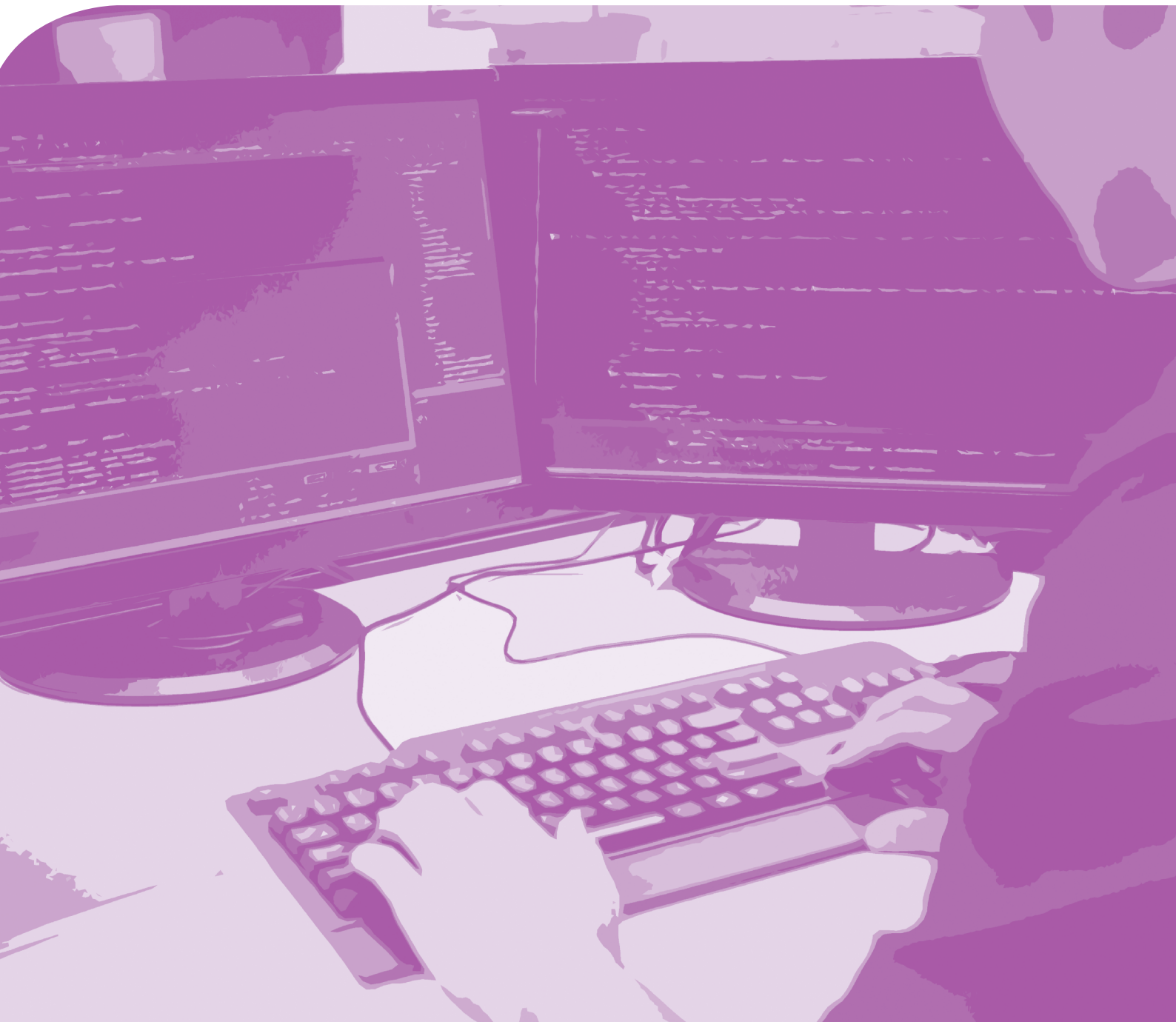Pearson BTEC Uzbekistan Level 4 Qualifications in

Software Development

Unit 6: Digital Graphics and Animation

Teacher Resources

Issue 1

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Contents

Introduction

This resource booklet is a companion to the BTEC Uzbekistan Level 4 Qualifications in Software Development. The specification tells you what must be taught and what must be assessed. This resource booklet gives you suggestions and ideas as to how you can do this.

This booklet gives you ideas for teaching and learning, including practical activities, realistic scenarios, ways of involving employers in delivery and of managing independent learning, and how to approach assessments. The booklet also shows you how the specification content might work in practice and inspires you to start thinking about different ways of delivering your qualification.

This resource booklet gives you:

- guidance on how to deliver the unit

- recommended resources to support the delivery of the unit

- a scheme of work that show the topics, activities and assessments covered in the unit

- lesson plans with detailed guidance on how to deliver the lessons in the unit

The information in this resource booklet has been put together by teachers who have been close to the development of the qualification and so understand the challenges of finding new and engaging ways to deliver BTEC qualifications.

The delivery guidance in this booklet gives you information on what you need to consider as you plan the delivery of the unit. This includes suggestions on how to approach the learning aims and unit content, as well as ideas for interesting and varied activities. You will also find tips and ideas on how to plan for and deliver your assessments.

We have included a list of carefully selected resources for the unit. This resource list offers suggestions for books, websites and videos that you can direct your learners to use and/or that you can use to complement delivery.

Unit 6: Digital Graphics and Animation

Delivery guidance

Approaching the unit

The purpose of this unit is to provide learners with opportunities to explore how digital graphics and animation are used within digital products. Learners will explore how the design and technical features of impact on how they can be used, and the appropriateness for audience and purpose. Learners will explore creative computing skills to develop appropriate digital graphics and animation for an identified digital product. Learners will apply analytical thinking to examine the use of digital graphics and animation in a range of vocational areas. Learners will combine their analytical skills with creative proficiency and project management skills to identify and meet the needs of an identified client. Learners should have access to computers with digital graphic and animation creation and editing software.

