Unit 15: Website Development

Delivery guidance

Approaching the unit

This practical-based unit allows learners to understand the principles of designing and creating a functional website and focuses on the design and development of a website to meet the requirements of a client. Learners should be encouraged to seek out real-life situations where a website is required. For example, learners (or you) could approach local businesses. They could then explore the specific requirements and begin to design and develop a website for that particular business. By utilising real-life scenarios, learners should be empowered to design and develop interesting and creative websites. If this is not possible, you could develop scenarios.

When approaching the unit, it is important to provide practical web-based exercises to hone learners' web design skills. For example, tutorials on hypertext markup language (HTML), cascading style sheets (CSS) and JavaScript® will enable learners to learn the necessary skills involved in developing a website. Learners should be encouraged to explore different software packages – for instance, rapid application development tools such as Dreamweaver. Alternatively, where this type of software is not available, learners should work from a text editor and a web browser.

This delivery guide does not cover everything that needs to be delivered for completion of this unit but gives examples of delivery methods. You should refer to the specification for full details of all the content that needs to be covered.

Delivering the learning aims

For learning aim A, you could start by introducing the principles of website development. Begin with a class discussion that introduces the purpose and principles of website products. There are various concepts that learners need to understand, so there will be elements of tutor-led delivery where key ideas and principles will need to be explained.

The delivery, however, should be predominantly practical-based. Therefore, tutor-led delivery should be complemented with exercises and independent research. Within learning aim A, there is scope for learners to research websites and give feedback on the purpose and principles of website products, as well as the different factors that affect website performance. Learners need to understand that website development is influenced by many factors and this can have a bearing on a website's overall performance and success. Encourage learners to present their research findings through class discussions, via online tools such as blogs or wikis, and as reports.

For learning aim B, there needs to be tutor-led instruction about the design concepts involved in producing websites. Design tools are crucial for showing clients what their website will look like when completed. Failure to produce a coherent design may mean that the end result will not meet the requirements of the client. Therefore, when planning the unit, ensure that learners understand the importance of the design process, and that it should be undertaken in conjunction with the client. If a local employer in your area has the need for a

website, try to arrange for a guest speaker to discuss what their needs are so that learners can elicit requirements from them. In addition, try to arrange technical workshops involving staff from local organisations/businesses or opportunities for learners to observe working practice through visits or work experience.

Having discussed the requirements, learners should be able to develop appropriate designs to meet the needs of the client. Teaching and learning should focus on developing each learner's ability to produce clear and coherent designs, and being able to articulate these, as well as highlighting the need for a justification of their choice of design. You should also guide learners to identify the target audience and their requirements.

Learning aim C is a natural extension of learning aim B. Learners must be capable of developing a website to meet the needs of a client. It is important that learners fully understand the different skills required to develop a website and have sufficient practice at applying them. One approach to delivering the content is for learners to work individually through exercises, for example workbook exercises on HTML, CSS and JavaScript®. This will ensure that learners are confident using the necessary skills. Allowing learners to work in pairs may well help them to develop their skills quickly as they will be able to share their existing knowledge with others.

It is important that learners understand how to optimise a website and test its usability, interactivity and compatibility. To help with learners' understanding, they could ask for feedback on their designs from their peers and they could provide feedback for others. Learners should evaluate the feedback and make improvements, as necessary, to meet client needs.

It is feasible that learners will be working at different paces. Their progress will need to be tracked and monitored. Differentiation opportunities are available for learners with prior knowledge: for instance, you could introduce and develop client-side scripting or HTML5.

You could encourage learners to apply the project management skills that they acquired in *Unit 3: Planning and Management of Computing Projects* to their projects.

For learning aim C, you could invite back the guest speaker to appraise the work in progress. This is an opportunity for learners to talk to the guest speaker about what they have developed and for there to be a dialogue between 'designer' and 'client'. This is particularly useful for helping learners to develop their understanding of how to communicate and behave appropriately in more formal situations. The aim is for learners to utilise the techniques they have learned in order to develop an innovative and compelling website for the client. Solving real-world problems will help learners develop employability skills. For example, they will learn the importance of deadlines, communicating appropriately with clients and getting the client to sign off on what they have done. These are all skills that learners will need to develop within the industry during their working lives.

Throughout their practical work, learners should be encouraged to keep a diary, in which they can keep a record of their progress, any issues they encountered and how they overcame them. This will be valuable when writing the evaluation and reflecting on their own performance as part of the second assignment.

High-quality, accurate communication skills in written and verbal forms are vital for progression into higher education and in employment. As such, learners should be confident in presenting thoughts and ideas to others, as well as producing well-presented, accurate and appropriate documentation for all stages of a project. Learners must be able to effectively evaluate the success of a

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project and the factors that contributed to the final outcome, including their own skills, knowledge and behaviours.

