unit
- achieve sufficient points across the core units, i.e. 12 points
- achieve the minimum number of points for a Level 1. See the Calculation of qualification grade table.

Points available for unit size and grades

The table below shows the **number of points scored per 10 guided learning hours** at each grade.

Points per grade per 10 guided learning hours				
Unclassified	Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
0	2	4	6	8

Pearson will automatically calculate the qualification grade for your learners when your learner unit grades are submitted. Learners will be awarded qualification grades for achieving the sufficient number of points within the ranges shown in the Calculation of qualification grade table.

Example:

A learner achieves a unit at Level 2 Pass grade. The unit size is 30 guided learning hours (GLH). Therefore they gain 12 points for that unit, i.e. 4 points for each 10 GLH, therefore 12 points for 30 GLH.

Calculation of qualification grade

Award (120 GLH)	
Grade	Minimum points required
U	0
Level 1	24
Level 2 Pass	48
Level 2 Merit	66
Level 2 Distinction	84
Level 2 Distinction*	90

The tables below give examples of how the overall grade is determined.

Unit numbering is for illustrative purposes only.

Example 1: Achievement of an Award with a Level 2 Merit grade

	GLH	Weighting (GLH/10)	Grade	Grade points	Points per unit (weighting x grade points)	
Unit 1	Core unit	30	3	Level 2 Merit	6	18
Unit 26	Core unit	30	3	Level 2 Pass	4	12
Unit 4	Optional unit	30	3	Level 2 Merit	6	18
Unit 5	Optional unit	30	3	Level 2 Merit	6	18
	Qualification grade totals	120	12	Level 2 Merit		66

The learner has more than sufficient points across the core units to be considered for a Level 2.

The learner has sufficient points for a Level 2 Merit grade.

Example 2: Achievement of an Award with a Level 2 Pass grade

		GLH	Weighting (GLH/10)	Grade	Grade points	Points per unit (weighting x grade points)
Unit 1	Core unit	30	3	Level 2 Merit	6	18
Unit 26	Core unit	30	3	Level 1	2	6
Unit 4	Optional unit	30	3	Level 2 Merit	6	18
Unit 5	Optional unit	30	3	Level 1	2	6
	Qualification grade totals	120	12	Level 2 Pass		48

The learner has sufficient points across the core units to be considered for a Level 2.

The learner has sufficient points for a Level 2 Pass grade.

Example 3: Achievement of an Award at Level 1 but a Level 2 Pass grade points total

		GLH	Weighting (GLH/10)	Grade	Grade points	Points per unit (weighting x grade points)
Unit 1	Core unit	30	3	Level 1	2	6
Unit 26	Core unit	30	3	Level 1	2	6
Unit 4	Optional unit	30	3	Level 2 Merit	6	18
Unit 5	Optional unit	30	3	Level 2 Merit	6	18
	Qualification grade totals	120	12	Level 1		48

The learner has not achieved sufficient points across the core units to achieve a Level 2 but has sufficient points to be considered for a Level 1.

Although the learner has gained enough points overall for a Level 2, they will get a Level 1 qualification as they did not achieve sufficient points across the core units.

Example 4: The learner has not achieved sufficient points in the core units to gain a Level 2 or Level 1 qualification

		GLH	Weighting (GLH/10)	Grade	Grade points	Points per unit (weighting x grade points)
Unit 1	Core unit	30	3	Unclassified	0	0
Unit 26	Core unit	30	3	Level 1	2	6
Unit 4	Optional unit	30	3	Level 2 Merit	6	18
Unit 5	Optional unit	30	3	Level 2 Merit	6	18
	Qualification grade totals	120	12	Unclassified		42

The learner has not achieved sufficient points across the core units to achieve a Level 2 or Level 1.

Although the learner has gained enough points overall for a Level 1, they will receive an Unclassified grade as they did not achieve sufficient points across the core units.

11 Quality assurance of centres

Pearson will produce on an annual basis the *BTEC Quality Assurance Handbook*, which will contain detailed guidance on the quality processes required to underpin robust assessment and internal verification.

The key principles of quality assurance are that:

- a centre delivering BTEC programmes must be an approved centre, and must have approval for the programmes or groups of programmes that it is delivering
- the centre agrees, as part of gaining approval, to abide by specific terms and conditions around the effective delivery and quality assurance of assessment; it must abide by these conditions throughout the period of delivery
- Pearson makes available to approved centres a range of materials and opportunities, through online standardisation, intended to exemplify the processes required for effective assessment, and examples of effective standards. Approved centres must use the materials and services to ensure that all staff delivering BTEC qualifications keep up to date with the guidance on assessment
- an approved centre must follow agreed protocols for standardisation of assessors and verifiers for the planning, monitoring and recording of assessment processes, and for dealing with special circumstances, appeals and malpractice.

The approach of quality-assured assessment is through a partnership between an approved centre and Pearson. We will make sure that each centre follows best practice and employs appropriate technology to support quality-assurance processes, where practicable. We work to support centres and seek to make sure that our quality-assurance processes do not place undue bureaucratic processes on centres.

We monitor and support centres in the effective operation of assessment and quality assurance. The methods we use to do this for BTEC First programmes include:

- making sure that all centres complete appropriate declarations at the time of approval
- undertaking approval visits to centres
- making sure that centres have effective teams of assessors and verifiers who are trained to undertake assessment
- assessment sampling and verification, through requested samples of assessments, completed assessed learner work and associated documentation
- an overarching review and assessment of a centre's strategy for assessing and quality assuring its BTEC programmes.

An approved centre must make certification claims only when authorised by us and strictly in accordance with requirements for reporting.

Centres that do not fully address and maintain rigorous approaches to quality assurance cannot seek certification for individual programmes or for all BTEC First programmes. Centres that do not comply with remedial action plans may have their approval to deliver qualifications removed.

12 Further information and useful publications

For further information about the qualification featured in this specification, or other Pearson qualifications, please call Customer Services on 0844 576 0026 (calls may be monitored for quality and training purposes) or visit our website qualifications.pearson.com.

Related information and publications include:

- *Equality Policy*
- *Information Manual* (updated annually)
- *Access arrangements, reasonable adjustments and special considerations*
- *Quality Assurance Handbook* (updated annually).
 - Publications on the quality assurance of BTEC qualifications are on our website at qualifications.pearson.com

Additional documentation

Additional materials include:

- Sample Assessment Material (for the external units)
- a guide to *Getting Started with BTEC*
- guides to our support for planning, delivery and assessment (including sample assignment briefs).

Visit www.btec.co.uk/2012 for more information.

Additional resources

If you need to source further learning and teaching material to support planning and delivery for your learners, there is a wide range of BTEC resources available to you.

Any publisher can seek endorsement for their resources, and, if they are successful, we will list their BTEC resources on our website qualifications.pearson.com

13 Professional development and support

Pearson supports UK and international customers with training related to BTEC qualifications. This support is available through a choice of training options offered in our published training directory, or through customised training at your centre.

The support we offer focuses on a range of issues including:

- planning for the delivery of a new programme
- planning for assessment and grading
- developing effective assignments
- building your team and teamwork skills
- developing learner-centred learning and teaching approaches
- building functional skills into your programme
- building in effective and efficient quality-assurance systems.

The national programme of training we offer is on our website at qualifications.pearson.com. You can request customised training through the website or you can contact one of our advisors in the Training from Pearson team via Customer Services to discuss your training needs.

BTEC training and support for the lifetime of the qualification

Training and networks: our training programme ranges from free introductory events through sector-specific opportunities to detailed training on all aspects of delivery, assignments and assessment. In addition, we have designed our new network events programme to allow you to share your experiences, ideas and best practice with other BTEC colleagues in your region. Sign up to the training you need at: www.btec.co.uk/training

Regional support: our team of Curriculum Development Managers and Curriculum Support Consultants, based around the country, are responsible for providing advice and support in centres. They can help you with planning and curriculum developments. Call **0844 576 0027** to contact the curriculum team for your centre.

Your BTEC Support team

Whether you want to talk to a sector specialist, browse online or submit your query for an individual response, there is someone in our BTEC Support team to help you whenever – and however – you need, with:

- Welcome Packs for new BTEC centres: if you are delivering BTEC for the first time, we will send you a sector-specific Welcome Pack designed to help you get started with the new Pearson BTEC Level 1/Level 2 First Award
- Subject Advisors: find out more about our subject advisor team – immediate, reliable support from a fellow subject expert – at: qualifications.pearson.com/subjectadvisors
- BTEC Hotline: call the BTEC Hotline on 0844 576 0026 with your query

Units

Unit 1: The Digital World

Level: **1 and 2**

Unit type: **Core**

Guided learning hours: **30**

Assessment type: **External**

Unit introduction

Understanding the digital world and how it works is essential in order to use digital technologies effectively. This unit provides an introduction to the modern digital world. You will extend your knowledge of digital services and investigate the technology and software that supports them. You will learn more about a range of services, including data storage, collaborative software, search engines and blogging.

This unit will help you understand the main technologies and processes behind the internet and investigate how they come together to let you exchange and view information from across the world. Technology is enabling more collaborative working, more access to information and is becoming a larger part of our daily lives. For example, smart appliances are able to talk to each other, wearable technology monitors our health, and retailers access social networking to gain insight into our shopping preferences.

You will explore a range of digital devices and consider the technology that enables these devices to share and exchange information.

You will investigate the concerns and legal considerations of a digital world, considering how users should behave online to safeguard themselves and respect others.

This unit is essential if you are considering a career in the digital technology sector. Digital systems and technology have become part of everyday work, so being able to understand and work with this technology is relevant in many roles in the industry.

This unit supports all of the optional units in the Award, especially *Unit 4: Creating Digital Animation*, *Unit 5: Creating Digital Audio*, *Unit 6: Creating Digital Graphics* and *Unit 7: Creating Digital Video*. It also supports *Unit 9: Spreadsheet Development*, *Unit 10: Database Development* and *Unit 13: Website Development*, as these technologies form an important part of our digital world.

Learners must complete this unit, which contributes to the final qualification.

Learning aims

In this unit you will:

- A** Investigate digital services, collaboration and communication
- B** Understand how digital devices exchange and store information
- C** Know how to operate securely in a digital world.

Learning aims and unit content

What needs to be learnt
Learning aim A: Investigate digital services, collaboration and communication
Digital services
<ul style="list-style-type: none"> • Be able to understand and select appropriate features of digital services: <ul style="list-style-type: none"> ◦ real-time information (train timetables, news services, traffic reports, flight status, updates, weather) ◦ commerce (internet banking, online auction websites, retail sales, publishing) ◦ government (online tax returns, e-voting, applications for services/grants, revenue collection) ◦ online learning/training (virtual learning environments, distance learning, online courses) ◦ entertainment (multiplayer games, radio players) ◦ collaborative working (online data storage, file access, productivity tools) ◦ download services (music, film, upgrades, software). • Understand accessibility issues in relation to digital services.
Digital collaboration
Understand the benefits and drawbacks of digital collaborative working practices, including:
<ul style="list-style-type: none"> • file types (pdf, docx, xlsx, pptx, odt, ods, jpeg, bmp, png, eps, tiff) • how files are compressed and expanded for upload/download • using digital services to collaborate • comparing the use of online and stand-alone software • version control • levels of access • file permissions (read only, read/write and full control) • storage (online services, file sharing).
Digital communication
<ul style="list-style-type: none"> • Understand the benefits and drawbacks of digital communication methods: <ul style="list-style-type: none"> ◦ social networking ◦ instant messaging ◦ live video ◦ video conferencing ◦ email. • Understand how to communicate effectively in a digital world: <ul style="list-style-type: none"> ◦ to exchange information and build digital communities ◦ netiquette. • Understand how smart devices create an Internet of Things (IoT) to control everyday objects and functions. • Understand how RFID (radio frequency identification systems) chips are used in computer systems.

What needs to be learnt

Learning aim B: Understand how digital devices exchange and store information

Connection methods

Understand, identify and compare data transfer rates, effective ranges and appropriate uses of different connection methods.

- Wireless connection methods:
 - Wi-Fi
 - Bluetooth®
 - NFC (near field communication)
 - mobile/cellular (4G, LTE etc.).
- Wired connection methods:
 - fibre optic
 - ADSL (asymmetric digital subscriber line)
 - Ethernet
 - USB
 - HDMI
 - Thunderbolt™.
- The relationship between bandwidth and transmission rates.
- Parallel and serial transmission of data, and bidirectional transmission.

Data exchange

Understand the concepts, processes and implications of networking.

- The components of a network and their usage:
 - server
 - client
 - router
 - switch
 - access points (wired/wireless).
- Internet infrastructure in terms of clients, servers, routers, networks and connecting backbones.
- The role of an Internet service provider (ISP).
- The contents of a packet as a group of bits that include:
 - packet identification
 - error control bits
 - coded data
 - destination address.
- The process of packet switching as a method of sending data.
- The role of a server (including web servers):
 - data storage
 - data access
 - authentication
 - processing of data (client side/server side).

What needs to be learnt

- Understanding search engines:
 - maintaining indexes/ranking of web pages
 - web crawlers/spiders
 - search engine optimisation (SEO)
 - adwords
 - pay-per-click advertising.

Protocols

- Internet protocols (IP), including transmission control protocol (TCP) and file transfer protocol (FTP).
- Relationship between uniform resource locator (URL) and domain name services (DNS).
- Voice over Internet protocol (VoIP).
- Hypertext Transfer Protocol (HTTP/HTTPS).
- Secure Sockets Layer (SSL).
- Email protocols:
 - Simple Mail Transfer Protocol (SMTP)
 - Post Office Protocol 3 (POP3)
 - Internet Message Access Protocol (IMAP).

What needs to be learnt

Learning aim C: Know how to operate securely in a digital world

Security of data and individuals

Understand the concepts, applications, processes and implications regarding protecting data.

- Types of threats to data:
 - malware (virus, Trojan, adware, spyware, ransomware)
 - hacking
 - accidental damage
 - hardware/system failure.
- Security measures taken to protect data:
 - encryption
 - firewalls
 - antivirus software
 - authentication
 - access rights
 - physical security measures (doors, locks, biometrics).
- Factors to consider when backing up and recovering data:
 - amount of data to be backed up
 - frequency and scheduling
 - medium (magnetic tape, optical media, hard drive)
 - type (full, differential and incremental)
 - location (on site/off site)
 - outsourcing (cloud, hosted services).
- Risks and implications of communicating digitally and measures to communicate safely:
 - cyberbullying
 - sexting
 - phishing
 - harassment
 - social engineering
 - identity theft
 - control of online content
 - e-reputation
 - digital monitoring/tracking.
- Consider ways in which digital technology can be used to monitor individuals' movements and communications.

What needs to be learnt

Legislation and policies

Understand the principles of current legislation and policies.

- Current legislation and its implications:
 - Data Protection Act 1998
 - Computer Misuse Act 1990.
- Policies and their impact on an individual:
 - acceptable use policy
 - password policy
 - terms and conditions.

Teacher guidance

Resources

There are no special resources needed for this unit.

Assessment guidance

This unit is assessed using an onscreen test. Pearson sets and marks the test. The test lasts for 1 hour and is worth 50 marks. The assessment is available on demand.

Learners will complete an onscreen test that has different types of questions, including objective- and short-answer questions. Where appropriate, questions will contain graphics, photos, animations or video. An onscreen calculator is available for questions requiring calculations. An onscreen notepad is available for making notes. Each item will have an accessibility panel that allows learners to zoom in and out, and apply a colour filter.

Learners should be encouraged to keep up to date with emerging technology as part of their learning experience.

Centres are encouraged to be aware of developments in systems and technologies. In terms of assessment, we will issue updates annually in April to be taken into account during delivery from the following September. External assessments will reflect updates from the subsequent January.

Unit 26: Integrated Digital Technologies

Level: **1 and 2**

Unit type: **Core**

Guided learning hours: **30**

Assessment type: **Internal**

Unit introduction

How many people do you know who have smartphones or use wearable technology such as fitness trackers? Have you ever posted on social media when you have arrived at a particular location? Or used the internet to access work stored in school or college when you are at home? We are now more connected than ever and every day we use a range of digital technologies to help us communicate or be more productive.

Although we may often use a number of different devices, such as our smartphone or laptop, these are often integrated with a large number of other technologies.

Smartphones, for example, provide a range of technologies such as cameras, sensors (e.g. GPS) and an internet connection. We may often share data with other services such as our social media site or the use of cloud storage to back up photographs and share files with work colleagues.

In this unit, you will investigate the features of digital technologies and how these can be combined to create a larger solution to meet the needs of different users, as well as the inherent security concerns with using digital technology. You will produce a proposal for how technologies can be used to meet the needs of a specific user. You will review how your solution addresses potential security concerns, and having obtained feedback from others, evaluate possible improvements.

This unit allows you to further develop skills from *Unit 1: The Digital World* as well as selecting and applying skills from the specialist units.

Learning aims

In this unit you will:

- A** Investigate integrated digital technologies
- B** Produce a proposal for an integrated digital solution.

Learning aims and unit content

What needs to be learnt

Learning aim A: Investigate integrated digital technologies

Integrated digital technologies

Integrated digital technologies (pervasive/ubiquitous computing) are the combination of new hardware and software devices that are embedded into items we use every day.

Typical uses and applications of integrated digital technologies

Understand and research why and how integrated digital technologies are used and the technologies they interact with:

- information, e.g. news feeds, location-based services
- communication, e.g. social media, voice and video calling
- accessibility, e.g. voice recognition, additional/adapted functionality
- leisure and fitness, e.g. fitness trackers, social media integration
- home automation, e.g. remote central heating/electricity controls.

Features and requirements of integrated digital technologies

Know the features of integrated digital technologies and how they meet different needs:

- digital devices, e.g. smartphones, wearables, laptops
- sensors, e.g. GPS receivers, accelerometer, gyroscope
- connectivity, e.g. Wi-Fi, Bluetooth®, USB
- ad-hoc networks, e.g. public Wi-Fi, home networks
- software, e.g. firmware, operating systems, apps
- integration with everyday objects, e.g. electricity meters, lighting
- use of and integration with online services, e.g. social media integration, remote/cloud storage.

Issues and concerns with integrated technologies

Explore the issues, security and privacy concerns caused by typical features of integrated technologies:

- use of ad-hoc networks, e.g. open/public network, eavesdropping
- 'always-on' connectivity, e.g. device visibility, additional points of attack
- location-based services, e.g. privacy, personal safety, profiling
- integration/sharing of data between services and devices, e.g. privacy, profiling, multiple points of attack
- data held remotely/by a third party, e.g. lack of control of data, sharing with other organisations
- embedded operating systems/firmware, e.g. difficulty of patching/updating
- malware

Security threats and measures

Understand ways in which security threats can be minimised, including:

- antivirus software
- firewalls
- encryption
- backup and recovery procedures
- authentication, e.g. passwords, biometrics
- user behaviour, e.g. not posting location, security settings.

What needs to be learnt
Learning aim B: Produce a proposal for an integrated digital solution
What are integrated digital solutions?
Integrated digital solutions are the combination of the technologies to meet a defined user need. They usually comprise software and at least one hardware device that are adapted to meet that need.
Identify the user needs
A user requirements specification, to include:
<ul style="list-style-type: none">• statement of problem• user profile• tasks to be performed by the user• tasks to be performed by the system• required outputs• specific needs, e.g. accessibility functions, size/weight restrictions• security considerations.
Hardware requirements
Suggest ways in which computer hardware can be used to meet identified needs, including:
<ul style="list-style-type: none">• required device(s)• features of device(s), e.g. sensors, cameras, microphone• connectivity
Software and service requirements
Suggest ways in which computer software and services can be used to meet identified needs, including:
<ul style="list-style-type: none">• computer programs/apps• online services, e.g. social media integration, cloud computing services, real-time information• location-based services.
Security considerations
Identify potential security concerns with the proposed solution and potential ways to mitigate these, including:
<ul style="list-style-type: none">• limiting access to the device• protecting stored data (local and remote)• protecting transmitted data• user behaviour• security software, e.g. firewall, antivirus, encryption.

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Investigate integrated digital technologies			
1A.1 Identify the uses and features of two different integrated digital technologies.	2A.P1 Explain the uses and features of two different integrated digital technologies.	2A.M1 Review how the features of the integrated digital technologies affect the intended uses.	2A.D1 Assess the benefits and drawbacks of the technologies and how they meet user needs and could be improved.
1A.2 Identify potential security issues of two integrated digital technologies.	2A.P2 Explain potential security issues of two different integrated digital technologies.	2A.M2 Discuss how potential security issues can be/are minimised in the identified technologies.	
Learning aim B: Produce a proposal for an integrated digital solution			
1B.3 Identify the user, hardware and software/service requirements of an integrated digital solution.	2B.P3 Explain the user, hardware and software/service requirements of an integrated digital solution.	2B.M3 Create a detailed proposal for an integrated digital solution, including: <ul style="list-style-type: none"> ● constraints ● actioning feedback from others ● alternative solutions. 	2B.D2 Justify choices made when producing the proposal for the solution, including: <ul style="list-style-type: none"> ● how they will meet the requirements of the problem ● how the solution was refined based on feedback from others ● any design constraints ● suggestions for future improvements/developments of the solution.
1B.4 Identify potential security concerns of the proposed solution and ways to minimise them.	2B.P4 Describe potential security concerns of the proposed solution and ways to minimise them.	2B.M4 Analyse the security of the proposal, including: <ul style="list-style-type: none"> ● security concerns ● security measures to protect stored and transmitted data ● potential security improvements. 	

