

Annexe A

Example examination.

The following principles will apply to the design and structure of each exam.

- 1.** Questions will vary in the general area of the required learning outcomes and cover all the IPU assessment criteria. Questions will reflect a balance of the content syllabus as well as the IPU learning outcomes.
- 2.** Efficient use of applications/cost savings. Minimum 30%
- 3.** Knowledge of data standards/interoperability. Minimum of 15%
- 4.** Making judgements in a probably unfamiliar contexts. Minimum 10%
- 5.** Analysis of data/information in an IT context. Minimum of 10%
- 6.** Dealing with quantifiables and calculations. Minimum of 10%
- 7.** Safety, security, acceptable use. Minimum of 5%
- 8.** IP - copyright, trademarks, patents. Minimum 5%
- 9.** Multiple choice questions on any paper. Maximum 15% of the score.
- 10.** Open-ended free response questions. Minimum 15% of the score.

Questions

- 1. Which of the following is a description of a purpose for using Information Technology to support a task? (1.1)**
 - a) To reach a wide audience at low cost.
 - b) To increase costs.
 - c) To make the task more complex.
 - d) To support the IT industry.

(a) (1 mark)

2. **Why might using a web page be a better method of presenting information than a desktop office presentation program? (2.2)**

- a) The web page is a bigger file and easier to see.
 - b) The web page is easier to get to a lot of people more efficiently.
 - c) The web page is in a proprietary file format whereas the desktop file is open.
 - d) The web page has more multimedia capability.
- (b) (1 mark)

3. **Which of the following software applications would be most appropriate for collecting survey data. (1.5)**

- a) A word processor.
 - b) A spreadsheet.
 - c) A web form.
 - d) A presentation program.
- (c) (1 mark)

4. **When planning a task using IT, (1.3)**

- a) make sure the software used is all from the same supplier for compatibility.
 - b) always work on the internet.
 - c) always work in a team.
 - d) set SMART targets.
- (d) (1 mark)

5. **Which of the following statements is FALSE? (1.1, 1.5)**

- a) It is possible to run a business using only resources that are legal and free from the internet.

- b) It is possible to develop a spreadsheet model with three different people in different countries all working on the same sheet at the same time.
- c) The internet was developed by Microsoft and Apple to get their products to work together.
- d) The world wide web is supported by millions of databases.

(C is false) (1 mark)

(The internet was the result of a US Defence need to link together different incompatible networks – elimination requires knowledge related to the purpose of IT and being competent in selecting IT applications)

6. **Formal writing is important in some situations.** (1.2)

Describe a situation where you would be careful to write formally and a situation where you would not be concerned with writing formally.

(Write formally in a Blog, write informally in a chat session or any other reasonable cases)

(2 marks, 1 for each)

7. **What type of file has a .jpg extension?** (1.2, 1.5).

(Image file - with trade off between size of file and quality of image)

(2 marks) 1 mark for image, photograph, picture. 1 mark for reference to compression.

8. **What type of application is associated with .mp3 files?**

(Music)

(1.2, 1.5) (2 marks for music, audio, 1 mark for sound, podcast or other plausible type.)

9. **Where would you see the contents of a HTML file displayed?** (1.2, 1.5)

(In a web page or in a web browser) (2 marks for either)

10. **What type of file has a .exe extension?**(1.2, 1.5) (Program)
(2 marks, for Program or Executable File or Application)
11. **Why should you never open .exe files sent to you over the internet?** (1.4)
(It might be a virus or other malware)
(2 marks, for virus, malware, worm, trojan or other example. 1 mark for it could harm your computer or a general indication that it is dangerous).
12. **Describe two reasons why downloading a large file using a Smartphone might be a disadvantage when compared to using a broadband cable connection.**
(Takes longer, could cost money, could lower the performance of the phone for other apps) (1.4)
(2 marks, 1 for each of two reasons.)
13. **I have an application that is intended to help in designing graphics for posters and advertising.**

It saves files in its own format, naming files with a .ofz extension. I want to save my file for display on the internet, describe the facility in the software that I should look for to do this? (1.2, 1.4, 1.5)
(Save as... or Export to .jpg, .png or .svg)
(2 marks, 1 for save as or export and 1 for naming an internet graphics format - allow gif)
14. **You work for a small company and you have received a request to discuss your company's products with a potential customer in Brazil.**

Briefly describe applications which you might use to meet these requirements saving your company money compared to standard 'phone calls. (1.6)