Learning aim	Key content areas	Recommended assessment approach
A Understand the principles of website development	**A1** Purpose and principles of website products **A2** Factors affecting website performance	A report describing the different types and purposes of websites. This will include an explanation of the factors that affect website performance and mathematical principles used in website development.
B Design a website to meet client requirements	**B1** Website design **B2** Common tools and techniques used to produce websites	Learners' devised design documentation arising from the identification of client requirements. A digital version of the website product, including an observation record sheet and supporting documentation, such as scripts and annotated screenshots, to justify design decisions. A report evaluating the design of the website against the client requirements.
C Develop a website to meet client requirements	**C1** Client-side scripting languages **C2** Website development **C3** Website review **C4** Website optimisation **C5** Skills, knowledge and behaviours	

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Assessment guidance

This unit is internally assessed, so you have some flexibility about what assessment methodologies to adopt. The recommendation is to split assessment into two assignments. The first assignment should focus on the principles of website development and the second one on the design and creation of a website to solve a problem.

The first assignment requires learners to evaluate the principles of website design, and how these can be utilised to produce a high-performance outcome that meets the needs of the client. This could be assessed in a variety of ways, for example in the form of a presentation. Learners could use an online presentation package such as Prezi to present their evaluation to the rest of the class. Assessors could use video recording combined with an observation sheet to cite which assessment criteria the learner has met, with appropriate commentary supporting the reason for awarding a particular grade. A blog or some form of audio or visual evidence would also be acceptable and would allow learners to develop their creativity, provided the information is communicated in a clear and detailed manner using appropriate language.

The second assignment should focus on the design and creation of a website. Learners should produce several different website designs, explaining how the finished designs meet the needs of the 'client'. If possible, try to find a real-life scenario for the learners to work on. There should be evidence of appropriate stages in the website design, such as mood boards and wireframes. Learners should produce an evaluation of finished designs against client requirements in a word-processed report. As part of the process, learners could work together on the investigation that will lead to the design and implementation of a website prior to individually designing a solution to the same problem using different creative techniques. Learners could then compare the final outcomes and consider how well they have met the client's brief.

From their designs, learners must produce a fully functioning website that meets the needs of the 'client'. The website must be tested appropriately to ensure that it works and is fit for purpose. Consider different testing methods, such as user acceptance testing or black box testing, for this part of the assessment. Learners could upload their websites to a server for the assessor to mark and use a blog to review their final websites. This would show that different assessment methods have been used creatively within the unit.

Getting started

This gives you a starting place for one way of delivering the unit, based around the recommended assessment approach in the specification.

Unit 15: Website Development

Introduction

Developing a website can be crucial to any business or organisation. With so many different technology platforms, websites are now more accessible. This, in itself, presents the website developer with more challenges as the website must be equally appropriate across different technologies (such as PC, tablet or smartphone). Therefore, it is extremely important to be able to produce a website that stands out and meets the needs of the client. The ultimate aim of this unit is for learners to understand how websites are developed and for them to design and create their own websites.

Learning aim A – Understand the principles of website development

This learning aim should ensure that learners understand the suitability of websites for their intended audience and purpose. Understanding the principles of website design will help learners develop high-performance websites that meet client requirements.

- You could begin by initiating a group discussion on principles of website development. Note down suggestions on a flip chart or dry wipe board, and discuss each suggested topic in detail.
- Learners could state the different target audiences of websites. This could include social networkers, gamers or buyers. Explain how and why users are now more empowered by websites. Reasons might include the fact that websites are user-friendly, consistent, navigational, flexible and customisable. This could lead into a research exercise in which learners have to explain (and cite examples of) web 1.0 and web 2.0 technologies. There is also scope to discuss the future of website development.
- It is important for you to explain the purpose and principles of website products. Specifically, learners need to understand how to use website design principles to produce engaging websites. You could highlight 'good' and 'bad' websites and cite what principles are being utilised in each case, for example use of white space, typography, colour or consistency. Divide the group into pairs or small groups and ask each group to identify and explore poorly designed websites and compare these with examples of innovative/creative websites. Their judgements should be based on the principles of website design that you have explained.
- Give learners opportunities to do practical-based work. For example, when citing what web 2.0 technologies are, each learner could upload and define a technical term to a VLE glossary. This gives learners a real-life example of how web 2.0 technologies can be utilised.
- Work with learners to develop their analytical and evaluative skills. Explore a variety of different website designs for different purposes and give learners opportunities to consider the requirements of each.

Learning aim B – Design a website to meet client requirements

This learning aim is particularly well suited to learners who want to demonstrate their creative flair and individuality. Give learners practical tasks that ask them to produce different designs to solve a range of problems. Learners need to investigate these problems and develop appropriate designs. Learners should be equipped with a range

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of skills and knowledge before starting the assignment – do not use the assignment as a vehicle to teach the content.