Teacher guidance

Resources

The resource requirements for this unit are access to research material such as the internet and access to word-processing software for learners to produce their proposal.

Learners will need to be given guidance as to the scope of the two solutions that they should investigate for learning aim A. Tutors may wish to provide the scope as part of the assessment brief or to identify and direct learners to two solutions. It is up to learners to identify the features and uses of these solutions but tutors may provide the examples to ensure that they provide the scope required. Learners can source their own examples if they wish but these should be checked by the centre before being used in the assessment.

It is assumed that learners will have some basic understanding of some of the technologies and topic areas (including security issues) before starting the unit (based on core content from Unit 1).

Assessment guidance

This unit is internally assessed by the centre and externally verified by Pearson.

Please read this guidance in conjunction with *Section 8 Internal assessment*.

Learning aim A

For 2A.P1: learners should explain how integrated digital technologies are used in two real-world situations, for example how a professional athlete uses a fitness tracker, smartphone, data-handling software and online communities to meet a range of related needs. Learners should describe how the features of the different combined technologies and services are used within the solution.

For 2A.P2: learners should explain potential security issues with the identified technologies.

For Level 1, as a minimum, learners should identify features of technologies that are used in two different real-world situations and identify potential security issues for each example.

For 2A.M1: learners should review the extent to which the features of the two identified solutions and the technologies they use meet the specific requirements of the intended uses. They should provide descriptions of specific ways that security issues could be/are minimised.

For 2A.D1: learners should look at the solutions in greater detail and consider their strengths and weaknesses of the way the technologies are used and combined. Learners should consider how well they meet the user needs and the impact on security. They should explore a range of strengths and weaknesses for both identified solutions, which are supported by specific examples.

Learning aim B

Learners need to produce a proposal for an integrated digital solution that will combine at least two physical devices and at least one online service to meet the needs of a given user.

For 2B.P3: learners should provide a proposal for an integrated solution that includes:

- a user requirements specification – explaining the needs of the identified user (see learning aim B subject content for scope of user requirements specifications)
- an explanation of the hardware (including devices and connections) that would be used to meet the needs of the user
- an explanation of how software (e.g. apps, online communities etc.) would be used to meet the needs of the user
- security and privacy concerns and ways in which these can be minimised.

For Level 1, as a minimum, learners should identify the user requirements and hardware and software that would be used to meet the identified needs. Learners should identify potential security concerns (this may be in the form of a list) and identify security procedures/technologies that could be used to mitigate some of them.

For 2B.M3: learners should produce a detailed proposal that provides a clear description of how the features of a range of digital technologies can be used and combined to meet the identified needs of a specific user.

The proposal should provide detailed consideration of the potential security and privacy concerns with the proposed solution and how these will be addressed (including application of specific technologies and user behaviour). For example, if a device that is being used by an athlete to track their running routes is providing location and time data, which is then being shared on social media, learners would need to consider how the potential impact of these issues could be reduced or the problems they may cause.

Learners should discuss how they considered feedback from others when developing their proposal and how this feedback impacted on their final solution.

Learners should make reference to how specific constraints of the problem impacted on their proposed solution. For example, use of open public networks may be a security concern but the nature of the problem meant that use of these for one part of the solution was unavoidable.

Learners should provide an outline of an alternative solution that shows how different features of hardware and software or how alternative technologies could be used to meet the needs of the user.

For 2B.D2: learners should provide detailed supporting arguments for their solution, justifying the choices made for their proposed solution and providing supporting arguments for how the:

- features of the solution will meet the specific requirements of the identified user
- solution was refined based on feedback from others
- proposed solution addressed specific constraints.

Learners should support the points they make with specific examples from the problem and/or their solution. Learners should explore both the use and security requirements of the problem, considering the balance between providing an effective system, user requirements and the level of security.

Learners should provide justification for any changes made to the solution during development of the proposal. Learners should provide sensible and appropriate recommendations for future improvements to the security of the solution.

Suggested assignment outlines

The table below shows a programme of suggested assignment outlines that cover the assessment criteria. This is guidance and it is recommended that centres either write their own assignments or adapt any assignments we provide to meet local needs and resources.

Criteria covered	Assignment	Scenario	Assessment evidence
2A.P1, 2A.P2, 2A.M1, 2A.M2, 2A.D1 (1A.1, 1A.2)	Investigating integrated technology	<p>You are applying for a job in a technology consultancy firm that designs digital solutions to meet specific needs.</p> <p>As part of the application process, you must produce a report on uses of integrated digital technology and how it is used in different scenarios.</p> <p>Your report should cover:</p> <ul style="list-style-type: none"> • two distinctly different uses of integrated digital solutions • the features of each of the identified digital technologies and how they meet the different needs • potential security concerns of the identified situations and technologies • how identified security issues can be addressed. 	<ul style="list-style-type: none"> • Written report

Criteria covered	Assignment	Scenario	Assessment evidence
2B.P3,2B.P4 2B.M3, 2B.M4 2B.D2 (1B.3, 1B.4)	Propose an integrated solution	<p>A technology consultant has asked for your input on a current project.</p> <p>The consultant's client requires an integrated digital solution that will aid them in both their leisure and work life.</p> <ul style="list-style-type: none"> Leisure – an amateur cyclist who takes part in races and wants to improve their training/performance and promote their activity to attract sponsorship. Work – a cycle courier delivering letters and parcels in a large city centre. <p>You are required to produce a written proposal that should discuss in detail how integrated digital technology could be used to meet the client's needs.</p> <p>The proposal should include:</p> <ul style="list-style-type: none"> user needs hardware requirements software/service requirements security concerns measures that will be taken to protect stored and transmitted data constraints on the design alternative ideas for the solution. <p>You should seek feedback from others to allow you to refine the proposal during development, providing justification for changes that were made.</p> <p>You should provide justification of why your proposed solution is appropriate for the identified user and scenario and make suggestions for future developments and/or improvements.</p>	<ul style="list-style-type: none"> Presentation Observation records Presentation notes

Unit 4: Creating Digital Animation

Level: **1 and 2**

Unit type: **Optional specialist**

Guided learning hours: **30**

Assessment type: **Internal**

Unit introduction

How are the amazing visual effects in science fiction and fantasy films, and computer games, made? This unit provides you with an introduction to tools/techniques and processes that are used commercially when creating computer animation.

Animation is the creation of moving images and has a long history. Today modern animations are usually created using a computer. It is an exciting and fast moving area of creative technology that provides an opportunity to combine creative and technical computing skills, and is one in which the UK excels. The creative industries have grown considerably in recent years and provide increasing employment opportunities. An animator can work in a number of different creative areas: creating effects for live-action films, feature-length animations and computer games. Non-narrative animations feature in online advertising and software interface design.

In this unit you will investigate the range of applications and features of existing animation products or sequences, that have been created for an intended audience and purpose. You will be able to apply your findings when creating your own computer animation which do not require user interaction.

You will then design, create and test your own animated product, in a similar way to how it is done in industry, and be introduced to the technology and techniques used by the professionals. You will be given a brief which will need to be fulfilled. You will also need to think about the creative aspect of the project as well as technical skills to use. You will review your completed animated product having obtained feedback from others.

In particular, this unit develops skills from *Unit 1: The Digital World* and the following optional units: *Unit 5: Creating Digital Audio*, *Unit 6: Creating Digital Graphics* and *Unit 7: Creating Digital Video*. In addition, it supports the content of *Unit 8: Mobile Apps Development* and *Unit 13: Website Development*.

Learning aims

In this unit you will:

- A** Understand the applications and features of digital animation products
- B** Design a digital animation product
- C** Create, test and review a digital animation product.

Learning aims and unit content

What needs to be learnt
Learning aim A: Understand the applications and features of digital animation products
Types of animation
Know the different types of traditional and digital based animation, including:
<ul style="list-style-type: none"> • flick book • cel animation • stop motion • cut-out (paper-based and computer-generated images either scanned or as graphics) • rotoscoping • skeletal animation • Flash animation • computer-generated imagery (CGI).
Applications of digital animation
Applications and purpose of digital animation, including:
<ul style="list-style-type: none"> • different existing digitally animated products (e.g. TV programmes, films, computer games, music videos, advertisements, internet and mobile content, simulation, product development) • the effect (e.g. evoke emotion, educate) they have on different audiences (e.g. age, gender, interest, need).
Features of digital animation
Features of computer-animated products, e.g.:
<ul style="list-style-type: none"> • type of animation • 2-D and 3-D models • image type (bitmap/photo and vector) • frames per second • resolution • timing and length • special effects (motion blur/fade, rendering effects, morphing, camera angles) • audio (speech, music, sound effects).

What needs to be learnt
Learning aim B: Design a digital animation product
What goes into the design?
<p>Designs include:</p> <ul style="list-style-type: none">● intended audience (age, gender, interests), purpose and requirements (as defined in a brief)● storyboards containing panels which outline the main assets (characters, objects, scenes, sounds) and which include some main panels that show how the assets combine, with timing, camera angles and flow shown● list of any ready-made assets, with their sources documented and referenced in a sources table, e.g.:<ul style="list-style-type: none">○ graphics – characters and/or objects○ audio clips – speech, sound effects and/or music○ video clips● alternative ideas for the design● if required, prototypes of the animated product, e.g. characters, objects, video clips, audio clips, scenes (hand-drawn or computer-generated prototypes are acceptable formats for designs).

What needs to be learnt**Learning aim C: Create, test and review a digital animation product****Creating the animation**

Preparing assets

- Gather ready-made digital assets (characters, objects, audio clips, video footage) from other sources (e.g. internet, media such as CD or DVD).
- Hand draw or use graphic-editing software to create original assets (characters, objects and/or backgrounds).
- Import original and ready-made assets:
 - graphics and/or video files, e.g. .tga, .jpg, .png, .dpx, .iff, .avi, .mov (QuickTime), .ac (AC3D), .obj (Wavefront), .lwo (Lightwave), .motion capture, .mp4 and .mpg
 - audio files, e.g. .wav, .aiff, .au, .mp3
- reference ready-made assets appropriately in a sources table, considering copyright issues.
- Graphic-editing software:
 - vector editing tools/techniques, e.g.:
 - text
 - line and curve (types and thickness)
 - shading, colour fills, gradients, patterns
 - layering
 - photo editing tools/techniques, e.g.:
 - selecting and removing parts (lasso, eraser, marquee)
 - cropping and resizing images
 - shape fill with texture, solid colours, colour gradient or outline with colour
 - scale, rotate, reflect and distort layers.

If required for the product, record original audio and video, import assets into animation software and use software to edit the original assets.

continued

What needs to be learnt

Animation-editing software

- 2-D digital animation techniques (3-D techniques are acceptable but not required):
 - cut-out (either scanned images or digitally generated graphics)
 - rotoscoping
 - skeletal animation
- animation-editing software tools/techniques:
 - edit key frames (e.g. insert, delete, copy)
 - tweening
 - layering
 - camera movement (e.g. panning, cuttings from one shot to another, zoom, angles)
 - rendering (e.g. shading, reflections, edge effects and shadows)
 - transition effects (e.g. motion blur/fade, morphing)
 - audio speech, sounds and/or music
 - lip-sync mouth movement to audio.

Test the animation

Improving the animation:

- test the animated product for functionality (e.g. sound is audible, the animation runs, the length of the clip is appropriate)
- test that the animation is fit for purpose
- gather feedback from others on quality (e.g. the characters and/or objects move as intended, timing is accurate, sound quality is high), functionality, audience and purpose
- document any improvements and update the sources table for ready-made assets
- understand the reasons for exporting and compressing animation files (e.g. to ensure format is appropriate for reviewers and/or users)
- export and compress the animation product into a suitable final file type (e.g. .swf, .mpeg, .wmv, .sb, .mpg) and size.

Review the animation

Review the finished digital animation product for:

- quality of the animation product
- fitness for audience and purpose
- suitability against the original requirements
- legal and ethical constraints, e.g. copyright, eSafety, suitable content
- strengths and improvements.

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Understand the applications and features of digital animation products			
1A.1 Identify the intended purpose and features of two animation products.	2A.P1 Explain the intended purpose and features of two different animation products.	2A.M1 Review how the products are fit for purpose and their intended effect on the audience.	2A.D1 Discuss the strengths and weaknesses of two animation products.
Learning aim B: Design a digital animation product			
1B.2 Identify the audience and purpose for the design of an animation.	2B.P2 Describe the audience and purpose for the design of an animation.	2B.M2 Produce a detailed animation product design, including reasons why alternative ideas have been discarded.#	2B.D2 Justify the final design decisions, explain how they will: <ul style="list-style-type: none"> fulfil the stated purpose and requirements of the brief meet the needs of the audience.#
1B.3 Produce an outline design for an animation product, with guidance. The design must include an outline storyboard.	2B.P3 Produce designs for an animation product of at least 30 seconds duration. The design must include: <ul style="list-style-type: none"> description of requirements from the brief a storyboard a list of ready-made assets audio.# 		

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim C: Create, test and review a digital animation product			
1C.4 Prepare assets for the animation, with guidance.	2C.P4 Prepare assets for the animation product, demonstrating awareness of purpose, with sources of assets listed.	2C.M3 Prepare assets for the animation product demonstrating awareness of audience with all sources of assets fully referenced.	2C.D3 Refine assets to create a high-quality animation product.*
1C.5 Edit assets to create an animation product of at least 20 seconds, testing the product for functionality with guidance.*	2C.P5 Edit assets to create an animation of at least 30 seconds which includes audio.* Test the product for functionality and purpose against the original requirements, making any necessary improvements to the product.	2C.M4 Gather feedback from others on the quality of the product and use it to improve the product, demonstrating awareness of audience and purpose.*	
1C.6 Identify how the final animation product is suitable for the intended purpose.	2C.P6 Explain how the final animation product is suitable for the intended audience and purpose.	2C.M5 Review the extent to which the final animation product meets the needs of the intended audience and the purpose, considering feedback from others and any constraints.	2C.D4 Evaluate the final animation product and the initial design and justify any changes made, making recommendations for further improvement.

*Opportunity to assess mathematical skills

#Opportunity to assess English skills

Teacher guidance

Resources

The special resources required for this unit are animation software, e.g.:

- Flash
- Toon Boom Studio
- Anime Studio
- Blender
- After Effects
- any other appropriate animation software.

Other optional resources include:

- digital drawing tablet and pen
- digital scanner
- digital video recorder or web cam
- solid colour background (i.e. green screen)
- audio software packages such as Audacity and Apple Garage Band.

Learners will need access to a suitable assignment brief that specifies the intended audience, purpose of the animation and the user requirements.

Assessment guidance

This unit is assessed internally by the centre and externally verified by Pearson. Please read this guidance in conjunction with *Section 8 Internal assessment*.

Evidence for this unit requires learners to show that they understand the features of animation products and the processes involved in creating them. They also need to demonstrate practical skills when designing, creating, testing and reviewing a digital animation product of their own to meet a given brief.

Please note that it is not appropriate for learners to use ready-made animation scenes or templates, such as those found in PowerPoint, and a slideshow is not sufficient. Also, for the purpose of this qualification, stop-motion and cel animation techniques are prohibited.

To achieve all grading criteria, learners should have access to existing animation products.

Learning aim A

Learners should investigate two different existing animation products created using different animation techniques, e.g. rotoscoping, flick book and cut-out, and one of these should be 3D animation. For each product they should identify technical features of the animation and content, audience and purpose. Learners should be encouraged to choose products themselves to investigate, such as computer games, computer-animated film clips, digitally animated music videos and product-design animations (e.g. for medical devices and buildings). The two animations should be designed for different purposes.

For 2A.P1: learners should explain the purpose of the animation products and identify features, including file type and size, length, quality, any details of any special effects, e.g. motion blur/fade, rendering effects, morphing and/or camera angles.

For Level 1, as a minimum, learners should identify the purpose of two animated products and limited features, e.g. file type and size, length, quality, 2-D or 3-D models.

For 2A.M1: learners should review whether the animated products are fit for purpose and their intended effect on the audience.

For 2A.D1: learners should examine one animation in more detail and discuss the strengths, weaknesses and essential features of the products, concluding if the products could be improved.

Learning aim B

Learners should design a 2-D digitally animated product to meet a given brief. Learners are not prevented from creating 3-D animations but should recognise the significant additional challenges this would present. The design should be for an animation product for a specific audience and purpose that is between 30 seconds and 2 minutes long and which runs continuously **without** user interaction. The animation can be abstract but must demonstrate basic motion of at least one character.

For 2B.P2: for the design, learners should describe the purpose and intended audience for the product (as outlined in the brief), for the design ideas for the product.

For Level 1, as a minimum, learners should identify the audience and purpose for their animation design.

For 2B.P3: learners should produce design ideas for an animation product, describing any design requirements from the brief. Initial design ideas can either be hand drawn or produced using editing software.

They should create a list of ready-made assets (graphics, audio and video) and a storyboard showing at least six main panels for characters, objects and audio assets and how these will be combined. Motion should also be indicated on the storyboard. Learners can create prototypes for their ideas, e.g. key frames, but these should not be finished products. Learners should include audio in their designs.

For Level 1, as a minimum, learners should produce an outline design for their animation product. An outline design would contain an outline storyboard containing at least three main panels that give an indication of what the product would be like and what it is about.

For 2B.M2: learners should extend their design documentation and increase the level of detail in their design documents, including outline design ideas, for example a description of alternative characters and storyline or alternative audience. Learners should give reasons why these ideas have been discarded and so should not be fully worked-up designs.

They should refine the chosen design idea, which must include a detailed storyboard showing a minimum of 12 panels, an indication of motion, and descriptions of what original and ready-made assets are included and how they are combined. Learners should also include details of animation effects, e.g. motion blur/fade, rendering effects, morphing and camera angles, and what edits are required to the ready-made assets.

For 2B.D2: learners should explain how each asset helps meet the purpose and original requirements in the brief. Learners should refer back to their storyboard and explain how the design meets the needs of the intended audience.

Learners may wish to do this by annotating their design documents and describing why (e.g. 'I have used a certain gesture here because ...'). They should also justify why they have chosen to combine assets in this way to fulfil the brief, and why the chosen design was selected.

Learning aim C

Learners should create, test and review an original digital animation product of between 30 seconds and 2 minutes in length (excluding any repeated looped sections). Although learners may deviate from their plans (as often happens with any project) they should aim to create a final product that closely resembles their original design. Any major changes should be noted on their design with a brief reason for the change, e.g. 'I found a more appropriate character or sound effect'.

The type and nature of the graphics and video assets required by learners will depend on the animation techniques used. The following techniques are acceptable:

- cut-out – either scanned, hand drawn and/or ready-made images or computer-drawn graphics
- rotoscoping (video footage that is edited into a graphical format)
- skeletal animation (graphical characters).

For 2C.P4: learners should gather required ready-made graphic asset(s), e.g. for background scenes and objects, and video and audio asset(s), e.g. speech, music and sound effects. Video and audio assets can be ready-made and/or original. All ready-made asset(s) should be listed in a sources table.

Learners should prepare original graphics for the main characters and, if required, for objects and scenes, demonstrating awareness of purpose, e.g. if the computer animation is about a 'mad professor' then the character can be recognised as such and is appropriate for the purpose of the animation. Graphic assets can be hand drawn, created using editing software and/or, for the rotoscoping animation technique, they can be converted from video asset(s) into graphical assets using the animation editing software.

For Level 1, as a minimum, learners should gather and prepare some assets for the animation. Some of the graphical assets will be missing (e.g. characters, objects and scenes) or the main characters will be incomplete (e.g. characters may be missing limbs or shading may be unfinished) and audio assets may be omitted.

For 2C.M3: learners should gather and prepare graphics that are high quality, demonstrating awareness of the intended audience. For example, characters should be fit for audience in the use of characterisation, texture and colour, and the individual assets should have a common look and feel, e.g. as with the characters in the *South Park* cartoon.

The sources table should be detailed enough for another person to independently obtain all of the assets used.

For 2C.P5: learners should edit their original and ready-made graphics and audio assets to create their designed animation product. The animation must be at least 30 seconds long and not more than 2 minutes in length (excluding any repeated loop sections).

Learners should test their products for functionality, e.g. that the animation plays and volume levels are appropriate. The products should contain the correct assets, and the product should be fit for purpose. For this criterion, it is acceptable to have some brief interruptions in the motion and movement that is shaky and/or in the wrong direction. Learners should make any improvements based on their testing. Changes can be evidenced by annotating their design documents.

Learners should check whether their animation needs to be compressed and exported so that teachers can review their product quickly.

For Level 1, as a minimum, learners should edit the original and ready-made graphics to create an animation product of least 20 seconds (excluding any repeated looped sections). This product may not contain any audio assets and some of the assets will be missing or incomplete. Learners should test their product for functionality (e.g. that the animation plays and the volume levels are appropriate).

For 2C.M4: learners should gather feedback from at least one other person on the quality of their products. They should then respond to the feedback to improve the animation, demonstrating awareness of audience and purpose. For instance, the assets must integrate well together, with characters, objects and scenes sharing a similar style and colour scheme.