(Use voice over IP eg Skype or Google Hangouts allow Sipgate or similar although these do cost small amounts)
(2 marks, for voice over IP applications, or 1 each for two specific examples)

15. What is the purpose of an Acceptable Use Policy (AUP)?

(1.7) (To enable a group of people to work together using IT in a way that is socially acceptable to the group)
(2 marks for any reasonable description)

16. Take one subject at school and describe 3 ways in which IT makes you more productive in it.

(1.1, 3.2) (3 marks)

(eg in English I can draft and redraft work more easily and I can share my work with other people through Blogging. Spell-checkers help me improve my spelling by flagging up words that are incorrectly spelt. In History I can search for information in secondary sources and find specific details needed for homework. I can present my work in a neater way and use messaging to discuss work with my friends.)

17. To make a video many pictures are taken very quickly one after the other.

These pictures are called frames and the more frames that are played each second the steadier the video picture will be. Each frame is stored as digital data and the sharper the image and the more rich the colour the bigger the quantity of data in each frame. (1.4)

18. Which of the following statements best fits the information provided for a 10 minute video file?

The size of the file in MB

- a. only depends on the rate frames are played back

- b. only depends on the data in each of its frames
 - c. depends on both the rate frames are played back and the data in each frame
 - d. only depends on the software playing it back
- (c.) (1 mark)

19. **Which of these passwords is most secure? (3.4)**

- a. LETMEINNOW
 - b. 1235775321
 - c. 120dollars
 - d. 50%Certain
- (d.) (1 mark)

All have the same number of characters but D has a bigger range of character types. Knowing this will support testing the choice of a password as a security solution.

20. **“Copyright law” in a digital age is unworkable.** Explain two reasons why someone might agree with this and two reasons why someone might disagree.

(1.4, 1.7, 2.2, 2.5)

(4 marks)

(Reasons to agree: There is massive evidence of law breaking with illegal downloads of music, films and programmes from the internet. It is so easy to copy digital data it is impossible to prevent this without the disadvantages of inconvenience to all users outweighing the advantages. There are so many different licenses it is impossible for ordinary people to understand them all. Copyright mostly protects large monopolies rather than individual authors as it was originally intended.

Reasons to disagree: Although there is a lot of law-breaking, copyright is still used usefully in most information based

industries. Using digital rights management it is possible to protect digital information against copying. It is the best way to make sure authors get rewarded for their work.)

21. **What is the difference between a Creative Commons licensed music file and a music file that is in the public domain?**

(1.4, 1.7)

(2 marks 1 for explaining each)

(Creative Commons licenses generally allow sharing but with some conditions eg acknowledgement of the author. In the public domain there are generally no restrictions to how the work is used.)

22. **.svg (Scalable Vector Graphics) and .png (Portable Network Graphics)** files are W3C Standards for graphics files. My company wants me to design a logo which might be used in web pages or on large display boards. (3.1, 3.2)

Explain 3 reasons why I should start by producing the logo as a .svg file.

(3 marks, 1 mark for each of the following up to 3 marks total. Saying svg files are scalable, 1 for they stay clear or sharp or don't lose resolution, 1 for it's easy to convert from svg to other formats, 1 for the file size is small even for large clear images, 1 for saying they are the internationally agreed standard for vector graphics or similar.)

(The .svg file can produce images of any size without loss of resolution, it is easy to produce a .png or .jpg file from a .svg file, it is difficult to produce a .svg file from a .png file. Producing a large high resolution image with .png will produce a very large file. .svg is supported by most up to date web browsers, .svg is the W3C standard for vector graphics, it is XML based and will become increasingly important with

HTML5 and the current and future generation of web browsers.)

Explain 2 advantages that a .png file has over a .jpg file.

(2 marks)

(1. They support transparency so images display properly on a variety of backgrounds. 2. None of the original data is lost when the file is compressed)

Explain 1 disadvantage of a .png file compared to a .jpg.

(1 mark) (There is a limit to how small the file can be compressed which could lead to web pages in which many .png files are embedded opening very slowly or cause added data transfer costs eg with mobile technologies)

Give one reason why preparing text in a text editor might be an advantage compared to using a full feature word processor. (1.5, 3.3)

(1 mark, any one of the reasons below)

(When transferring text between applications, style features transferred with a word processor document can cause formatting problems in a different application eg in a web page. It is safer to use plain text and add styles afterwards. Text editor will run faster on low spec machines. Text editors are freely available with most computers)

23. .pdf is a widely used file format for documents. Which of the following statements is true? (1.5)

- a) pdf was designed so that documents from a range of different word processors could be printed on paper consistently
- b) pdf is a proprietary standard controlled by Adobe and can only be accessed legally with Acrobat Reader

- c) pdf is the best method of providing information on the internet
 - d) pdf uses lossy file compression
- (a is correct.) (1 mark)

Many people use pdf when putting information directly in web pages would be better. Pdf is now gaining use for electronic book readers mainly because it can be used for copy protection more easily than HTML files.)

