

TLM Handbook

TLM Level 2 Certificate in Open Platforms and Digital Skills

QAN Code: 603/1204/X



“Digital wisdom is the ability to think and act using knowledge, experience, understanding and insight related to digital technologies”

Ian Lynch founder of TLM



This is version 1.3 of the TLM handbook for schools IT qualifications submitted for league table points from 2020 onwards and first published in March 2017. Further printed copies can be obtained from Lulu.com.

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The Regulated Qualifications Framework (RQF) was designed by the UK government's Qualifications and Curriculum Development Agency now replaced by Ofqual. The RQF is referenced to the European Qualifications Framework devised by the European Union.

The assessment model for the qualifications presented in this publication was designed by TLM in consultation with industry experts, employers and other stakeholders to make sure the qualification is rigorous and will fully prepare young people with the skills required for further study or future employment, irrespective of the specific industry.

The Learning Machine Ltd, Unit 4D Gagarin, Lichfield Road Industrial Estate, Tamworth, Staffordshire, B79 7GN (www.tlm.org.uk)

Please note: the handbook will be updated annually, but new support and guidance materials will be published on the website regularly. Please check there.

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1. Nature and Purpose of this Qualification.

Who this qualification is for?

This qualification is for students aged 14-16 as part of their Key Stage 4 programme of study. It is designed for students who are interested in the digital world and who wish to become critically informed users of digital technologies. It is also designed to give an understanding of open platforms which currently make up the bulk of the internet.

Who might be interested in taking this course?

The course is a broad ranging course covering all aspects of digital technology with a focus on the emerging “always on” aspects of services. Any students who use digital technology to create or share material, or who wish to pursue a career or further study in information and communication technology will benefit from the skills and understanding on offer.

What will you study

The programme of study develops an appreciation of the fact that data is all around us but that it is when data is processed that data is turned into information and with information comes power to make decisions.

The linked unit structure allows learners to develop a “joined up” view of the digital world and the way that it impacts upon their lives and the personal decisions they make everyday.

The “themed” sets of practical units build a digital portfolio that showcases a true “Can do” capability to tutors or agencies recruiting students to level 3 courses or to an advanced apprenticeship programme

The programme of study is divided into 4 sections

1. Understanding digital platforms and open standards
2. Managing digital platforms and applying digital skills
3. Protecting and future proofing digital platforms
4. Planning, executing and evaluating digital systems

Qualification Learning Outcomes

Having studied this qualification you will know:

1. Data is found in many forms
2. How data is captured without our knowledge
3. How digital applications transform data into information
4. Why and how personal and commercial data needs protection
5. The responsibilities that organisations who hold data have to protect that data
6. How digital applications are allowing users to collaborate to make the best use of available data
7. Why the online world has increased the challenges to data security
8. How to develop practical skills in taking data and using it to meet the needs of an audience
9. How to develop a project from research and planning to testing and evaluation

What subjects will compliment this course

This qualification is complementary to any other academic or technical subject because it is fundamentally about essential digital literacy and IT User skills. Any other subject can provide a context for their development. Meaningful links can be made with all Ebacc subjects. For example a publishing project could result in a book with its own ISBN published for free using the Lulu.com service. That could be using English as a complement to this course. A video editing project might include elements of geography allied to global politics. Maths and art might be combined by graphics transforms in a vector drawing program.

While this qualification provides a progression route to the level 3 IT user and practitioner qualifications, it also provides a general education background that would be suitable support for the great majority of higher level qualifications and occupations.

What will this qualification prepare you for in the future.

This qualification is part of the digital vocational pathway which can lead to a wide range of apprenticeship or higher studies in areas such as:

1. Digital marketing
2. Digital communication
3. Digital Data analysis
4. Digital security

It underpins all aspects of digital competence in any career or path of study. The world of work has seen a recent explosion in digital based careers and industries, such as FinTech or MedTech, where digital technology is used to understand and improve these industries. Very few jobs or academic disciplines would not benefit from a good grounding in the collecting, handling, interpreting and managing of data to produce information.

2. This qualification in summary.

Vocational sector: ICT, Digital

QAN Code: 603/1204/X

Age range: 14 - 16

How this qualification is assessed

One written (online) examination

Coursework assessed by centre and moderated by TLM

The learner's completed digital portfolio exemplifying and highlighting their use of a digital platform.

How this qualification is graded: This qualification will be graded Pass, Merit, Distinction, Distinction*.

Centre registration

This qualification requires centres to be registered with TLM and every learner to have a registration on the TLM Markbook site.

Mandatory units

Understanding digital platforms and open standards

Managing digital platforms and applying digital skills

Protecting and future proofing digital platforms

Planning, executing and evaluating digital systems

How TLM support this qualification

TLM has a comprehensive programme of staff support and development including:

1. An annual Moderation and Quality assurance review to verify centre compliance and maintenance of Centre Accreditation
2. Weekly teacher workshops at TLM offices in Tamworth to discuss moderation and coursework
3. Access to a wide range of quality teaching and learning materials plus insights into qualification delivery methods on the TLM Moodle this site also contains access to a range of revision and other materials provided by existing TLM centres who embrace the creative commons philosophy of open source
4. All statutory information and access to TLM markbooks and Learning sites via

How does TLM Quality Assure this qualification.

A Moderation and Quality Assurance review takes place each year to verify centre compliance and the maintenance of Centre accreditation.

TLM provides free weekly workshops for teachers. A representative from each centre must attend at least one workshop each year. Teachers are encouraged to bring samples of work to ensure that students are working at the correct level. This also allows the sharing of best practice between centres.

Internally marked coursework that contributes to the digital online ePortfolio is subject to external moderation by TLM Moderators as well as plagiarism checks. Students will receive 20 marks for good work and an additional 10 marks for outstanding work. These marks are added to their exam which is out of 70. The pass mark is 50/100 marks.

What is the TQT for this qualification: 125 GLH, 140TQT

The following table shows the guided learning hours expected per unit to meet the skills and understanding expectation of the qualification. In addition, it is expected there will be extra hours outside of curriculum time, for example, research tasks set as homework, meeting with local companies to further enhance the completed work.

This makes up the qualification's TQT or Total Qualification Time.

	Unit Title	GLH	Extra	TQT
TLM1	Understanding digital platforms and open standards	25	3	28
TLM2	Managing digital platforms applying of digital skills	25	3	28
TLM3	Protecting and future proofing digital platforms	25	3	28
TLM4	Planning, executing and evaluating digital systems	50	6	56

3. Introduction

The TLM Level 2 Certificate in Open Platforms and Digital Skills has been created in recognition of the fact that young people face a plethora of digital influences on their lives which they are often ill informed and therefore ill equipped to deal with.

The qualification and its associated programme of study examines these issues in a way that allows learners to fully understand the nature of information that they create or that is created for or about them. They are taught how to organise and manage this material so that they can work collaboratively to share and enhance the material. They will learn the nature of digital material and how this has been underpinned by open standards and systems. All of their skills and understanding will be reinforced by practical activities culminating in the creation of an electronic portfolio of their work. This electronic portfolio will provide a platform for them to continue at a higher level of study and allow them to add their best work and experiences as they progress through their life online.

4. Centre requirements

- Procedures for Centre approval
- The procedure for recognising the Centre is as follows:
 - The Principal Assessor, on behalf of the Centre, confirms compliance with the contractual conditions by signing an agreement on the certification web site and provides details of the Centre's internal quality assurance procedures to the satisfaction of the Awarding Organisation-
 - The continued compliance with the requirements of the Awarding Organisation is verified through a personal Centre engagement process where any deficiencies are noted on the Centre's account together with any actions needed to fully meet the requirements.
- TLM is not a member of JCQ, though we recognise the guidance they give to schools and colleges regarding the appropriate management of public examinations.
- Full details of JCQ policies for candidates and for centre exam secretaries can be found at

5. Delivering this qualification

The TQT for this qualification is 140 hrs

6. Unit Structure

This qualification consists of the following mandatory units

	Unit	GLH	Credits
TLM1	Understanding digital platforms and open standards	25	3
TLM2	Managing digital platforms applying digital skills	25	3
TLM3	Protecting and future proofing digital platforms	25	3
TLM4	Planning, executing and evaluating digital systems	50	5

7. Assessment methods

This qualification will be assessed by Coursework and Examination. The examination will represent a minimum of 40% of the overall final grade.

Students must achieve at least 20 out of the 30 available marks for their coursework before being eligible for the examination.

The total for the examination is 70 marks.

The pass mark for the qualification is 50 marks.

See table in Annexe A for an overview. A sample exam is in Annexe B and coursework marking matrix in Annexe D.

The Coursework

Coursework will consist of one major project demonstrating a holistic use of ICT. TLM has secured partner collaboration through Mahara that enables this project to become the learner's digital portfolio of best work showcasing their digital profile. Centres can choose to use their own systems such as google classroom if they perform the same functions

The project chosen should give students opportunities to satisfy all of the coursework objectives and will be part of the TLM moderation process.

All students will be required to display a level of competence in their coursework which reflects the appropriate level of skills and knowledge applied in practical ways. This will be assessed internally by the centres and moderated externally by TLM staff.

The additional 10 marks will not only reward students for exceptional work and best practice in the course, but incentivise them and their peers to work to their strengths in order to achieve the mark and give them the chance of a far higher terminal grade.

Students must achieve 20 coursework marks to demonstrate that they are ready to sit the examination. An additional 10 marks are available to reward students for providing coursework that is of an exemplary standard. The breakdown of potential marks is in Annexe D. Students who achieve over 25 marks are eligible to receive a certificate of commendation for excellent coursework.

Setting, administering and supervising coursework

The coursework component contributes up to 30 marks towards the final assessment.

Coursework is defined as work done on the course **but should not be directed by the teacher.**

Students may choose any line of enquiry for their project,

The project may reflect

- personal interests of the student
- another course at school or college
- local interests

It should be chosen to ensure that the skills, techniques, concepts, theories and knowledge from across the qualification's content are demonstrated effectively and in an integrated way.

The project should involve opportunities for designing the overall strategy, the identification of aims and hypotheses, the identification of appropriate data to be collected, the techniques which will be used and how it will be presented.

Learners will need to be provided with opportunities to:

- create and interrogate databases
- use the Internet critically as a source of data
- use computer apps and packages.
- Use hardware and software
- show an understanding of internet safety and security

It is important to show the reasons which underpin the choices which have been made.

The use of software packages and apps should be encouraged at all times since this is very much at the heart of what is functional in real-life situations.

Cross-curricular projects

TLM recognise that digital skills can be developed in other areas of the curriculum. It is possible that cross curricular work could form the basis of a project in which the student can demonstrate their digital skills.

It must be recognised that a project submitted for assessment both in this qualification and another area of study will need to satisfy the assessment objectives and GLH of both areas of study and be assessed according to the assessment criteria for each subject.

Group work / Working in a team

Group work in the coursework is allowed. Students may work together on different aspects which can then be shared. When group work is undertaken it is important that each student makes clear their contribution and also acknowledges the work of others.

Many employers and further education institutes are increasingly looking for students to demonstrate “soft skills”. The academic achievements of the learners, in terms of GCSE and Technical qualifications will be obvious, but the soft skills will be less so.

- Can they convince others in a team that their idea is the best one to adopt.
- Can they motivate their friends in a project to work as hard as they are so that the targets do not get missed.
- Can they be led by someone else in the team and accept their ideas, even if they disagree with them.
- Can they work independently on a sub-project while others work in different areas, but not lose site of the main goals.

TLM firmly believe that this qualification is an opportunity for learners to develop and showcase these skills in their profile. The challenge to teachers being the ability to recognise the contribution of each individual in order to make reliable assessments.

Standardisation

The Lead Assessor at the centre is responsible for ensuring that assessment is standardised across the centre.

Moderation

Centres may request moderation of coursework components at any stage of the course to meet the needs of the teacher. The Moderator will choose a sample at random from those students ready for moderation.

Centres are advised to submit samples as early as possible. The moderator will provide brief feedback notes to highlight problem areas or omissions which can be rectified before the final submission.

For final moderation the work of the learner with the highest and lowest mark will always be included in the sample along with a random spread of other learners.