If rotoscoping is used then an attempt must have been made to reduce 'boil' (caused when the output slightly deviates from the image that varies between frames, which causes unnatural shake). This does not apply when 'boil' is being used as a required effect or style, which should be clearly stated in the design.

For 2C.D3: teachers should be aware that the process of creating a product is iterative.

The digital animation product should be refined to a high quality, which means the sound is free from noise, the motion is synchronised, smooth, realistic and flows as intended, and the timing is accurate. All of the ideas from testing, feedback and reviewing their designs as they create the animations should have been considered as how best to refine the product.

Learners should ensure there are copies of both the initial and refined versions of the animation product saved, with annotations on design documents where appropriate.

For 2C.P6: The learner should explain reasons why the product is suitable for audience and purpose. Learners should give at least one reason for audience and one for purpose.

For Level 1, as a minimum, learners should identify why their animation is fit for purpose, for example, "My animation is suitable for use in a toddler's TV show, as it is simple and easy to follow and brightly coloured".

For 2C.M5: learners should build on the strengths, weaknesses and explanations in the Pass criteria to review how much the product is suitable for the intended audience and purpose as defined in the designs. They should also seek feedback from at least one other person. This could be asking a peer to watch and listen to the computer animation and give written/recorded feedback, or playing it to the class and asking them to fill in a short questionnaire. Learners should use this feedback when considering how suitable their product is.

Learners must consider any legal and ethical constraints they encountered during the creation of the animation products, for instance copyright, eSafety and the use of content appropriate for the target audience.

For 2C.D4: learners should evaluate the final products against the initial designs in terms of audience, purpose and client requirements as required by the brief, and justify any changes that were made, explaining the rationale for those changes. They should also recommend at least three improvements but do not need to implement the enhancements.

Suggested assignment outlines

The table below shows a programme of suggested assignment outlines that cover the assessment criteria. This is guidance and it is recommended that centres either write their own assignments or adapt any assignments we provide to meet local needs and resources.

Possible scenarios for this unit are:

- animations for a music video
- a short children's cartoon
- an advertisement for chocolate milkshake.

Criteria covered	Assignment	Scenario	Assessment evidence
1A.1 2A.P1, 2A.M1 2A.D1	Investigation	<p>Consider at least two existing and different animation products and explain the use of animation features and the purpose of each. Look at how these features are suitable for the target audience and analyse the impact of the clip on the audience.</p> <p>Discuss the strengths, weaknesses and essential features of each animation, can they be improved to make a better product?</p>	<ul style="list-style-type: none"> • Research report or a magazine article.

Criteria covered	Assignment	Scenario	Assessment evidence
1B.2, 1B.3 2B.P2, 2B.P3 2B.M2, 2B.D2	Smoking vs Health – design	<p>A charity has commissioned you to produce a short 2-D (or 3-D, for an additional challenge) computer animation about the dangers of smoking. The animation is for the charity's website and is aimed at young people 14–19 years old.</p> <p>Describe who are the audience for your animation, and what its purpose is. What are you going to design?</p> <p>Design an animation for the charity, including:</p> <ul style="list-style-type: none"> • a storyboard • a list of assets to use, including some audio. <p>Outline some alternative ideas for the animation, such as characters, plot or effects.</p> <p>Justify why your design meets the original requirements and why you have chosen some ideas above others.</p>	<ul style="list-style-type: none"> • Design documentation and prototypes.
1C.4, 1C.5 2C.P4, 2C.M3, 2C.P5, 2C.M4, 2C.D3	Making the Animation	<p>Prepare by gathering assets together and create your animation, keeping the audience and purpose of your clip in mind. Note any changes you make to your design as you go through.</p> <p>Edit your assets together and test that your clip works.</p> <p>Get feedback from others on the clip and refine it to make it as high quality as you can, recording the sources of your assets and updating your design documents with each change you make.</p>	<ul style="list-style-type: none"> • Completed digital animation product • Annotated and updated design documents • Records of feedback and comments.

Criteria covered	Assignment	Scenario	Assessment evidence
1C.6 2C.P6, 2C.M5 2C.D4	Review	Evaluate the clip, justifying why it meets the brief, and suggest improvements and consider any constraints. Why is it suitable for the audience and purpose? Get feedback from others on your animation and use it in your explanation. Justify and explain any changes you made to the design through the process. How would you improve it further?	<ul style="list-style-type: none"> • Evaluation report. • Feedback from others.

Unit 5: Creating Digital Audio

Level: **1 and 2**

Unit type: **Optional specialist**

Guided learning hours: **30**

Assessment type: **Internal**

Unit introduction

Audio products can be used to change an individual's mood, from the extremes of reducing them to tears to making them smile. Many companies now routinely use digital audio products, such as adverts on the TV, music, computer games, mobile phones and audible alerts or warnings. Mobile devices allow us to listen to audio at any time, so we can listen to a podcast on our MP3 player whenever and wherever we want. Job roles which use the creation of audio include sound designers, sound engineers and music artists and producers.

You will plan, record and edit digital audio products in a similar way to how it is done in industry and be introduced to the technology and techniques used by professionals. You will be given a brief that will need to be fulfilled. You will also need to think about creative aspects of the project as well as technical skills. You will need to record original audio and combine this with imported audio files to create an audio product. Once finished, you will review the products, having obtained feedback from others, and evaluate possible improvements.

In particular, this unit develops skills from *Unit 1: The Digital World* and the following optional units: *Unit 4: Creating Digital Animation*, *Unit 6: Creating Digital Graphics* and *Unit 7: Creating Digital Video*. In addition, it supports the content of *Unit 8: Mobile Apps Development* and *Unit 13: Website Development*.

Learning aims

In this unit you will:

- A** Understand the applications and features of digital audio products
- B** Design digital audio products
- C** Create, test and review digital audio products.

Learning aims and unit content

What needs to be learnt
Learning aim A: Understand the applications and features of digital audio products
Applications of digital audio Applications and purpose including: <ul style="list-style-type: none">• a range of different existing audio products or clips (e.g. podcasts, radio adverts, news, plays, comedy shows, live music, speeches)• the effect (e.g. evoke emotion, educate) they have on different audiences (e.g. age, gender, interest, need). Features of digital audio products Features, e.g.: <ul style="list-style-type: none">• file types (e.g. .mp4, .wav, .wma, .aac)• file sizes• timing and length• quality• codecs• platforms and compatibility• special effects (e.g. echo, fade, distortion, change of pitch or tempo)• voiceovers• soundtracks• layering• transitions/mixing• multi tracks.

What needs to be learnt
Learning aim B: Design digital audio products
Designing a digital audio product
<p>Designs include:</p> <ul style="list-style-type: none">intended audience, purpose and any other requirements (as given in a brief)script (e.g. what will be included in the product, any dialogue, instructions, effects and directions)list of any ready-made digital assets (e.g. an individual digital audio recording of any type such as speech, music or sound effect). Sources for ready-made assets must be documented and referencedtimeline, e.g. outlining what different assets are included and when different assets will be combinedalternative design ideasif required, prototype design ideas of the digital audio assets (e.g. voice overs, soundtrack, cropping/mixing of recorded clips) and special effects (e.g. echo, fade, distortion, change of pitch or tempo)recording schedule (e.g. the day(s) on which learners plan to record, the equipment they will need and the people who will be involved)consideration of health and safety constraints while recording (e.g. trailing cables, carrying heavy equipment, high volume levels, use of headphones) and the environment where the recording will take place (e.g. no liquids near electrical equipment).

What needs to be learnt**Learning aim C: Create, test and review digital audio products****Record original audio assets**

Use audio equipment:

- features of recording equipment (e.g. directional, covers/pop shields/muffs, range (Hz), length of cord/wireless, portability/clip-on, cost)
- types of equipment used for recording:
 - microphones
 - other equipment (e.g. dictaphones, in-camera, mobile phones)
- features of playback equipment (e.g. range (Hz), length of cord/wireless, cost)
- types of equipment for playback:
 - headphones
 - speakers.

Prepare and test the equipment

Use audio equipment:

- perform a soundcheck and adjust set up if necessary (e.g. to reduce background noise), distance from microphone and sound levels
- record original audio assets safely from different sources.

Create digital audio products

Prepare (gather and create) audio assets.

Gather ready-made audio assets from other sources (e.g. the internet, other media such as CD or DVD) and reference them in a sources table

Audio editing software, e.g.

- import audio files (e.g. .wav, .aiff, .au, and .mp3)
- editing, e.g.:
 - cut, copy, paste and delete clips
 - edit and mix tracks
 - fade the volume up or down smoothly
 - layering separate audio assets
- effects, e.g.:
 - change the pitch without changing the tempo, or vice versa
 - adjust volumes, balance, amplify, and normalise effects
 - special effects like echo and reverse speech
 - filters (e.g. pitch, tempo, pan)
- sound quality, e.g.:
 - clean the audio product of unwanted noise (e.g. static, hiss or hum)
 - understand tracks can have different sample rates or levels of quality (e.g. 24 bit or 32 bit).

continued

What needs to be learnt**Test audio products**

Test and refine audio products

- Test the audio products for functionality (e.g. checking that the assets work, that sound is audible, the clip runs, the length of the clip is correct) and against the original requirements of the brief
- Gather feedback from others on feedback on quality (e.g. they are free of unwanted noise, the assets are synchronised and flow, timing is accurate and sound quality is high), functionality, audience and purpose.
- Document any improvements, including updating the sources table for ready-made assets.
- Understand the reasons for exporting and compressing audio files (e.g. to ensure format is appropriate for reviewers or users).
- Export and compress the audio product into suitable final file type (e.g. .mp3, .wav, .wma) and size.

Review the audio products

Review the finished audio products for:

- quality of the audio product
- fitness for audience and purpose
- meeting the original requirements
- legal and ethical constraints (e.g. copyright, eSafety, suitable content)
- strengths and improvements.

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Understand the applications and features of digital audio products			
1A.1 Identify the intended purpose and features of two digital audio products.	2A.P1 Explain the intended purpose and features of two different digital audio products.	2A.M1 Review how the products are fit for purpose and their intended effect on the audience.	2A.D1 Discuss the strengths and weaknesses of the digital audio products.
Learning aim B: Design digital audio products			
1B.2 Identify the audience and purpose for the design of a digital audio product.	2B.P2 Describe the audience and purpose for the design of a digital audio product.	2B.M2 Produce detailed audio designs, including reasons why alternative ideas have been discarded.#	2B.D2 Justify the final design decisions, explaining how they will: <ul style="list-style-type: none"> fulfil the stated purpose and requirements of the brief meet the needs of the intended audience.#
1B.3 Produce outline design(s) for the digital audio product(s). Each design must include: <ul style="list-style-type: none"> outline script timeline. 	2B.P3 Produce designs for two digital audio products, each of at least three minutes duration, which together include speech, music and sound effects. Each design must include: <ul style="list-style-type: none"> description of requirements from the brief a script a list of the ready-made digital audio assets to be used a timeline.# 		

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim C: Create, test and review digital audio products			
1C.4 Record audio and gather audio assets, with guidance.	2C.P4 Carry out a soundcheck and record audio, demonstrating awareness of purpose, and prepare audio assets, listing sources used.	2C.M3 Record high quality original audio, demonstrating awareness of audience, with all sources of assets fully referenced.	
1C.5 Edit audio assets to create a digital audio product of at least three minutes duration, and test it for functionality, with guidance	2C.P5 Edit audio assets to create two digital audio products each of at least three minutes duration. Test the products for functionality, purpose and against the original requirements, making any necessary improvements to the products.	2C.M4 Gather feedback from others on the quality of the digital audio products and use it to improve the product, demonstrating awareness of audience and purpose.	2C.D3 Refine audio assets to create two high-quality digital audio products.
1C.6 For each of the final digital audio products, identify how they are suitable for the intended purpose.	2C.P6 For each of the final digital audio products, explain how the final product is suitable for the intended audience and purpose.	2C.M5 Review the extent to which each of the final digital audio products meets the needs of the intended audience and the purpose, considering feedback from others and any constraints.	2C.D4 Evaluate the final digital audio products against the initial designs and justify any changes made, making recommendations for further improvements.

*Opportunity to assess mathematical skills

#Opportunity to assess English skills

Teacher guidance

Resources

The special resources required for this unit are:

- suitable audio editing software package, e.g. Audacity, Adobe Audition, Apple Garage Band, Sony Sound Forge
- microphones and/or other recording equipment
- headphones/speakers.

Learners need access to assignment briefs that specify the intended audience and purpose for the audio products required.

Assessment guidance

This unit is assessed internally by the centre and externally verified by Pearson. Please read this guidance in conjunction with *Section 8 Internal assessment*.

Evidence for this unit will require learners to show that they understand the features of audio and the processes involved in recording and editing it. They also need to demonstrate practical skills in designing, creating, testing and reviewing an audio product of their own to meet a given brief.

To achieve all grading criteria, learners should have access to existing audio clips/products for investigation. They should also have access to equipment and software to allow them to create their own audio product through editing and testing audio assets.

Learners should record their own original audio assets to combine and edit into the final product. A final product should not only contain ready-made audio files edited together but must also include some original material.

Learning aim A

Learners should investigate two different existing audio products and identify features about the technical qualities, the content, intended audience and purpose. Learners should be encouraged to choose their own products or clips and to investigate different types of products, such as podcasts, radio adverts, music, and recordings of speeches. The two digital audio products should be designed for different purposes.

For 2A.P1: learners should explain the purpose of the audio products or clips and the features used including file type and size, length, quality, details of any special effects, e.g. voiceovers, layering, mixing or use of multitracks.

For Level 1, as a minimum, learners should identify the purpose of two audio products/clips and limited features – file type and size, length and quality.

For 2A.M1: learners should review whether the audio products/clips are fit for purpose and how they are intended to affect the audience.

For 2A.D1: learners should examine the digital audio products in more detail and discuss the strengths, weaknesses and essential features of the products, concluding if the products could be improved.

Learning aim B

Learners should design two audio products to given briefs. Each product should be between three and five minutes long and for a specific audience and purpose. Between the two products, they should have the opportunity to combine speech, music and sound effects. Learners should consider any health and safety requirements, e.g. trailing cables, carrying heavy equipment, high volume levels, use of headphones, and the environment where the recording will take place, e.g. possibly near a busy road.

For 2B.P2: for each design, learners should describe the purpose and target audience, relating this to their design ideas for the product.

For Level 1, as a minimum, learners should identify the audience and the purpose for their design.

For 2B.P3: learners will generate design ideas for a digital audio product. Learners should include any requirements for the product required in the brief. They should create a list of ready-made assets to be combined, a script and a timeline showing how and when the different assets will be combined. The script should include the people involved and give an overview of what will be included, and any dialogue.

Learners could also include a recording schedule to help organise their recordings. Learners can create prototypes for their ideas, e.g. a sound effect, but these should not be finished products.

For Level 1, as a minimum, learners should produce an outline design for their audio products. An outline design would contain an outline script and a timeline to give an indication of what the product would be like and what it is about.

For 2B.M2: learners should extend their design documentation and increase the detail in their design documents, including outlines of alternative ideas and give the reasons why they have discarded them, e.g. an outline of variations on the script or alternative audiences for their products. These should not be fully worked up designs, but annotations or sketches to demonstrate the development in their design process.

Learners should refine both designs, which must include a detailed script (including timing), any instructions or stage directions, note where assets are included, and include a detailed timeline for how the different assets will be combined. The detailed timeline should include details on what sort of transitions, fades, etc. are required.

For 2B.D2: learners should justify why they chose the final design ideas from the alternative ideas outlined for the Merit criteria. Learners should explain how each asset helps meet the purpose and requirements from the brief. Learners should refer back to their script and timeline for combining assets, and explain how the design meets the needs of the intended audience and purpose.

Learners may wish to do this by annotating their design documents and describing why, e.g. 'I have used sound fading in here because ...'. They should also justify why they have chosen to combine assets in this way to fulfil the brief, and why the chosen design was selected.

Learning aim C

Learners should prepare and carry out recordings and gather and source additional ready-made assets such as music and sound effects. They should then use these to create their planned audio products.

Although learners may deviate from their plans (as happens with any project), they should aim to create final products that closely resemble their original design. Any major changes should be noted on their design with a brief reason for the change, e.g. 'Had to change an actor's voice due to illness' or 'Found a different, more appropriate piece of music'.

For 2C.P4: learners should check their equipment (as defined in their design) and carry out a soundcheck to make sure they are prepared for their actual recordings, making adjustments if necessary, e.g. ensuring minimal or no background noise and good sound levels. These could be evidenced by photographs and/or witness statements.

Learners should then carry out their recordings. If they need to carry out several recordings in different locations then they should complete a new soundcheck each time.

Learners should gather and prepare ready-made audio assets such as music and/or sound effects. To evidence gathering these audio assets, learners should include a table of sources. Learners should demonstrate an awareness of purpose for the product.

For Level 1, as a minimum, learners should create original recordings and gather prepared ready-made audio assets. They may not have carried out a soundcheck and their recordings may be of low quality.

For 2C.M3: learners should ensure that their recordings are high quality, meaning that the recordings are clear with minimal background noise. The table of sources should be detailed enough for another person to independently obtain all of the assets used. Learners should demonstrate an awareness of the intended audience.

For 2C.P5: learners should edit their original recordings and gathered assets to create their designed audio products, while considering the requirements of the brief. Their two products must each be at least three minutes in length but no more than five minutes in length.

Learners should test their products for purpose and functionality, checking that the products play and that volume levels are appropriate, and that they are the correct length and contain the correct assets, and then make improvements based on that testing.

If required, when learners have completed their audio products, the products should be compressed and available in a suitable file type to enable review and feedback to take place.

For Level 1 as a minimum, learners should edit the original and gathered audio, and create audio product(s) of least three minutes. Learners should test their product for functionality.

For 2C.M4: learners should gather feedback from other people on the quality of their products. They should then respond to the feedback to improve the audio, demonstrating awareness of audience and purpose in the changes they make.

For 2C.D3: teachers should be aware that the process of creating a product is iterative.

The product should be refined to a high quality, which means the sound is free from noise, the assets are well synchronised and flow, and the timing is accurate. The product should be refined, using feedback from others where appropriate. Learners should ensure there are copies of both the initial and the refined versions of the audio products saved, with annotations on design documents where appropriate. All of the ideas from testing, feedback and reviewing their designs as they create the digital audio products should have been considered as how best to refine the product.

For 2C.P6: learners should explain reasons why the product is suitable for audience and purpose. Learners should give at least one reason for audience and one for purpose.

For Level 1, as a minimum, learners should identify how their products are fit for purpose, for example, 'My audio clip is for news radio programme, so it is short and keeps to the facts, with one person speaking and music only at the beginning and end'

For 2C.M5: learners should build on the strengths, weaknesses and explanations from the Pass criteria to review how much the product is suitable for the intended audience and purpose as defined in the designs. They should also seek feedback from at least one other person. This could be by asking a peer to listen to their clip and give written/recorded feedback, or by playing it to the class and asking them to fill in a short questionnaire. Learners should use this feedback when considering how suitable their product is.

Learners must consider and explain any legal and ethical constraints they encountered during the creation of the audio products. For instance, copyright, eSafety, and the use of appropriate content for the target audience.

For 2C.D4: learners should evaluate the final products against the initial designs in terms of audience, purpose and original requirements in the brief, and justify any changes that were made, explaining the rationale for those changes. They should also recommend at least three improvements but do not need to implement them.

Suggested assignment outlines

The table below shows a programme of suggested assignment outlines that cover the assessment criteria. This is guidance and it is recommended that centres either write their own assignments or adapt any assignments we provide to meet local needs and resources.

Possible scenarios for this unit include:

- a short podcast (humorous or informative)
- a radio news segment
- a comedy sketch for radio
- a radio advert
- a trail for a radio drama
- a live music recording.

Criteria covered	Assignment	Scenario	Assessment evidence
1A.1 2A.P1, 2A.M1, 2A.D1	Research	<p>You are applying for a job with BBC Radio 4. As part of your application process, you have been asked to produce a trail for a new radio comedy programme and a short podcast to inform listeners about a recent scientific discovery.</p> <p>In order to design your two audio products, you first must do some research into trails and podcasts that are currently available. Review at least two existing and different audio products and explain features about the technical qualities, content and message/purpose.</p> <p>Match these features to the target audience, analyse the impact of the clip on the audience. Discuss in detail the strengths and weaknesses and any improvements that can be made.</p>	<ul style="list-style-type: none"> • Research report or magazine articles.

Criteria covered	Assignment	Scenario	Assessment evidence
1B.2, 1B.3 2B.P2, 2B.P3 2B.M2, 2B.D2	Pre-production	<p>Using your experience from your research, you now can plan your trail and your podcast.</p> <p>Design two audio products based on the briefs. Describe the purpose and target audience for each. What are the requirements in the brief for these clips?</p> <p>Create a script and list of assets and plan for how the different assets will combine.</p> <p>Justify how this design entirely meets the briefs. How are they suited for the audience and purpose?</p>	<ul style="list-style-type: none"> Design documents or prototypes including description of purpose and audience, script, list of assets, and timeline of how the assets will combine.
1C.4 2C.P4, 2C.M3	Production and Post-production	<p>For each product, you have to prepare and carry out your recordings.</p> <p>Carry out a sound check and prepare to record, including checking sound levels. Record all original audio footage. Gather additional audio assets and create a bibliography for the sources of assets.</p>	<ul style="list-style-type: none"> Evidence of soundcheck, e.g. completed checklist with photographs or video of learner carrying it out. Digital files of original audio recordings. Digital files of ready-made sound assets.
1.C5 2C.P5, 2C.M4 2C.D3	Editing and testing	<p>Each of your products now needs to be edited and tested before being completed.</p> <p>Edit the original footage into audio clips, incorporating all the different gathered assets. Make sure your products are as high quality as you can make them.</p> <p>Test the products for functionality, check they are in a suitable format for review and gather feedback from other people.</p>	<ul style="list-style-type: none"> Completed audio clips in native or compressed file type. Evidence of testing and feedback, e.g. completed questionnaire or witness statement.