24. **When considering the page layout, what is the difference between putting information into a web page compared to putting it into a Word Processor?** (1.5, 3.1, 3.3, 3.4)
(1 mark)

(There is no fixed page size in a web page so the exact layout can change on different sized screens whereas with a WP the layout will always be fixed to the chosen page dimensions. Knowledge needed when deciding on tools and solutions related to documents)

25. **Here is a macro from a spreadsheet. Its purpose is to check the type of data contained in spreadsheet cells.**
(3.4)

```
Sub ContentChk()  
If Application.IsText(ActiveCell) = True Then  
    MsgBox "Text"  
Else  
    If ActiveCell = "" Then  
        MsgBox "Blank cell"  
    Else  
    End If  
If ActiveCell.HasFormula Then  
    MsgBox "formula"  
Else
```

```
End If
If IsDate(ActiveCell.Value) = True Then
    MsgBox "date"
Else
End If
End If
End Sub
```

What 4 types of data is the macro checking?

(Text, Blank cell, formula, date)
(2 marks, remove one for each error)

What is the purpose of the MsgBox function?

(It will put a message box onto the screen) (1 mark) If I replaced the line

```
MsgBox "Blank
cell" with
Sub PutNumber(9)
```

What is my likely intention?

(2 marks, 1 for calling a Macro or Subroutine, 1 for its purpose)
(I would be calling another Macro to put a number 9 somewhere, probably into the blank cell.)

How would I test to see if my solution worked as intended?

(1 mark)
(If ActiveCell = "9" Then MsgBox "9" – or something plausibly similar)

- 26. Your school only has one proprietary Word Processor** available for which license fees have to be paid. You don't have any money to buy the software and currently have a computer but no software. Explain how you might solve this problem, any possible difficulties you might have and possible solutions. (2.1, 2.2, 3.3)

(You can use eg OpenOffice, LibreOffice, GoogleDocs (1 mark) or other applications that have a wide range of import/export filters and that can be used legally, free of charge. The main draw back is that documents using complicated tables and formatting might not transfer accurately. (1 mark) (1 mark any of the following) Possible solutions: Ask the school not to make any documents unnecessarily complex, keep things as simple as possible. Ask the school to make a free Word Processor available so that it can be used at home and school without cost or restrictions on your family and friends using it. Note that any answers that imply illegal software copying or use in violation of the license should get no marks.)

27. **A small business decides to move its operations to Cloud Computing** where there will be no local servers and all the resources will be accessed using a web browser. (2.1)

(i) **Explain why the company might want to do this?**

(1 mark)

(Any of - Save most of the maintenance costs of locally managed services, save the cost of licensing locally installed applications, save on hardware, access services from a wide range of locations)

(ii) **Explain why it would be a good idea not to rely on a single broadband connection?**

(1 mark) (If the internet connection is lost they will not be able to do any work)

(iii) **Explain low cost options to ensure the service is maintained even if the main connection is lost.**

(1 mark) (Second high speed connection and several low cost connections such as 3G through smartphones)

- (iv) **Some people say that office applications can't work efficiently in this way.**

What do you think? Explain your answer. (3 marks)