- Give direct input to learners about the different ways in which a website developer can design websites, particularly in relation to different future audiences. Use question and answer techniques to check learners' understanding. This should then lead into practical exercises that the learners need to complete.
- Provide each group of learners with a different themed website, for example an information site, a site linked to a sport or other activity, a blogging site or food site. Ask them to work through the appropriate stages of design for their site. This must include mood boards and wireframes.
- Ask learners to present their designs to the rest of the group in the form of a presentation. Consider giving some kind of reward to the group of learners who develop the most innovative design. This should help motivate learners when they do their research and design.
- If possible, enlist the help of a local business with a digital marketing team. Ask if one of their marketers could come in and pose as a client. They should outline why they require a website, and learners could design and develop a website for them. A real-life situation should motivate learners to produce a design of the highest possible standard that meets the needs of their client.

Learning aim C – Develop a website to meet client requirements

Learning aim C should give learners the tools they need to create a website from scratch. Give learners exercises to work through sequentially. Start by teaching the basics, such as how to develop a simple 'Hello World' website, and develop from there.

- Start by leading a discussion on the tools and techniques available to develop websites, linking these to real examples. Explain the software that learners will be using to develop their websites. Learners should explore the advantages and disadvantages of rapid application website development tools and compare them with using a simple text editor.
- When you are confident that learners understand the key concepts involved in designing a website, decide how you wish your learners to create their websites. They could use web authoring tools or code their websites manually using a web browser and notepad.
- It would be advantageous for learners to work through website creation exercises that hone their skills in HTML, CSS and JavaScript®. Exercises should initially be relatively simple such as, for example, developing a basic website, and then progress to harder tasks that challenge learners' creativity. Learners should demonstrate their understanding of website scripting by tracking their progress and you can use appropriate question and answer techniques to check their understanding.
- In the second assignment, learners should actually create a website based on their designs from learning aim B. They will need to optimise their designs, test the website appropriately and review the extent to which it meets the requirements of the client.
- It will benefit learners if they maintain a diary or take notes as they complete the various practical activities in the lessons relating to this learning aim. They should also note the comments that their peers make when they act as users of the system.
- Ensure that learners understand how to fulfil the assessment criteria for the pass, merit and distinction grades.

Details of links to other BTEC units and qualifications, and to other relevant units/qualifications

Pearson BTEC Level 3 Nationals in Computing (NQF):

- *Unit 3: Planning and Management of Computing Projects*
- *Unit 10: Human–Computer Interaction*
- *Unit 11: Digital Graphics and Animation*
- *Unit 12: Digital Audio*
- *Unit 13: Digital Video*
- *Unit 17: Mobile Apps Development*
- *Unit 22: Systems Analysis and Design*
- *Unit 25: Web Application Development*.

The previous QCF Level 3 BTEC National in Computing also has units that link to this and resources produced may be suitable for use in this unit.

Resources

In addition to the resources listed below, publishers are likely to produce Pearson-endorsed textbooks that support this unit of the BTEC Nationals in Computing. Check the Pearson website (http://qualifications.pearson.com/en/support/published-resources.html) for more information as titles achieve endorsement.

Textbooks

- Flanagan D – *JavaScript: The Definitive Guide (Definitive Guides), Sixth Edition* (O'Reilly Media, 2011) ISBN 9780596805524
  This is a useful guide on how to use client-side scripting within websites to produce interactivity and ultimately engaging websites.
- McFarland D – *CSS: The Missing Manual, Fourth Edition* (O'Reilly Media, 2015) ISBN 9781491918050
  This is an excellent book on how to use HTML and CSS to produce clean, usable websites.
- McGrath M – *HTML5 in Easy Steps, Seventh Edition* (In Easy Steps Limited, 2011) ISBN 9781840784251
  This book simply conveys how to apply HTML5 scripting to websites easily and efficiently.

Websites

- www.w3schools.com
  The w3schools.com website is a useful starting point for anyone who wishes to learn how to use HTML, CSS and Javascript to produce websites.

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- www.codecademy.com
  Anyone can register on the Codecademy website. It includes free videos and training tutorials on how to develop websites.
- https://validator.w3.org
  The Markup Validation Service (W3C) allows you to validate website content for free. This enables you to check for errors and ensure that your website is W3C compliant.
- www.webpagesthatsuck.com
  This website analyses good and poorly designed websites. You may find it useful for showing learners examples when explaining how to design clean, intuitive websites.
- www.csszengarden.com
  The CSS Zen Garden website allows anyone to explore different CSS templates which can be applied to a website design. You could show learners different styles of website layout and how those layouts can be achieved using CSS.

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