Criteria covered	Assignment	Scenario	Assessment evidence
1.C5 2C.P6, 2C.M5, 2C.D4	Review	At the interview, you will be expected to evaluate your products and discuss how you could improve them. Evaluate the final product, justifying how they meet the briefs and are suitable for the audience and the purpose. Suggest improvements and consider any constraints.	<ul style="list-style-type: none">• Evaluation report.

Unit 6: Creating Digital Graphics

Level: **1 and 2**

Unit type: **Optional specialist**

Guided learning hours: **30**

Assessment type: **Internal**

Unit introduction

You will see graphics at work whenever you surf websites, play computer games, go shopping or read a user manual. Graphics are used to communicate messages in every part of our lives, such as advertising, music, fashion, interior design and architecture. It is the job role of a graphic designer to create digital graphics, that bring colour, information and interest to our lives for a wide range of industries.

In this unit you will investigate a range of applications and features of existing graphic products and consider their audience and purpose. You will be able to apply some of what you discover to your own digital graphic products.

You will design, create and test graphic products in a similar way to how it is done in industry and be introduced to the technology and techniques used by professionals. You will need to think about the creative aspects of the product as well as the technical (both vector-editing and photo-editing). Once finished, you will review the products, having obtained feedback from others, and evaluate possible improvements.

In particular, this unit develops skills from *Unit 1: The Digital World* and the following optional units: *Unit 4: Creating Digital Animation* and *Unit 7: Creating Digital Video*. In addition, it supports the content of *Unit 8: Mobile Apps Development* and *Unit 13: Website Development*.

Learning aims

In this unit you will:

- A** Understand the applications and features of digital graphic products
- B** Design digital graphic products
- C** Create, test and review digital graphic products.

Learning aims and unit content

What needs to be learnt
Learning aim A: Understand the applications and features of digital graphic products
Applications of digital graphics Applications and purpose, including: <ul style="list-style-type: none">• a range of different existing graphic products (e.g. logos, signs, posters, magazine covers, packaging, web graphics, engineering drawings, manuals, imagery in movies and computer games)• the effect (e.g. to invoke emotion, educate, inform, entertain) they have on different audiences (e.g. age, gender, interest, need).
Features of digital graphics Features, e.g.: <ul style="list-style-type: none">• type – vector graphic or bitmap image (photograph)• text• composition• use of colour and texture• size and position• characters and objects• file type and sizes• resolution.

What needs to be learnt**Learning aim B: Design digital graphic products****Design documents**

Designs include:

- intended audience, purpose and requirements as defined in a brief for two products, one vector with text and one bitmap with text
- initial design ideas/prototypes (an early sample or model built to test a concept) – to illustrate content and appearance and can either be produced using:
 - digital editing techniques (as given in learning aim C), or
 - traditional methods such as hand-drawn on paper
- a list of ready-made bitmap and/or vector digital graphic assets (e.g. a company logo, a character or an object) which can be combined with original graphic assets to create a product – sources for ready-made assets must be documented and referenced
- alternative design ideas
- consideration of health and safety constraints while taking original photographs with a camera (e.g. carrying heavy equipment and the environment where the photography will take place, e.g. no liquids near electrical equipment).

What needs to be learnt
Learning aim C: Create, test and review digital graphic products
Preparing assets
Gathering and selecting ready-made vector and bitmap assets, considering:
<ul style="list-style-type: none"> • sources (e.g. the internet, other media such as CD or DVD), referencing them appropriately • copyright for ready-made graphics.
Graphics software
Vector editing software tools/techniques, e.g.:
<ul style="list-style-type: none"> • line (types and thickness) • shapes • text • shading and effects • colour fills, gradients and patterns • group and ungroup • rotate and reflect • scale and dimensions • duplicate and clone • combine shapes and paths • edit and break apart paths • layering.
Photo editing software tools/techniques, e.g.:
<ul style="list-style-type: none"> • importing and combining images • selecting and removing parts (lasso, eraser and marquee) • cropping and resizing images • duplicate and clone • colour selection and palettes • gradients and opacity • brush and spray effects • contrast and greyscale • filters • scale, rotate, reflect and distort layers.

continued

What needs to be learnt**Testing and refining graphic products**

Use different processes to test and refine graphic products:

- vector and bitmap asset properties (e.g. resolution, file type, filesize, compression)
- gather feedback from other people on quality (e.g. resolution, accuracy of the line drawing), audience and purpose
- document any improvements to the products, including updating the sources table for ready-made assets
- understand the reasons for exporting and compressing graphic product files (e.g. to ensure format is appropriate for reviewers or users)
- export and compress the graphic products into suitable final file types (e.g. .jpg, .gif, .swf)

Reviewing products

Review the finished graphic products for:

- quality
- fitness for audience and purpose
- suitability against the original requirements
- legal and ethical constraints (e.g. copyright, eSafety, suitable content)
- strengths and improvements.

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Understand the applications and features of digital graphic products			
1A.1 Identify the intended purpose and features of two different graphic products.	2A.P1 Explain the intended purpose and features of at least two different graphic products.	2A.M1 Review how the products are fit for purpose and their intended effect on the audience.	2A.D1 Discuss the strengths and weaknesses of the graphic products.

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim B: Design digital graphic products			
1B.2 Identify the audience and purpose for the design of a graphic product.	2B.P2 Describe the audience and purpose for the design of a graphic product.	2B.M2 Produce detailed graphic product designs, including reasons why alternative ideas have been discarded.#	2B.D2 Justify the final design decisions, explaining how they will: <ul style="list-style-type: none"> fulfil the stated purpose and requirements in the brief meet the needs of the audience.#
1B.3 Produce outline design(s) for the digital graphic products. Each design must include outline product ideas.	2B.P3 Produce designs for two digital graphic products with different purposes and audiences. One design must be for a vector image and the other must be for a bitmap image. Each design must include: <ul style="list-style-type: none"> requirements of the brief documented product ideas and/or prototypes a list of any ready-made assets to be used.# 		

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim C: Create, test and review digital graphic products			
1C.4 Prepare assets for the graphic products, with guidance.	2C.P4 Prepare assets for the graphic products, demonstrating awareness of purpose, with a list of sources for ready-made assets.	2C.M3 Prepare high-quality assets for the graphic products, demonstrating awareness of audience, with all sources of assets fully referenced.	2C.D3 Refine assets to create two high-quality digital graphic products.*
1C.5 Edit assets to create graphic products, and test them for functionality, with guidance.*	2C.P5 Edit assets to create two graphic products that both include text. Test the products for quality, purpose and against the original requirements, making any necessary improvements.*	2C.M4 Gather feedback on the quality of the products, and use it to improve the product, demonstrating awareness of audience and purpose.*	
1C.6 For each of the final graphic products, identify how the final product is suitable for the intended purpose.	2C.P6 For each of the final graphic products, explain how the final product is suitable for the intended audience and purpose.	2C.M5 Review the extent to which each of the final graphic products meets the needs of audience and the purpose, considering feedback from others and any constraints.	2C.D4 Evaluate the initial designs and the final graphic products and justify any changes made, making recommendations for further improvement.

*Opportunity to assess mathematical skills

#Opportunity to assess English skills

Teacher guidance

Resources

The special resources required for this unit are:

- vector-graphics editing software (e.g. Illustrator, CorelDRAW, DrawPlus, Inkscape, Visio or any other suitable graphics-editing package)
- bitmap-graphics editing software (e.g. PhotoShop, PaintShop Pro, PhotoPlus or any other suitable graphics editing package)
- digital devices to capture images (e.g. scanner, webcam, digital camera, mobile phone).

Learners should have access to assignment briefs that specify the intended audience and purpose for the two graphic products required.

Assessment guidance

This unit is assessed internally by the centre and externally verified by Pearson.

Please read this guidance in conjunction with *Section 8 Internal assessment*.

Evidence for this unit will require learners to show that they understand the features of graphic products and the processes involved in creating them. They also need to demonstrate practical skills when designing, creating, testing and reviewing graphic products of their own to meet the briefs. To achieve all grading criteria, learners should have access to existing graphic products for investigation.

Learners should prepare (gather, create) assets and edit them into the final products. The products must contain both ready-made and original vector and bitmap graphics that have been edited and both should also include text.

Learning aim A

For 2A.P1: learners are required to review two graphic products created by others. Learners should explain features of the products, the technical qualities, the content, audience and purpose. Features should include composition, use of colour, size and position. The two graphic products should be designed for different purposes.

For Level 1, as a minimum, learners should identify the purpose of two graphics products and limited features – file type and size, length and quality.

For 2A.M1: learners should review whether the graphics products are fit for purpose and their intended effect upon the audience.

For 2A.D1: learners should examine the graphic products in more detail and discuss the strengths, weaknesses and essential features of the products, concluding if the products could be improved.

Learning aim B

Learners should design two graphics products to meet the given briefs. Each product should have specific audiences and purposes and incorporate text. Between the two products, learners should have the opportunity to consider the features of their products, such as the use of colour, composition, textures and background images. One product should require the use of vector graphics and the other should require the use of bitmap images.

For 2B.P2: for each design, learners should describe the purpose and intended audience for the product, relating this to design ideas.

For Level 1, as a minimum, learners should identify the intended audience and purpose for their designs.

For 2B.P3: learners should generate design ideas for two graphic products. The designs must include text and must be for a minimum of one vector graphic product and one bitmap graphic product. Learners should include a list of ready-made assets to be used. Learners should describe the requirements for the product as outlined in the brief, for example the dimensions of a static advert.

The design documentation should illustrate the content and appearance of the two product ideas. The ideas can either be created using traditional hand-drawn methods or using a range of techniques from an appropriate editing software package. They must not be finished products but should demonstrate accuracy, e.g. where vector lines join or where backgrounds are removed from images. The products must incorporate text and be fit for their intended audience and purpose.

For Level 1, as a minimum, learners should create an outline design for their digital graphic products or complete a full design for one product only. An outline design would contain the purpose and outline design documentation to give an indication of what the product would be like and what it is about.

For 2B.M2: learners should extend their design documentation to include outline alternative ideas, e.g. the same product photographed from different angles under different lighting conditions, and give the reasons why they have been discarded. These should not be fully worked-up designs but annotations or sketches to demonstrate the design ideas.

Learners should refine detailed designs for each graphic product (e.g. specify colours, font types, textures, photo images and characters) and as well as preparing designs accurately with a good sense of scale.

For 2B.D2: learners should justify why they chose the final design ideas and not their alternative designs. Learners should explain how each asset helps meet the purpose and requirements in the brief.

Learners should refer back to their design documentation and explain how the design meets the needs of the intended audience. They may wish to do this by annotating their design documents and describing why (e.g. 'I have used a texture here because ...'). They should also justify why they have chosen to fulfil the brief by combining graphics assets and text in this way, and why the chosen design was selected.

Learning aim C

The designs will be used to create the digital graphic products. Although learners may deviate from their designs (as happens with any project), they should aim to create final products that closely resemble their original design. Teachers should recognise that the design process (the activities of gathering, creating and preparing assets and then editing them to create finished products) is iterative.

For 2C.P4: learners should prepare (gather and create) their assets. They should gather ready-made graphic assets such as photographs, logos and objects and list them in a table of sources. Learners should also create any original assets, e.g. take appropriate photographs using a camera and/or produce line (vector images) drawings using editing software. Original and ready-made assets should be prepared properly for inclusion in the digital products, e.g. cropped appropriately and created accurately (for example where vector lines join or where backgrounds are removed from images).

Both ready-made and original assets should demonstrate awareness of purpose for the product. These could be evidenced by the individual digital assets and through annotation on design documents.

For Level 1, as a minimum, learners should gather and prepare ready-made images and create and prepare original graphic assets. The quality of their assets is likely to be of low quality, e.g. images not cropped appropriately, vector lines that do not join appropriately and inaccurate removal of images from backgrounds, and/or individual assets required for their design may be missing.

For 2C.M3: learners should prepare assets, including gathering ready-made graphic assets such as bitmap images, e.g. logos and objects, and list them in a sources table. The table should be detailed enough for another person to independently obtain all the assets used. Learners should keep the purpose and requirements of the brief in mind.

Learners should create original and prepare ready-made high-quality graphic assets. For instance, vector drawings should be to scale and proportion and be an accurate representation of the object or character they portray. Bitmap images should be optimised, e.g. be an appropriate file type and size and suitable resolution (for example, images are no more than 72 dots per inch or 40-80 KB to facilitate fast loading for a website). They should demonstrate awareness of the intended audience.

For 2C.P5: learners should edit their ready-made and original graphic assets to create their digital graphic products, keeping the requirements of the brief in mind. Both products should include text; one product should require the use vector graphics and the other should require the use of bitmap images.

Learners should test the quality of their products, e.g. that images are cropped and vector lines join appropriately, any images have been removed accurately from backgrounds and all the required elements of the design have been included. Learners should also check that their products are fit for purpose and make improvements based on that testing.

If required, when learners have completed their graphic product they should compress the file into a suitable file type to enable it to be reviewed and feedback given.

For Level 1, as a minimum, learners should edit the ready-made and original graphic assets to create at least one digital graphic product. However, the quality of their product is likely to be low, e.g. images not cropped appropriately, vector lines that do not join appropriately and inaccurate removal of images from backgrounds, and/or individual assets required in their design may be missing. Learners should test their product for functionality.

For 2C.M4: learners should gather feedback on the quality of their products from at least one other person, e.g. appropriate images have been used, vector drawings are to scale and proportion, assets are an accurate representation of the object or character they portray and a range of editing techniques have been used. They should then respond to the feedback to improve their product, demonstrating awareness of audience and purpose.

For 2C.D3: teachers should be aware that the process of creating a product is iterative.

The product should be refined to a high quality, e.g. a good selection of appropriate and compelling imagery, correct and appropriate use of formatting and editing techniques and a clear message. The products should have been refined using feedback from others, where appropriate. Learners can incorporate any other refinements into their design, noting any changes.

Learners should ensure that they have saved copies of both the initial and the refined versions of the graphics, with annotations on design documents where appropriate. All of the ideas from testing, feedback and reviewing their designs as they create the digital graphic products should have been considered.

For 2C.P6: learners should explain reasons why the product is suitable for audience and purpose. Learners should give at least one reason for the audience and one for the purpose.

For Level 1, as a minimum, learners should identify why their final product is suitable for audience and purpose. For example, 'This is a warning notice, so I have made sure the words are simple and clear, and the graphics are simple to understand. I have only used a few colours so it is easy to read quickly'.

For 2C.M5: learners should build on the strengths, weaknesses and explanations from the Pass criteria to review how much the product is suitable for the intended audience and purpose as defined in the designs. They should also seek feedback from at least one other person. This could be by asking a peer to review their graphics and give written/recorded feedback, or by presenting them to the class and asking them to fill in a short questionnaire. Learners should use this feedback when considering how suitable their product is.

Learners must consider and explain any legal and ethical constraints they encountered during the creation of the digital graphic products. These might include, for instance, issues surrounding copyright, eSafety and the use of content appropriate for the target audience.

For 2C.D4: learners should evaluate the final products against the initial designs in terms of audience, purpose and original requirements, and justify any changes that were made, explaining the rationale for those changes. The evaluation should include an explanation of how the resolution, size and compression of the final products make them fit for purpose and audience. Learners should also recommend at least three improvements but they do not need to implement them.

Suggested assignment outlines

The table below shows a programme of suggested assignment outlines that cover the assessment criteria. This is guidance and it is recommended that centres either write their own assignments or adapt any assignments we provide to meet local needs and resources.

Criteria covered	Assignment	Scenario	Assessment evidence
1A.1 2A.P1, 2A.M1, 2A.D1	Research – Technology Products	<p>You work for a company that makes technology products. You are asked to produce graphics for a promotional campaign for a new smartphone. Before you design your products, you must review graphics that are used currently.</p> <p>Review at least two different graphic products used in advertising and explain their features, including technical qualities, content and purpose.</p> <p>Consider whether these products are fit for purpose, and how they affect the audience. How have they been designed to be used in promotion?</p> <p>What are the strengths and weaknesses? How do they compare?</p> <p>How would you improve these products?</p>	<ul style="list-style-type: none"> • Research report or magazine articles.

Criteria covered	Assignment	Scenario	Assessment evidence
1B.2, 1B.3 2B.P2, 2B.P3 2B.M2, 2B.D2	A Promotional Campaign	<p>Your graphics need to be used to promote a new smartphone. The smartphone is aimed at the 16–25 age group and offers options to target both sexes.</p> <p>You need to design two graphic products to be used in the campaign.</p> <p>Design one vector and one bitmap graphic product, both including text. The graphics should include:</p> <ul style="list-style-type: none"> • a user guide – line drawing(s) of the product illustrating the size and main features • an advert – including an image(s) of the product in use and compressed appropriately for viewing on screen (the website used to advertise the smartphone) and on paper (high-end magazine). <p>The brief will include further requirements.</p> <p>Describe why the products will be fit for audience and purpose.</p> <p>Provide a sources table for the ready-made assets.</p> <p>Justify how this design meets the brief for your products.</p>	<ul style="list-style-type: none"> • Design documents or prototypes including description of purpose and audience, list of ready-made assets, and illustrations of the products • A sources table of ready-made assets.

Criteria covered	Assignment	Scenario	Assessment evidence
1.C4, 1.C5 2C.P4, 2C.P5, 2C.M3, 2C.M4, 2C.D3	Create Graphics	<p>The original and ready-made digital graphics should be prepared, created and combined with text to provide the main illustration for a user guide for the smartphone and an advert for the smartphone.</p> <p>Update the sources table.</p> <p>Test the products for quality, e.g. images are cropped appropriately and accurately, and vector lines join or backgrounds are removed from images competently.</p> <p>Gather feedback to check that the products are fit for purpose and audience, while considering the original requirements, and make any improvements as necessary to create two high quality products.</p>	<ul style="list-style-type: none"> Digital files of ready-made graphic assets Digital files of original graphic assets Completed graphic assets in native or compressed file types Evidence of testing and feedback, e.g. completed questionnaire or witness statement Finished products in a suitable digital file format: <ul style="list-style-type: none"> a user guide illustration an advert <p>(Files prepared to suit both types of specified media).</p>
1C.6 2C.P6, 2C.M5, 2C.D4	Review	Evaluate the final products, justifying how they meet the briefs and are fit for purpose and suitable for the audience. Suggest improvements you would make if you designed these products again and consider any constraints.	<ul style="list-style-type: none"> Evaluation report.

Unit 7: Creating Digital Video

Level: **1 and 2**

Unit type: **Optional specialist**

Guided learning hours: **30**

Assessment type: **Internal**

Unit introduction

Video is one of the most powerful ways to convey a message in modern society and different types of video are transmitted worldwide. These range from a documentary or news item that can change minds and encourage people to take action to a movie that will entertain, or a well-made advert that can increase product sales or raise money for a charity. Job roles which use digital video include camera operators who capture original footage, and editors who use computers to manipulate the original footage and combine it with other assets such as animations, audio and text.

In this unit you will investigate the range of applications and features of digital video products which have been created for a specific audience and purpose. You will apply some of your findings to your own digital products.

You will be given a brief to fulfil and will be introduced to the technology and techniques professionals use. You will need to think about the creative aspects of the product, as well as the technical. You will need to record original video assets and combine these with other assets, e.g. audio, as required. You will review your finished product having obtained feedback from others and evaluate possible improvements.

In particular, this unit develops skills from *Unit 1: The Digital World* and the following optional units: *Unit 5: Creating Digital Audio*, and *Unit 6: Creating Digital Graphics*.

In addition, it supports the content of *Unit 4: Creating Digital Animation*, *Unit 8: Mobile Apps Development* and *Unit 13: Website Development*.

Learning aims

In this unit you will:

- A** Understand the applications and features of digital video products
- B** Design a digital video product
- C** Create, test and review a digital video product.

Learning aims and unit content

What needs to be learnt
<p>Learning aim A: Understand the applications and features of digital video</p> <p>Applications of digital video products</p> <p>Applications and purpose, including:</p> <ul style="list-style-type: none"> • a range of different existing digital video products/recordings (e.g. a TV news segment, a sketch for a comedy show, a section of documentary, a TV advert, a movie trailer, machinima) • the effect (e.g. evoke emotion, educate, entertain, inform) that they have on different audiences (e.g. age, gender, interest, need). <p>Features of digital video</p> <p>Features, e.g.:</p> <ul style="list-style-type: none"> • file types (.avi, .mpeg, etc.) • file sizes • timing and length • quality • codecs • platforms and compatibility • resolution (e.g. HD, for web) • bit rate • frames per second • layers (soundtrack, narrative, etc.).