Marking Criteria

Students will use a project management cycle for the development of their coursework folios that will be assessed for:

Research

Learners will undertake research around the brief that enables them to meet the assessment criteria, Strands assess:

- The techniques used in digital and online publication
- File formats used in digital documentation and applications
- Security implications of being a member of the digital world

Planning

Learners will develop a plan for their brief that enables them to meet the assessment criteria, Strands assess:

- The identification and choice of assets for their digital profile
- The quality of success criteria and SMART targets embedded in the plan
- The appropriate choice of software applications to assemble the profile
- The appropriate choice of file types to enhance the profile

Execution

Learners will produce a digital profile that enables them to meet the assessment criteria, Strands assess:

- The production of suitable assets for the profile
- The skills, knowledge and understanding displayed in producing the profile
- The security of the completed profile

Testing

Learners will devise and operate testing procedures that enables them to meet the assessment criteria, Strands assess:

- Tests that ensure an error free profile
- Collection of quality test data from alternative sources
- Evidence that testing leads to higher quality and a more secure profile

Evaluating

Learners will analyse and evaluate their digital profile in order to meet the assessment criteria, Strands assess:

- Evaluating against success criteria and SMART targets set in the plan
- The ability to identify “even better if” improvements
- Appreciation of the extent to which learners have worked in a productive and efficient manner and ways that this could be improved.

Students have to be assessed as meeting a Level 2 standard in order to progress and this will earn a basic 20 marks for the coursework component. Additional marks will be awarded for exemplary displays of understanding to a maximum of 30 marks as shown in Annexe D. Students will then need a minimum of 20 marks in the external examination to pass.

Digital Profile content

Learners digital profiles will be published online and will contain:

- A website that incorporates and highlights themselves and their digital skills.
- A Blog or Vlog of their digital journey
- Hyperlinks to their digital documentation and:
- Unique learner produced digital assets e.g.:
 - Audio Video
 - Animation Digital imagery
 - Digital Apps Digital Data solutions

Produced as a result of their choice of digital theme.

Exemplification of this portfolio is provided in Annexe E.

Presentation

The ability to present ideas in the digital world is not always as obvious as it seems.

Learners will understand and apply skills to make sure that they convey their ideas to others in a way that is clear and concise not confused or over complicated.

They will demonstrate the presentation skills at a semi-professional level, whether it is face-to-face, via some type of online meeting system or via digital platforms, adjusting the style and format for each of these environments as needed.

The Examination

This qualification has a single exam paper with a maximum of 70 marks which can be online or paper based.

- Students may retake this examination once - the better of the two marks gained to be counted
- Style of exam - The exam will be made up of
 - 10 multiple choice questions worth 1 mark each
 - A number of short to medium length questions worth 1 - 4 marks
 - At least 3 longer unstructured questions worth 6-10 marks

Assessment Objectives

TLM examinations use a consistent set of Assessment Objectives across their awards. The description of each AO and overall qualification weighting is in the table below.

Assessment Objective	Overall Weighting	Coursework Weighting	Examination Weighting*
AO1 - Recall, select and communicate their knowledge and understanding of ICT.	15-20	5	10-15
AO2 -Apply knowledge, understanding and skills to produce ICT based solutions.	45-50	15	30-35
AO3 -Analyse, evaluate, make reasoned judgements and present conclusions.	30-35	10	20-25
Total Marks	100	30	70
* The examination weighting will vary for each AO, but will always equal 70 marks. Therefore, if AO1 has 10 marks, then AO2 and AO3 will have 60 between them. If AO1 has 13 marks, the other AOs will adjust accordingly. This will also therefore affect the overall weighting of coursework (which is fixed) and examination marks in relation to the three AOs as reflected in the Overall Weighting column.			

Methods of delivery

TLM does not prescribe any methods of delivery however the following should be borne in mind:

- The practical projects in preparing for life on line are designed not only to deliver Assessment Objective AO1-AO3, but to provide a practical context to the concepts covered in other subjects.
- A variety of ways for delivering this qualification will be expanded and exemplified in the course Moodle with student examples on Mahara <https://eportfolio.tlm.org.uk>.

Marking

Marks gained by learners on the written exam will be notified to centres within 20 days of the learners sitting the paper.

Notification periods for sitting the exam

- A minimum of two and maximum of six weeks notice is required for the provision of online examinations
- Exam requests must be made through the TLM Markbook and will only become accessible once the moderation team has approved the moderation of coursework to the required level.

8. Examination Content

Unit	Title	Marks
TLM1	Understanding digital platforms and open standards	15
TLM2	Managing digital platforms and applying digital skills	15
TLM3	Protecting and future proofing digital platforms	15
TLM4	Planning, executing and evaluating digital systems	25

Sample assessment materials are provided in Appendix B and C

Sample examinations and mark schemes, as well as coursework exemplars will be available on the website and will expand over time.

Grade Structure

The qualification will follow grade levels

Grade Pass = 50-65 Marks

Grade Distinction = 75-84 Marks

Grade Descriptions

A Distinction grade candidate will exhibit most of the following characteristics.

- demonstrate relevant and comprehensive knowledge and understanding of fundamental concepts and principles of digital systems and open standards while applying comprehensive knowledge and understanding of these principles in a range of familiar and unfamiliar situations
- effectively apply fundamental concepts, principles and technical skills, using sustained analytical, logical and evaluative thinking, to a wide range of complex digital problems and online issues
- apply knowledge and critical understanding to evaluate and protect digital systems and platforms against current and future threats
- effectively employ sophisticated technical language and deploy a wide range of digital application solutions and data modelling methods to interrogate and present data to inform and persuade
- critically analyse and evaluate available information and evidence to make reasoned, substantiated judgements and conclusions, and, where appropriate, suggest viable recommendations for future activity

- demonstrate comprehensive skills, knowledge and understanding through practical application and project management of a digital portfolio and an online personal portfolio

A Pass grade candidate will exhibit most of the following characteristics

- demonstrate appropriate knowledge and understanding of fundamental concepts and principles of digital systems and open standards while applying a number of these principles in a range of familiar and some unfamiliar situations
- apply fundamental concepts, principles and technical skills, using analytical, logical and evaluative thinking, to a range of digital problems and online issues
- apply knowledge and understanding to evaluate and protect digital systems and platforms against current and future threats employ clear technical language and deploy a range of digital application solutions and data modelling methods to understand and present data to inform and persuade
- analyse and evaluate available information and evidence to make reasoned judgements and conclusions, and, where appropriate, suggest sensible recommendations for future activity
- demonstrate a range of skills, knowledge and understanding through practical application and project management of a digital portfolio and an online personal portfolio

Distinction* and Merit

Performance at Distinction* and Merit grades will be extrapolated from the grade descriptions for Pass and Distinction

The Extended Project - Preparing for a life online

This is work completed under supervision and submitted before the learner is entered for the examination.

Candidates must achieve at least 20 marks on the coursework element as an entry requirement for the examination

Synoptic Assessment

Threads for Synoptic assessment

Assessment Objectives

- AO1: Recall, select and communicate their knowledge and understanding of ICT
- AO2: Apply knowledge, understanding and skills to produce ICT based solutions.
- AO3: Analyse, and make reasoned judgements and present conclusions.

The moderation and assessment of coursework will run through the entire body of learner's work and the final coursework grade will be based on this assessment and an overall assessment of their finished extended project.

9. Moderation and Standardisation

Moderation on demand

TLM offers a unique service where coursework is moderated as requested. This gives teachers rapid feedback on the suitability of their learner's work so that they can adjust it to the correct levels or allow learners to carry on with other tasks.

TLM moderators will provide feedback

Feedback is given and suggestions made so that teachers can feel confident that the work their learners are producing is to the correct levels and standards. This frees them up to do more focussed teaching and not wait until the end of the course to find out problems when it is too late to fix.

Requirements to use the Markbook

All centre staff delivering the TLM qualifications are required to be fully trained and validated on the use of the online Markbook. The training will take place at a workshop or in the centres as an integral part of centre induction.

Moderation workshops

TLM has an ongoing commitment to the CPD of centres delivering its qualifications. Course delivery and moderation workshops are offered to centres on a regular basis at TLM Head Office. These workshops are free of charge to assessors.

10. How this qualification is graded

The qualification overall will be graded by up to 30 marks for coursework and up to 70 marks by external examination using the P/M/D/D* grading system. However, since this is a Level 2 qualification, the student's coursework will act as a guide as to their final level.

Students not reaching the required level of coursework will be advised to take a Level 1 course.

This will ensure that credit is achieved by students across the entire range of internal and externally assessed work. Students achieving the highest grades will have high marks in both areas. The table in Appendix A shows the way grades are determined by marks achieved and their relative weight.

Students who are strong on the coursework element will be able to access the higher marks on the examination to achieve high marks across all aspects of the qualification and all students will be rewarded for exemplary coursework submissions.

[The published grade boundaries may be subject to change]

Grade	Pass	Merit	Distinction	Distinction*
Coursework and Exam Mark Range	50-65	66-74	75-84	85

11. Qualification Administration

Submission of coursework and deadlines

All coursework has to have been moderated and approved as complete for students to be entered for the examination. Centres wanting their results included in the statistics for the current academic year must hold the examination on or before the 30th June. The exam cannot be made available to any candidate whose coursework has not achieved a pass grade following TLM moderation. Centres are advised that completed coursework must be submitted for moderation by May 31st. Any work which is incomplete after this date will mean that students cannot sit the examination.

Submission of exam requests

Requests for the provision of online exams must be received by TLM two weeks prior to the exam being sat, and are dependent on successful completion of coursework as per the coursework moderation section 7.

Exam policies and procedures

As previously noted, the conduct of all assessment components of this qualification are similar to those laid down in the JCQ procedures . We expect centres to observe best practice when invigilating examinations and we conduct unannounced visits to satisfy ourselves that best practice is being adhered to.

In simple terms:

- Examination invigilators are required for the supervision of online exams
- Class tutors should not be present whilst students are taking the exam but the principal assessor may attend the start of the exam in case of any technical issues
- All coursework submitted must be the work of each individual student and be free from any form of plagiarism

- **All exams, are live and therefore can not be seen by invigilators or exams officers before the exam date and can not be shared after the exam has finished until TLM state otherwise.**

Appeals procedures

TLM has comprehensive policies and procedures for dealing with Appeals. These are documented with links on the web site at

Malpractice definitions and sanctions

TLM has comprehensive policies and procedures for dealing with malpractice. These are documented with links on the web site at

Assessors should be familiar with these policies and make them clear to candidates. Assessors should inform their account manager if they suspect any instance of malpractice that could have a material effect on the outcome of any assessments, either for themselves or colleagues. This is part of the upholding of standards that is part of the contract with TLM.

12. Detailed Guidance of Coursework and Assessment Examples

Unit 1: Understanding digital platforms and open standards, 3 credits, 25 GLH

1. Understand the structure and properties of digital material	2. Plan, design and use digital information in appropriate ways	3. Analyse and evaluate the control of digital information
1.1 I can understand the nature of digital material	2.1 I can understand how to use digital information for different purposes	3.1 I can evaluate the need for control of the use of digital information
1.2 I can describe different types of digital material	2.2 I can describe how digital information can affect outcomes	3.2 I can describe the misuse of digital information
1.3 I can demonstrate how different types of digital material are captured	2.3 I can demonstrate digital information in a number of different applications	3.3 I can discuss the laws that apply to digital information
1.4 I can demonstrate how digital material becomes information	2.4 I can describe the ways that digital information is designed to be used in different situations	3.4 I can discuss and describe the open standards that apply to digital information
1.5 I can describe why digital material is used for specific purposes	2.5 I can demonstrate the relationship between digital material I create and how it is used	3.5 I can describe and evaluate my own digital material in terms of laws and standards

Learning Outcomes for this Unit:

Strand 1: Learners will understand that digital systems are developed to collect and process large quantities of digital material which are later processed to provide information to inform, persuade or influence. They will understand what methods can be used to make information work for different purposes, such as to persuade or even trick. They will describe some of the methods, with clear examples, to illustrate their deep understanding.

Strand 2: Learners will be able to describe a range of digital materials used across different sectors and organisations, both public and private. They will use these examples to describe what affect they may have on given or expected outcomes. Learners will describe that data and information is increasingly being used for criminal purposes and what these are.

Strand 3: Learners will be able to demonstrate different ways and means, relating to their own interest, on the capture of raw data. They will demonstrate how this is then used in applications and in what style and format as required. This data will in many cases be subject to laws and regulations so they can discuss some of the laws that come into play.

Strand 4: Learners will be able to demonstrate with some clarity that they understand at what point data becomes a piece of information: what the context is, the objectives and outcomes that make it information. They will further describe that this information, once designated, will then be used in situations for different purposes. Many aspects of the modern world, viz a viz the Internet, can not operate without open standards, and learners should discuss the details of this reality and describe some of the effects this has, both positive and negative.

Strand 5: Learners will begin to speculate why information is used in a particular way and perhaps what features of the information determine this, for example the influence of money on information compared to information that is more social. This will lead them to discuss how this might impact their own digital material as they generate more and more and reflect on how laws might try to protect them and to what extent they work.