For Learning aim A, learners should explore existing products. Facilitate learners by providing them access to high quality professionally produced graphics and animations, as well as less professional examples – should include good as well as not-so-good features. It may be beneficial to learners to start with the concepts of how graphics and animation are used in different contexts and how they can be used for different purposes (e.g., to illustrate, to inform, etc.). Learners will also need to understand how the characteristics of different audiences affect the choice of graphic. Learners should then explore the design elements of graphics and animation that have been used in identified examples. As learners become more familiar with graphic and animation use, they should explore more technical concepts.

For Learning aim B, learners need to understand the practical skills required. After the content for Learning aim A, and once Learning aim B has been introduced, it would be beneficial to get learners to revisit using their design skills as part of the activities for Learning aim C. These design activities can be set as homework/independent study to complete between lessons to allow more classroom time to develop the practical computer-based skills.

Learners will be required to demonstrate a number of practical project planning and management skills. In preparation for the assignment, ensure that learners are able to produce planning documentation that is clear and detailed, and that are able to communicate effectively to give and record feedback on each other's ideas. You should ensure learners are also aware of relevant legal and ethical considerations (such as copyright, royalties, etc.).

For Learning aim C, learners develop their practical skills listed in a range of realistic vocational scenarios. Learners should be provided opportunities for working with others to identify success criteria and to review outcomes. It is important that learners can demonstrate the application of all skills in a realistic project environment. When delivering the content, engagement with local professionals would be beneficial. Guest speakers can provide insight into how digital graphics and animation are used in larger projects, or could provide examples and case studies relating to the project management skills required in the computing industry.

Getting started

This gives you a starting place for one way of delivering the unit. It is based on the recommended assessment approach given in the specification.

Unit 6: Digital Graphics and Animation
Introduction   Digital graphics and animation play a key role in many areas of the computing industry to enhance products as well as to engage and support users. This unit is designed to provide learners with the skills and understanding to create and manipulate graphics and animation for use on computer systems. Learners will apply practical skills and underpinning knowledge to produce digital graphics for a range of purposes.
Learning aim A – Analyse the use of graphics and animation in digital products
• Introduce the overall aim of the unit, providing learners with the 'big picture', i.e. what the aim of the unit is. Explain that they will be required to produce digital graphics and animation for an identified digital product to meet a client's needs.   **Key content area A1: Purpose of digital graphics and animation**   • Through a combination of teacher input, independent research and practical application learners should explore how of raster and vector graphics and animations are used in digital products. They should explore their use, and implications of their use, in a range of contexts.   • Give learners opportunities to develop their analytical and evaluative skills by exploring the effects of using digital graphics and animation within different contexts. Learners should understand how and why different processes are used and be able to select, and justify the selection of, different process to meet identified needs**.**   **Key content area A2: Properties of digital graphics and animations**   • Provide learners with initial teacher input into the technical aspects of how graphics and animations are represented and stored. Start with the concepts of how the data is stored and how the characteristics of the stored data (and how it is collected) affect the finished asset.   • You should spend time exploring how the final outcomes of a graphic or animation are affected by the use and application of the file (e.g., intended audience, target format/platform, required features, etc.).   • Give learners the opportunity to explore a range of problems to which they can apply their problem-solving skills.

Unit 6: Digital Graphics and Animation
Learning aim B – Plan digital graphics and animation for an identified digital product
Key content area B1: Scoping the problem • Learners research existing products that have similar purposes and target audiences. They should be aware of current design trends. • Make learners aware that production of digital graphics and animation, like software development, is an iterative process. Learners should make use of common design tools for capturing initial ideas and communicating these clearly to a client. They should understand how to effectively record and make use of feedback to improve ideas and create more detailed designs. **Key content area B2: Design documents of digital graphics and animation** • Learners use a range of planning documents to identify the scope of the problem and the intended solution. Learners should produce designs for graphics and animation and should use appropriate planning tools. • Learners should be aware that planning documents should be clear and detailed and provide a vehicle for discussion with the client (and other relevant parties) to ensure the project is efficient and outcomes are accurate. Planning documents should be sufficiently detailed that (as may be the case in the real-world) a third party could use the planning documentation to continue the project without any input from the original designer. **Key content area B3: Legal and ethical considerations** • It is likely that learners will make use of a wide range of sources for their work and, as such, should be aware of and comply with the associated legal, ethical and practical considerations. Learners should be equipped with the analytical understanding to choose appropriate sources as well as the skills to produce their own assets as required.
Learning aim C – Produce digital graphics and animation for a digital product
• Learners need to be able to source, process and edit graphics and animations. Leaners should have a sound understanding of how, using appropriate hardware and software, to select and apply appropriate tools and techniques (as listed in topics C1 and C2), to produce graphic and animation files. • Learners explore how digital graphics and animations are used in a range of contexts and consider how the purpose, audience, target file type/size and target platform affect choices in relation to their design and the file formats. Learners should be able to evaluate the requirements for different scenarios, and select appropriate tools and techniques to produce digital graphics and animation that meet client needs.

Details of links to other BTEC units and qualifications

This unit links to:

- Unit 3: Website Development
- Unit 7: Mobile Apps Development
- Unit 8: Computer Games Development.