What needs to be learnt

Learning aim B: Design a digital video product

Design documents

Designs include:

- intended audience (age, gender, interests), purpose and the requirements defined in the brief
- initial design ideas
- script (e.g. what will be included in the product, dialogue, instructions, effects, stage directions)
- storyboard outlining the main panels of action showing characters, scenery, props and sounds and identifying timing, camera angles and flow
- list of ready-made digital assets (audio – speech, music and/or sound effects, graphics, and video recordings of any type). Sources for ready-made assets must be documented and referenced
- alternative design ideas
- recording schedule (e.g. the day(s) on which learners plan to record, the equipment they will need and the people who will be involved).
- logsheet (log of what scenes are recorded and their details)
- health and safety considerations of filming (e.g. trailing cables, risk of falling, slippery surfaces, sharp objects, heavy equipment and the environment where the recording will take place)

Carry out a recce (reconnaissance, an initial investigation) for the filming location(s):

- types of location, e.g.:
 - exterior
 - interior
 - stage
- considerations, e.g.:
 - indoor/outdoor
 - lighting
 - ambient sounds
 - weather
 - legalities (e.g. need to obtain permission, health and safety)
 - transport
 - security

Recruit a cast/crew:

- types of cast (e.g. lead actors, secondary actors, extras)
- job roles of crew, e.g.:
 - director
 - cinematographer (cameraman)
 - sound recordist
 - lighting technician.

What needs to be learnt**Learning aim C: Create, test and review a digital video product****Recording original video clips**

Features of video recording equipment:

- digital video equipment: zoom, pan, placement of camera, use of tripod, camera angles, specifications of cameras (e.g. DV tape or digital storage, images sensors – e.g. CMOS/CCDs, connectivity to editing machine, cost)
- screen capture software: screen region, mouse pointer, narration.

Understand the difference between original video clips recorded onto tape and digital formats, and the saved digital format (usually .dv) and other wrapped formats (e.g. .avi, .qt), which are known as assets.

Create a video product

Gather ready-made video, audio and/or graphic asset(s) from other sources (e.g. internet, other media – such as CD or DVD).

Video editing software, e.g.:

- import video files and other files (e.g. music)
- editing tools and techniques, e.g.:
 - cut, copy, paste and delete clips
 - split and trim clips
 - transitions
 - text
- effects tools and techniques, e.g.:
 - filters
 - overlays
 - layering (video and audio)
 - picture in picture
- video quality tools and techniques, e.g.:
 - contrast
 - sharpen
 - saturation
 - white balance.

continued

What needs to be learnt**Test the video product**

Test the video products for functionality during editing (e.g. checking that the clips' play and volume levels are appropriate, picture quality is usable, products are the correct length).

Gather feedback from others, including quality (e.g. that they only capture what is needed, the clips flow together well, timing is accurate, sound quality high – minimal or no noise, picture quality is high, and video is appropriate for audience and purpose).

Document any improvements, updating the sources table for ready-made assets.

Render the video (if required) into a suitable final size and format (e.g. .avi, .flv, .mpeg, .mov, .wmv). Understand the process of rendering and the reasons for doing it and consider technical aspects (e.g. format, file size, bandwidth, length, compression, frames per second (fps), bit rate).

Review the video product

Review the finished video product for:

- quality
- fitness for audience and purpose
- suitability against the original requirements
- legal and ethical constraints, e.g. copyright, eSafety and suitable content
- strengths and improvements.

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Understand the applications and features of digital video products			
1A.1 Identify the intended purpose and features of two different digital video products.	2A.P1 Explain the intended purpose and features of two different digital video products.	2A.M1 Review how the products are fit for purpose and their intended effect on the audience.	2A.D1 Discuss the strengths and weaknesses of one digital video product.
Learning aim B: Design a digital video product			
1B.2 Identify the audience and purpose for the design of a digital video product.	2B.P2 Describe the audience and purpose for the design of a digital video product.	2B.M2 Produce a detailed video design, including reasons why alternative ideas have been discarded. The design must include: <ul style="list-style-type: none">• logsheet• recce of filming locations.#	2B.D2 Justify the final design decisions, explaining how the designs will: <ul style="list-style-type: none">• fulfil the stated purpose and requirements in the brief• meet the needs of the audience.#
1B.3 Produce an outline design for a video product. The design must include: <ul style="list-style-type: none">• an outline script• an outline storyboard.	2B.P3 Produce a design for a video product of at least 5 minutes duration. The design must include: <ul style="list-style-type: none">• description of requirements from the brief• a script• a storyboard• a cast/crew list• a list of any ready-made assets if used.#		

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim C: Create, test and review a digital video product			
1C.4 Record video clips and, if required, prepare any other assets, with guidance.	2C.P4 Record video clips and, if required, additional audio clips and prepare any other assets, demonstrating awareness of purpose, with sources of assets listed.	2C.M3 Record high-quality video clips, demonstrating awareness of audience, with all sources for assets fully referenced.	
1C.5 Edit original video clips and, if required, any other assets to create a video product of at least 3 minutes' duration, and test for functionality, with guidance.	2C.P5 Edit original video clips, if required, audio clips and ready-made assets to create a video product of at least 5 minutes' duration. Test the product for functionality and purpose, checking that it meets the original requirements, making any necessary improvements to the products.	2C.M4 Gather feedback from others about quality of the product and use it to improve the product, demonstrating awareness of audience and purpose.	2C.D3 Refine video and other assets to create a high-quality video product.

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
1C.6 For the final video product, identify how the final product is suitable for the intended purpose.	2C.P6 For the final video product, explain how the final product is suitable for the intended audience and purpose.	2C.M5 Review the extent to which the final video product meets the needs of audience and the purpose, considering feedback from others and any constraints.	2C.D4 Evaluate the final video product and the initial designs and justify any changes made, making recommendations for further improvements.

*Opportunity to assess mathematical skills

#Opportunity to assess English skills

Teacher guidance

Resources

The special resources required for this unit are:

- video cameras – either video recorders or screen capture software, e.g. Camtasia, Fraps or screen capture software for other material, e.g. game console footage – Hauppauge PVR (personal video recorder)
- video-editing software, e.g. Adobe Premiere (Pro or Elements), Sony Vegas, Final Cut (Express or Pro).

Learners need access to a suitable assignment brief, a cast and crew, and if required, audio equipment. Teachers should consider the maximum length of product appropriate for the brief.

Assessment guidance

This unit is assessed internally by the centre and externally verified by Pearson. Please read this guidance in conjunction with *Section 8 Internal assessment*.

Evidence for this unit will require learners to show they understand the features of video, and the processes involved in filming and editing digital clips. They will also need to demonstrate practical skills in designing, creating original recordings, editing, testing and reviewing a digital video product of their own, to meet a given brief that outlines requirements for the product. It is not acceptable to produce the product without using digital video editing software. Learners will need to record original video material: they cannot just use ready-made assets edited together.

To achieve all grading criteria, learners should have access to existing digital video products for investigation. They should also have access to equipment and software to allow them to produce their own video product through editing and testing video assets.

Please note that:

- it is not acceptable to use Windows Movie Maker editing software because, at the time of writing, the software does not provide the required technical functionality
- the video recording must be captured on digital cameras, either on hard drive or DAT tapes, rather than on 8 mm celluloid or similar.

Learning aim A

Learners should investigate two existing digital video products for different purposes and consider features about the technical qualities, the content, and intended audience and purpose. Learners should be encouraged to choose their own clips, and to investigate different types of digital video products, such as a TV news segment, an outside broadcast for breakfast TV, a sketch for a comedy show, a section of documentary, a TV advert, movie trailer or training film. The two digital video products should be designed for different purposes.

For 2A.P1: learners should explain the purpose of the video clip and the use of features in the clip, including file type, file size, length, quality, any codecs used, resolution, frames per second and describe any use of layers.

For Level 1, as a minimum, learners should identify the purpose of video product and limited features, including file type, file size, length and quality.

For 2A.M1: learners should review whether the clips are fit for purpose, and their intended effect on the audience.

For 2A.D1: learners should examine one digital video product in more detail and discuss the strengths, weaknesses and essential features of the product, concluding if the product could be improved.

Learning aim B

Learners should design their own digital video product to a given brief. The video should be at least 5 minutes long, but no longer than 10 minutes, for learners aiming to achieve a Level 2 Pass. Learners should consider health and safety constraints of filming, (e.g. trailing cables, risk of falling, slippery surfaces, sharp objects, heavy equipment and choice of location).

For 2B.P2: learners should describe the intended audience and purpose of the product, relating this to design ideas.

For Level 1, as a minimum, learners should identify the intended audience and purpose for the video product.

For 2B.P3: learners will produce design ideas for a digital video product. Learners should describe any requirements for the product (as outlined in the brief). They should create a script and storyboard showing at least six main panels. The script should include the people involved (cast and crew), and give an overview of what will be included in the video. The storyboard should give an idea of what will happen from beginning to end, although it might not cover all aspects.

Learners should produce:

- a cast/crew list showing names of those involved, and the role they will take
- a list of any ready made-assets to be used.

The learner can use a recording schedule to plan and organise the production of their video.

For Level 1, as a minimum, learners should produce an outline design for their video product. An outline design would contain a script which may not be complete and a storyboard, which should include at least three main panels that should give an indication of what the video product will be about and what will be included.

For 2B.M2: learners should produce detailed design documents, including outlines of alternative ideas and why they have discarded them, e.g. an outline of variations on the script or alternative audiences for their products. These should not be fully worked-up designs, but annotations or sketches to demonstrate the development in their design process.

Learners should give more detail in their design documents, considering purpose, intended audience and requirements given in the brief. This should include an explanation of what the learner must include in the designs to fulfil requirements, e.g. 'My target audience is x, therefore the video product needs to include ...'. The designs should be developed to include a detailed script that includes all dialogue, stage directions and instructions to cast and crew, including any equipment, e.g. camera positions. The documents should include a detailed storyboard, which includes at least 12 main panels and explains the action in detail. Information about timing and transitions between scenes should be noted, and the learner should include a logsheet to note which scenes/clips are recorded, their timing and details, and evidence of recce(s) to filming location(s). Learners can also include any prototype video and audio clip(s) in their design documents, but these should be draft versions only, and not the final versions of clips.

To meet this criterion, a learner does not need to record video at more than one filming location, but if their design requires multiple locations, then learners must complete multiple reccees.

For 2B.D2: learners should justify why they chose the final design ideas from the alternative ideas outlined for the Merit criteria. Learners should explain how each asset helps meet the stated purpose and requirements in the brief, including reference to the script, storyboard, logsheet and recce report.

Learners may wish to do this by annotating their designs and describing why they have chosen an idea, e.g. 'I have used a fade transition in here because...'. They should also justify why they have chosen to combine assets in this way to fulfil the brief, and why the chosen design was selected.

Learning aim C

Learners should prepare and carry out filming and prepare (create and gather) additional assets, such as music, graphics or sound effects. Learners should use these to create their planned digital video product. Although learners may deviate slightly from their plans (as happens with any project), they should aim to produce a final product that closely resembles their design. Any major changes should be noted on their design, with a brief reason for the change, e.g. 'had to change an actor due to illness' or 'found a different piece of music that better matched the images'.

For 2C.P4: learners should carry out the filming at the locations where they have done their recce(s), using the people in their cast/crew list. Learners should prepare and gather any other ready-made assets they need, such as music, sound effects or graphics. Learners should demonstrate an awareness of purpose for the product, while considering any requirements from the brief. The assets should have the sources they have used listed in a source table.

For Level 1, as a minimum, learners should have made original recordings and prepared and gathered any other assets needed, such as music. The quality of their filming and original video clips may be low and/or incomplete.

For 2C.M3: learners should ensure that their recordings are of a high quality, meaning that their video clips only capture what is needed, sound recording is clear and free from most noise, and the images are of a good quality. Learners should demonstrate an awareness of the audience. The bibliography of gathered sources should be detailed enough for another person to find all the specific sources used.

For 2C.P5: learners should edit their original video clips and gathered assets into their designed digital product. Their product should certainly be at least 5 minutes' duration, and no more than 10 minutes. Learners should also test their product for functionality, purpose, and against any requirements in the brief. Testing should include checking that the clips play, volume levels are appropriate, picture quality is usable, products are of the correct length, and the product follows the order in the storyboard. Improvements should be based on the results of testing.

If required, when learners have completed their video product, the product should be rendered and available in a suitable file type to enable review and feedback.

For Level 1, as a minimum, learners should have edited their original and ready-made clips to create a video product of least 3 minutes' duration. Learners should test their product for functionality (that the assets play and have suitable volume levels).

For 2C.M4: learners should gather feedback from at least two other people about the quality of their products. They should then respond to the feedback to improve the video, demonstrating awareness of audience and purpose.

For 2C.D3: teachers should be aware that the process of creating a product is iterative.

The product should be refined to a high quality, meaning it is clear, the assets flow well and are synchronised, the timing is accurate and the sound and picture quality is high. The product should be refined, using feedback from others where appropriate. Learners should ensure there are copies of both the initial and the refined versions of their video clips, with annotations on the designs where appropriate.

For 2C.P6: learners should explain reasons why the product is suitable for audience and purpose. Learners should give at least one reason for audience and one for purpose.

For Level 1, as a minimum, learners should identify how their product is fit for purpose, for example, 'My video is an educational video so it has short scenes and has a summary screen at the end'.

For 2C.M5: learners should build on the strengths, weaknesses and explanations in the Pass criteria to review how much the product is suitable for the intended audience and purpose as defined in the designs. They should also seek feedback from at least one other person. This could be asking a peer or 'test buddy' to review their video product to suggest strengths, weaknesses and improvements (either written or recorded evidence). Learners should use this feedback when considering how suitable their product is. Learners must consider and explain any legal and health and safety constraints they encountered during the creation of the digital video products, for example, copyright constraints that affected the assets they used. They should consider health and safety in terms of using their equipment and filming on location. Their explanations should include typical health and safety measures, such as no trailing cables and no bare wires, and consider individual aspects relating to their filming locations.

For 2C.D4: learners should evaluate their final product against the initial design, identifying good and bad points, justifying why their product meets the needs of the audience, is fit for purpose and meets the brief, and justify changes made between the design and final product. They should make recommendations for at least three improvements. They do not need to act on the improvements.

Suggested assignment outlines

The table below shows a programme of suggested assignment outlines that cover the assessment criteria. This is guidance and it is recommended that centres either write their own assignments or adapt any assignments we provide to meet local needs and resources.

Possible scenarios for this unit include:

- a TV news segment
- an outside broadcast for breakfast TV
- a sketch for a comedy show
- a section of documentary
- a TV advert
- a movie trailer
- a training film (e.g. how to use screen capture software)
- machinima.

Criteria covered	Assignment	Scenario	Assessment evidence
1A.1 2A.P1, 2A.M1, 2A.D1	Research	<p>You work for a TV company that produces a breakfast TV programme. You've been asked to produce a new segment for the programme, providing a round-up of funny news items. Before you design a pilot segment to show the producers of the programme, you need to research existing video segments.</p> <p>Review at least three existing and different digital video products/clips and explain features about the technical qualities, content and the message/purpose.</p> <p>Match these features to the target audience and analyse the impact of the clip on the audience.</p> <p>What could be improved in the clip? What are the strengths, weaknesses and essential features of the clip?</p>	<ul style="list-style-type: none"> • Research report or magazine articles.

Criteria covered	Assignment	Scenario	Assessment evidence
1B.2, 1B.3 2B.P2, 2B.P3, 2B.M2, 2B.D2	Pre-production	<p>Design a video clip based on the requirements of the brief you have been given by the producers of the programme. Explain the purpose and target audience.</p> <p>Write a complete script and storyboard, and create a recording schedule and logsheet.</p> <p>Recruit a cast/crew, and carry out a recce of filming location(s).</p> <p>Consider any alternative ideas in the design for the TV segment.</p> <p>Justify how this design entirely meets the brief from the producers.</p>	<ul style="list-style-type: none"> Design documentation, including description of purpose and audience, script, storyboard, recording schedule, logsheet, cast/crew list and recce report. Prototype clips.
1C.4 2C.P4, 2C.M3	Production and Post-production	<p>Record all original video clips and, if required, audio clips. Prepare any additional assets needed and describe any relevant constraints.</p> <p>Make sure you have noted any health and safety issues or legal issues for your TV segment.</p>	<ul style="list-style-type: none"> Digital files of original video clips and, if required audio clips, demonstrating range of skills used. Digital files of acquired assets. Documentation of health and safety issues when filming (perhaps using annotated photographs). Report of legal issues.
1C.5 2C.P5, 2C.M4, 2C.D3	Editing and Testing	<p>Edit the original video clips and assets into a digital video product. Render the finished TV segment into a suitable file format if you need to.</p> <p>Test that your clip is functional and get feedback from other people on your video. Is it fit for purpose? Is it suitable for the audience? Amend your clip to make sure it meets the original requirements in the brief to create a high quality video product.</p>	<ul style="list-style-type: none"> Completed video clip in native format. Completed video clip in rendered format.

Criteria covered	Assignment	Scenario	Assessment evidence
1C.6 2C.P6, 2C.M5, 2C.D4	Review	<p>At the meeting with the producers, you will need to show that your TV segment meets the brief, the viewers will like it and you have reviewed your design.</p> <p>Obtain feedback from another person to act as the viewer. Evaluate the final product and justify why it meets the brief and suggest improvements.</p> <p>Describe legal and/or ethical constraints, and any health and safety considerations.</p> <p>Your evaluation could be used to present your thoughts and considerations to the producers in order to be asked to do another TV segment.</p>	<ul style="list-style-type: none"> • Evidence of feedback, e.g. completed questionnaire. • Evaluation report/ presentation.

Unit 9: Spreadsheet Development

Level: **1 and 2**

Unit type: **Optional specialist**

Guided learning hours: **30**

Assessment type: **Internal**

Unit introduction

Spreadsheets are used to store, manipulate and analyse data and to present it in easy-to-understand ways. They are invaluable for collecting and manipulating data of all types. Spreadsheets can be formatted to create clear, concise reports and can be sorted, filtered and updated with the touch of a button.

Spreadsheets are used extensively in many organisations to help people carry out their job roles. For instance, accountants use spreadsheets to keep track of the money going into and out from a business, and scientists use them to analyse the results of their experiments and record the data for use in the future.

In this unit you will understand the many uses for spreadsheets and the tools and techniques that are available and become skilled at using them. You will be able to apply some of your findings to your own spreadsheet solutions.

In this unit, you will understand the many uses for spreadsheets. You will discover the many tools and techniques that are available in spreadsheet software and will become skilled at using them. You will investigate some of the ways spreadsheets used in real-life. You will design a spreadsheet solution for a brief. You will then develop and test your spreadsheet solution to store, manipulate and analyse a large amount of data and present the output data in easy-to-understand way. Once completed, you will review the finished spreadsheet solution having obtained feedback from others, and evaluate possible improvements.

In particular, this unit develops skills from *Unit 1: The Digital World*. In addition, it supports the content of *Unit 10: Database Development*.

Learning aims

In this unit you will:

- A** Understand the uses of spreadsheets and the features available in spreadsheet software packages
- B** Design a spreadsheet
- C** Develop and test a spreadsheet
- D** Review the finished spreadsheet.

Learning aims and unit content

What needs to be learnt
Learning aim A: Understand the uses of spreadsheets and the features available in spreadsheet software packages
What is a spreadsheet? Spreadsheet software stores, manipulates and analyses large amounts of data accurately and to present the output data in an easy-to-understand way.
How and why spreadsheets are used Know why organisations use spreadsheets, e.g.: <ul style="list-style-type: none">● improve productivity and accuracy● support decision making (e.g. scenario modelling, goal seek, regression and data mining)● present information● analyse data● perform calculations● manipulate large datasets. Activities where spreadsheets are used, e.g.: <ul style="list-style-type: none">● cost modelling (e.g. in small- and medium-sized enterprises (SMEs))● analysis of data (e.g. scientific experiments or market research)● tracking progress and recording results (e.g. homework and test results in a school or college)● creating timetables and results (e.g. league table information for a football league)● stock control (e.g. in a shop or manufacturing organisation).
Features of spreadsheet software Tools and techniques (e.g. cell replication and formatting, page setup and user interfaces (as listed in learning aim C)). Purpose of tools and techniques (e.g. aid usability, productivity, accuracy and the presentation of output data).

What needs to be learnt
Learning aim B: Design a spreadsheet
Designing a spreadsheet
Designs include: <ul style="list-style-type: none">● intended purpose and user requirements● design documentation that includes<ul style="list-style-type: none">○ worksheet structure diagram showing the proposed layout, calculations/processes (e.g. formulae and functions) and data input method (e.g. labeling and row and column use, forms, cell formatting, validation, conditional formatting)○ user input interface identifying appropriate tools/techniques.○ user output data (e.g. ideas for presentation showing format(s) and tools/techniques)○ onscreen user navigation and guidance (e.g. navigation prompts, input messages and validation (including lists))○ test plan with test data to test functionality (e.g. test, expected result, actual result)○ a brief outline of alternative design ideas (e.g. choice of calculations and artistic style of the solution).