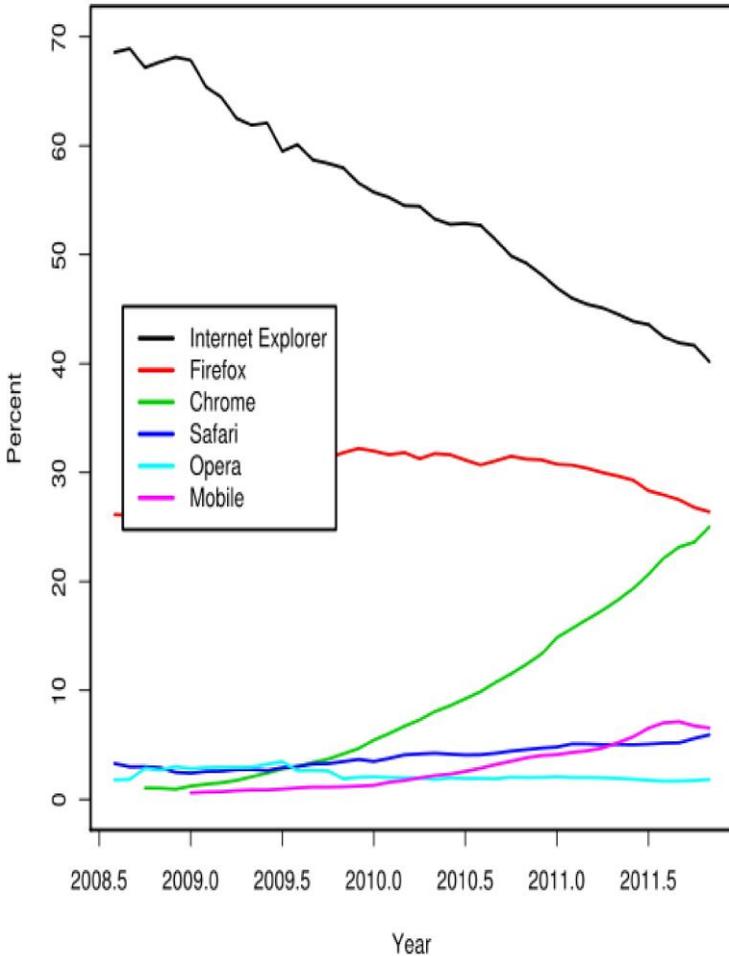
(Looking for some analysis such as it depends on the activities that the company is engaged in. If they need a lot of the features in desktop applications, heavy commitment to video editing or such like, probably it won't work. If they are doing typical standard things like letters, text documents with a few illustrations, general accounts, CRM, spreadsheets etc. it probably will. Also give credit for saying use the Cloud mainly but keep a local provision for specific apps. or reduce risk by maintaining the local capacity as a back up until practical use proves it is redundant.)

- 28. A company is about to upgrade its desktop office software** and the cost will be £10,000 in new licenses. They have the option to use a different office suite for free. What are the likely issues involved in deciding what to do?

(3 marks)

(They can make an immediate saving but will it cost money to retrain staff? Can they transfer important files reliably to the new system? Can they keep the old system going alongside the new system in case there are any problems? Any other plausible rational considerations.)

Usage share of web browsers



Source: StatCounter

The graph shows the access of the Wikimedia Commons by different web browsers. Wikimedia Commons is the source of the images used in the Wikipedia encyclopedia. (2.1, 2.2, 3.1)

- (i) **Which web browser has declined in its usage share at a rate of about 10% per year.** (Internet Explorer) (1 mark)
- (ii) **What is the approximate rate of growth** in the usage of Chrome? (About 15% per year, allow anything between 10% and 20% per year. Note that it is an increasing rate so what really matters is the tangent to the curve at 2011.5) (2 marks
1 for the number 1 for the units)
- (iii) **Approximately when will Chrome become** the most popular browser? (Any time between 2012 and 2013) (1 mark)
- (iv) **Why would it not be safe to assume that the web browser** usage pattern shown here is the same for usage in general all over the world? (Because the users of Wikimedia might not be typical of users in general) (1 mark)
- (v) **Some people say Chrome is becoming more popular** than Internet Explorer because it is cross-platform. Explain what cross-platform means and whether you think this is the best explanation comparing with other possibilities.

(1 mark for cross platform meaning it runs on different types of computer/operating system, 1 mark for any other reason eg its faster, more standards compliant, linked to Google search etc)

Annexe B

Detailed syllabus for the examination

B.1 Note that while this content syllabus covers the range of the qualification in terms of what can be sensibly tested in a controlled exam, it does not cover every single aspect of learning. Elements requiring practical competence in a work context are more validly assessed through practical coursework evidence which is to a minimum standard of competence.

B.2 In the examination, questions will be set related to the following broad areas associated with improving productivity through the use of IT. Examples are illustrative rather than exhaustive.

1. Audiences at which work is targeted. Aspects of the work that makes it particularly suitable for the audience. Global audience and how communications technologies offer scope to improve productivity. Key characteristics of writing formally as opposed to writing informally in IT environments and why.

Examples: Knowing that people with disabilities need special consideration. Simple cases such as choosing colours that will not cause problems for people with colour blindness, having text alternatives for graphics to enable blind people to know what is being displayed, subtitles for videos for deaf people.