Resources

Websites

https://inkscape.org/

Inkscape 0.92 – an open source vector graphics creation and editing software

https://www.gimp.org/

GIMP 2.10.12 – an open source graphics editor

https://www.blender.org/

Blender 2.80 – an open source 3D creation suite

https://www.pencil2d.org/

Pencil 2D – an open source 2D animation tool

https://www.synfig.org/

Synfig Studio – open source 2D animation software

Pearson is not responsible for the content of any external internet sites. It is essential for teachers to preview each website before using it in class so as to ensure that the URL is still accurate, relevant and appropriate. We suggest that teachers bookmark useful websites and consider enabling learners to access them through the school/college intranet.

Scheme of work

Unit	Unit 6: Digital Graphics and Animation
Guided Learning Hours	60
Number of lessons	20
Duration of lessons	3 hours
Links to other units	- Unit 3: Website Development - Unit 7: Mobile Apps Development - Unit 8: Computer Games Development

Key to learning opportunities			
AA	Assessment Activity	**RS**	Revision Session
GS	Guest Speaker	**V**	Visit
IS	Independent Study	**WE**	Work Experience

#	Topic	Lesson type	Suggested activities	Resources
1	A1 Purpose of digital graphics	IS	● **Lead-in:** Introduce the unit and the main topics that will be covered. Explain the importance of digital graphics and animation in enhancing all software. ● **Teacher-led demonstration:** Introduction to graphics and animations of different types and different graphical elements. ● **Small group/paired activity:** Learners explore different products to analyse how they use graphics and animation. ● **Teacher-led discussion**: Learners feed their analysis back to the whole class.	● Computers with internet access ● Bank of different software/digital products

#	Topic	Lesson type	Suggested activities	Resources
2	A2 Properties of digital graphics and animation	IS	● **Lead-in**: Recap the previous lesson with a question and answer session. Explain that this lesson will explore the properties of digital graphics and animation. ● **Teacher-led demonstration:** Introduce the new technical language (e.g., vector, raster, etc.) and show learners how to view the properties. ● **Individual activity**: Learners explore a selection of digital graphics and animations. They should look at how the properties will impact on their use. ● **Small group/paired activity:** Learners should discuss their findings with another member of the group. ● **Individual activity**: Learners should choose three of the graphics/animations they have looked at and suggest how they could be altered to better suit their intended purpose or altered for an alternative purpose.	● Computers with internet access ● Bank of graphics and animations

#	Topic	Lesson type	Suggested activities	Resources

3	B1 Scoping the problem	IS	● **Lead-in**: Explain to learners that over the next three lessons they will be introduced to planning graphics and animation for a given client brief.
			
			● **Teacher-led demonstration**: Introduce mood boards, brainstorming and thumbnail sketches and their uses.
			
			● **Individual activity**: Learners to be given a sample client brief for graphics and animation to be created. Learners will:
			
			   o use the internet to research similar products
			
			   o produce a set of initial ideas using mood boards, brainstorming and thumbnail sketches.
			
			● **Paired/small group activity:** Discuss their work with others in the group and provide peer feedback.
			
			● **Plenary**: Learners use feedback given to improve their ideas.
				● Computers with internet access
				
				● Paper and drawing equipment
				
				● Client brief

#	Topic	Lesson type	Suggested activities	Resources
4	B2 Design documents of digital graphics and animation	IS	● **Lead-in:** Recap the previous lesson. Introduce the lesson by explaining that learners will now explore more detailed design documents. ● **Teacher-led demonstration:** Introduce the three main types of design document that would be used (design brief, hand drawn designs, and storyboards). ● **Individual activity**: Provide learners with the same client brief as last lesson. Learners produce detailed designs using their improved ideas documents as a starting point. ● **Small group activities**: Provide learners with opportunities during the lesson where they can seek feedback from others and improve their designs	● Computers with internet access ● Paper and drawing equipment ● Client brief

#	Topic	Lesson type	Suggested activities	Resources
5	B3 Legal and ethical considerations	IS	● **Lead-in**: Introduce lesson and remind learners of the client brief. ● **Teacher-led discussion**: Explore the legal and ethical considerations in terms of what a design includes and also the use of content that has been created by others. ● **Individual activity 1**: Learners use the internet to collect pre-existing assets that could be used in their design for the given brief. Learners should complete the asset table. ● **Individual activity 2**: Learners to annotate their work to describe how they have considered ethical factors. ● **Assessment**: Work from lessons 3–5 should be used by the teacher to identify areas of strength and areas for improvement. ***Note: This is not a final assessment.***	● Computers with internet access ● Client brief ● Asset table template

#	Topic	Lesson type	Suggested activities	Resources
6	C1 Digital graphics tools ● Raster-based graphics	IS	● **Lead-in:** Introduce the lesson by explaining that this lesson learners will explore the skills and tools needed to create raster-based graphics. ● **Teacher-led demonstration:** Explain what a raster-based graphic is and demonstrate graphic editing tools**.** ● **Individual activity:** Learners work through a series of tasks to develop graphic skills. ● **Plenary**: Learners identify one or two skills/tasks that they struggled with. With a partner, they discuss difficulties and attempt to identify improvements together.	● Computers with graphics software ● Task worksheet ● Help sheets (as required)

#	Topic	Lesson type	Suggested activities	Resources
7	C1 Digital graphics tools ● Raster-based graphics	IS	● **Lead-in**: Introduce the lesson by explaining that in this lesson learners will continue to work on the skills and tools needed to create raster-based graphics. ● **Teacher-led discussion**: Allow learners to discuss skills and tasks that they struggled with last lesson. Provide extra demonstrations of skills as required. ● **Individual activity 1**: Learners to revisit the skills they struggled with last lesson. Learners to work on practising/improving that skill. ● **Individual activity 2**: Learners to revisit the client brief from lessons 3–4. Learners should use graphic software to create some of the graphics they designed for the brief. ● **Plenary**: Learners identify any areas that require improvement and work on developing the skill away from the classroom.	● Computers with graphics software ● Task/client brief from lessons 3–4 ● Learner design work ● Help sheets (as required)