Evidence for learning in this unit: Written answers in the terminal exam, material in their ePortfolio

Detailed Guidance for the delivery of this Unit:

1. Understand the structure and properties of digital material

1.1 I can understand the nature of digital material

Learners should be able to demonstrate they understand what digital material is at a basic level

Additional information and guidance

Learners need to show a clear understanding that data is the raw form of information before any meaning or context has been applied. As they use their smartphone they will be sending out data about where they are.

If their friends also have smart phones, there will be data about who they are with and when. If they are searching for anything online or purchasing, there will be data about these habits. All of this will be raw text and numbers and on it's own, pretty meaningless.

However, if the data can be correlated to show that they were at a sporting event and they purchased certain foods while there, this is information that can be used to send them targeted advertisements on upcoming sporting events at this venue or food promotions from the food chain they visited.

If they use personal information about themselves while online, this can then also add more focussed targeting and the companies will know that they are of a certain age range and therefore can be expected to like similar things to other people of the same age range or gender being tracked.

Learners need to show some examples like this to demonstrate they understand the nature of data in different contexts. They can be introduced to data samples from the assessor in order to help them frame their understanding, but they should then find their own suitable examples.

1.2 I can describe different types of digital material

Learners should be able to demonstrate they understand and can give examples of different types of digital material

Additional information and guidance

Learners need to show that they have investigated and understood a range of digital material in as many contexts as possible. There is no set list here, but examples should include some or all of the following:

- Digitally stored documents
- Photographs
- Podcasts
- Blogs, Vlogs, Wikis
- Social media sites
- Email
- SMS (Short Message Service) and MMS (Multimedia Messaging Service) such as Whatsapp

1.3 I can demonstrate how different types of digital material are captured

Learners will know that most digital information is captured remotely or automatically by digital systems.

Additional information and guidance

Learners can investigate and report on some of the material that is captured as they go about their daily lives. This will include some of the following examples:

- ANPR and Speed cameras on road networks,
- EPOS systems via barcodes or QR Codes in retail
- Mobile phone data as handsets are handed from mast to mast
- Satellite GPS data for use in SATNAV and other applications
- Sensors and Dataloggers in Aircraft nose-cones during international flights collecting weather data
- Satellite data in the form of IR UV and Visible images, for meteorology, mapping and surveillance.

Learners should be able to describe the advantages and disadvantages of automated versus manual data capture.

Learners should be able to discuss some ethical aspects of remote data capture presenting a cogent argument

1.4 I can demonstrate how digital material becomes information

Learners should be able to demonstrate they understand that until data is processed and given a context it remains relatively useless

Additional information and guidance

Learners will be able to describe how a range of software apps take data, give it context and display it in a format that transforms it into information. These will include:

- Document processing applications such as word processors, desk top publishers and numerical systems
- Presentation applications which enable data in multiple media formats to be combined
- Database applications (either flat or relational tables) that perform by performing queries and calculations allow data to be modelled in different ways
- Websites
- Video and or imaging applications that take raw images or footage and edit them to add context or detail.

1.5 I can describe how digital material is used for specific purposes

Learners should be able to demonstrate their capability to produce digital materials that display data in a context and manner that meets the needs of a target audience.

Learners may do this using three or more of the Applications named in 1.4

2. Plan, design and use digital information in appropriate ways

2.1 I can understand how to use digital information for different purposes

Learners should be able to demonstrate they understand that digital material can be used to:

- Communicate ideas to wider audiences
- Model and predict outcomes
- Provide proof in investigations

Additional information and guidance

Learners should be able to gather some examples of different types of material and write some reflective comments on why it was made and what it is supposed to achieve. Some material will be to persuade users to purchase something. Some government information might be to warn people about problems, such as a recent campaign to warn car drivers not to use their mobile phones whilst driving.

The more examples they can gather and comment on, the more in depth their understanding will be.

2.2 I can describe how digital information can affect outcomes and use this information to plan

Learners should be able to demonstrate they can describe the fact that the ways digital information is stored will affect the way that it can be used.

Additional information and guidance

For this a working knowledge of digital file types will be required. File types covered by this section could be presented as a table as below:

Type	Proprietary	Open	other	Comment
Word processing	.docx	.odt	.rtf, .epub	Used primarily for documents
Numerical data	.xlsx	.ods	.csv	Used for numbers, but can have text
Image files	.bmp	.svg	.png	Files have different properties based on use and purpose

There are extensive file types and the above is only an example. Other files to explore could include: .pdf, .txt, .pptx, .htm, .html, .jpg, .gif, .wav, .mpv, .mp4, .mov, .wmf, .mp3, .psd etc.

Learners will also be able to describe the advantages and disadvantages in saving information in proprietary versus open standard formats.

2.3 I can demonstrate digital information in a number of different applications

Learners will in their coursework components be challenged to work with information presented in a range of file formats and for a range of audiences and purposes.

Additional information and guidance

The applications learners will use will be determined by the coursework areas the centre chooses to cover but it is expected that they will cover the range detailed in section 1.4.

More able students will describe that certain proprietary file formats contain more than is required for the formatting of that file (metadata) and that this can affect the way that this data can be moved between applications

2.4 I can describe the way digital information is designed to be used in different situations

Learners should be able to demonstrate they understand that digital formats that they create or choose to use will have an effect on the final product.

Additional information and guidance

Examples could be:

- Choosing to create artwork for a logo as an .svg as opposed to a .png
- Saving photographs that have been manipulated as a .psd as opposed to a .jpg
- Converting a spreadsheet of names and logins to .csv so that it can be imported into a web based database for logins to a Learning Management System.

2.5 I can demonstrate the relationship between digital information I create and how it is used

Learners should be able to demonstrate in their coursework components work with information presented in a range of file formats and for a range of audiences and purposes.

Additional information and guidance

The applications learners will use will be determined by the coursework areas the centre chooses to cover but it is expected that they will cover the range detailed in section 1.4 and a good cross section of the file types in section 2.2

3. Analyse and evaluate the control of digital material

3.1 I can evaluate the need for control of the use of digital information

Learners should be able to demonstrate that they understand strategies to prevent misuse of their personal digital information.

Additional information and guidance

The strategies should include:

- Having reliable – regularly updated - antivirus systems on their devices
- Ensuring their PC systems are behind a firewall
- The use of strong passwords and non-reliance on a single password
- Setting online profile privacy levels
- Non-sharing of personal details and passwords
- Being aware of CEOP and other reporting mechanisms in the case of suspected abuse

3.2 I can describe the misuse of digital information

Learners should be able to communicate understanding of the risks of digital information being used for purposes other than it is intended.

Additional information and guidance

Students should be aware of any misuse and be able to describe accurately risks including:

- Phishing and pharming
- Trolling and Cyberbullying
- Hacking - including interception of mobile phone communications
- Misuse of social media for grooming and or sexting as well as frapping Facebook profiles.

3.3 I can discuss the laws that apply to digital information

Learners should be able to discuss the impact of a range of constraints upon the use of digital information.

Additional information and guidance

These constraints may be local agreements such as the school / college Acceptable Use Policy (AUP), national or international legislation.

Learners will be expected to be able to discuss:

- Acceptable use policies
- Copyright constraints
- Investigatory Powers Bill
- Computer Misuse Act
- Data Protection
- Communication Act

3.4 I can discuss and describe the open standards that apply to digital information

Learners should be able to demonstrate they understand what open standards are in terms of file formats.

Additional information and guidance

Learners should be able to Identify key image file formats:

- svg, jpg and png as open standards associated with web browsers.
- [CSS](#), [HTML](#), [XML](#), [SQL](#), [RSS](#) and [HTTP](#) as open standards used in the production of websites

Learners should be able to discuss the difference between formats which are issued under the creative commons licence framework and those which are unlicensed.

Learners should also be able to discuss reasons behind the continual evolution of open licences such as the development of HTML5 so that multimedia information can be embedded in websites without reliance on proprietary file formats such as “flash player” which is licensed by Adobe and has been shown to increase website vulnerabilities.

3.5 I can describe and evaluate my own digital material in terms of laws and standards

Learners should be able to show how they have applied or apply knowledge and theory in sections 3.1, 3.2 and 3.3 to their own personal circumstance having carefully evaluated the risks created by their own online presence.

Unit 2: Managing digital platforms applying digital skills, 3 credits, 25 GLH

1. Understand the way digital information is managed and modified	2. Plan, create and manage different digital material as required	3. Assess the strengths and weaknesses of digital material management and systems
1.1 I can appreciate the need for the management of digital material	2.1 I can create and modify different forms of storage for my digital material	3.1 I can determine the best type of system management to use for a given project
1.2 I can outline the ways that digital material is managed and stored	2.2 I can describe the file formats and standards required for my digital information needs	3.2 I can explain best practices in information management for a given project and set of needs
1.3 I can explain the issues related to the volume of data now being collected and stored	2.3 I can import and export different digital materials and merge the results as required	3.3 I can demonstrate why specific file types are most appropriate for collaborative work
1.4 I can discuss the need for open standards when sharing information	2.4 I can collaborate with colleagues on digital information projects	3.4 I can analyse and recommend the best tools for collaborative project work
1.5 I can describe the difference between local and remote storage solutions with working examples	2.5 I can organise shared digital information to make collaborative work more efficient	3.5 I can demonstrate the strengths and weaknesses of collaborative tools
1.6 I can recommend storage solutions based on specific requirements	2.6 I can apply the permissions and access rights required for successful collaborative work	3.6 I can write a report outlining my findings and present these to an audience for feedback

Learning Outcomes for this Unit:

Strand 1: Learners will understand that the increasing levels of data they produce need careful management. They will research and understand the need for good housekeeping when managing this data and that it will be in various forms and locations. This knowledge will allow them to make informed judgements about the systems and processes they use for this management.

Strand 2: Learners will investigate the ways that data is converted as it moves from system to system and the reasons behind some of these processes. They will use practical tests to see first hand how this conversion works and some of the strengths and weaknesses that exist and how to get around these. These skills and knowledge will help them to more carefully plan projects involving multiple data types.

Strand 3: Learners will appreciate the role open standards plays in the information age and how this has enabled the Internet among other technologies. This openness is governed by rules and regulations with their own character and learners will show an understanding of this in their work.

Strand 4: Learners will explore the different types of storage available, their vulnerabilities and the increasing amount of information stored remotely (cloud) compared to locally. They will examine the reasons for both choices and be able to recommend a solution to a potential customer based on their knowledge and understanding.

Strand 5: Learners will research the different ways and forms that collaborative work can be carried out as a result of the information age. They will explore and critique different types of collaborative system and practice their skills in order to make informed choices about the best systems for certain tasks.

Strand 6: Learners will be able to demonstrate the depth of their skills and knowledge by reflecting on their findings and making evaluative statements about strengths and weaknesses in relation to clear objectives. They will be able to demonstrate this by presenting their reflections to an audience for feedback and respond to the feedback as required.

Detailed Guidance for the delivery of this Unit:

1. Understand the way digital information is managed and modified

“80% of all data currently in use was created in the past 2 years” -
Professor L Floridi - Oxford University

Learners need a good understanding of the digital world around them and some semblance of how they can control what is being collected about them.

1.1 I can appreciate the need for the management of digital material

Learners will appreciate the volume and variety of data now captured about them or by them.

Additional information and guidance

Learners will begin to explore the range and nature of data that is currently being produced. Some of this will be generated by them, but some will be generated about them and much of it without their knowledge or consent. Some of the different mechanisms are listed here for reference.

- location data when using smartphone
- school reports about them, school material for coursework
- house television habits or the “hacking of smart TVs”
- house Internet habits
- CCTV images when travelling
- Passport details when travelling abroad
- Travel information on public transport
- Social media images, chats, videos

Learners should be able to define some basic management needs based on their understanding gathered as part of their preliminary research. Learners should be able to begin to discuss some digital material related to them and know some of the facts and figures related to this level of data collection such as number of CCTV cameras in use or the nature of data collected at airports etc.

1.2 I can outline the ways that digital material is managed and stored

Learners will begin to demonstrate methods and means to manage their data or display understanding of how data is managed about them.

Additional information and guidance

Learners should be able to begin to understand and therefore demonstrate an understanding of the different ways that data is managed, either privately, publicly, locally or in the cloud etc. Some of the following areas can be explored for reference and guidance.

- public and private servers
- shared or protected folders
- compressed or uncompressed
- laws about location (i.e. UK based etc)
- social media account preferences
- evaluate the rise of “Big data”
- need for HPC (High Performance Computing)

Some of these areas will form the basis for more in depth analysis and evaluation later, such as location of data. Do they know where their data is stored and who can access it? How can they know and find out? Is it that important etc.

You need to read carefully before you click things that may affect you later, especially when you are not protected by local laws.