What needs to be learnt
Learning aim C: Develop and test a spreadsheet
Developing a spreadsheet solution
Use spreadsheet software tools and techniques, e.g.:
<ul style="list-style-type: none"> • cell manipulation (e.g. entering and editing data, autofilling, replication, conditional formatting (to highlight outcomes)) • cell formatting (e.g. colours, shading, merging cells, alignment) • data manipulation (e.g. filters, sorts, pivot tables) • formulae (e.g. add, subtract, divide, multiply) • functions (e.g. sum, average, count and countIF, lookup, index) • logical functions (e.g. IF, AND, OR, NOT) • data validation • relative and absolute cell referencing • boxes (e.g. lists, drop-down) • data entry forms • lookup tables • nested IF functions • cell protection • types of charts and graphs (e.g. bar, pie) • chart and graph formatting (e.g. titles, resizing, labels) • worksheets (e.g. headers, page breaks, links) • conditional formatting • named ranges, relative and absolute cell referencing • goal seek – what if function • macros.
Test and refine a spreadsheet
<ul style="list-style-type: none"> • Test the spreadsheet solution for functionality and usability. • Provide onscreen user navigation and instructions. • Gather feedback from others, e.g. on user requirements, functionality, user experience (e.g. usability, performance, adaptability to different scenarios). • Improvements and/or refinements to the spreadsheet solution, e.g. adaptability, usability, productivity.

What needs to be learnt

Learning aim D: Review the finished spreadsheet

Reviewing the spreadsheet solution

Review the finished spreadsheet solution against:

- user requirements
- fitness for purpose
- user experience (e.g. usability, performance, adaptability)
- strengths and improvements.

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Understand the uses of spreadsheets and the features available in spreadsheet software packages			
1A.1 Identify how spreadsheets are used for two different activities and how the features are used in the spreadsheets.	2A.P1 Explain how spreadsheets are used for two different activities, and how the features are used in the spreadsheets.	2A.M1 Review how the features in the spreadsheets could improve productivity, accuracy and usability.	2A.D1 Discuss the strengths and weaknesses of the spreadsheets.
Learning aim B: Design a spreadsheet			
1B.2 Identify the purpose and user requirements for the spreadsheet.	2B.P2 Describe the purpose and user requirements for the spreadsheet	2B.M2 Produce detailed designs for a spreadsheet, including: <ul style="list-style-type: none"> • alternative solutions • detailed worksheet structure diagram • test data. 	2B.D2 Justify final design decisions, including: <ul style="list-style-type: none"> • how the spreadsheet solution will fulfil the stated purpose and user requirements • any constraints to the design.
1B.3 With guidance, produce a design for a spreadsheet, including: <ul style="list-style-type: none"> • worksheet structure diagram. 	2B.P3 Produce a design for a spreadsheet, including: <ul style="list-style-type: none"> • worksheet structure diagram • how output data is to be presented • a test plan. 		

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim C: Develop and test a spreadsheet			
1C.4 With guidance, develop a spreadsheet with a given realistic dataset.	2C.P4 Develop a spreadsheet with a given realistic data set, containing a user interface for data input and presentation of output data.	2C.M3 Refine the spreadsheet to improve usability and accuracy using onscreen user navigation and guidance.	2C.D3 Refine the spreadsheet using automated tools/techniques to improve productivity, accuracy and presentation of output data.*
1C.5 With guidance, test the spreadsheet for functionality and purpose, and repair any faults, documenting any changes made.*	2C.P5 Test the spreadsheet for functionality and purpose and repair any faults, documenting any changes made.*	2C.M4 Gather feedback from others on usability, and use it to improve the spreadsheet, testing the additional functionality and repair any faults.*	
Learning aim D: Review the finished spreadsheet			
1D.6 For the final spreadsheet, identify how the final spreadsheet is suitable for the purpose.	2D.P6 For the final spreadsheet, explain how the final spreadsheet is suitable for the user requirements and purpose.	2D.M5 Review the extent to which the final spreadsheet meets the user requirements and purpose while considering feedback from others.	2D.D4 Evaluate the final spreadsheet against the initial designs and justify any changes that were made, making recommendations for further improvements to the spreadsheet.

*Opportunity to assess mathematical skills

#Opportunity to assess English skills

Teacher guidance

Resources

The special resource for this unit is access to spreadsheet editing software. Learners will need to be given example spreadsheets and an assessment brief, giving a situation that requires a spreadsheet solution.

Learners should produce a spreadsheet solution to a problem in a given brief and with either a given dataset. The user requirements in the assessment brief should include:

- the purpose of the spreadsheet
- the task(s) the spreadsheet must perform
- the information the spreadsheet must supply, in what form, to whom
- an outline of the required processing/calculations.

This unit assumes that learners already have a basic understanding of and ability to use spreadsheets which cover basic spreadsheet tools and techniques such as using formulae, e.g. add, subtract, divide and multiply.

Learners can devise their own brief, but it must be approved by the centre before being used for assessment.

Assessment guidance

This unit is assessed internally by the centre and externally verified by Pearson. Please read this guidance in conjunction with *Section 8 Internal assessment*.

Learning aim A

For 2A.P1: learners should explain how two spreadsheets are used in the real world, for example to measure performance over time or to calculate profit and loss. They should describe how the tools and techniques included in the spreadsheets are used. The two spreadsheets should be designed for different purposes.

For Level 1, as a minimum, learners should identify how two spreadsheets are used in the real world and identify how the features (e.g. formulae, layout) are used in two given spreadsheets.

For 2A.M1: learners should review how the features (e.g. functions, layout, structure) could improve productivity, accuracy and usability in the spreadsheets.

For 2A.D1: learners should examine the spreadsheets in more detail and consider the strengths, weaknesses and essential features of the products, concluding if the products could be improved.

Learning aim B

Learners need to design a spreadsheet solution for a specific purpose.

For 2B.P2: learners should describe the user requirements and purpose of the spreadsheet in their designs.

For Level 1, as a minimum, learners should identify the purpose and the user requirements for their spreadsheet design.

For Level 1, as a minimum, learners should have created an outline design for their spreadsheet solution. An outline design would contain worksheet layout and data input diagram. Some annotations should indicate the processes and appropriate tools/techniques used, e.g. functions and formulas. This will give an indication of what the product would be like and what it is about.

For 2B.P3: learners should design a spreadsheet solution. This should be a workable design and should include:

- a worksheet structure diagram including calculations and tools/techniques to be applied, e.g. cell formatting, functions, formulas, IF statements
- output data presenting the results/outcome
- a test plan.

For 2B.M2: the detailed spreadsheet design will contain:

- a brief description of alternative solutions, e.g. choice of calculations and style
- a detailed worksheet structure diagram indicating data validation (including lists), e.g. multiple worksheets, cell referencing, input messages, error messages, macros, cell protection and navigation between multiple worksheets
- test data, e.g. test, expected result, actual result.

For 2B.D2: learners should justify their design decision, explaining how they meet the brief. Learners may wish to do this by annotating their design documents and describing why (e.g. 'I have used a function here because ...').

They should also justify why they have chosen a specific design to fulfil the brief in terms of purpose and user requirements. Learners should explain why alternative designs were rejected, and consider any constraints.

Learning aim C

Learners' designs will be used to create the spreadsheet solution. Although learners may deviate from their designs (as happens with any project), they should aim to create a final spreadsheet that closely resembles their original design (unless there is a good reason not to).

For 2C.P4: learners will develop a spreadsheet solution for a given purpose to meet the brief. The spreadsheet will contain a user interface for data input and for the presentation of output data. It will include simple functions and formulae. Data for the spreadsheet will be sorted and the spreadsheet will be formatted appropriately to promote ease of use. Learners will have created either a chart or a graph to present the result/output from the spreadsheet solution.

For Level 1, as a minimum, learners should develop a spreadsheet solution for a brief. The solution should include formulae and simple functions, some formatting, and basic output to present the outcome/result.

For 2C.M3: learners will refine their spreadsheet solution to improve the usability of their spreadsheet. Onscreen user navigation and guidance includes:

- input messages
- validation (including lists)
- error messages
- navigation prompts and guidance
- conditional formatting
- labels
- data-entry forms
- a commentary explaining the output presentation.

For 2C.P5: learners should test the functionality of the spreadsheet and make changes based on these tests to repair any faults. The spreadsheet should be fully functional and fit for purpose. Changes to the spreadsheet should be documented: different versions from stages of development could be used to evidence this.

For Level 1, as a minimum, learners should test the spreadsheet solution for functionality and purpose and repair any faults.

For 2C.M4: learners should test the functionality of any additional tools/techniques used, repair any faults and gather feedback on their spreadsheet from potential users, and use it to improve the spreadsheet. They should cover the ease of use of the spreadsheet solution, both in terms of the storage, manipulation and analysis of data and the data output presentation.

For 2C.D3: teachers should recognise that the process of developing and testing a spreadsheet is iterative, and not a sequential process. Learners will refine the spreadsheet solution using automated tools/techniques to improve productivity, accuracy and the presentation of output data. Automated tools/techniques used to do this include macros, links, named ranges and pivot tables.

All of the ideas from testing, feedback and reviewing their designs as they create the spreadsheet solution should have been considered as how best to refine the product.

Learning aim D

Learners will complete a review of their finished spreadsheet solutions. This is a reflective exercise to establish what the strengths and areas for improvement of the solution are against the purpose and user requirements.

For 2D.P6: learners should have assessed the functionality of their spreadsheet and should explain why their spreadsheet is suitable for user requirements and purpose. Learners should try to avoid identifying mundane points such as the colour used (unless that is particularly important) and instead think about why their solution is appropriate and how it can be made more appropriate.

For Level 1, as a minimum, learners should identify how their spreadsheet is suitable for the purpose and user requirements.

For 2D.M5: learners should review the extent of how their spreadsheet solution meets the brief, based on feedback, and consider how the spreadsheet measures up against the original purpose and user requirements.

For 2D.D4: learners should evaluate their final spreadsheet solution against the initial designs and justify any changes made. Learners should make at least three recommendations for how they could further improve their spreadsheet.

Learners do not need to implement the enhancements.

Suggested assignment outlines

The table below shows a programme of suggested assignment outlines that cover the assessment criteria. This is guidance and it is recommended that centres either write their own assignments or adapt any assignments we provide to meet local needs and resources.

Learners should have access to an assessment brief that outlines the purpose and user requirements and a suitable data set (of at least 50 rows). Possible scenarios for this unit include:

- a spreadsheet showing potential costs for a series of mobile phone tariffs
- a membership list for a pop band's fan club showing age ranges and location of members
- fixtures, results and league table information for a football league
- a costing model for a charity event
- a profit-and-loss model for a clothing/sports shop, including incoming and outgoing stock.

Criteria covered	Assignment	Scenario	Assessment evidence
1A.1 2A.P1, 2A.M1, 2A.D1	Application of Spreadsheets	<p>You are completing a placement with the local football club in the administration department. Your manager wants you to investigate spreadsheets which could:</p> <ul style="list-style-type: none"> • manage the season ticket holder information • manage the results, fixtures and league table information for the club. <p>Before you design a spreadsheet for one of these uses, you must investigate ways in which different organisations use spreadsheets. Your manager is keen to make their spreadsheet systems as efficient as possible.</p> <p>For two given spreadsheets, you should present a presentation or report entitled 'Top 10 spreadsheet tools/techniques'. This should highlight how these tools/techniques are used in each or not in each spreadsheets, describe their purpose, and explain how these tools/techniques improve productivity, accuracy and usability.</p>	<ul style="list-style-type: none"> • Evidence of independent research into how organisations use spreadsheets • Top 10 spreadsheet tools/techniques in the form of presentation, report or demonstration for a meeting.

		Discussing the strengths, weaknesses and features of the spreadsheets.	
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Criteria covered	Assignment	Scenario	Assessment evidence
1B.2, 1B.3 2B.P2, 2B.M2, 2B.P3, 2B.D2	Designing a Spreadsheet Solution	<p>You have been asked to produce a spreadsheet to manage the season ticket holder information. You will produce design documents for a spreadsheet solution to meet your manager's needs.</p> <p>Your design documents should consider the formatting of inputs to the spreadsheet, what processes (calculations) are required, and the output presentation of the result/outcome displayed as a chart, graph or table. You will then justify your final design decisions including how the spreadsheet will meet its purpose and user requirements.</p>	<ul style="list-style-type: none"> Design documents, including: <ul style="list-style-type: none"> user needs purpose worksheet layout proposed functions, formula and calculations, named ranges potential output in charts and graphs a basic plan to test the spreadsheet.
1C.4, 1C.5 2C.P4, 2C.M3, 2C.P5, 2C.M4, 2C.D3	Developing and Testing a Spreadsheet Solution	<p>Now you will create a spreadsheet solution to manage the information about season ticket holders.</p> <p>You should complete a test plan that includes testing how well the spreadsheet solution is used by people in the administration team.</p> <p>You should test their spreadsheet for functionality, purpose and usability, gathering user feedback from the people who try the spreadsheet. You should refine the spreadsheet and record any changes made.</p>	<ul style="list-style-type: none"> A spreadsheet solution to a proposed brief Test plan.
1D.6 2D.P6, 2D.M5, 2D.D4	Review	<p>Before you present your manager with your ideas for a spreadsheet solution, and demonstrate how it can be used, you must review your solution and design. The review should consider strengths and areas for improvement and justify changes you have made to your original design.</p>	<ul style="list-style-type: none"> Evaluation.

		Your evaluation should make specific recommendations for further improvement of the solution.	
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Unit 10: Database Development

Level: **1 and 2**

Unit type: **Optional specialist**

Guided learning hours: **60**

Assessment type: **Internal**

Unit introduction

Do you use the internet to search for information, such as music tracks, items in an online shop or train times? If so, the chances are that you are using a database without realising it! Many IT systems involve the use of databases and it is important to understand how they work.

Databases are designed to hold data in a digital form, for example, a record for each computer game in a shop. Database tools can be used to ensure the data is valid and accurate. They also allow information to be restricted to certain individuals and to be analysed and presented in reports.

Job roles include database administrators who oversee the performance, integrity and security of a system and database managers who are responsible for the way a company manages, organises and stores its information.

In this unit you will investigate the features and uses of databases by exploring what they are and what you can do with them. You will be able to apply some of your findings to your own database solution.

You will also learn how to use database software to design, develop and test relational databases for a brief. Once completed, you will review your database, having obtained feedback from others, and evaluate possible improvements.

In particular this unit develops skills from the following optional units: *Unit 9: Spreadsheet Development* and *Unit 12: Software Development*.

Learning aims

In this unit you will:

- A** Understand the uses of and tools/techniques used in databases
- B** Design a relational database
- C** Develop and test a relational database
- D** Review the finished relational database.

Learning aims and unit content

What needs to be learnt
Learning aim A: Understand the uses of and tools/techniques used in databases
Why are databases used?
The purpose of database software is to store, manage and extract a large amount of organised information for one or more users.
Know why organisations use databases to:
<ul style="list-style-type: none"> ● improve productivity ● make decisions ● present information ● interpret data ● perform calculations ● manage large datasets.
Examples of uses of a database:
<ul style="list-style-type: none"> ● health (data – doctors, patients, appointments) ● employment (data – name, payroll, department) ● agencies (data – client, services, reservations) ● sale of goods (data – orders, goods, invoices) ● libraries (data – books, loans, members) ● police (data – offenders, crime, officers).
Tools and techniques used in a database
Tools and techniques include, e.g.:
<ul style="list-style-type: none"> ● table structures ● field characteristics ● validation rules ● indexing ● records ● relationships ● forms ● sorts ● queries.
(As listed in learning aim C.)

continued

What needs to be learnt

Using databases to improve working practices

Improving productivity and accuracy in a database, e.g.:

- creating and presenting financial reports
- record keeping
- backing up data
- collaborative working
- searching and planning information.

Databases and relationships

Types of databases, e.g.:

- local
- online (web)
- flat file (contains a single table of information)
- relational (uses common identifiers found within a data set consisting of two or more related tables).

Types of relationships, e.g.:

- one-to-one is a relationship between one record in the first table that corresponds to exactly one record in the related table
- one-to-many is a relationship where each record in the first table may have many linked records in the related table, but will still have only one corresponding record in the first table
- many-to-many is a relationship where each record in the first table may have linked records in the related table and vice versa.

Learning aim B: Design a relational database

Designing a database

Designs should be based around the intended purpose and user requirements as defined in a brief to solve a problem.

Design documentation, including:

- hardware, software and other resources required
- entity Relationship Diagram (ERD), including entities, attributes and relationships
- validation and verification procedures
- input and output screens/forms and reports
- constraints (e.g. hardware and software availability)
- test plan with test data to test functionality
- a brief outline of alternative design ideas.

What needs to be learnt

Learning aim C: Develop and test a relational database

Software tools and techniques to develop a relational database

Create and edit:

- single and multiple table structures with appropriate field characteristics, including
 - field names
 - field data types, e.g. alphabetic (text and memo), numeric (number, currency, and date/time), alphanumeric (text and memo), logical (yes/no and true/false), web (hyperlink), lookup wizards
 - field sizes (e.g. byte, integer, long integer, single, double and decimal)
 - field formats (e.g. fixed and decimal places)
 - default values
- validation rules and text, which applies to a range, format and length for different data types including input masks
- indexing (e.g. primary key, foreign key)
- create new records (e.g. populate tables with data manually or import a data set from an external source (text file or spreadsheet))
- edit and delete existing records of data
- create, edit and delete relationships
- use wizards.

Create and edit forms, including:

- simple forms (e.g. data-entry and main menu forms with limited functionality)
- customised forms, which suit users and purpose, e.g. a data-entry form that facilitates accurate data entry, has an appropriate user interface with programmable buttons that run events (navigation, add new record, delete record, print record) and main menu forms allowing users to access sub-forms (e.g. data-entry forms), run queries and view reports
- sub-forms
- forms should
 - allow navigation between sub-forms
 - enable the entry of data into single and multiple tables
 - have appropriate entry-form field lengths
 - provide clear labelling of entry-form fields
 - provide instruction fields where necessary
 - include validation checks on field entries as appropriate
 - delete existing forms.

continued

What needs to be learnt

Use reports:

- create and edit reports to present meaningful information for a purpose and specific users, using features (e.g. titles, page layout, colours, field selection, date/time, grouping, introductions and images)
- delete existing reports.

Use sorts:

- sort records using a single field (alpha or numeric, ascending and descending)
- sort records using multiple fields.

Use queries:

- queries with single criteria on one or two fields using relational operators
- queries with multiple criteria using at least two tables, making use of logical operators (e.g. AND, OR, NOT) and wildcards.

Automation, security and usability e.g.:

- automated tasks using macros
- security to protect the database
- provide onscreen user navigation and instructions.

Testing a database

The testing process:

- Test the relational database for functionality, purpose and usability
- Use feedback from others, for example, on the database's functionality, its usability, and its performance
- Consider possible improvements and/or refinements to the relational database, for example, additional tables, additional queries, forms, reports, automation (macros) and security
- Provide onscreen user navigation and instructions.

Learning aim D: Review the finished relational database

Reviewing a database

Review the finished relational database for:

- the user requirements and user experience (e.g. usability and reliability)
- fitness for purpose
- any constraints (e.g. hardware and software availability)
- strengths and improvements.

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Understand the uses of and tools/techniques used in databases			
1A.1 Identify the uses of databases and how the tools/techniques are used in two different databases.	2A.P1 Explain the uses of databases and how the tools/techniques are used in two different databases.	2A.M1 Review how the tools/techniques are used in two databases to improve productivity, accuracy and usability.	2A.D1 Discuss the strengths and weaknesses of the databases.
Learning aim B: Design a relational database			
1B.2 Identify the purpose and user requirements for the database.	2B.P2 Describe the purpose and user requirements for the database.	2B.M2 Produce a detailed design for a relational database, including: <ul style="list-style-type: none"> • alternative designs • a detailed database structure • test data. 	2B.D2 Justify final design decisions, explaining how the relational database will fulfil the stated purpose and user requirements, and any constraints in the design.
1B.3 Produce a design for a database with guidance, including a single table database structure with a data entry form.	2B.P3 Produce a design for a relational database, including: <ul style="list-style-type: none"> • a database structure • a test plan. 		

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim C: Develop and test a relational database			
1C.4 Develop a database with a realistic data set with guidance, including: <ul style="list-style-type: none"> • a single table structure • a data-entry form. 	2C.P4 Develop a relational database with a realistic data set, which includes: <ul style="list-style-type: none"> • two tables • sort records • data-entry forms. 	2C.M3 Develop the database demonstrating awareness of users' requirements and accuracy. To include: <ul style="list-style-type: none"> • customised data-entry forms • queries and output data reports • onscreen navigation and guidance 	2C.D3 Refine the database solution using automated tools and techniques to improve productivity, accuracy and the presentation of output data, taking account of user feedback.*
1C.5 Test the functionality of the database and repair any faults with guidance.*	2C.P5 Test the functionality and purpose of the relational database for functionality, repairing any faults.*	2C.M4 Gather feedback from others and use it to improve the database and test any additional functionality, repairing any faults.*	
Learning aim D: Review the finished relational database			
1D.6 Identify how the final database is suitable for the user requirements and purpose.	2D.P6 Explain how the final database is suitable for the user requirements and purpose.	2D.M5 Review the extent to which the finished database meets the user requirements, considering feedback from others.	2D.D4 Evaluate the finished database against the design and justify any changes made, making recommendations for further improvements to the database.