#	Topic	Lesson type	Suggested activities	Resources
8	C1 Digital graphics tools ● Vector-based graphics		● **Lead-in**: Introduce the lesson by explaining that in this lesson learners will explore the skills and tools needed to create vector-based graphics. ● **Teacher-led demonstration**: Explain what a vector-based graphic is. Demonstrate graphic editing tools. ● **Individual activity**: Learners work through a series of tasks to develop graphic skills. ● **Plenary**: Learners identify one or two skills/tasks that they struggled with. With a partner discuss difficulties and attempt to identify improvements together.	● Computers with graphics software ● Task worksheet ● Help sheets (as required)

#	Topic	Lesson type	Suggested activities	Resources
9	C1 Digital graphics tools ● Vector-based graphics		● **Lead-in**: Introduce the lesson by explaining that in this lesson learners will continue to work on the skills and tools needed to create vector-based graphics. ● **Teacher-led discussion**: Allow learners to discuss skills and tasks that they struggled with last lesson. Provide extra demonstrations of skills as required. ● **Individual activity 1**: Provide learners with a client brief that will require a vector-based graphic. Learners produce a detailed design in response to the brief. ● **Individual activity 2**: Learners produce a vector-based graphic using the brief and their design as guidance. provide learners with a design brief. ● **Assessment**: Outcomes from lessons 6–9 should be used by the teacher to identify areas of strength and areas for improvement *Note: This is not a final assessment*	● Computers with graphics software ● Task/client brief ● Paper and drawing equipment ● Help sheets (as required)

#	Topic	Lesson type	Suggested activities	Resources
10	C2 Digital animation tools		● **Lead-in**: Introduce the lesson by explaining that in this lesson learners will explore the skills and tools needed to create digital animation. ● **Teacher-led demonstration**: Demonstrate animation creation and editing tools. ● **Individual activity**: Learners work through a series of tasks to develop animation skills. ● **Plenary**: Learners identify one or two skills/tasks that they struggled with and – with their partner – they discuss any difficulties the experienced during the practical activity and attempt to identify improvements together.	● Computers with graphics and animation software ● Task sheet ● Help sheets (as required)

#	Topic	Lesson type	Suggested activities	Resources
11	C2 Digital animation tools		● **Lead-in:** Introduce the lesson by explaining that in this lesson learners will continue to work on the skills and tools needed to create digital animation. ● **Teacher-led discussion**: Allow learners to discuss skills and tasks that they struggled with last lesson. Provide extra demonstrations of skills as required. ● **Individual activity 1**: Learners to revisit the skills they struggled with last lesson. Learners to work on practising/improving that skill. ● **Individual activity 2**: Learners to revisit the client brief from lessons 3–4. Learners should use animation software to create some of the animation they designed for the brief. ● **Plenary**: Learners identify any areas that require improvement and work on developing the skill away from the classroom.	● Computers with graphics and animation software ● Client brief from lessons 3–4 ● Learner design work ● Help sheets (as required)

#	Topic	Lesson type	Suggested activities	Resources
12	C3 Preparing products for use		● **Lead-in**: Introduce the lesson by explaining that in this lesson learners will look at how altering properties of graphics changes the way they can be used. ● **Teacher-led discussion**: Explore why graphics and animation would need to be saved in different formats. ● **Teacher-led demonstration**: Explain how to export/save graphics into different file formats and how to alter the properties of the graphic when doing so. ● **Individual activity**: Learners respond to different scenarios that require them to alter the properties and file types of graphics to make them suitable for specific uses. ● **Plenary**: Learners discuss their work with other members of the group. They should explain/justify why they have chosen specific properties and file types.	● Computers with graphics and animation software ● Worksheet with scenarios for Individual activity ● Help sheets (as required) ● Bank of graphics and animations for task

#	Topic	Lesson type	Suggested activities	Resources
13	Learning aim B	RS	● **Lead-in:** Explain to learners that over the next four lessons they will complete a task that will allow them to practise all the skills that they have learned so far in this unit. ● **Teacher-led discussion**: Recap the key points from Learning aim B (lessons 3–5). Explain that learners will be given a problem that requires digital graphics and animation. ● **Individual/paired activity 1**: Learners research related products and create initial ideas. They should show these to another member of the group and gain feedback. ● **Individual activity 2**: Learners create detailed plans in response to a previously unseen client brief (see Learning aim B). ● **Plenary**: In pairs, learners should discuss their plans. They should be prepared to explain/justify their choices. Learners can provide peer feedback.	● Computers with internet access ● Client brief ● Paper and drawing equipment ● Help sheets

#	Topic	Lesson type	Suggested activities	Resources
14–15	Learning aims B and C	RS	• **Lead-in**: Recap the focus of this series of lessons. • **Individual activity 1**: Learners use the internet to collect assets for use in their products and record them in an asset table. • **Individual activity 2**: Learners create digital graphics and animation in response to the brief. • **Assessment**: Work from lessons 13–15 should be used by the teacher to identify areas of strength and areas for improvement. *Note: This is not a final assessment.*	• Computers with internet access and graphic/animation software • Asset table template • Client brief • Help sheets (as required)
16	Learning aims B and C	RS	• **Lead-in**: Provide learners with copies of teacher feedback for the work produced in lessons 13–15. • **Individual/paired activity 1**: Learners read through feedback and identify areas that require further study or improvement. • **Individual/paired activity 2**: Learners complete individual study on areas where they need improvement.	• Computers with internet access and graphic/animation software • Client brief • Learner work from lessons 13–15 • Teacher feedback

#	Topic	Lesson type	Suggested activities	Resources
17–20	Learning aims A, B and C *Final assignment*	AA	● **Lead-in**: Introduce the assessment, Tasks 1, 2 and 3 (see Assessment Workbook) detailing the main assessment criteria, deadline and submission criteria. ● **Individual assessment activity**: Using the Assessment Workbook, learners should complete Tasks 1, 2 and 3.	● Computers with internet access and graphic/animation software ● Asset table template ● Assessment workbook

Lesson plan

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Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	1 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	● be able to describe the purpose of digital graphics and animation.