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1.3 I can explain the issues related to the amount of data now being collected and stored

Learners can begin to analyse the issues related to this volume and the impact it is having on the world

Additional information and guidance

Learners should begin to investigate some of the issues around this phenomenal increase in material and the storage implications. Since this has a potentially huge impact on their future, what are the main concerns. Some are listed below for investigation.

- data centres consume more power than most large cities
- data once created never goes, so take care what you post
- Iceland emerging as “ethical” data centre due to natural cold for storage
- leaks and their impact - for good or bad

In 2013, IT consumed 10% of all the world’s electricity. It is quite difficult to find out how much energy Google uses in its data centres. The last published data was in 2011 when they were consuming 260,000,000 watts, equivalent to the power for 200,000 homes. This equated to 2 metric tonnes of carbon.

There is good scope here for some cross curricular work with science and mathematics to look at these numbers in context.

1.4 I can describe the need for open standards when sharing information

Learners will explain what open standards are and how they help with information sharing

Additional information and guidance

Learners may find it helpful to contrast open versus closed standards when describing some of these elements. The list below is a few of the areas of investigation.

- list some standards used: http, smtp, ftp, pbx etc and their purpose
- explore WC3 (World Wide Web Consortium) and its impact
- explore interoperability issues and reasoning

Learners will cite examples of open versus closed standards with examples to illustrate their views.

1.5 I can describe the difference between local and remote storage solutions with working examples

Learners will compare and contrast the features of local and remote storage

Learners will understand the different methods of securing data on these devices including the principles of encryption and decryption

Additional information and guidance

It is clear that in the last couple of years and going forward, there is a big move from local storage solutions to cloud or online ones. Learners will discuss the various issues involved in deciding on the best options.

Some potential areas for investigation and discussion will be:

- types of storage: HDD, SSD, tape drives etc
- costs of different solutions
- local server vs cloud
- access speed
- transmission rates
- RAID (Redundant Array of Inexpensive Drives)

Learners will carry out some practical tasks on local versus remote servers such as file transfer speeds and moving files between folders etc. to get a practical feel for advantages. Some cloud based services can be accessed on a trial basis for testing purposes.

1.6 I can recommend storage solutions based on specific requirements

Learners can use their knowledge to recommend the correct storage for a tasks or project

Additional information and guidance

The above skills and knowledge, coupled with some hands on practical experience, should be a good grounding for learners to be able to make some recommendations. For example, a local charity may wish to move their services from their offices to the cloud. What would the learner need to do in order to advise them. Some areas to explore and tools to use could be:

- find out the requirements, survey, interview, on-site visit etc.

- future proofing - “I use 500GB now, but the company is growing. How much storage would you recommend for the next 5 years”
- detail the TCO (Total Cost of Ownership)
- highlight the strengths and weaknesses of different storage types (HDD, SSD).
- cloud or local?

In the last of these bullet points, learners should be prepared to be able to say that staying local is the best approach, as long as they can back it up with evidence.

2. Plan, create and manage different digital material as required

It is getting easier and easier to create and share digital material, from images on social media to videos or blogs about yourself. The speed of this creation process makes it imperative to not send out the wrong message. The extension of cloud based services also makes it easier to work with others across the world, what issues does this bring and what advantages.

2.1 I can create different forms of digital information for a specified purpose

Learners should show competence in creating different media depending on the specific needs and target audience.

Additional information and guidance

Learners work should demonstrate an understanding of impact, layout and form to best display the information or message. Some of the materials and forms they should investigate will include:

- documents
- web pages
- podcasts
- videos
- presentations
- spreadsheets
- databases

Many of these materials they will be creating for other subject areas, but they can use their IT skills and understanding to fully evaluate the way they have been made, the tools and formats that have been used, and how they meet their stated purpose. They can also evaluate materials from other areas such as local companies.

Much of this material will go towards building their electronic portfolio in their extended project work.

2.2 I can describe the file formats and standards required for my digital information needs

Learners will be able to differentiate between open standard files and ones that are more proprietary.

Additional information and guidance

Learners will appreciate that open standards offer more choice, though may come with some limitations.

Learners will have done some basic investigations of files in Unit 1 (2.3 and 3,2), and here they can describe the choices more in terms of the standards that they are working towards and the needs they are trying to fulfil. This could be related back to their extended project.

2.3 I can import and export different digital materials and merge the results as required

Learners will be able to demonstrate practical skills in the import and export of files from a range of applications.

Additional information and guidance

Learners will be proficient in choosing the right format to import/export depending on some of the tasks further on during the process. This overall understanding of the entire lifecycle of the material they are using and creating will help them make more informed choices.

Learners working on digital files should appreciate that an svg file will allow them more modification of an image as it progresses towards an end point than some less flexible formats. They should also demonstrate an appreciation that collaborative tools work better with open standards and starting with a heavily modified proprietary format will force others to find that same software, rather than use more flexible choices.

2.4 I can collaborate with colleagues on digital information projects

Learners will demonstrate the ability to work with others

Additional information and guidance

It seems obvious, but working as part of a team on projects does not always come naturally to everyone and there are certain soft skills that learners should be encouraged to employ in their collaborative work.

Some of these are:

- politeness
- appreciation
- critical feedback, not criticism
- understanding of differences - cultural, linguistic, personal etc

Learners will be able to apply these skills to their collaborative project work and take them forward into their further studies or work based learning.

2.5 I can organise shared digital information to make collaborative work more efficient

Learners will show competence in organising their collaborative systems for maximum efficiency and productivity.

Additional information and guidance

Learners will structure their systems in a way that helps their best practice. They should show competence in creating clear names and structures so that it is easier for them to find and therefore share their work. On large and complex documents they should be able to work to add clear comments to others working on the system so that the overall work is carried out efficiently and effectively.

2.6 I can apply the permissions and access rights required for successful collaborative work

Learners will understand the different levels of sharing involved in collaborative systems and services.

Additional information and guidance

Learners will be able to show that they can effectively apply the right sharing permissions to their work. In most systems there will be permissions that allow different contributions, such as contributing rights or full editing rights.

Systems have different ways of sharing material for collaborative work and learners can show examples of some of the systems they use in different subject areas.

3. Assess the strengths and weaknesses of digital material management and systems

3.1 I can determine the best type of digital information to use for a project

Learners will be able to plan and determine the best tools and assets when presented with a task so that their work is more efficient.

Additional information and guidance

Learners will demonstrate a skill and practical knowledge of a wide enough range of tools and applications to make an informed choice.

Using their knowledge gained from other practical tasks, learners will be able to quickly decide which type of digital resource would be appropriate to complete a task set, such as the correct type of graphic for different applications or the most portable file format for a video or audio project.

3.2 I can explain the best file format for a given project and need

Learners will be able to justify their choice of digital asset and link this to the needs of the project relating to elements such as data rates and flexibility.

Additional information and guidance

Learners should be able to detail some attributes of the file formats they choose for different projects in terms of their best fit, or in some cases that they have had to make a compromise in one area, perhaps for quality, in order to meet another.

3.3 I can describe why file types are most appropriate in set circumstances

Learners will be able to give some detailed responses to their decisions in order to fully justify why they have taken an action and what some of the strengths and weaknesses of that decision will entail.

Additional information and guidance

Some of the work students will undertake in this qualification will not always be straightforward. Learners may be very comfortable using a certain application for creating graphics, but find that it does not output the type of file requested by a client.

The more exposure they have to different file formats and the more details they can understand about their attributes and application, the easier it will be to adapt quickly to changing demands from clients.

3.4 I can analyse and recommend the best tools for collaborative project work

Learners will bring together all of their skills and understanding to begin demonstrating the ability to work as part of a team on a project.

Additional information and guidance

Learners will examine a number of different collaborative applications and rate them in terms of their features such as:

- tools available
- ease of use
- ability to extend via add ons
- customisation of look and feel
- automation potential
- interoperability

Most learners will be familiar with the collaborative Office tools offered by Google and others, but there are also many other collaborative tools depending on the purpose such as video based, note taking etc. The following link has a summary of some of the more popular ones.

3.5 I can demonstrate the strengths and weaknesses of collaborative tools

Learners will be able to compile a list of the strengths and weaknesses of systems they have investigated.

Additional information and guidance

Learners will be able to present their findings in a clear and concise way such that another person could use the details to make an informed choice. They can use the above link and focus on an area of their interest, such as online meeting tools etc.

Unit 3: Protecting and future proofing digital platforms, 3 credits, 25 GLH

1 Understand the different risks associated with online digital material	2. Plan, create and deploy systems and processes to minimise threats	3. Analyse and apply tools and systems to minimise threats to digital material
1.1 I understand that digital material is a valuable commodity	2.1 I can describe the processes I use to protect my digital material	3.1 I can analyse the latest hardware technologies to prevent attacks on digital material
1.2 I appreciate that digital material can be stolen if unprotected or badly managed	2.2 I can describe the systems I use to protect my digital material	3.2 I can analyse the latest software technologies to prevent attacks on digital material
1.3 I can describe the ways that digital material is threatened	2.3 I can describe the nature of different threats	3.3 I can evaluate the current threats to my personal digital material and explain which offer the greatest risks
1.4 I can detail the ways that digital material can be protected	2.4 I can create a working system that protects my digital material	3.4 I can evaluate the best methods of protection and recommend protocols to minimise the threat of attacks
1.5 I can explain the different types of threat currently in action	2.5 I can explore alternative methods to prevent future attacks on my digital material	3.5 I can recommend systems to enhance security
1.6 I can explain the threats to my personal safety from online activity	2.6 I can explain how different types of online activity bring with them a variety of risks to personal data and security	3.6 I can provide cogent advice to other online users about being safe online

Learning Outcomes for this Unit:

Strand 1: Learners will understand that data has monetary value. Data that is given for one purpose is often then sold to other organisations who process it for a different purpose.

Learners will know that “personal” data which is held digitally has to be kept securely as a consequence of Data Protection legislation. Learners will know and be able to describe the hardware methods used in digital systems to prevent unauthorised access to personal or commercially valuable data

Strand 2: Learners will understand that “data protection begins with the individual that data posted freely on public sites is data that has been given away. Learners will understand that there are simple things that they can do to prevent data loss such as privacy settings, use of strong passwords that random key generators will not generate.

Learners will understand and be able to describe the principles of encryption to ensure that data can be transferred safely without being “hacked”

Strand 3: Learners will know the different threats to data terms of corruption and theft. Learners will demonstrate a realistic understanding of the chances of a cyber threat to themselves and their personal data.

Strand 4: Learners will know that efficient protection of data requires a mixture of hardware and software including:

Anti-virus software, Firewalls, Encryption - decryption, Use of strong and regularly changed passwords

Strand 5: Learners will be able to understand the ever changing nature of cybercrime

Strand 6: Learners will be able to communicate their knowledge of on line risks in terms of dealing with spurious e-mails inc. phishing mail. Setting and maintaining of personal profiles at a secure level of privacy, non-sharing of personal information in other ways such as sexting, how to deal with cyberbullying and also to recognise grooming and to take appropriate steps to deal with both.

Evidence for learning in this unit: Written answers in the terminal exam, material in their ePortfolio

Detailed Guidance for the delivery of this Unit:

1. Understand the different risks associated with online digital material

1.1 I understand that digital material is a valuable commodity

Learners will be able to demonstrate in their own words what makes something digital become valuable and sought after

Additional information and guidance

Learners will begin to appreciate the real value of digital material and the need to look after it.

Learners can investigate material presented to them about the value of data theft and fraud so that they can begin to appreciate the scale of the problem.

The government's current estimates for 2017 are that cybercrime costs the UK £27 billion per year.

Learners can discuss what the value of information about them might be as a starting point to their other investigations in this unit.

1.2 I appreciate that digital material can be stolen if unprotected or badly managed

Learners will provide evidence from their own research of examples of data crime.

Additional information and guidance

Learners will show a range of different crime statistics to back up their understanding. They could look at the local news and newspapers to find out crime data for their area. There are also websites which list crimes, though they may not break these down into digital crimes. They might be lucky enough to have a local police officer who is specialised in digital crime who can come and talk to students.

1.3 I can describe the ways that digital material is threatened

Learners will comment on the material they have gathered and offer their own opinions and analysis to show a deeper understanding of the issues.

Additional information and guidance

Learners will describe the details of the crimes to show how the threats came about in terms of poor security. At this level they do not need to go into a great deal of detail, just to show that they are aware of the way that people can get data for illegal activities.

This might be a good point to reinforce how easy the Internet has made crime possible. Many students will no doubt think it is acceptable to listen to illegally streamed music and films, or be using pirated software, knowingly or otherwise. It is also a good time to discuss plagiarism and copyright in terms of stealing IP (Intellectual Property).