*Opportunity to assess mathematical skills

#Opportunity to assess English skills

Teacher guidance

Resources

The special resource required for this unit is database software that allows the creation and use of relational database structures.

Learners will also need a brief to design and develop a database against.

A brief should include:

- purpose
- 'client' and user requirements for the database
- task(s) the database must perform
- information the database must supply, in what form and to whom
- data to be input into the database, how and from where
- the processing that is required in the database
- the level of security needed to access the database.

The tasks, data and processing in the brief must meet the following requirements (as a minimum):

- at least two tables with appropriate field attributes, including names, sizes formats, data types, validation rules and text
- define appropriate primary and foreign keys
- a given data set containing at least 50 records
- at least one one-to-many relationship between at least two tables
- sort records using single and multiple fields
- at least two data-entry forms, which enables entry of data into single and/or multiple tables
- a main menu form, which links to the data-entry sub-forms and includes options to run queries and view reports
- at least five queries, which searches for meaningful information using single and multiple criteria in at least two tables, using relational and logical operators and wildcards
- at least three reports to present meaningful information for a purpose and audience.

Assessment guidance

This unit is assessed internally by the centre and externally verified by Pearson. Please read this guidance in conjunction with *Section 8 Internal assessment*.

Learning aim A

Learners will investigate databases by describing the main uses of databases, as well as the purpose of the tool/techniques they include.

For 2A.P1: learners should explain the uses of databases and how the tools/techniques are used in two given databases, e.g. an appointment system for a doctor's surgery that stores records of patients, appointments and medical history, with the intention of using features such as reports to identify the numbers of cancelled appointments in any given month. The two databases should be designed for different purposes.

For Level 1, as a minimum, learners should identify the uses of databases and how the tools/techniques are used for two databases, including tables, fields, records, queries and reports.

For 2A.M1: learners should explain how the tools/techniques of the databases could improve productivity, accuracy and usability, e.g. sending an automated mail shot to every patient in the database using their address details, explaining important news about the surgery.

For 2A.D1: learners should examine the databases in more detail and consider the strengths weaknesses and essential features of the databases, concluding if the products could be improved.

Learning aim B

Learners should now have an understanding of what databases are and should be able to distinguish between different types of databases. They will be able to apply what they find out during their investigation of databases in the development of their own relational database.

Learners will design, develop and test a relational database.

Learners should be given a brief, which will allow them to design a relational database for a given purpose. The brief should ideally be written with a 'client' in mind, including clear objectives of what they want the database to perform and present. This will include a data set containing at least 50 records that learners will be expected to import into the database.

For 2B.P2: To produce a design for a relational database, learners must first be able to understand and interpret the purpose and users requirements for the product, relating this to design ideas for the product. They should be able to provide a description of the relational database and what it is intended to be used for.

For Level 1, as a minimum, learners should identify the user requirements and purpose for the design of their database.

For 2B.P3: learners need to provide a database structure, including at least two tables with appropriate field attributes (e.g. names, sizes, formats, data types), an entity relationship diagram illustrating at least one, one-to-many relationship and a data input form. Learners must also provide a test plan giving an outline of the range of tests that they will perform when the relational database is developed.

For Level 1, as a minimum, learners should have created an outline design for their relational database. Their outline design will contain a single table database structure with appropriate field attributes and input/output screen for a data entry form.

For 2B.M2: learners will need to consider alternative design ideas to suit audience and purpose including:

- different ways of presenting reports and forms.
- A detailed database structure including what validation and verification procedures would apply to the data. Learners will also need to provide an input and output screen/form for a main menu with options to access at least two data-entry sub-forms, run queries and view reports. All forms at this stage should be customised to meet audience and purpose. Examples include applying appropriate logos, themes, titles and user instructions. Learners must include some test data as part of the test plan, which should reflect the user requirements.
- an outline of at least five queries and three reports that will extract and present meaningful information.

For 2B.D2: learners should justify their final design decisions, explaining how the relational database will fulfil the stated purpose and user requirements. Learners must also think about the constraints, e.g. software availability and whether or not this will have an impact on developing the relational database. If it does, learners should consider whether there are any alternatives for developing the same solution. Learners should explain why alternative designs were rejected.

Learning aim C

Learners will have a design of what their intended database will do, how it will be structured and how it will be tested. They should therefore be ready to apply their practical skills and knowledge to develop and test a relational database.

For 2C.P4: learners should use appropriate software resources (identified in their design) to develop their relational database. The relational database that they design must demonstrate awareness of the purpose of the database and user requirements.

As a minimum, learners should have developed a relational database that demonstrates the following competencies (as defined in the brief):

- consists of at least two tables with appropriate field attributes including names, sizes formats, data types, validation rules and text
- has defined primary and foreign key(s)
- has tables populated with a combined data set containing at least 50 records
- has at least one example of a one-to-many relationship
- sorts records using single and multiple fields alphabetically or numerically in ascending or descending order
- includes at least two data-entry forms.

For Level 1, as a minimum, learners should have developed a database includes a single table with appropriate field attributes and an input form for data entry.

For 2C.M3: learners will develop the database, demonstrating an awareness of the intended user requirements and accuracy by:

- creating reports to present meaningful information, using features (e.g. titles, page layouts, colours, field selection, date/time, grouping, introductions and images)
- customising data-entry forms, to enable entry of data into single and multiple tables. The fields should have appropriate entry-form field lengths, have clear labelling of entry-form fields, provide instruction fields where necessary and include validation checks on field entries where appropriate and facilitate navigation
- creating and editing a main menu form with options to access other forms, queries and reports
- searching with single and multiple criteria on one or two fields in at least two tables, using relational and logical operators and wildcards
- onscreen user navigation and guidance.

For 2C.P5: learners will be expected to follow their test plans (as defined in their design) and test the functionality and purpose of their database.

Learners are likely to experience technical difficulties as they develop their database. Where this happens, learners will be expected to resolve these difficulties, and by doing so will have made the necessary repairs to their database. It is important that learners make appropriate comments on their designs and test plans about any issues they discover and how they resolved them.

For Level 1, as a minimum, Learners must show they have tested for the functionality of their database..

For 2C.M4: over and above the existing functionality testing, learners will also be required to test the functionality of the additional features of the database, as implemented for 2C.M3.

Learners will also complete usability testing with the help of at least two people who can act as the 'client'. The 'client' should comment on the functionality and usability of the relational database. Learners should record this feedback as part of the testing process.

For 2C.D3: teachers should recognise that the process of developing and testing a database is an iterative process. When making refinements to their database, learners should take into account their test results and feedback.

Learners should refine the database solution using automated tools and techniques to improve productivity, accuracy and the presentation of output data. The database should include:

- error messages resulting from validation and verification checks to data (including queries and reports) and the user interface (forms)
- onscreen user guidance to assist users with the user interface, particularly with instructions on how to navigate throughout the forms, data entry and data management, queries and reports
- automations (e.g. the ability to automate tasks using macros).

Learners will also be expected to make refinements to their databases by taking account of their test results and feedback from the 'client'.

All of the ideas from testing, feedback and reviewing their designs as they create the database should have been considered as how best to refine the product.

Learning aim D

For 2D.P6: learners should explain why their final database meets the user requirements and purpose.

For Level 1, as a minimum, learners should have identified how their database meets the purpose and user requirements.

For 2D.M5: learners should build on the comments they made for the pass criteria, and should refer back to the user requirements as defined in their design when doing so. They should also seek feedback from another person about the final relational database. An interview would be an ideal way of discussing the relational database and recording the feedback. Learners should use this feedback to identify strengths and potential improvements.

For 2D.D4: learners should evaluate their design against the final database in terms of overall user experience and user requirements in the original brief. They should justify any changes that were made through the development of the database and explain the rationale for the changes. Refinements could include exporting data, using data to create mail shots, macros, complex queries, etc. They should also give at least three recommendations for any further improvements, but do not need to implement the enhancements.

Suggested assignment outlines

The table below shows a programme of suggested assignment outlines that cover the assessment criteria. This is guidance and it is recommended that centres either write their own assignments or adapt any assignments we provide to meet local needs and resources.

An idea for a scenario is:

- an endangered animal's charity needs a database of all the animals that it supports.
- members will be able to use the database online to search for information and to generate reports.

Criteria covered	Assignment	Scenario	Assessment evidence
1A.1 2A.P1, 2A.M1, 2A.D1	How and Why are Databases Used?	<p>You work for a local health authority and have been asked to develop simple information management systems for doctors' surgeries to use in the area. Before you design a database solution, you want to prepare a demonstration to show how databases are currently used in two different ways by organisations.</p> <p>Write a short description of the use and features of databases in two different organisations. How does each database improve productivity? You should discuss the strengths, weaknesses and essential features.</p>	<ul style="list-style-type: none"> • A short report.

Criteria covered	Assignment	Scenario	Assessment evidence
1B.2, 1B.3 2B.P2, 2B.M2, 2B.P3, 2B.D2	Designing a Database for a Doctor's Surgery	<p>You begin your design of an information system by designing a database for a doctor's surgery for a new appointment system. The surgery has five doctors.</p> <p>Design a database to store service users' details and their appointments, with appropriate fields.</p> <p>Your design should include:</p> <ul style="list-style-type: none"> • at least two tables • an entity relationship diagram • input and output screens • at least two data-entry forms for new service users and appointments • at least one main menu form that accesses at least two data-entry sub-forms, including options to view queries and reports. <p>The design should include the structure, validation, queries and reports that will extract and present meaningful information and a test plan with test data.</p> <p>Customise your forms.</p> <p>Justify how your design meets the requirements of the doctor's surgery.</p>	<ul style="list-style-type: none"> • Database design documents • Structure • Justification.

Criteria covered	Assignment	Scenario	Assessment evidence
1C.4, 1C. 5 2C.P4, 2C.M3, 2C.P5, 2C.M4, 2C.D3	Developing Your Database	<p>You should now develop your pilot database and test it out with some users.</p> <p>Create the database structure and build a relationship between the tables. Add appropriate data validation.</p> <p>Your database should be able to sort records alphabetically or numerically, in ascending and descending order. Create two data-entry forms that are suitable for staff use, e.g. adding new patients and new appointments.</p> <p>Create one main menu form that will allow staff to navigate between all forms (e.g. data-entry sub-forms) and be able to run queries and view reports.</p> <p>Create appropriate queries that will search for patient or appointment data, e.g. a service user's address or medical history.</p> <p>Create appropriate reports that will extract and present information, e.g. a report of missed appointments in any given day, week or month.</p> <p>Populate your database with the given dataset.</p> <p>Test your database (including any validation rules). Repair any features that do not work.</p> <p>Get the opinion of at least two other people on your database in terms of how easy it is to use.</p> <p>Improve your database.</p>	<ul style="list-style-type: none"> ● Database ● Annotated design documents ● Witness statement and observation records ● Updated versions of files ● Feedback from users.

Criteria covered	Assignment	Scenario	Assessment evidence
2D.P6, 2D.M5, 2D.D4	Reviewing Your Database	<p>You now need to review your database solution before you present it to your manager or roll it out across surgeries in the local area.</p> <p>Give at least three strengths and one improvement you could make to your database.</p> <p>Does your finished database meet the brief given by the doctor's surgery? How does it meet the requirements of the brief? How is it suitable for the users?</p> <p>What changes did you make to your designs? Explain any changes made. How would you improve your database to roll it out for other surgeries?</p>	<ul style="list-style-type: none"> • A report • Annotation of design and feedback responses.

Unit 13: Website Development

Level: **1 and 2**

Unit type: **Optional specialist**

Guided learning hours: **60**

Assessment type: **Internal**

Unit introduction

Have you ever viewed a website and wondered how it was created? Many different elements can be included in the website, such as text, graphics, animation, video and programs (client-side computer scripts). Many websites also contain sophisticated interactive features such as database search facilities, online purchasing and messaging. To be successful, a website must be visually interesting, while remaining easy to use.

With the internet being central to how most organisations and individuals communicate and do business, the creation and maintenance of websites is an important job role. There is a strong demand in the job market for web developers with appropriate technical and creative skills. For instance, a web-developer is a technical role involved with designing and developing websites, a content manager is responsible for keeping a website up to date and a search engine optimisation specialist encourages user traffic from internet search engines to specific websites.

In this unit, you will investigate the features and uses of websites by exploring what they are and how their integrated components and applications interact with each other.

You will also learn how to design, develop and test a website for a brief. Once this is completed you will review your website, having obtained feedback from others.

In particular this unit develops skills from *Unit 1: The Digital World*. It also develops the skills from the following optional units: *Unit 4: Creating Digital Animation*, *Unit 5: Creating Digital Audio*, *Unit 6: Creating Digital Graphics*, and *Unit 7: Creating Digital Video*.

Learning aims

In this unit you will:

- A** Understand the uses and features of websites
- B** Design a website
- C** Develop and test a website
- D** Review the finished website.

Learning aims and unit content

What needs to be learnt
<p>Learning aim A: Understand the uses and features of websites</p> <p>Why are websites used?</p> <p>The purpose of a website is to present information to an audience by using a collection of related web pages, traditionally hosted on a web server. This information may include text, graphics, video or other digital assets.</p> <p>Typical uses of websites, including:</p> <ul style="list-style-type: none"> • presenting information (e.g. advertising, news) • storing information (e.g. archiving, cloud) • browsing and searching for information (e.g. real-time information) • improving productivity (e.g. email, collaborative working) • making decisions (e.g. financial, managerial) • communicating with people (e.g. social networking, video conferencing) • media sharing (e.g. listen to live radio, watch films) • e-commerce (e.g. shopping, banking) • education (e.g. libraries, online learning, assessments) • downloading information (e.g. data, media). <p>Features of websites:</p> <ul style="list-style-type: none"> • hyperlinks • action buttons • hot spots • templates • email links • registration and logins • forms (user input and feedback) • accessibility, e.g. text to speech. • e-commerce facilities • online forums • aesthetics, e.g. colours, layout, graphics/video/animation, audio, text, styles (use of style sheets).

continued

What needs to be learnt**Types of websites:**

- static
- dynamic.

Static websites are a collection of web pages primarily coded in HyperText Markup Language (HTML). These types of websites present static information to their audience, e.g. a brochure.

A dynamic website is a collection of web pages that often changes or customises itself frequently and automatically.

How can user experience of websites be improved?

Different features of websites can improve the user experience for an individual, business or organisation, e.g.:

- forms that allow customers to leave feedback
- dynamic interactions when socialising online
- applying style sheets to keep the same look and feel for a website
- making websites interactive by embedding digital assets.

What needs to be learnt**Learning aim B: Design a website****Designing a website**

Designs include:

- intended purpose and user requirements as defined in a brief
- documented design ideas/prototypes, including:
 - original and/or ready-made digital assets (e.g. digital animation, digital graphic, digital audio, digital video or any combined assets). Sources for ready-made assets must be documented and referenced.
 - storyboard, containing a number of panels, showing the intended content and structure of the website
 - home page and folder structure
 - site map, to illustrate how web pages are interlinked
 - styles, templates and formats (e.g. colours, font size, font type, text and image alignment, page layouts)
- hardware, software and other resources required
- constraints, e.g. hardware and software availability, accessibility, browser compatibility, file and file formats, client-side functionality, and performance (bandwidth, processor, memory), availability of web plug-ins, e.g. ActiveX, Flash
- test plan, to test functionality
- a brief outline of alternative design ideas.

What needs to be learnt

Learning aim C: Develop and test a website

Develop and test a website

Prepare assets and create a website:

- Prepare (gather or create) suitable assets e.g. graphics, audio, video, other content such as text and external links
- Use appropriate software tools/techniques
- create and edit web pages including:
 - text
 - tables
 - forms (e.g. text field, text area, buttons, radio buttons, check boxes)
 - frames
 - navigation (e.g. menus, hyperlinks (internal and external), anchors)
 - interactive components (e.g. hot spots, pop-ups, buttons, menus, rollover images)
 - colour schemes, styles and templates (e.g. cascading style sheets, page layout, size and position (text, links, assets, forms), text wrapping, background colours)
 - embedded multimedia/digital asset content (e.g. digital graphics, digital video, digital audio, digital animation)
 - simple client-side scripts (e.g. embed JavaScript code to display a name in a pop-up box)
 - other formatting (e.g. HyperText Markup Language (HTML), Dynamic HyperText Markup Language (DHTML))
 - accessibility features (e.g. alternative tags, zoom features, text-to-speech)
 - check browser compatibility to present web pages
 - export and compress any digital assets into suitable file types (e.g. resolution and size appropriate for web pages)
 - suitable file names for web pages.

Website hosting:

- web server
- domain name
- web hosting services.

Test the website:

- Test the website for functionality, quality and usability
- gather feedback from others (e.g. on content, presentation, navigation, usability, accessibility, performance and purpose).
- improve and/or refine the website to improve accessibility, e.g.:
 - alternative text tags
 - zoom features
 - text to speech features
- improve and/or refine the website to enhance performance, e.g.:
 - export and compress digital assets
 - add dynamic functionality.

What needs to be learnt**Learning aim D: Review the finished website****Reviewing a website**

Review the finished website for:

- fitness for purpose and user requirements
- functionality
- information/content including digital assets
- user experience (e.g. usability, quality, performance)
- constraints
- strengths and potential improvements.

Assessment criteria

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Understand the uses and features of websites			
1A.1 Identify the intended use and features of two websites.	2A.P1 Explain the intended uses and features of two different websites.	2A.M1 Review how the features in two websites improve presentation, usability, accessibility, and performance.	2A.D1 Discuss the strengths and weaknesses of the websites.
Learning aim B: Design a website			
1B.2 Identify the purpose and user requirements for the website.	2B.P2 Describe the purpose and user requirements for the website.	2B.M2 Produce a detailed design for a website, including: <ul style="list-style-type: none"> • alternative solutions • aesthetic features • interactive components.# 	2B.D2 Justify the final design decisions, including: <ul style="list-style-type: none"> • how the design will fulfil the purpose and user requirements • including any design constraints.#
1B.3 Produce a design for a four page interlinked website, with guidance, including an outline of the proposed solution.	2B.P3 Produce a design for an eight page interlinked website, including: <ul style="list-style-type: none"> • a proposed solution • a list of assets • a test plan.# 		

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim C: Develop and test a website			
1C.4 Prepare assets and content for the website, with guidance.	2C.P4 Prepare assets and content for the website, demonstrating awareness of purpose, listing sources of assets.	2C.M3 Prepare assets and content for the website demonstrating awareness of the users' requirements, with all sources fully referenced.	2C.D3 Refine the website, to improve accessibility and performance, taking account of user feedback and test results.
1C.5 Develop a website containing four interlinked web pages, with guidance.	2C.P5 Develop a website containing at least eight interlinked web pages, demonstrating awareness of purpose.	2C.M4 Develop a website including interactive components, demonstrating awareness of user requirements and taking account of usability.	
1C.6 Test the website for functionality and purpose repairing any faults and documenting changes, with guidance.	2C.P6 Test the website for functionality and purpose, repairing any faults, and documenting changes.	2C.M5 Test interactivity and gather feedback from others on the quality of the website, and use it to improve the website, showing awareness of user requirements.	

Level 1	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim D: Review the finished website			
1D.7 Identify how the final website is suitable for the intended purpose.	2D.P7 Explain how the final website is suitable for the intended audience and purpose.	2D.M6 Review the extent to which the finished website meets the needs of purpose and user requirements, while considering feedback from others and constraints.	2D.D4 Evaluate the final website against the design and justify any changes made, making recommendations for further improvements.

*Opportunity to assess mathematical skills

#Opportunity to assess English skills

Teacher guidance

Resources

The special resource required for this unit is website authoring software that allows the creation of websites.

Learners should have access to an assignment brief to allow the learner to design a website for a given purpose. The brief should ideally be written with a 'client' in mind, and should have clear objectives of what they want the website to present. The brief should include details of any required text and digital assets (e.g. digital animation, digital video, digital audio, digital graphics).

If the brief requires learners to create assets for the website, they will also need access to suitable software in order to create audio, video, animation or graphics.

Assessment guidance

This unit is assessed internally by the centre and externally verified by Pearson. Please read this guidance in conjunction with *Section 8 Internal assessment*.

Learning aim A

Learners will investigate websites in order to understand the uses of two websites and the purpose of their features. The websites should be designed for different purposes.

For 2A.P1: learners should explain the uses of two websites and the features they include, e.g. a theatre website that allows users to purchase tickets in advance using online payment methods, or a banking website that allows users to manage their bank accounts securely.

For Level 1, as a minimum, learners should have identified the intended uses of two websites and their features, including text, digital assets and links.

For 2A.M1: learners should review how the features of the websites improves the presentation, usability and accessibility, e.g. allowing users to customise the website format so that people with visual difficulties can enlarge the text.

For 2A.D1: learners should examine the websites in more detail to discuss their strengths, weaknesses and essential features of the products, concluding if the products could be improved.

Learning aim B

Learners will design, develop and test a website.

Scenarios suitable for a brief should allow learners to achieve all assessment criteria. The brief should include:

- the purpose of the website
- the user requirements
- the information (e.g. text) that must be provided
- features that must be included (e.g. text, forms, frames, tables)
- the user interaction that is required
- digital assets to be included (e.g. digital animation, digital graphics, digital audio, digital video).

Centres can allow learners to devise their own scenario for the brief. However, all scenarios should be approved by the centre before being used in order to ensure access to all assessment criteria.