Resources checklist	● Computers with internet access
	● Bank of different software/digital products
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (10 minutes)	• Introduce the unit and the main topics that will be covered. • Explain the importance of digital graphics and animation in enhancing all software and the role it plays in providing a good user experience.

Teacher-led demonstration
 	
(30 minutes)
	• Deliver a presentation to explain graphics and animations of different types and different the different graphical elements.
	
	• Explain how different graphics and design elements are used to create graphics appropriate for different situations and audiences.
	
	• The presentation should cover:
	
	   o purpose of digital graphics and animation (as listed in Topic A1.1)
	
	   o Different audiences and their characteristics
	
	   o different elements that make up digital graphics and animation including:
	
	     - how text is used
	     - style
	     - how colour is used
	     - the composition
	     - how digital effects are used.
	
	• Use question and answer techniques throughout demonstration to get learners involved and check understanding.

Small group/paired activity (1 hour 50 minutes)	• Leaners explore three or four different products in detail, to analyse how they use graphics and animation to ensure the product is appropriated for audience and purpose. • Learners should consider good features and areas for improvement. • Learners should make notes throughout their analysis and be prepared to discuss their findings with others.
Teacher-led discussion (30 minutes)	• Learners feed their analysis back to the whole class. • Teacher to support this through questioning.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	2 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	• be able to explain the impact that the properties of graphics and animation have on their use.

Resources checklist	• Computers with internet access
	• Bank of graphics and animations
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (10 minutes)	● Recap the previous lesson with a question and answer session. ● Explain that this lesson will explore the properties of digital graphics and animation.

Teacher-led demonstration
 	
(35 minutes)
	● Deliver a presentation to explain properties of digital graphics and animations and how these impact on use.
	
	● The presentation should cover:
	
	   ○ introduction to the new technical language to be used
	
	   ○ introduction to the differences between raster-based and vector-based graphics
	
	   ○ uses of raster-based and vector-based graphics or animation
	
	   ○ properties of raster-based graphics including:
	     - resolution
	     - dimensions
	     - bit depth
	     - sampling interval
	     - colour modes
	     - file type
	     - compression
	     - file size
	
	   ○ properties of vector-based graphics including:
	     - how the graphic is constructed
	     - file types
	     - scalability.
	
	● Demonstrate how to use graphic editing software to change the properties of a graphic (e.g., by exporting to a different file format, changing resolution, etc.).
	
	● Use question and answer techniques throughout demonstration to keep learners involved.

Activities	Teaching notes

Small group/paired activity
 	
(1 hour)
	• Learners explore a selection of digital graphics and animations.
	
	• They should:
	   o look at how the properties of the examples
	   o consider how the properties would affect their use.
	
	• Learners should make notes throughout their analysis and be prepared to discuss their findings with others.

Small group/paired activity (25 minutes)	• Learners should discuss their findings with another member of the group.
Individual activity (50 minutes)	• Learners should choose three of the graphics/animations they have looked at and suggest how they could be altered to better suit their intended purpose or altered for an alternative purpose. • Learners should use graphics software to alter the properties they have identified to see the impact this has on the graphic.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	3 (3 hours)

Lesson objectives	At the end of the lesson, learners will: ● be able to produce initial plans for the creation of digital graphics and animation in response to a given brief.

Resources checklist	● Computers with internet access
	● Paper and drawing equipment
	● Client brief
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (10 minutes)	● Explain to learners that over the next three lessons they will be introduced to planning graphics and animation for a given client brief. ● Explain that in this lesson they will look specifically at how to record initial ideas in a way that will effectively communicate with a client.

Teacher-led demonstration
 	
(30 minutes)
	● Deliver a presentation to introduce ways in which ideas can be recorded and presented.
	
	● The presentation should cover the key features and uses of:
	  o mood boards
	  o brainstorming
	  o thumbnail sketches.
	
	● Use question and answer techniques throughout demonstration to keep learners involved.

Small group/paired activity
 	
(1 hour)
	● Learners to be given a sample client brief for graphics and animation to be created.
	
	● Example brief: *You have been employed to design and create a user interface for a new website called 'MoveeStarr'. The* website *will provide information and reviews about movies.*
	
	● Learners will:
	  o use the internet to research similar products
	  o produce a set of initial ideas for a design to meet the brief using mood boards, brainstorming and thumbnail sketches.

Paired/small group activity (20 minutes)	● Learners discuss their work with others in the group and provide each other with peer feedback.
Plenary (60 minutes)	● Learners use feedback given to improve their ideas.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	4 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	● select and use appropriate design documentation to document the design process

Resources checklist	● Computers with internet access
	● Paper and drawing equipment
	● Client brief
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (10 minutes)	● Recap the previous lesson. Use question and answer techniques to establish areas of knowledge that may need revisiting. ● Introduce the lesson by explaining that learners will now explore more detailed design documents.

Teacher-led demonstration
 	
(30 minutes)
	● Deliver a presentation to introduce the three main types of design documentation.
	