1.4 I can detail the ways that digital material can be protected

Learners will research and present their understanding of some ways and means to prevent some of the crimes they have identified earlier.

Additional information and guidance

Learners will list some of the protection mechanisms they have discovered and depending on the audience they can either present it as a report, as a presentation or even as part of their extended project.

Some areas they should show knowledge and understanding of will be:

- personal: training of workers or students at school
- software: https vs http, encryption, SSL
- hardware: firewall, IDS
- organisation: AUP, security protocols

What kind of training do people need in order to prevent fraud and crime happening to them.

What knowledge of software and hardware is generally required to be safe online and are there simple ways to protect these elements.

What can organisations do in order to protect themselves.

It might be useful for students to have a talk from the network team on what is being done to protect their data and how the learners themselves can help in that process, if it is not already covered in a school induction process.

1.5 I can explain the different types of threat currently in action

Learners can discuss a number of the main threats currently in the news.

Additional information and guidance

Learners will discuss their understanding of how the threats operate and their main characteristics. Many of these are in the news every day so there should be no shortage of source material, but they will need to summarise it in a form that others can understand and appreciate.

- Online fraud
- Scareware
- Identity Theft
- IP Theft
- Espionage
- Loss of customer data
- Online theft from companies
- Extortion
- Fiscal Fraud

It might be useful for learners to put these into a table that they can use in other presentations and document

Name of threat	Main characteristics	Prevention techniques	Potential damage
Online fraud	Email or phone calls etc, or fake websites used to collect information such as bank details	Check where email comes from, not clicking on links, use only trusted websites, filter phone calls	Loss of money
Loss of customer data	Carelessness: leaving company laptop on train	More care Auto switch off if no key pressed	Damage to company reputation, being fired from job

1.6 I can explain the threats to my personal safety from online activity

Learners will explain the key types of threat that affect them personally when they operate online.

Additional information and guidance

Learners can reflect on these threats and rate them in terms of the likelihood of them occurring and what actions they will take to minimise them. This could be as a report.

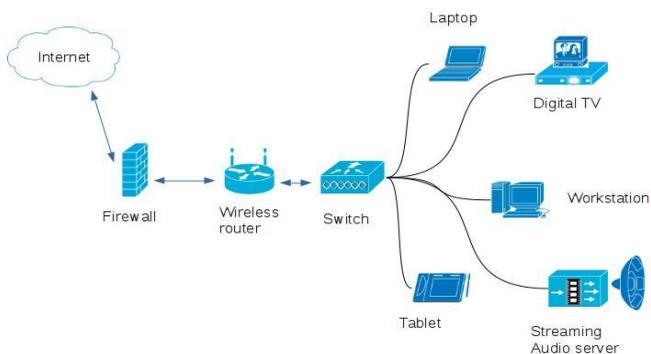
2. Plan, create and deploy systems and processes to minimise threats

2.1 I can detail the processes I use to protect my digital material

Learners will document and detail, with commentary, the actions they take to protect themselves online.

Additional information and guidance

Learners will describe a situation that could occur in order to illustrate how their processes are effective at each point. They could also diagram how they protect themselves at home from potential attacks. You can add these types of network icons to LibreOffice by following the



instructions here:

<https://smacak.wordpress.com/2011/01/26/opensource-alternative-to-microsoft-visio/>

2.2 I can describe the systems I use to protect my digital material

Learners will describe in detail the software they use to protect themselves from online threats.

Learners will know the vulnerabilities of different transmission protocols and be able to use this information to protect themselves.

Protocols they will have working knowledge of will include:

- Bluetooth
- SMS
- http and https
- wireless
- NFC

Additional information and guidance

Learners will describe in detail the hardware they use to protect themselves from online threats. In most cases this will be some kind of home based firewall. What are the attributes that make it work for them. What are the key features that protect their data from being stolen and how would they know if it was?

2.3 I can describe the nature of different threats

Learners will pick a number of threats from 1.5 or their own research and describe in detail their attributes and strengths and weaknesses.

Additional information and guidance

Learners will illustrate their understanding with detailed examples and commentary.

- What makes something a threat rather than just an annoyance?
- Do they have examples of threats that have occurred to them they can define and describe.
- Have they received bogus emails asking them for money from a bank they don't have an account with.
- Why would anyone respond to these?
- What it is about these that make them effective?
- What are some of the statistics about online fraud and threat that they can use to back up their descriptions.

2.4 I can describe a working system that protects my digital material

Learners will give working examples of a system that will protect them from online harm.

Additional information and guidance

Learners can use the diagram they created for 2.1 and add in some detail about how each piece is protecting them or exposing them to threats if not properly configured or maintained.

2.5 I can explore alternative methods to prevent future attacks on my digital material

“a system is only as good as it's weakest link”

Having understood the vulnerabilities of a personal communication device (2.1) Learners can research and comment on different types of software and hardware to the ones they currently use.

Additional information and guidance

Learners will demonstrate an understanding of cost benefit and how more money may not deliver more security.

Learners will show an understanding that there is a trade off between security and flexibility.

At what point does a system become unworkable because it is too secure?

If they had unlimited amounts of money, how would they upgrade their home system to make it as secure as possible?

2.6 I can explain how different types of online activity bring with them a variety of risks to personal data and security

Learners will discuss a range of online activities and rate them in terms of their understanding of the risks associated.

Additional information and guidance

Learners can create a blog or vlog to show the types of activity they undertake online and what types of risk are occurring at different stages of their activity. This is to collate all of their skills and understanding into a clear and concise form that can be either presented in person or as a report.

3. Analyse and apply tools and systems to minimise threats to digital material

3.1 I can analyse the latest hardware technologies to prevent attacks on digital material

Learners will demonstrate a deeper understanding of the available hardware so that they can advise others on the suitability of choosing equipment.

Additional information and guidance

Having explored and researched various pieces of equipment in their research and practical exercises, learners can now make some reasoned judgements, backed by their statements, about what kinds of technologies are the most appropriate.

Are we at the point where all homes require hardware based firewall appliances?

With more and more of our internal lives networked with IoT (Internet of Things) devices like smart heating monitors and smart devices, are the simplistic firewalls that are part of home broadband routers enough to protect our privacy?

How do you know when someone is logged in to your Wi-Fi system and using it for other purposes.

How well do you understand the setup and use of a DMZ (Demilitarised Zone) on your home network.

What ports are vulnerable and exploitable.

If large companies and banks struggle, what chance do we have at home?

Learners should gather some specifications on hardware and make reports about their features, perhaps comparing them in terms of features and prices.

3.2 I can analyse the latest software technologies to prevent attacks on digital material

Learners will demonstrate a deeper understanding of the available software so that they can advise others on the suitability of choosing equipment.

Additional information and guidance

As above, what systems do they have in place to protect their own environment and how good are they at what they do. How do you know they are working as well as they should. How do you keep track of the latest updates to software patches and exploits that have been found.

As with the hardware, learners can compile a report to compare and contrast the different offerings in terms of suitability, features and cost. What services are in place for software and hardware from your own ISP (Internet Service Provider).

3.3 I can evaluate the current threats to my personal digital material and explain which offer the greatest risks

Learners will be able to demonstrate an understanding of software and hardware log files in order to fully understand what threats are occurring.

Additional information and guidance

Learners will comment on these findings to demonstrate their level of understanding and to inform their actions.

Operating systems have some of their own built in protection which can be used as a second way of understanding what is happening to your network and therefore your digital material. The following is a log file from a software system on Linux called Fail2Ban which detects unwanted attacks and bans them from trying for several minutes. When they try again later they will be ignored and eventually go away.

Module Index
View Logfile
/var/log/fail2ban.log

Last lines of Only show lines with text [Refresh](#)

2017-03-08 21:10:35,513 fail2ban.actions	[1558]:	NOTICE	[ssh]	Ban 140.255.198.194
2017-03-08 21:10:37,914 fail2ban.filter	[1558]:	INFO	[ssh]	Found 140.255.198.194
2017-03-08 21:29:36,416 fail2ban.actions	[1558]:	NOTICE	[ssh]	Unban 140.255.198.194
2017-03-08 21:32:21,750 fail2ban.filter	[1558]:	INFO	[ssh]	Found 190.49.231.172
2017-03-08 21:32:21,926 fail2ban.filter	[1558]:	INFO	[ssh]	Found 190.49.231.172
2017-03-08 21:32:23,656 fail2ban.filter	[1558]:	INFO	[ssh]	Found 190.49.231.172
2017-03-08 21:32:26,489 fail2ban.filter	[1558]:	INFO	[ssh]	Found 190.49.231.172
2017-03-08 21:32:28,487 fail2ban.filter	[1558]:	INFO	[ssh]	Found 190.49.231.172
2017-03-08 21:32:31,030 fail2ban.filter	[1558]:	INFO	[ssh]	Found 190.49.231.172
2017-03-08 21:32:31,433 fail2ban.actions	[1558]:	NOTICE	[ssh]	Ban 190.49.231.172
2017-03-08 21:42:32,335 fail2ban.actions	[1558]:	NOTICE	[ssh]	Unban 190.49.231.172
2017-03-09 05:16:10,591 fail2ban.filter	[1558]:	INFO	[ssh]	Found 221.194.47.198
2017-03-09 05:16:10,797 fail2ban.filter	[1558]:	INFO	[ssh]	Found 221.194.47.198
2017-03-09 05:16:12,626 fail2ban.filter	[1558]:	INFO	[ssh]	Found 221.194.47.198
2017-03-09 05:16:40,823 fail2ban.filter	[1558]:	INFO	[ssh]	Found 221.194.47.198
2017-03-09 05:16:40,946 fail2ban.filter	[1558]:	INFO	[ssh]	Found 221.194.47.198
2017-03-09 05:16:43,308 fail2ban.filter	[1558]:	INFO	[ssh]	Found 221.194.47.198
2017-03-09 05:16:44,384 fail2ban.actions	[1558]:	NOTICE	[ssh]	Ban 221.194.47.198
2017-03-09 05:16:51,451 fail2ban.filter	[1558]:	INFO	[ssh]	Found 221.194.47.198
2017-03-09 05:26:45,263 fail2ban.actions	[1558]:	NOTICE	[ssh]	Unban 221.194.47.198

This is on a home based server running a DMZ. On the router itself, most users should have some security logs which can be examined.

The following image is an attack on a web server software trying to run a script which might be there to exploit.

```

[351] AH00094: Command Line: '/usr/sbin/apache2
|client 91.196.50.33:39980| script '/var/www/testproxy.php' not found or unable to sta
|client 89.145.77.93:44824| [WARN] 25 (auth/session.php:561) session_start(): Cannot st
|client 89.145.77.93:44824| Call stack (most recent first):
|89.145.77.93:44824|

```

Learners should be able to give some examples of what threats they face from various areas, as well as threats created by bad habits such as staying logged in on the school network, sharing passwords with friends or using public Wi-Fi systems.

3.4 I can evaluate the best methods of protection and recommend protocols to minimise the threat of attacks

Learners will explain some of the protocols used in their systems and link these to the identified threats.

Additional information and guidance

Learners will develop a working protocol for their own protection or recommend one for others.

A protocol is a set of rules that need to be followed to achieve a particular goal. In this case, it would be useful if learners could create a set of rules and guidelines to be followed. This could be for their own home, their school, or for a local company.

3.5 I can recommend systems to enhance security

Learners will be able to identify weaknesses in systems in order to recommend enhancements.

Additional information and guidance

Learners will collect their findings in order to support these recommendations.

This material can be used as part of the presentation for 2.6. If they are working for a local company as a client, or as part of their extended project they should have some specific details, though these may need to be anonymised to protect the company. This is a collation of all their findings and understanding as well as practical demonstrations of what they have discovered and what constitutes best practice.

3.6 I can provide cogent advice to other online users about being safe online

Learners will generate a report to present to their peers on their advice and recommendations.

Additional information and guidance

Learners could create a questionnaire or survey to be used by local companies in order to evaluate their security protocols or services and then to use this to report on improvements. They could also do this as a short video, perhaps loaded onto a video display system. They should be able to demonstrate that they understand enough about the more common problems associated with online activity to be able to help others, even if this is pointing them towards resources such as CEOP.

Perhaps they are part of a local club or organisation and they can offer them advice about online issues.