Description of a science investigation or other learning activity taken from the core curriculum, using a web page(s) with links to references so that a future employer can see the quality of work simply by knowing the URL.

Using translation software to communicate with someone in a different country.

Public web page (Wiki) to collaborate with friends in producing an information page about the local environment because it enabled collaborative working. Making it easy for other people to contribute and make the results easy to link to other similar sites. Advantages and disadvantages.

Formal writing in a web page to present part of an e-portfolio is important because employers will get a bad impression otherwise. Creating notes on a subject so they are accessible to themselves and peers from any location and

can be linked to references and supporting resources. Using on-line publishing services for formally written texts.

Informal writing, SMS conventions, chat and instant messaging of friends using accepted short cuts and slang to communicate meaning. . Awareness that many people using English discussion groups and mailing lists are not native English speakers.

Checking e-mail headers to make sure replies are only sent to people that need them. Not using automated replies on mailing list eg "I'm out of the office" and why.

"Spam" - knowing not to contribute to it eg by making your e-mail address public in a web page or replying to it.

2. Purpose in common applications and/or applications they have used. Security and safety when working online.

Examples: Word processing makes redrafting more efficient. Collaborative technologies enable sharing documents and concurrent development. Vector design programs produce drawings that can be scaled almost infinitely without loss of quality or increasing the size of the files. Web browsers should all display information provided on the internet consistently irrespective of the device. A spreadsheet enables mathematical models. The internet is increasingly the computer platform, its purpose is to store and provide and enable creation of information all over the world. Text messages enable low cost asynchronous communication.

Basic principles of files names and structures associated with applications. File sizes, file types and conversion between files. Issues related to interoperability of applications from different providers. Save as, import and export to and from applications.

Passwords enable security but quality of passwords matters. Identifying unsafe practice. Knowing that people on the internet should not be trusted without good and independent verification of their identity. Knowing that simple internet searches can reveal a lot about you and other people. Knowing that leaving your computer without logging out is a very significant security breach. Knowing about common internet scams.

3. Strengths and weaknesses in the ways information is presented. Make comparisons between methods. Improving the way information is presented. Making information more accessible.

Examples: As a method of presenting information to a general audience, using web pages is better than desktop presentation software if sharing the information and updating it for a wide range of users is important. Desktop presentation software is better if there is a need for visual effects to a static audience.. A lot of information gets presented inefficiently because most people associate presentation with desktop presentation software and many have little experience or skills to use other methods. The problem with e-mailing files as attachments or even downloading a file is that there is then a big task managing all those files and no means of updating them centrally. Mostly routine presentations are simple slides and so there is no great advantage compared to using linked web pages or a simple web based presentation system. Giving the audience the URL (web address) of the information means all they have to do is book mark it. If anchors are set in the information and published the users can integrate precise bits of information into their own information systems with simple links. With the shift from desktop to the web these issues are becoming increasingly important in improving productivity.

There is still reluctance to acknowledge benefits when people have all their personal learning locked into older less efficient methods. This is why education for technological change is important rather than just teaching current established practice.

Handling and interpreting information in IT contexts, trends, rates of change and comparisons. Understanding trends will help in making better choices and improving productivity.

Information in formats that can be viewed and edited by free tools is more accessible to more people. Importance of open standards and the interests of particular commercial entities in proprietary standards.

Significant facts should be referenced to evidence. Many people providing information have a commercial interest. This includes the news media who will often distort facts to get a reaction to sell more news. Companies selling software and services will play up any advantages and keep very quiet about any disadvantages. Candidates need to be aware of the possible conflicts of

interest behind the information presented to them enabling them to make better decisions that underpin improved productivity.

4. Copyright licensing and patent issues that affect information associated with common applications. Candidates will be expected to be familiar with commonly used file types and important open standards.

Examples: All candidates should be able to identify key image file formats svg, jpg and png as open standards associated with web browsers. .psd as a common undocumented proprietary image format associated with desktop applications. HTML5 as an open standard including video playback. Flash video as a proprietary video file format. Describe the relationship between copyright and licensing. Illegality of using copyright material contrary to the license. Problems of long term access to information in “secret” formats and for interoperability of data between applications from different suppliers and the effect on competition. Referencing work and respecting trademarks. Balance between the power given to copyright/patent holders compared to the power of the end-user. All these have a significant impact on risk and productivity.