	● The presentation should cover the features and uses of:
	   o design briefs:
	     - identify and describe the requirements of the problem
	     - describe the target product
	     - describe the target audience
	     - describe any technical considerations
	   o hand-drawn designs:
	     - detailed sketch of each graphic
	     - colour palettes to be used
	     - how is text is to be used
	     - how digital effects will be used
	     - intended properties of the target graphics
	   o storyboards:
	     - summary of the overall story or message
	     - detailed sketches of key frames/scenes
	     - colour palettes to be used
	     - how is text is to be used
	     - how digital effects will be used
	     - timings and frame rates
	     - details of any sound to be used
	     - intended properties of the target animation.
	
	● Provide examples design documentation that is good and some that is not so good.
	
	● Use question and answer techniques to get learners to discuss why some are good and others not so good.

Activities	Teaching notes
Individual activity (1 hour 50 Minutes)	● Provide learners with the same client brief as last lesson. ● Example brief: *You have been employed to design and create a user interface for a new website called 'MoveeStarr'. The website will provide information and reviews about movies.* ● Learners produce detailed designs using their improved ideas documents from lesson 3 as a starting point.
Small group activities (30 minutes)	● Provide learners with opportunities during the lesson, by stopping them, where they can seek feedback from others and improve their designs.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	5 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	• apply an understanding of legal and ethical considerations when planning and preparing to use or develop digital graphics and animation.

Resources checklist	• Computers with internet access
	• Client brief
	• Asset table template
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	● Introduce lesson and remind learners of the client brief.

Teacher-led discussion
 	
(30 minutes)
	● Explore the legal and ethical considerations of the use and creation of digital assets and content.
	
	● The discussion should cover issues such as:
	
	   o intellectual property and copyright
	
	   o permissions and licensing
	
	   o how others are represented
	
	   o appropriateness of the content for purpose and audience.
	
	Note: See topic area B3 for a full list of areas that learners should understand.
	
	● Develop the discussion by providing examples of content that would require learners to think carefully about legal and ethical factors. For example, using a character from a well-known video game to advertise another product.

Individual activity 1 (1 hour 25 minutes)	● Learners use the internet to collect pre-existing assets that could be used in their design for the client brief from previous lessons. ● Learners should collect a range of different types of assets including graphics (raster and vector) sounds and animations. ● Learners should complete the asset table ensuring that they record the source and any relevant licencing/copyright information.
Individual activity 2 (1 hour)	● Learners should go through their asset table and annotate it to describe how they have considered legal and ethical factors when selecting this content for use in their designs.

Activities	Teaching notes
Assessment (*This is done outside class time and is not included in the 3 hours lesson time*)	● Teacher to collect in learners' work from lessons 3–5. ● The teacher is to identify areas of strength and areas for improvement and provide written feedback by next lesson. ● The teacher should keep a record of the quality of learner work, to be able to monitor learner progress. *Note: this is not a final assessment*

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	6 (3 hours)

Lesson objectives	At the end of the lesson, learners will: • be able to select and use appropriate tools to produce raster-based graphics.

Resources checklist	• Computers with graphics software • Task worksheet • Help sheets (as required)
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	• Introduce the lesson by explaining that this lesson learners will explore the skills and tools needed to create raster-based graphics.

Teacher-led demonstration
 	
(30 minutes)
	• Use question and answer techniques to establish how much previous experience learners have with the software.
	
	• Deliver a presentation on the skills to be used this lesson which may include:
	
	   o freehand draw
	
	   o grouping
	
	   o colour balance
	
	   o filters
	
	   o selection
	
	   o hue and saturation
	
	   o masking
	
	   o layering
	
	   o retouching
	
	   o opacity/transparency
	
	   o importing from external sources
	
	   o editing and combining paths.
	
	• You may wish to split the demonstration up into shorter demonstrations throughout the lesson or demonstrate only the more difficult/less familiar skills.

Individual activity (2 hours)	• Provide learners with a work sheet that sets a series of tasks which allow them to work on and apply the skills demonstrated by the teacher. • The tasks should provide scope for use of different skills and should gradually increase in difficulty.
Plenary (25 minutes)	• Organise learners into pairs. • Learners identify one or two skills/tasks that they struggled with. With their partner, they should discuss any difficulties the experienced during the practical activity and attempt to identify improvements together.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	7 (3 hours)

Lesson objectives	At the end of the lesson, learners will: ● be able to select and use appropriate tools to produce raster-based graphics.

Resources checklist	● Computers with graphics software ● Task/client brief from lessons 3–4 ● Learner design work ● Help sheets (as required)
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	• Introduce the lesson by explaining that in this lesson learners will continue to work on the skills and tools needed to create raster-based graphics.
Teacher-led discussion (35 minutes)	• Allow learners to discuss skills and tasks that they struggled with last lesson. • Use the discussion to identify some common issues that arose and provide extra demonstrations of skills as required. • Deliver a presentation on any skills that were identified from the last lesson as causing learners problems. • You may wish to split the class into smaller groups and provide demonstrations of some skills at different points during the lesson.
Individual activity 1 (1 hour)	• Learners to revisit the skills they struggled with last lesson. • Learners to work on practising/improving that skill. • You may wish to provide learners with additional worksheets that provide a series of tasks or instructions for the learner to work through. • The tasks should provide scope for use of different skills and should gradually increase in difficulty.
Individual activity 2 (1 hour)	• Learners to revisit the client brief from lessons 3–4. • Learners should use graphic software to create some of the graphics they designed for the brief. • Remind learners that although they should demonstrate a range of skills, it is also important to consider the appropriateness of the graphic for audience and purpose. • Provide learners with help sheets for some of the more difficult skills covered.
Plenary (20 minutes)	• Learners identify any areas that require improvement and work on developing the skill away from the classroom.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	8 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	● be able to select and use appropriate tools to produce vector-based graphics.