Unit 4. Planning, executing and evaluating digital systems, 5 credits, 50 GLH

1. Understand what is required of a digital profile to promote my knowledge and skills to different audiences in a secure manner	2. Plan a secure working digital profile to promote my skills and understanding in a secure manner	3. Create a secure working digital profile to promote my skills and understanding in a secure manner	4. Create a test regime to ensure the security and effectiveness of my profile	5. Analyse and assess the security and effectiveness of my profile
1.1 I can understand the ways to present myself suitably online understanding who is the audience for my digital profile	2.1 I can produce a working plan, including timescales and success criteria, for the production of my digital profile	3.1 I can create a working system to manage my digital skills and knowledge	4.1 I can use a range of data, expected, unexpected and extreme to test my profile	5.1 I can use digital as well as other methods for gathering feedback on my digital profile
1.2 I understand who to discuss issues and problems with in an online context		3.2 I can use appropriate digital applications and file-types to present my online profile	4.2 I can test my system against success criteria I developed at the research and planning stage	5.2 I can reflect critically on my digital profile against clear objectives including its security
1.3 I understand different systems and applications and file-types to use for my digital profile	2.3 My plan will clearly identify applications and file-types to use for my digital profile	3.3 I can protect my system against the most common attacks	4.3 I can respond to feedback on my digital profile and modify my system accordingly	5.3 I can justify the tools I used to create my digital profile
1.4 I understand the common risks to my personal data from maintaining an online presence	2.4 I can use plans to manage the security of my profile	3.4 My system conforms to all legal and local constraints	4.4 I can test my system against the most common attacks	5.4 I can describe ways that I could further improve my digital portfolio over the coming years

1.5 I understand the possible constraints local and or wider that could affect the way that I tackle this brief	2.5 My plan takes effective steps to ensure that I comply with local or wider constraints			5.5 I can evaluate the tools that I used and recommend them to other users based upon productivity and efficiency savings they produce.
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Learning outcome for this unit

Strand 1: Understand what is required of a digital profile to promote my knowledge and skills to different audiences in a secure manner

Learners will use their research capability to develop a better understanding of their given brief and how this relates to a job role(s) in the digital sector

Learners will develop an appreciation of the audience for their project and the needs and expectations of that audience from their digital output
Learners will collect information that enables them to make reasoned planning decisions when a range of possible solutions could be employed, including making informed and realistic choices of digital applications and file-types in their solution

Learners will also become better aware of the potential risks to personal information from maintaining an online presence.

Strand 2: Plan a secure working digital profile to promote my skills and understanding in a secure manner

Learners will use planning techniques common in the workplace to ensure that all aspects of the brief are covered

Learner plans will clearly identify:

- The applications they are going to use to develop their digital output
- The file types of all components of their ePortfolio

Strand 3: Create a secure working digital profile to promote my skills and understanding in a secure manner

Learner briefs will reflect accurate job requirements from contemporary job posts in the digital sector

Learners will demonstrate skills in and knowledge of a range of digital applications applied in an appropriate way with a particular audience in mind

Learners will demonstrate the ability to display digital artefacts in a secure manner to maintain their integrity

Strand 4: Create a test regime to ensure the security and effectiveness of my profile

Learners will understand the natures of attack starting from “not leaving the digital door wide open” by using the basics of good practice,

- Strong passwords
- Regular changes of password
- Non sharing of security data
- Creation of access rights that meet the level of need only

Learners will learn in theory about more sophisticated methods of attack including the use of bots and possible “brute attacks”.

Strand 5: Evaluate and Analyse the security and effectiveness of my profile

Learners will be given the opportunity to use widely available software that demonstrate the persistent nature of attacks and the way that routinely available systems such as firewalls and school based systems repel these.

Evidence for learning in this unit: Written answers in the terminal exam, material in their ePortfolio

Detailed Guidance for the delivery of this Unit:

1. Understand what is required of a digital profile to promote my knowledge and skills to different audiences in a secure manner

1.1 I can understand the ways to present myself suitably online understanding who the audience is for my digital profile

Learners will demonstrate a good appreciation of the nature of an online audience compared to a localised one, including cultural sensitivities and possible disabilities.

Additional information and guidance

Using a variety of research methods students will develop a realistic understanding of:

- The likely audience for their work
- The best tools for presentations
- Best practice for colours and fonts
- Appreciation of possible audience disabilities and how to assist them through the workplace
- Be sensitive to language, culture and other differences

1.2 I understand who to discuss issues and problems with in an online context

Learners will demonstrate a good understanding that they can go to assistance online from support forums and other community focussed groups.

Additional information and guidance

Learners will show their understanding of online safety by being critical of online sources when using them, while understanding that there are some good community based and public spirited forums that can be used.

Learners will recognise that online is not the only source of valuable information and that other more traditional methods of collecting information including:

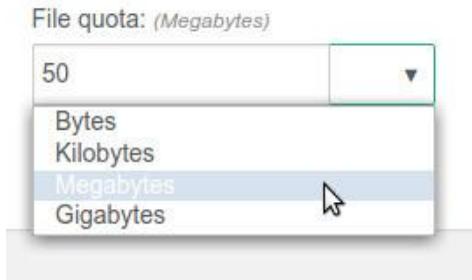
- Surveys
- Careers officer
- Careers section in the school or local library
- Relatives and local businesses

1.3 I understand different systems and applications and file-types to use for my digital profile

Learners will produce a list of alternative proposals that could provide a working solution to their brief

Additional information and guidance

Learners will develop an understanding of the properties of different file-types and be able to match them to the needs of specific features of the online profile. They should also demonstrate with their work that different files require different types of management. If they are working in an arts based field, they will be generating large graphical files and audio/video material that often requires specialised software to view it. It also requires increased storage capacity which may need to be discussed with a provider of an online service. The following shows a menu to choose how much storage can be used, from bytes to gigabytes.



1.4 I understand the common risks to my personal data from maintaining an online presence

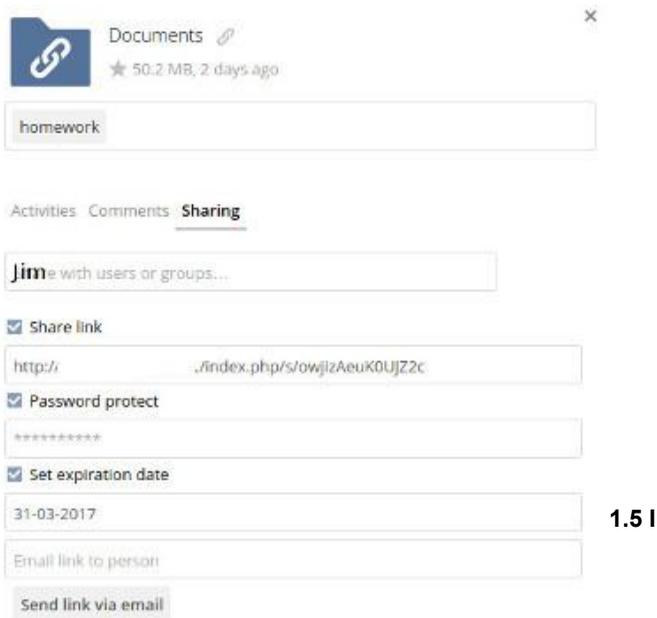
Learners will recognise that anything posted online has been given away for ever.

Additional information and guidance

Learners will recognise that unless the content of their profile is secured there is a danger of somebody else editing it in an incorrect or malicious manner. They will be able to provide evidence or commentary to back-up this knowledge.

Learners will understand the most common and effective ways of securing online content is by demonstrating how they have protected various types of material through permissions and locks on certain folders.

The picture following is of a cloud based system that allows file sharing and collaboration with some of the options available, such as notifying the person or group you are sharing it with and the ability to have a URL that can be emailed to that person, such as a potential employer.



understand the possible constraints local and or wider that could affect the way that I tackle this brief

Learners will recognise that local constraints may affect their choice of solution

Additional information and guidance

In many instances, learners will be constructing this ePortfolio from within school or college and there may be restrictions on what they can do. These may include:

- AUP
- Availability of software applications
- Internet restrictions

In most cases, it would be preferable to use an online system that they have access to and it should be cleared through the school and may be an extension of their existing system. Learners need to demonstrate that they understand these and can work with them as far as possible.

2. Plan a secure working digital profile to promote my skills and understanding in a secure manner

2.1 I can produce a working plan, including success criteria, for the production of my digital profile

Learners will demonstrate a clear and concise plan for their project to make sure they can meet deadlines and targets.

Additional information and guidance

Learner plans will include:

- Clear timescales for each section of their work
- Success criteria against which they will judge their work
- Use of SMART targets where appropriate

2.3 My plan will clearly identify applications and file-types to use for my digital profile

Additional information and guidance

Learner plans will include:

- The applications learners propose to use for each section of their work
- The file types of the different components of their digital profile
- Overview of any potential issues and problems they will need to deal with

2.4 I can use plans to manage the security of my profile

Learner plans will detail how the integrity of the online profile will be maintained.

Additional information and guidance

Learners will be able to demonstrate their understanding and practical application of various tools and services in order to protect their material, while still making it flexible enough for collaborative work. This will take some careful planning and review of how they implement this security to maintain some semblance of efficiency.

2.5 My plan takes effective steps to ensure that I comply with local or wider constraints

The learner will demonstrate a clear plan to make sure they can deal with most potential problems.

Additional information and guidance

Learner plans will show good awareness of constraints such as:

- AUPs
- Internet restrictions on school networks
- Availability of digital applications
- Time
- User skills

3. Create a secure working digital profile to promote my skills and understanding in a secure manner way

3.1 I can create a working system to manage my digital skills and knowledge

Learners will provide a digital ePortfolio that presents themselves and showcases their digital literacy for a designated job in the digital sector or more general applications for college or work.

Additional information and guidance

The ePortfolio will contain an appropriate set of digital files or components depending upon the brief or the learner's interests. The completed system should be semi-professional and be suitable for applications to college or work positions such as apprenticeships. It is expected that these can be tested and receive feedback from potential employers or local colleges.

3.2 I can use appropriate digital applications and file-types to present my online profile

Learners will show understanding of the properties of applications and file types.

Additional information and guidance

Depending on what type of courses the student is interested in and their experience will determine what types of files and media they will be presenting as part of their ePortfolio. Some will have a collection of office based documents to show basic competence in IT, while others will have complex media files created in their artistic subject areas.

In most cases the media presented will demonstrate their level of skills in the respective areas and they can gain feedback from potential employers or further education advisors.

3.3 I can protect my system against the most common attacks

Learners will employ their skills and understanding in protecting online systems to make sure their own system is safe and secure.

Additional information and guidance

Learners can produce a report of what threats they might experience and demonstrate what tools and techniques they have used to minimise these as far as possible. This may be systems and services provided by their ISP, but they will still need to demonstrate the advantages of these and why they have chosen them.

3.4 My system conforms to all legal and local constraints

Learners profiles will comply with various laws and regulations.

Additional information and guidance

Some of the key laws and regulations that need to be evidenced and verified by the learners will include, but not be limited to:

- AUP
- Copyright
- Plagiarism (content will be unique or properly acknowledged)
- Data Protection

4. Create a test regime to ensure the security and effectiveness of my profile

4.1 I can test my system against success criteria I developed at the research and planning stage

Learners will demonstrate a project planning approach to their project overall and be able to match outcomes to objectives as far as possible.

Additional information and guidance

Success criteria to form the basis for first line testing will include various qualitative and quantitative criteria such as:

- The ePortfolio will look “semi-professional”
- The material will be well organised and easy to navigate

- The material will only show what I want specific audiences to see
- There will be accommodation for viewers with disabilities
- The system will be tested to work with a variety of operating systems and browsers, as well as hand held systems

4.3 I can respond to feedback on my digital profile and modify my system accordingly

Learners will be able to respond politely and professionally to any feedback received and make adjustment accordingly.

Additional information and guidance

Peer or other external assessment is a valid form of testing and learners should endeavour to get as much feedback on their system as is possible. This will include during the planning stage and all through until the final production and unveiling. In all cases, the learner must show a professional attitude to feedback and make sure that realistic feedback is acted on in order to improve the system as far as possible.

4.4 I can test my system against the most common attacks

Learners will use their protocols developed in Unit 3, 3.4 in order to test their system

Additional information and guidance

Security of the ePortfolio will be tested for:

- Password strength
- Read only versions for digital media produce
- Possible brute attacks

If they allow other people to use their system, they might use some form of password policy or reCAPTCHA system such as the following.

reCAPTCHA on user registration form

Users self-registering a new account will have to prove themselves human by passing a reCAPTCHA test.

reCAPTCHA site key

The site key for your site's reCAPTCHA account.

reCAPTCHA secret key

The secret key for your site's reCAPTCHA account.

5. Evaluate and analyse the security and effectiveness of my profile

5.1 I can use digital as well as other methods for gathering feedback on my digital profile

learners should be comfortable and competent using various methods to gather feedback on their system.