For 2B.P2: learners should describe the purpose and user requirements for their website.

For Level 1, as a minimum, learners should identify the purpose and user requirements for their website.

For 2B.P3: learners must produce a design for an eight-page interlinked website.

The design documentation should include:

- the proposed solution containing:
 - a storyboard (with at least eight panels – one per web page) that outline the layout, content (e.g. text, assets and features)
 - a description of styles, templates, formats and interactive features
 - a site map including home page and file structure
 - a description of the ready-made and/or original assets to be used
- a list, in a sources table, of any original and/or ready-made assets
- a test plan, giving an outline of the range of tests to check the functionality of the website.

Learners should include a collection of website ideas or prototypes in their designs. Learners should describe any styles, templates or formats, and include details of any interactive features. They should outline at least four different original and/or ready-made assets that they intend to use, and list the sources for these assets in a sources table.

For level 1, as a minimum, learners should design an outline proposed solution. The outline of a proposed solution will contain a website structure including at least four panels in a storyboard, a site map and an outline of two original or ready-made asset to be used.

For 2B.M2: learners will be expected to add to their original design documentation by considering complex tools and techniques.

Learners should include:

- how colour schemes and page styles will be applied consistently in all of the web pages
- how interactive components that make use of simple client-side scripting will be embedded, e.g. display a message to welcome the user, and how to make it easier for users to navigate
- a brief outline of any alternative solutions for the intended website, e.g. the use of different assets for the intended website. These do not have to be fully worked-up designs.

For 2B.D2: learners should justify their design decisions, including why alternative designs were rejected, explaining how the website will fulfil the stated purpose and user requirements. Learners must also think about the constraints, e.g. software availability and whether or not this will have an impact on developing the website. If it does, are there any alternatives for developing the same solution?

Learning aim C

Learners will apply their practical skills and knowledge to develop and test a website.

For 2C.P4: learners should prepare assets (by gathering assets and creating them, if required), and list the sources for ready-made assets. At least four assets should be included, such as graphic images, audio clips and animations, as outlined in their designs. They should demonstrate an awareness of the purpose of the website.

For Level 1, as and with guidance. Learners should include at least two assets in their websites.

For 2C.M3: learners should prepare their assets and content for the website which has considered the user requirements of the website. All ready-made assets should be fully referenced in a sources table, with enough detail for another person to individually obtain the assets used.

For 2C.P5: learners should use appropriate website authoring software develop their website using appropriate tools/techniques. They should demonstrate an awareness of the purpose and the website should be based on their designs. Learners should have developed a website that includes at least eight interlinked web pages with:

- at least four different assets
- internal and external hyperlinks
- text
- at least one table
- forms
- menus
- colour schemes and styles.

For Level 1, as a minimum, learners should have developed a website which includes at least four interlinked web pages, with text, a table, hyperlinks and two assets.

For 2C.M4: learners should improve their website, taking account of usability and user requirements. Learners should include interactive components that make use of simple client-side scripting, e.g. JavaScript code that displays the date and time.

An example of improving usability would be consistent colour schemes and styles in all web pages (using a method like cascading style sheets).

For 2C.P6: learners will be expected to follow their test plans (as defined in their design) and test the functionality of their website, and check that it is fit for purpose.

Learners are likely to experience technical difficulties as they develop their website. Learners will be expected to make the necessary repairs to their website. It is important that learners make appropriate comments on their designs and test plans about any issues they discover, and how they have resolved them.

For Level 1, as a minimum, learners should have tested the website for functionality and fitness for purpose.

For 2C.M5: learners should test the functionality of the interactivity features of the website. They should also test that the website meets the user requirements.

Learners should complete user-experience testing, with the help of a test users. Learners should record this feedback as part of the testing process. While considering the feedback, they should keep the user requirements of the website in mind. Learners should use their feedback and test results to improve the website.

For 2C.D3: teachers should recognise that the process of developing and testing a website is an iterative process. When making refinements to their websites, learners should take into account their test results and feedback from the 'client'.

Learners should refine their website using tools and techniques to cater for accessibility requirements and performance enhancements. For instance, learners could use:

- alternative text tags, text-to-speech to improve accessibility for users with hearing or visual impairments
- optimising assets to improve how quickly the website presents to the audience; if not appropriately compressed, video, animation and graphics can slow a website.

Learning aim D

For 2D.P7: learners should explain why the product is suitable for the purpose and user requirements. Learners should give one reason for the purpose and one relating to user requirements.

For Level 1, as a minimum, learners should have identified how their website is fit for purpose, for example, 'My website is suitable to advertise films as it includes posters for recent film releases and links to film company websites and local cinemas'.

For 2D.M6: learners should build on the explanations given in the Pass criteria, and refer back to the user requirements and purpose as defined in their design. They should also seek feedback from users about the final website. An interview would be an ideal way of discussing the website with notes used to record the feedback.

For 2D.D4: learners should evaluate the initial design ideas/prototypes against the final website in terms of overall user experience and 'client' requirements in the original brief. They should justify any changes that were made during development, and explain the rationale for any changes. They should also give at least three recommendations for improvements, but do not need to implement the enhancements.

Suggested assignment outlines

The table below shows a programme of suggested assignment outlines that cover the assessment criteria. This is guidance and it is recommended that centres either write their own assignments or adapt any assignments we provide to meet local needs and resources.

Criteria covered	Assignment	Scenario	Assessment evidence
1A.1 2A.P1, 2A.M1 2A.D1	Investigating Websites	<p>You work for a web-development company and you have been asked to prepare a presentation to the directors of a prospective 'client'.</p> <p>The 'client' wants you to look at two existing competitors' websites, describing the features used.</p> <p>Explain how these features could improve the presentation, user experience, accessibility and performance of the websites.</p> <p>Discuss the strengths, weaknesses and essential features of the websites.</p>	<ul style="list-style-type: none"> • Presentation slides and notes. • Supporting material.

Criteria covered	Assignment	Scenario	Assessment evidence
1B.2, 1B.3 2B.P2, 2B.M2, 2B.P3, 2B.M3, 2B.D2	Designing the Website	<p>The 'client' has now provided some detailed requirements.</p> <p>You have been asked to develop and document a design.</p> <p>The designs should include:</p> <ul style="list-style-type: none"> • purpose and user requirements • website ideas/prototypes • styles, templates and formats • interactive features • site map • storyboards to show the layout and structure of the website • digital assets to be used • a test plan • a table of sources for the digital assets to be used. <p>Explain why any ideas you are not using have been rejected. Justify your design choices, relating back to the user requirements.</p> <p>Describe any constraints that have affected your design.</p>	<ul style="list-style-type: none"> • Supported design documentation. • Sources table. • Diagrams. • Prototype ideas or images. • List of assets.

Criteria covered	Assignment	Scenario	Assessment evidence
1C.4, 1C.5, 1C.6 2C.P4, 2C.P5, 2C.P6, 2C.M3, 2C.M4, 2C.M5, 2C.D3	Creating the Website	<p>The 'client' has asked you to develop the website according to the design. Your website should contain assets, hyperlinks, text, tables, forms, menus, colour schemes, styles, and interactive components (that include simple client-side scripting).</p> <p>Improve the website by improving navigation, accessibility and performance.</p> <p>Test the website for functionality, presentation and usability repairing any problems that arise. Get feedback from the 'client' on your website. Refine your final website.</p>	<ul style="list-style-type: none"> Website at different stages, supporting material and documented discussion, annotated designs, updated source table.
1D.7 2D.P7, 2D.M6, 2D.D4	Reviewing the Website	<p>Having completed the website, you now need to review it with the 'client'. Why is your website suitable for the 'client' and the purpose of the website? Include any improvements you could make, and what the strengths of your design are. Evaluate your website against your designs. Justify your changes.</p>	<ul style="list-style-type: none"> Completed test plan, review feedback, supporting reports.

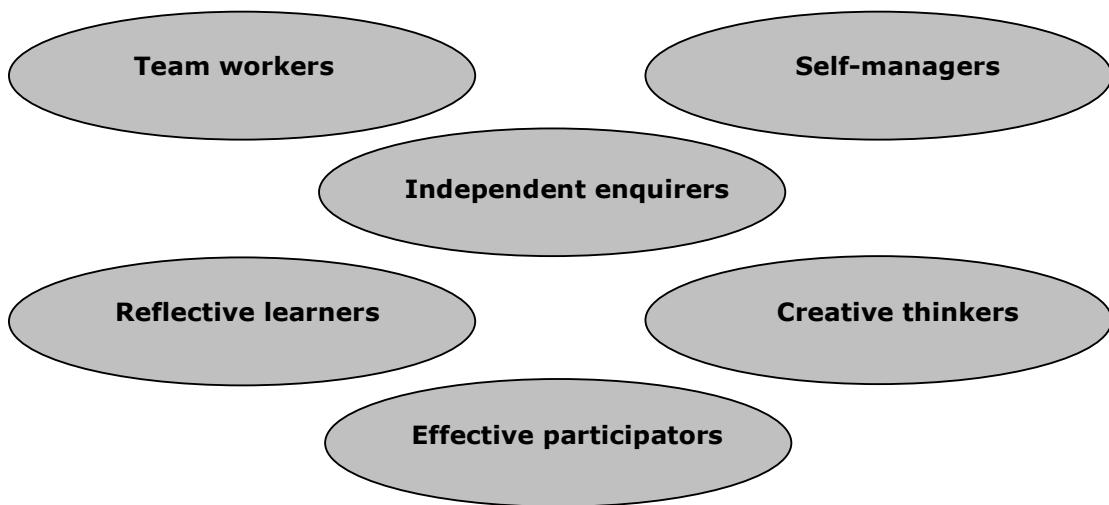
Annexe A

Personal, learning and thinking skills

A FRAMEWORK OF PERSONAL, LEARNING AND THINKING SKILLS 11–19 IN ENGLAND

The framework comprises six groups of skills that are essential to success in learning, life and work. In essence, the framework captures the essential skills of: managing self; managing relationships with others; and managing own learning, performance and work. It is these skills that will enable young people to enter work and adult life confident and capable.

The titles of the six groups of skills are set out below.



For each group, there is a focus statement that sums up the range of skills. This is followed by a set of outcome statements that are indicative of the skills, behaviours and personal qualities associated with each group.

Each group is distinctive and coherent. The groups are also interconnected. Young people are likely to encounter skills from several groups in any one learning experience. For example, an independent enquirer would set goals for their research with clear success criteria (reflective learner) and organise and manage their time and resources effectively to achieve these (self-manager). In order to acquire and develop fundamental concepts such as organising oneself, managing change, taking responsibility and perseverance, learners will need to apply skills from all six groups in a wide range of learning contexts.

The skills

Independent enquirers

Focus:

Young people process and evaluate information in their investigations, planning what to do and how to go about it. They take informed and well-reasoned decisions, recognising that others have different beliefs and attitudes.

Young people:

- identify questions to answer and problems to resolve
- plan and carry out research, appreciating the consequences of decisions
- explore issues, events or problems from different perspectives
- analyse and evaluate information, judging its relevance and value
- consider the influence of circumstances, beliefs and feelings on decisions and events
- support conclusions, using reasoned arguments and evidence.

Creative thinkers

Focus:

Young people think creatively by generating and exploring ideas, making original connections. They try different ways to tackle a problem, working with others to find imaginative solutions and outcomes that are of value.

Young people:

- generate ideas and explore possibilities
- ask questions to extend their thinking
- connect their own and others' ideas and experiences in inventive ways
- question their own and others' assumptions
- try out alternatives or new solutions and follow ideas through
- adapt ideas as circumstances change.

Reflective learners

Focus:

Young people evaluate their strengths and limitations, setting themselves realistic goals with criteria for success. They monitor their own performance and progress, inviting feedback from others and making changes to further their learning.

Young people:

- assess themselves and others, identifying opportunities and achievements
- set goals with success criteria for their development and work
- review progress, acting on the outcomes
- invite feedback and deal positively with praise, setbacks and criticism
- evaluate experiences and learning to inform future progress
- communicate their learning in relevant ways for different audiences.

Team workers

Focus:

Young people work confidently with others, adapting to different contexts and taking responsibility for their own part. They listen to and take account of different views. They form collaborative relationships, resolving issues to reach agreed outcomes.

Young people:

- collaborate with others to work towards common goals
- reach agreements, managing discussions to achieve results
- adapt behaviour to suit different roles and situations, including leadership roles
- show fairness and consideration to others
- take responsibility, showing confidence in themselves and their contribution
- provide constructive support and feedback to others.

Self-managers

Focus:

Young people organise themselves, showing personal responsibility, initiative, creativity and enterprise with a commitment to learning and self-improvement. They actively embrace change, responding positively to new priorities, coping with challenges and looking for opportunities.

Young people:

- seek out challenges or new responsibilities and show flexibility when priorities change
- work towards goals, showing initiative, commitment and perseverance
- organise time and resources, prioritising actions
- anticipate, take and manage risks
- deal with competing pressures, including personal and work-related demands
- respond positively to change, seeking advice and support when needed.

Effective participants

Focus:

Young people actively engage with issues that affect them and those around them. They play a full part in the life of their school, college, workplace or wider community by taking responsible action to bring improvements for others as well as themselves.

Young people:

- discuss issues of concern, seeking resolution where needed
- present a persuasive case for action
- propose practical ways forward, breaking these down into manageable steps
- identify improvements that would benefit others as well as themselves
- try to influence others, negotiating and balancing diverse views to reach workable solutions
- act as an advocate for views and beliefs that may differ from their own.

Summary of the PLTS coverage throughout the programme

This table shows where units support the development of personal, learning and thinking skills.

Key:

✓ indicates opportunities for development

a blank space indicates no opportunities for development

Unit	Personal, learning and thinking skills					
	Independent enquirers	Creative thinkers	Reflective learners	Team workers	Self-managers	Effective participants
1	✓	✓				
3	✓	✓	✓		✓	
4	✓	✓	✓		✓	
5	✓	✓	✓		✓	
6	✓	✓	✓		✓	
7	✓	✓	✓		✓	
9	✓	✓	✓		✓	
10	✓	✓	✓		✓	
13	✓	✓	✓		✓	

Annexe B

English knowledge and skills signposting

This table shows where an assessment criterion in a BTEC First unit can provide an opportunity to practise a subject content area from the GCSE English subject criteria (including functional elements).

Unit number and title	Learning aim	Assessment criterion reference	Subject content area from the GCSE subject criteria (details of the content area can be found below)
Unit 1: The Digital World	N/A	N/A	N/A
Unit 26: Integrated Digital Technologies	B	1B.3, 2B.P3, 2B.M2, 2B.M3, 2B.D2	2, 5, 15, 16
Unit 4: Creating Digital Animation	B	2B.P3, 2B.M2, 2B.D2	2, 5, 15, 16
Unit 5: Creating Digital Audio	B	2B.P3, 2B.M2, 2B.D2	2, 5, 15, 16
Unit 6: Creating Digital Graphics	B	2B.P3, 2B.M2, 2B.D2	2, 5, 15, 16
Unit 7: Creating Digital Video	B	2B.P3, 2B.M2, 2B.D2	2, 5, 15, 16
Unit 9: Spreadsheet Development	N/A	N/A	N/A
Unit 10: Database Development	N/A	N/A	N/A
Unit 13: Website Development	B	2B.P3, 2B.M2, 2B.D2	2, 5, 15, 16

GCSE English subject content area

The topic areas below are drawn from the GCSE English subject criteria.

Learners should:

- 1 analyse spoken and written language, exploring impact and how it is achieved
- 2 express ideas and information clearly, precisely, accurately and appropriately in spoken and written communication
- 3 form independent views and challenge what is heard or read on the grounds of reason, evidence or argument
- 4 understand and use the conventions of written language, including grammar, spelling and punctuation
- 5 explore questions, solve problems and develop ideas
- 6 engage with and make fresh connections between ideas, texts and words
- 7 experiment with language to create effects to engage the audience
- 8 reflect and comment critically on their own and others' use of language.

In speaking and listening, learners should:

- 9 present and listen to information and ideas
- 10 respond appropriately to the questions and views of others
- 11 participate in a range of real-life contexts in and beyond the classroom, adapting talk to situation and audience, and using standard English where appropriate
- 12 select and use a range of techniques and creative approaches to explore ideas, texts and issues in scripted and improvised work.

In reading, learners should:

- 13 understand how meaning is constructed through words, sentences and whole texts, recognising and responding to the effects of language variation
- 14 evaluate the ways in which texts may be interpreted differently according to the perspective of the reader.

In writing, learners should write accurately and fluently:

- 15 choosing content and adapting style and language to a wide range of forms, media, contexts, audiences and purposes
- 16 adapting form to a wide range of styles and genres.

Annexe C

Mathematics knowledge and skills signposting

This table shows where an assessment criterion in a BTEC First unit can provide an opportunity to practise a subject content area from the GCSE Mathematics subject criteria (including functional elements).

Unit number and title	Learning aim	Assessment criterion reference	Subject content area from the GCSE subject criteria (details of the content area can be found below)
Unit 1: The Digital World	N/A	N/A	N/A
Unit 26: Integrated Digital Technologies	N/A	N/A	N/A
Unit 4: Creating Digital Animation	C	1C.5, 2C.P5, 2C.M4, 2C.D3	1, 7
Unit 5: Creating Digital Audio	N/A	N/A	N/A
Unit 6: Creating Digital Graphics	C	1C.5, 2C.P5, 2C.M4, 2C.D3	1, 7
Unit 7: Creating Digital Video	N/A	N/A	N/A
Unit 9: Spreadsheet Development	C	1C.5, 2C.P5, 2C.M4, 2C.D3	1, 3, 4, 6, 8, 13, 17
Unit 10: Database Development	C	1C.5, 2C.P5, 2C.M4, 2C.D3	1, 3, 4, 6, 8, 13, 17
Unit 13: Website Development	N/A	N/A	N/A

GCSE Mathematics subject content area

The topic areas below are drawn from the GCSE Mathematics subject criteria.

Learners should be able to:

- 1 understand number size and scale and the quantitative relationship between units
- 2 understand when and how to use estimation
- 3 carry out calculations involving $+$, $-$, \times , \div , either singly or in combination, decimals, fractions, percentages and positive whole number powers
- 4 understand and use number operations and the relationships between them, including inverse operations and the hierarchy of operations
- 5 provide answers to calculations to an appropriate degree of accuracy, including a given power of ten, number of decimal places and significant figures
- 6 understand and use the symbols $=$, $<$, $>$, \sim
- 7 understand and use direct proportion and simple ratios
- 8 calculate arithmetic means
- 9 understand and use common measures and simple compound measures such as speed
- 10 make sensible estimates of a range of measures in everyday settings and choose appropriate units for estimating or carrying out measurement
- 11 interpret scales on a range of measuring instruments, work out time intervals and recognise that measurements given to the nearest whole unit may be inaccurate by up to one half in either direction
- 12 plot and draw graphs (line graphs, bar charts, pie charts, scatter graphs, histograms) selecting appropriate scales for the axes
- 13 substitute numerical values into simple formulae and equations using appropriate units
- 14 translate information between graphical and numerical form
- 15 design and use data-collection sheets, including questionnaires, for grouped, discrete or continuous data, process, represent, interpret and discuss the data
- 16 extract and interpret information from charts, graphs and tables
- 17 understand the idea of probability
- 18 calculate area and perimeters of shapes made from triangles and rectangles
- 19 calculate volumes of right prisms and of shapes made from cubes and cuboids
- 20 use Pythagoras' theorem in 2-D
- 21 use calculators effectively and efficiently

In addition, level 2 learners should be able to:

- 22 interpret, order and calculate with numbers written in standard form
- 23 carry out calculations involving negative powers (only -1 for rate of change)
- 24 change the subject of an equation
- 25 understand and use inverse proportion
- 26 understand and use percentiles and deciles
- 27 use Pythagoras' theorem in 2-D and 3-D
- 28 use trigonometric ratios to solve 2-D and 3-D problems.

Annexe D

Synoptic assessment

BTEC qualifications are designed to enable learners to connect their learning and to relate it to realistic situations. Learners should be encouraged to draw their learning together through use of practical assignments. The core units provide the essential knowledge, understanding and skills required in health and social care, and underpin the content of the optional specialist units and the mandatory unit.

For the Pearson BTEC First Award in Digital Technologies the mandatory unit, *Unit 26: Integrated Digital Technologies*, should include activities and an assessed assignment that enables learners to demonstrate that they can select and apply their knowledge, understanding and skills from across their learning to the key vocational task of applying their knowledge to use digital products in an innovate and customer focused way:

The synoptic nature of this assignment is satisfied through learners:

- interrelating overarching concepts and issues, bringing together their knowledge of information and creative technology
- making connections to particular technology situations when producing a technology proposal
- demonstrating their ability to use and apply a range of different methods and/or techniques
- being able to put forward different perspectives and/or explanations to support decisions they have made or evidence presented
- being able to suggest or apply different approaches to contexts, situations, or in the effective tackling of specific technology-related problems
- synthesising information gained from studying a number of different technology-based activities
- using specialist terminology where appropriate
- demonstrating security knowledge and identifying risks in particular technology situations
- demonstrating analytical and interpretation skills (of situations and/or results) and the ability to formulate valid well-argued responses
- evaluating and justifying their decisions, choices and recommendations.

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