Resources checklist	● Computers with graphics software
	● Task worksheet
	● Help sheets (as required)
	● https://inkscape.org/learn/tutorials/
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	• Introduce the lesson by explaining that this lesson learners will explore the skills and tools needed to create vector-based graphics.
Teacher-led demonstration (30 minutes)	• Use question and answer techniques to establish how much previous experience learners have with the software. • Explain that many of the skills they have used to create raster-based graphics are similar to those they will use with vector-based graphics. • Deliver a presentation which looks at the differences and similarities between the vector creation software and the raster creation software.
Individual activity (2 hours)	• Provide learners with a work sheet that sets a series of tasks which allow them to work on and apply the skills demonstrated by the teacher. • The tasks should provide scope for use of different skills and should gradually increase in difficulty.
Plenary (25 minutes)	• Organise learners into pairs. • Learners identify one or two skills/tasks that they struggled with. With their partner, they should discuss any difficulties the experienced during the practical activity and attempt to identify improvements together.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	9 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	● be able to select and use appropriate tools to produce raster-based and vector-based graphics.

Resources checklist	● Computers with graphics software
	● Task/client brief
	● Paper and drawing equipment
	● Help sheets (as required)
	● https://inkscape.org/learn/tutorials/
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	● Introduce the lesson by explaining that in this lesson learners will continue to work on the skills and tools needed to create vector-based graphics.
Teacher-led discussion (25 minutes)	● Allow learners to discuss skills and tasks that they struggled with last lesson. ● Use the discussion to identify some common issues that arose and provide extra demonstrations of skills as required. ● Deliver a presentation on any skills that were identified from last lesson as causing learners problems. ● You may wish to split the class into smaller groups and provide demonstrations of some skills at different points during the lesson.
Individual activity 1 (60 minutes)	● Provide learners with a client brief that will require a vector-based graphic. ● Learners produce a detailed design in response to the brief.
Individual activity 2 (1 hour 30 minutes)	● Learners produce a vector-based graphic using the brief and their design as guidance. ● Remind learners that although they should demonstrate a range of skills, it is also important to consider the appropriateness of the graphic for audience and purpose. ● Provide learners with help sheets for some of the more difficult skills covered as required.
Assessment (*This is done outside class time and is not included in the 3 hours lesson time*)	● Collect learners' work from lessons 6–9. ● Identify areas of strength and areas for improvement and provide written feedback by next lesson. ● Keep a record of the quality of learner work in order to be able to monitor learner progress. *Note: This is not a final assessment* ● Learners identify any areas that require improvement and work on developing the skill away from the classroom.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	10 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	• be able to select and use appropriate tools to produce raster-based graphics.

Resources checklist	• Computers with graphics and animation software
	• Task sheet
	• Help sheets (as required)
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	● Introduce the lesson by explaining that this lesson learners will explore the skills and tools needed to create digital animation.

Teacher-led demonstration
 	
(30 minutes)
	● Use question and answer techniques to establish how much previous experience learners have with the software.
	
	● Deliver a presentation on the skills to be used this lesson which may include:
	    o frame rates
	    o onion skinning
	    o tweening
	    o transitions
	    o camera angles
	    o movement
	    o picture duration
	    o rendering
	    o importing and applying sound and other externally created assets.
	
	● You may wish to split the demonstration up into shorter demonstrations throughout the lesson or demonstrate only the more difficult/less-familiar skills.

Individual activity (2 hours)	● Provide learners with a work sheet that sets a series of tasks which allow them to work on and apply the skills demonstrated by the teacher. ● The tasks should provide scope for use of different skills and should gradually increase in difficulty.
Plenary (25 minutes)	● Organise learners into pairs. ● Learners identify one or two skills/tasks that they struggled with and – with their partner – they discuss any difficulties the experienced during the practical activity and attempt to identify improvements together.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	11 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	• be able to select and use appropriate tools to produce digital animation.

Resources checklist	• Computers with graphics and animation software
	• Client brief from lessons 3–4
	• Learner design work
	• Help sheets (as required)
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	• Introduce the lesson by explaining that in this lesson learners will continue to work on the skills and tools needed to create digital animation
Teacher-led discussion (35 minutes)	• Allow learners to discuss skills and tasks that they struggled with last lesson. • Use the discussion to identify some common issues that arose and provide extra demonstrations of skills as required. • Deliver a presentation on any skills that were identified from the last lesson as causing learners problems. • You may wish to split the class into smaller groups and provide demonstrations of some skills at different points during the lesson.

Activities	Teaching notes
Individual activity 1 (1 hour)	• Learners to revisit the skills they struggled with last lesson. • Learners to work on practising/improving that skill. • You may wish to provide learners with additional worksheets that provide a series of tasks or instructions for the learner to work through. • The tasks should provide scope for use of different skills and should gradually increase in difficulty.
Individual activity 2 (1 hour)	• Learners to revisit the client brief from lessons 3–4. • Learners should use digital animation software to create some of the animation they designed for the brief. • Remind learners that although they should demonstrate a range of skills, it is also important to consider the appropriateness of the graphic for audience and purpose. • Provide learners with help sheets for some of the more difficult skills covered.
Plenary (20 minutes)	• Learners identify any areas that require improvement and work on developing the skill away from the classroom.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	12 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	• be able to prepare digital graphics and animation so that they are suitable for use in the intended product.

Resources checklist	• Computers with graphics and animation software
	• Worksheet with scenarios for Individual activity
	• Help sheets (as required)
	• Bank of graphics and animations for task
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	● Introduce the lesson by explaining that in this lesson learners will look at how altering properties of graphics changes the way they can be used.

Teacher-led discussion
 	
(15 minutes)
	● Explore why graphics and animation would need to be saved in different formats.
	