Additional information and guidance

Feedback to use a range of methods potentially including:

- Questionnaire
- Peer comment
- Online features such as forum, blog, bulletin board, forms, surveys etc.
- email contact

5.2 I can reflect critically on my digital profile against clear objectives including its security

Learner reflects on the results of their testing against success criteria.

Additional information and guidance

This is a general criterion when learners can think about the success of certain aspects of their project and reflect to themselves and others about what they have found successful and what aspects they may want to change for a later revision of the system.

In many cases with open source systems, it is probably worth checking their support forums as there may well be other people experiencing similar technical issues and it may well be a bug that is being worked on.

The following image shows a list of problems and potential fixes from the community for a piece of software that runs an open source phone. Some of these issues may be experienced by the learners on their own system, so they need to check the software developer's forums and places like GitHub to make sure they are not just experiencing a problem/bug that will soon be solved.

Milestone information

Project: Canonical System image
Series: trunk
Version: u16.1
Code name: Unity8 on Classic
Expected: 2017-03-24
Active: Yes. Drivers can target bugs and blueprints to this milestone.

0 blueprints and 51 bugs targeted

Bug report

#166168	[unity8] closing ubuntu-terminal also traps crashes unity8
#1619712	mint: rootless: Fullscreen apps never go full screen
#1649648	Unity8 crashes with SIGABRT in gmain:libsurface:CloseTimedOut () at _src/modules/unity/Application
#1650438	display brightness slider follows the level of mouse, but jumps above & brightness flickers at low end
#1661778	Qt & GTK apps are crashing with SIGABRT in mint_create_modal_dialog_window_spec() due to NULL param
#1668953	[unity8] kate, impossible to close "Print Preview" window
#1658840	cannot change time zone
#1668861	Forces a reboot when changing language

5.3 I can justify the tools I used to create my digital profile

Learner identifies strengths and weaknesses in their choices

Additional information and guidance

The choice of ePortfolio platform that learners use will depend on what is available and what their preference is, as long as it is a web based system.

TLM will provide an open source system using Mahara for students with guidance and support going forward. Schools may also deploy the same systems.

In either case, the learners need to justify their choice through research and analysis. They can formulate a report with their ideas and examples that helped them reach their final choice.

5.4 I can describe ways that I could further improve my digital portfolio over the coming years

Learners will be able to recognise no job is ever finished and the ePortfolio is part of lifelong learning.

Additional information and guidance

The completed ePortfolio will be a valuable tool for learners both now and into the future, regardless of what path they ultimately choose post-16 and beyond. It will showcase their ICT skills and understanding as well as give them a platform to manage and share their digital literacy in whatever form suits them and to what audience is required.

5.5 I can evaluate the tools that I used and recommend them to other users based upon productivity and efficiency savings they produce.

Learners can showcase the entirety of their digital journey with all of their best material across the life of their school experience.

Additional information and guidance

Learners can select and organise all of the material they have created and use the platform to demonstrate their journey to themselves and others.

They will have a wealth of material that may not be organised in a way that is useful. Here is their chance to make it part of their story. Some of the material they may have created and can therefore showcase effectively will be:

- Website Production
- Digital Animation
- Digital Image Production
- Dealing with Data Digitally
- Digital Video
- Digital Games production
- Digital Communication
- Digital Publishing

This is just a selection and there are many that can be recommended to learners.

Annexe A - Assessment Elements

	Pass	Merit	Distinction	Distinction*
Minimum Mark (Coursework + exam) to achieve grade	50	66	75	85
Coursework Mark	20-30	20-30	20-30	20-30
Exam Mark	20-30	36-46	45-55	55-65
Minimum % external Assessment	40%	54%	60%	64%
<p>The minimum external value above relates to the fact that students could get 20 or 30 on their coursework, which will affect the overall weighting. If students get 20 on their coursework, they are required to get 30 on their exam to pass. This will be 60% coursework and 40% external. If they get 30 on their coursework and 36 on the exam for a merit, this will be 54% external.</p>				

Annexe B – Sample Examination

1. Which of the 2 pieces of data captured in an attack on a system would be most useful to an attacker?

- a) Shoe size 5, favourite food pizza
- b) Bank JBTV, account # 243456
- c) Age 27, Nationality Scottish
- d) Left at library, right at supermarket

1 mark

2. What does SMS stand for?

- a) Storage Medium System
- b) Simple Messaging System
- c) Short Message Service
- d) Sending Messages Simply

1 mark

3. Which of the following file extensions would be the best export choice for students names to be used in a web based management system for logins?

- a) .epub
- b) .docx
- c) .png
- d) .csv

1 mark

4. Which of the following would most likely expose you to cyberbullying?

- a) Poor privacy levels on social media sites
- b) Weak passwords on your laptop login
- c) Out of date anti-virus software
- d) Open port on your home firewall

1 mark

5. The government's new Investigatory Powers Bill is known more commonly as?

- a) The "investigators tool"
- b) The "snoopers charter"
- c) The "Sherlock Bill"
- d) The "spy chasers bill"

1 mark

6. The Internet relies on open standards such as http. What does this stand for?

- a) Hyper Threading Transport Performance
- b) Hypertext Transfer Protocol
- c) High Transmission Texting Protocol
- d) Highly Transferable Transport Protocol

1 mark

7. When recommending the best broadband package for a local company you would probably try to balance performance versus cost.

Which of the following would you recommend on that basis?

- a) 40Mbps download, 15Mbps upload, £85 month
- b) 4Mbps download, 30Mbps upload, £38 month
- c) 38Mbps download, 12Mbps upload, £40 month
- d) 20Mbps download, 8Mbps upload, £45 month

1 mark

8. Which of the following software applications would be most appropriate to originate a budget system?

- a) A word processor
- b) A spreadsheet
- c) A bitmap graphics program
- d) A vector drawing program

1 mark

9. Which of the following would not be considered a “soft skill” when working as part of a team?

- a) Being good at accountancy
- b) Being good at constructive feedback
- c) Being good at encouraging colleagues
- d) Being aware of cultural differences in others

1 mark

10. In order to have a better chance of success on a project, you should?

- a) Use SMART targets to focus your work.
- b) Work very late to get it done.
- c) Copy other people’s work to make it faster.
- d) Leave it until the last minute to really concentrate your mind.

1 mark

11. Bluetooth is a common means of communication between mobile phones.

Describe two ways that a phone user can make sure that their data is not at risk from having Bluetooth enabled.

2 marks

12. If you create a game and place it online, it has the potential to become a “commodity”. Once it is online, it also becomes more likely to be stolen.

a) What does commodity mean?

b) What one thing could you do to try and protect your idea from being stolen?

2 marks

13. Phishing and Pharming are two increasingly common ways that criminals use to try and access personal data.

Explain the differences between them

2 marks

14. During 6 months in 2014 over 12,000 people reported receiving phone calls claiming to be from “Microsoft, Talk-talk or BT” and asking them to make changes on their PCs.

Why is this almost certainly an attempt at cybercrime?

2 marks

15. Describe two features of your school’s / college’s AUP that are designed to prevent loss of data.

2 marks

16. In choosing a logo for her digital portfolio Jenna had a choice of .svg and .png file types for her design.

Give one advantage that each filetype has over the other.

2 marks

17. Describe how Https differs from Http and how it ensures that digital connections are secure

3 marks

18. When researching how to plan an extended project Julian found that Gantt charts are often used by software engineers to project manage their work.

Describe the main features of a Gantt Chart and explain why they are particularly suited to this task.

5 marks

19. Give a clear example of why a collection of phone numbers is not considered information and write a clear statement about what they are at this point.

2 marks

20. The “cloud” has revolutionised the way that digital users are able to work collaboratively.

Describe two key features of cloud working that promotes collaboration.

2 marks

21. Many people now wear devices to track their movements and vital statistics for health and well being purposes.

However, there is some risk that the data could be misused once created.

Describe, with detailed examples, two ways this information could be misused and by who.

2 marks

- 22. Many music and sports fans are upset and frustrated because tickets for an event they really want to see are sold within seconds of “going online”. These tickets then appear on “resale sites in their hundreds a few minutes later.**

Research shows that it is not private individuals who are reselling the tickets but organisations who have used technology to “harvest tickets”.

Use your knowledge to explain how they use technology to be able to do this.

4 marks

- 23. HTML4 and HTML5 are open standards for website creation which illustrate the fact that open standards are constantly developing.**

What is the key development between HTML4 and HTML5?

2 marks

- 24. A new student arrives at your school from another country. In their country they have no restrictions or filters on school Internet use and they don’t understand why your school has such restrictions.**

Using clear examples to illustrate your reasoning, including laws and regulations where appropriate, write two things you would say to them to convince them it is for their own

safety.

Explain how a school AUP helps reinforce good practice when using the Internet.

3 marks

25. Many elderly people are concerned about using the Internet because of the risks of online fraud

- a) Write a definition of what online fraud is.**
- b) Give two clear examples of how people might be affected by different types of online fraud and how they can minimise or prevent this happening.**

5 marks

26. Most modern vehicles now have onboard systems that collect data about it while it is being used.

- a) Give three detailed descriptions of the possible data stored and with each example state clearly how it can be used as information.**
- b) Some of this data is clearly used by the manufacturers of the cars. What kind of data would be most valuable to them and why?**

4 marks

27. Your digital ePortfolio is a showcase to a potential employer or a college admissions tutor.

Pick three aspects of your ePortfolio or coursework you are particularly proud of and for each one:

- a) Describe what the digital skill is on display with clear**

examples.

- b) Describe how each skill will help you in a certain aspect of your career or further education path.**

6 marks

28. The increasing number of people using online facilities such as banks means that more and more cyber threats are being developed.

- a) List the most common type of cyber threat currently affecting digital applications. (1 mark)**
- b) Describe briefly three applications or practices you would use to protect yourself or your family from potential online threats. (3 marks)**
- c) Write a short policy document to help your school or college deal with three distinct cyber threats and give some practical tips on how people can make themselves safe online. (6 marks)**

10 marks

Annexe C – Sample Examination Mark Scheme

Exam question	Mark scheme	Assessment Objective(s)
<p>1. Which of the 2 pieces of data captured in an attack on a system would be most useful to an attacker?</p> <p>a) Shoe size 5, favourite food pizza b) Bank JBTv, account # 243456 c) Age 27, Nationality Scottish d) Left at library, right at supermarket</p> <p style="text-align: right;">1 mark</p>	(b) Grade P, Unit 1, 1.1	AO2 – students are applying their understanding of threats to the question to understand an attacker’s potential motivations.
<p>2. What does SMS stand for?</p> <p>a) Storage Medium System b) Simple Messaging System c) Short Message Service d) Sending Messages Simply</p> <p style="text-align: right;">1 mark</p>	(c) Grade P, Unit 1, 1.2	AO1 – students are expected to recall the meaning of this three letter acronym.
<p>3. Which of the following file extensions would be the best export choice for student’s names to be used in a web based management system for logins?</p> <p>a) .epub b) .docx c) .png d) .csv</p> <p style="text-align: right;">1 mark</p>	(d) Grade P, Unit 1, 2.4	AO2 – students are applying their understanding of file formats to this problem to work out the best choice
<p>4. Which of the following would most likely expose you to cyberbullying?</p> <p>a) Poor privacy levels on social media b) Weak passwords on your laptop login c) Out of date anti-virus software d) Open port on your home firewall</p> <p style="text-align: right;">1 mark</p>	(a) Grade P, Unit 1, 3.1	AO2 – students are asked to think about some possible threats and use their understanding of the concept of cyberbullying to match the best answer

<p>5. The government's new Investigatory Powers Bill is known more commonly as?</p> <p>a) The "investigators tool" b) The "snoopers charter" c) The "Sherlock Bill" d) The "spy chasers bill"</p> <p>1 mark</p>	<p>(b) Grade M, Unit 1, 3.3</p>	<p>AO1 – students should know the details of the bill, in this case the popular name in the press</p>
<p>6. The Internet relies on open standards such as http.</p> <p>What does this stand for?</p> <p>a) Hyper Threading Transport Performance b) Hypertext Transfer Protocol c) High Transmission Texting Protocol d) Highly Transferable Transport Protocol</p> <p>1 mark</p>	<p>(b) Grade CP Unit 2, 1.4</p>	<p>AO1 – a basic recall of understanding of a technology</p>
<p>7. When recommending the best broadband package for a local company you would probably try to balance performance versus cost.</p> <p>Which of the following would you recommend on that basis?</p> <p>a) 40Mbps download, 15Mbps upload, £85 month b) 4Mbps download, 30Mbps upload, £38 month c) 38Mbps download, 12Mbps upload, £40 month d) 20Mbps download, 8Mbps upload, £45 month</p> <p>1 mark</p>	<p>(c) Grade M, Unit 2, 1.6</p>	<p>AO3 – the information here is for students to make a judgement based on what they understand or have tried themselves</p>
<p>8. Which of the following software applications would be most appropriate to create a budget tracking system?</p> <p>a) A word processor b) A spreadsheet</p>	<p>(b) Grade P, Unit 2, 2.1</p>	<p>AO1 – students are asked to select from some choices</p>