In recent years licensing for sharing has become increasingly common. Whereas the traditional approach is to forbid copying without paying a license, removing such barriers can massively increase proliferation. Examples are the IBM PC hardware design, worldwide web, Wikipedia, web browsers, Android Smartphones. Note, mostly these things are NOT copyright free, they are copyrighted but they are licensed for free use sometimes with conditions.

Association of common files such as .doc, .docx, .xls, .xlsx, .ppt, .pptx, .pdf, .eps, .html, .odt, .odc, .odd, .wav, .mp3, .mpg, .ogg, .mov, .wmf, .flv, .exe, .txt, .zip, .rtf, .mp4, .jpg, .png, .svg, .gif, .avi. with types of application is expected.

5. System of information flow starting with input of information, through processing the information to outputting results.

Examples: Providing information in an e-portfolio system, linking it to assessment criteria and providing self-assessment and passing it to an assessor, assessor returning it with feedback. This could be in any subject of the curriculum. Listing the information sources needed for a homework assignment, explaining how they will be organised and how the final outcomes will be presented. Gathering empirical data through data logging, processing it and presenting it in graphical form. Gathering data from the internet about two

different software applications and processing and presenting the results to highlight comparative data. Collecting survey data using web forms, processing it and presenting the results.

Issues in an information flow linked to interoperability of different components in the system. Efficiency in terms of the degree of automation in the process and the tools used (Too many people collect data in word processor documents even at national government level. It is simply bad and inefficient practice probably resulting from low expectations in digital literacy and lock-in to dated methods and software) Macros, scripts and programs that improve productivity. Issues related to copyright and licensing of information in the system.

6. Costs of different applications, direct and indirect costs.

Examples: Putting information directly into web pages makes them available to anyone with a web browser and there are options to get free web browsers on free operating software. Putting information into eg MS Publisher and saving in .pub files makes it impossible to access the information without buying MS Publisher (and MS Windows). There are then license fees to pay for Publisher and the Operating System on which it is running. Saving a drawing in svg format enables it to be accessed and edited using free software and displayed on the web. A drawing in .cdr format can only be reliably opened using Corel Draw. Compare different aspects of costs to a company in procuring different applications and decide which is most significant. For example managing e-portfolios on a local server will need maintenance on the local server whereas managing an e-portfolio on an internet based server means no local server management. Training costs can be significant in changing working patterns. If short term costs are critical it will mitigate against the investment in training needed to support more efficient working practices in the future. Direct costs include software licenses, technical support to install the application. Indirect costs include the hardware to run the application, need for other associated applications eg anti-virus software, maintenance, mandatory upgrades that cost additional fees, technical support, training on new systems.

7. Target setting for IT projects. SMART targets, the importance of objectives and targets that can be rationally evaluated. Identifying resources needed for projects. Identifying critical success factors.

Examples: When producing a book and publishing it with its own ISBN using on-line publishing set specific targets at key points in the process. In the context

of an e-portfolio recognise that providing 3 screen sized pages for 3 subjects by 31st July is a SMART target. Know that “produce an e-portfolio to show employers” is an aim not a SMART target. “Critical to success of this project is access to the internet, a graphics editor that can produce .png files, an on-line content management system” these are critical success factors.

8. Specific characteristics of software to make choices of tools.

Examples: Using Inkscape as a design tool because it is free and is available on 3 major desktop platforms. Use MS Word for documents because it is the only word processor available on the school network. Use Google Docs spreadsheet because it can be used by several people in different schools at the same time working on the same sheet. Using PortableApps because they can be run from a USB key without having to install anything on the computer. Use a content management system because it is easy to generate and edit web pages making them available to a wide audience. Support for macro generators/programming to automate common processes. Analysis of software applications to identify factors and attributes that support productivity and efficiency, including short, medium and long term effects.

9. Purposes and outcomes in ICT projects

Examples: Describing how a science investigation was presented on the internet. Describe how they supported learning in their Ebacc subjects using IT. Describing how they published their own book with its own ISBN. Describing how they built a simple web site for a small business that did not have a presence on the internet. General understanding of productivity issues coming from practical projects they have completed.

10. Key aspects of local “Acceptable Use Policy” and their purpose. Legal issues related to usage.

Examples: Not sharing passwords, being polite to other people in social/collaborative networks, not attempting to hack into the system or use other people’s accounts. No bullying. Reasons can include privacy, accountability, technical security against malware and general good manners. How do constraints related to acceptable use affect productivity? Legal issues such as copyright and licenses.