	● Use question and answer techniques to direct learner discussion to relevant areas. You may wish to consider:
	
	   o logos and other branding and how this needs to appear on a range of different products
	
	   o the requirements of target products including on screen viewing, print quality, load time, etc.

Teacher-led demonstration
 	
(30 minutes)
	● Deliver a presentation to introduce how to export/save graphics into different file formats and how to alter the properties of the graphic when doing so.
	
	● The presentation should cover considerations of key features/properties, such as:
	
	   o resolution
	
	   o dimensions
	
	   o bit depth
	
	   o colour modes
	
	   o file type
	
	   o compression
	
	   o file sizes
	
	   o suitable compression methods.

Individual activity (1 hour 35 minutes)	● Provide learners with a work sheet that sets a series of tasks which allow them to work on and apply the skills demonstrated by the teacher. ● The tasks should provide scope for use of different skills and should gradually increase in difficulty.

Activities	Teaching notes
Plenary (35 minutes)	● Organise learners into smaller groups. ● Learners discuss their work with other members of the group. ● They should explain/justify why they have chosen specific properties and file types with specific reference to the requirements of the scenarios. ● Learners to provide each other with peer feedback.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	13 (3 hours)

Lesson objectives	At the end of the lesson, learners will:
	• be able to plan digital graphics and animation for an identified digital product.

Resources checklist	• Computers with internet access
	• Client brief
	• Paper and drawing equipment
	• Help sheets (as required)
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	• Explain to learners that over the next four lessons they will complete a task that will allow them to practise all the skills that they have learnt so far in this unit.
Teacher-led discussion (25 minutes)	• Recap the key points from Learning aim B (lessons 3–5). Explain that learners will be given a problem that requires a digital graphics and animation. • Go through the client brief with learners and clarify any misunderstandings or misconceptions. Example brief: *You have been employed to design and develop some digital graphics and animation for use in a new game designed specifically for playing on smartphones.* *The game is to be a side-scrolling spaceship game.* *You are required to design and produce appropriate digital graphics and/or animations for:* • *The player-controlled spaceship* • *Enemy characters/ships* • *Icons for the main menu screen* • *An animation that will introduce the storyline for the game.*
Individual/ paired activity 1 (1 hour)	• Learners use the internet to research similar products and identify key features of this style of game. • Leaners to produce some initial ideas of how they will respond to the brief using suitable plans (e.g., mood boards, sketches, etc.) • They should show these to another member of the group and gain feedback and quality and appropriateness of the ideas.
Individual activity 2 (1 hour)	• Learners consider the feedback received and develop their initial ideas to produce detailed plans for digital graphics and animation that will meet the brief.

Activities	Teaching notes
Plenary (30 minutes)	● In pairs, learners should discuss their plans. They should be prepared to explain/justify their choices. Learners can provide peer feedback. ● Learners should make use of time away from the classroom between this lesson and the next, to develop and finalise their designs.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	14–15 (6 hours)

Lesson objectives	At the end of the lesson, learners will:
	● be able to produce digital graphics and animation for an identified digital product.

Resources checklist	● Computers with internet access and graphic/animation software
	● Asset table template
	● Client brief
	● Help sheets (as required)
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	• Recap the focus of this series of lessons. • Remind learners of the client brief.
Individual activity 1 (55 minutes)	• Learners use the internet to collect assets for use in their products and record them in an asset table.
Individual/ paired activity 2 (5 hours)	• Learners use appropriate software to produce their planned digital graphics and animation in response to the brief.
Assessment (*This is done outside class time and is not included in the 3 hours lesson time*)	• Teacher to collect in learners' work from lessons 13–15. • The teacher is to identify areas of strength and areas for improvement and provide written feedback by next lesson. • The teacher should keep a record of the quality of learner work, to be able to monitor learner progress. • Assessment and feedback should be based on the unit assessment criteria listed in the specification in order to prepare learners for their final assessment. *Note: this is not a final assessment.*

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	16 (3 hours)

Lesson objectives	At the end of the lesson, learners will be able to:
	● use identify areas of strength and weakness in their subject knowledge/skills
	● demonstrate independence and self-development.

Resources checklist	● Computers with internet access and graphic/animation software
	● Client brief
	● Learner work from lessons 13–15
	● Teacher feedback
	● Help sheets (as required)
Key: **AS**: Activity Sheet; **TF**: Template Form; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (5 minutes)	• Provide learners with marked copies of their work from lessons 13–15.
Individual/ paired activity 1 (35 minutes)	• Learners read through feedback they have received from the teacher. • Learners should identify areas where they require improvement and topic area they need further assistance on or skills they feel they need more practice.

Individual/
paired activity 2
 	
(2 hours 20 minutes)
	• Learners should work on a variety of tasks/tutorials to practise and improve any areas of weakness.
	
	• Allow learners to self-direct the activities they use. Activities may include:
	  o using online tutorials
	  o developing their work further based on assessment feedback
	  o paired discussions and support
	  o revisiting skills tasks from earlier lessons.

Lesson plan

Qualification	Pearson BTEC Uzbekistan Level 4 Qualifications in Software Development
Unit	Unit 6: Digital Graphics and Animation
Lesson number	17–20 (12 hours)

Lesson objectives	Final assignment

Resources checklist	- Computers with internet access and graphic/animation software - Asset table template - Assessment Workbook
Key: **AS**: Activity Sheet; **TF**: Template; **PS**: Presentation Slide	

Activities	Teaching notes
Lead-in (15 minutes)	Introduce the assessment, Tasks 1, 2 and 3 (see Assessment Workbook) detailing the main assessment criteria, deadline and submission criteria.
Individual assessment activity (11 hours 45 minutes)	Using the Assessment Workbook, learners should complete Tasks 1, 2 and 3.

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