<p>c) A bitmap graphics program d) A vector drawing program 1 mark</p>		
<p>9. Which of the following would not be considered a “soft skill” when working as part of a team?</p> <p>a) Being good at accountancy b) Being good at constructive feedback c) Being good at encouraging colleagues d) Being aware of cultural differences in others 1 mark</p>	<p>(a) Grade P, Unit 2, 2.4</p>	<p>AO2 – student’s understanding of some of the ways IT is supported will allow them to find the most appropriate soft skill here</p>
<p>10. In order to have a better chance of success on a project, you should?</p> <p>a) Use SMART targets to focus your work. b) Work very late to get it done. c) Copy other people’s work to make it faster. d) Leave it until the last minute to really concentrate your mind. 1 mark</p>	<p>(a) Grade P, Unit 4, 2.1</p>	<p>AO2 – application of knowledge of SMART targets to an issue</p>
<p>11. Bluetooth is a common means of communication between mobile phones.</p> <p>Describe two ways that a phone user can make sure that their data is not at risk from having Bluetooth enabled. 2 marks</p>	<p>Grade P, Unit 3, 3.?</p> <p>Ensure that the device is invisible to other devices (1) Pair only with known devices (1)</p> <p>Any other suitable reasons for 1 mark each, maximum 2, i.e.</p> <p>Switch off Bluetooth when not using it</p>	<p>AO2 – 2 marks for applying their knowledge of the technology and describing how it works for this situation</p>
<p>12. If you create a game and place it online, it has the potential to become a “commodity”. Once it is online, it also becomes more likely to be stolen.</p> <p>a) What does commodity mean?</p>	<p>Grade P, Unit 3, 1.1, Unit 2, 2.6</p> <p>a) A commodity is something that has a value to others, that can be sold to make some form of profit. Similar explanations that discuss the value of something, whether real or otherwise. (1)</p>	<p>a) AO1 – is a recall of information about the definition of a commodity.</p> <p>b) AO2 – this requires students to apply their understanding of laws such as copyright and how they can use this to protect what they have made.</p>

<p>b) What one thing could you do to try and protect your idea from being stolen?</p> <p>2 marks</p>	<p>b) The material can be protected by copyright laws or have a restrictive license applied so that it is protected by law. They could also protect it with restrictions to the online system, such as access rights or password protected downloads etc. (1) Any similar means of protection from theft or copying.</p>	
<p>13. Phishing and Pharming are two increasingly common ways that criminals use to try and access personal data.</p> <p>Explain the differences between them</p> <p>2 marks</p>	<p>Grade P, Unit 4, 3.4, Unit 3</p> <p>Phishing uses documents that masquerade as from a reliable source, i.e. an email from your bank or government department, to get you to input your private data as you would trust the source. It is like someone offering bait to a fish, hence the name. (1)</p> <p>Pharming redirects you using “fake” DNS to a site that masquerades as a reliable site, again such as a bank website. As you think it is real, you will enter all of your details as if you were on the real site. (1)</p>	<p>AO2 – 2 marks for applying their understanding of these terms in this context to show their understanding.</p>
<p>14. During 6 months in 2014 over 12,000 people reported receiving phone calls claiming to be from “Microsoft, Talk-Talk or BT” and asking them to make changes on their PCs., often asking for payment to do so.</p> <p>Give two clear reasons why this is almost certainly an attempt at cybercrime</p> <p>2 marks</p>	<p>Grade P, Unit 4, 4.</p> <p>These companies would never phone customers directly to ask them to make changes to their home PC. If there was an issue, they would make an announcement on their web site or use the customers’ online account to tell them. (1).</p> <p>The people making the call will often ask for a charge for this service. No company would make this sort of claim as protection would be part of the overall service and not an extra.</p>	<p>AO2 – this situation asks students to apply their understanding of cybercrime to say how these instances meet the criteria of what constitutes cybercrime. Their reasoning will show their depth of understanding. There is an element of recall, but it is more applying it to the problem.</p>

	(1)	
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<p>15. Describe two features of your school / colleges AUP that are designed to prevent loss of data.</p> <p>2 marks</p>	<p>Grade P, Unit 4, 1.5</p> <p>1 mark each, maximum 2 from:</p> <ul style="list-style-type: none"> ● Don't leave PC logged in ● Never share passwords ● Don't open unsolicited emails from unknown sources etc ● Don't download untrusted programs 	<p>AO1 – this question is asking them to recall aspects of their own school AUP.</p>
<p>16. In choosing a logo for her digital portfolio Jenna had a choice of .svg and .png file types for her design.</p> <p>Give one advantage that each file type has over the other.</p> <p>2 marks</p>	<p>Grade P, Unit 2,</p> <p>.svg - vector graphic - infinitely scalable with no pixelation (1) .png - transparency for use over coloured sections (1) Svg not supported by "older browsers</p>	<p>AO2 – applying their understanding of graphic file types to choose advantages</p>
<p>17.</p> <p>a) Describe how https differs from http and how it ensures that digital connections are secure</p> <p>b) What should you see in your browser URL to know it is a https connection?</p> <p>3 marks</p>	<p>Grade P, Unit 3, 1.4, Unit 4, 3.3</p> <p>a) https sends data in an encrypted format, so it is scrambled and hard to use if stolen (1). http data is sent as plain text so it is easy to steal and read. https uses a SSL (Secure Socket Layer) and sometimes tunnelling protocol to make sure that the receiving device receives the data and that it is safe in transit. (1)</p> <p>b) A small padlock icon. (1)</p>	<p>AO1 – recall of information about the functioning of these protocols and the symbol to represent a decent https connection</p>
<p>18. When researching how to plan an extended project Julian found that Gantt charts are often used by software engineers to project manage their work.</p> <p>Describe the main features of a Gantt Chart and explain why they are particularly suited to this task.</p>	<p>Grade P/M, Unit 4, 2.2</p> <p>Students will need to know the major features of Gantt charts 2 marks - timelines, responsibilities, milestones etc. then relate these to project management in terms of having an expectation of the time</p>	<p>AO1 – 2 marks for recalling the key features.</p> <p>AO2 – 2 marks for relating to their knowledge of planning</p> <p>AO2 – 1 mark for applying this to another area of SMART targets</p>

<p>5 marks</p>	<p>required but also noting the actual time taken so that slippage can be managed. 2 marks - a link to this meeting the T in smart targets for fifth mark</p>	
<p>19. Give a clear example of why a collection of phone numbers is not considered information and write a statement about what they are at this point.</p> <p>2 marks</p>	<p>Grade M, Unit 1, 1.1</p> <p>Although they are phone numbers, there is no real context or meaning that can be drawn from them so at this point they are just data (1). If they were a set of phone numbers from i.e. "Tamworth", or of "all Brexit voters in a specific city", they would have some context and meaning and therefore be information to be used for a purpose and can be used to cross reference something like voting behaviour by location (1).</p>	<p>AO2 – using their knowledge of data versus information to answer this</p>
<p>20. The "cloud" has revolutionised the way that digital users are able to work collaboratively.</p> <p>Describe two key features of cloud working that promotes collaboration.</p> <p>2 marks</p>	<p>Grade M, Unit 2, 2.4</p> <p>Any 2 answers from:</p> <ul style="list-style-type: none"> ● Collaborators can be anywhere in the world with an internet connection. ● Multiple users can work on a document simultaneously. ● Live chat / comments between collaborators to explain thinking. ● Folders / documents can be "shared" with specific team members <p>Other suitable answers that show an understanding.</p>	<p>AO2 – showing how their knowledge of collaboration relates to cloud technology</p>
<p>21. Many people now wear devices to track their movements and vital statistics for health and well being purposes. However, there is</p>	<p>Grade M, Unit 1, 3.2</p> <p>The students need to show that they understand what kind of data is being collected and therefore what value it has to</p>	<p>AO2 – students need to show their understanding of data collection in this scenario and apply it to what might happen</p>

<p>some risk that the data could be misused once created. Describe, with detailed examples, two ways this information could be misused and by who.</p> <p>2 marks</p>	<p>others to determine who would want it.</p> <p>The data could be used to track a person's whereabouts in order to cause them some sort of harm, for example a diplomat or political person when travelling abroad(1). The data could reveal where you are and at what time as a pattern of your movements and therefore be useful to terrorist groups or other groups looking to cause you personal harm. (1)</p> <p>Other suitable examples, such as: Insurance companies are trying to gather this data to make decisions about people's life insurance policies. (1) The data may reveal irregularities in your heart and therefore make the company refuse to give you life insurance or increase your premiums. (2)</p> <p>If students give a weak example that shows they understand some of the question, but can't give a clear example, award 1 mark.</p>	
<p>22. Many music and sports fans are upset and frustrated because tickets for an event they really want to see are sold within seconds of "going online". These tickets then appear on "resale sites in their hundreds a few minutes later".</p> <p>Research shows that it is not private individuals who are reselling the tickets but organisations who have use technology to "harvest tickets".</p> <p>Use your knowledge to explain how they use</p>	<p>Grade M/D, Unit 4, 3.3</p> <p>Use of "bots" (1) pieces of code that have all payment details from "multiple credit cards" loaded into them. (1)</p> <p>These complete transactions in seconds (1) and block access to fans trying to use "manual" - much slower methods.(1)</p>	<p>AO2 – 4 marks for using their understanding about the technology and how it works.</p>

<p>technology to be able to do this.</p> <p>4 marks</p>		
<p>23. HTML4 and HTML5 are open standards for website creation which illustrate the fact that open standards are constantly developing.</p> <p>What are the key development differences between HTML4 and HTML5</p> <p>2 marks</p>	<p>Grade D, Unit 2, 3.4</p> <p>HMTL allows for the embedding of media such as video without the need for proprietary apps such as “Flashplayer” from Adobe (1). It also has improved performance in handling badly coded documents. (1).</p> <p>Other answers include:</p> <ul style="list-style-type: none"> ● New parsing rules oriented towards flexible parsing and compatibility ● New elements – section, video, progress, nav, meter, time, aside, canvas ● New input attributes – dates and times, email, urn ● New attributes – ping, charset, async ● Global attributes (that can be applied for every element) – id, tabindex, repeat ● Deprecated elements dropped – centre, font, strike <p>Any from the above for a maximum of 2 marks.</p>	<p>AO2 – they are applying their knowledge of these two standards to show the changes</p>
<p>24. A new student arrives at your school from another country. In their country they have no restrictions or filters on school Internet use and they don’t understand why your school has such restrictions.</p> <p>a) Using clear examples to illustrate your reasoning, including laws and regulations where appropriate, write two things you would say to them</p>	<p>Grade D, Unit 3, 2.2, 3.5, 3.6: Unit 1, 3.3</p> <p>The answers need to be fully argued and clear.</p> <p>a) The student needs to be able to cite some of the laws that are at work in the UK to protect young people. They could discuss the Data Protection Act that makes sure data about people is not used for anything</p>	<p>AO3 – 2 marks for analysing the reasons and trying to convince the other student</p> <p>AO1 – 1 mark for recall of their own AUP and it’s features</p>

<p>to convince them it is for their own safety.</p> <p>b) Explain how a school AUP helps reinforce good practice when using the Internet.</p> <p style="text-align: right;">3 marks</p>	<p>other than intended. This would therefore help the new student from having data about them taken away from the school and used without their permissions. (1) other laws would also work. They could also argue that as a young person, the school has strong filters in place on the network to make sure that no inappropriate material comes through to the school as this would potentially cause distress to that students or others. (1).</p> <p>b) An AUP is generally designed by the school staff for their particular circumstances. It will include elements like what can be used and how to treat other people and will also include rules against cyberbullying and who to report issues to. All of these will make the Internet a safer place to work. (1)</p>	
<p>25. Many elderly people are concerned about using the Internet because of the risks of online fraud.</p> <p>a) Write a definition of what online fraud is.</p> <p>b) Give two clear examples of how people might be affected by different types of online fraud and how they can minimise or prevent this happening</p> <p style="text-align: right;">5 marks</p>	<p>Grade D/D*, Unit 3, 1.5, 2.5, 2.6, 3.6</p> <p>a) Students should have a clearly understood definition of online fraud as close to a dictionary definition as possible. For example, from the online Free Dictionary: "A crime in which the perpetrator develops a scheme using one or more elements of the Internet to deprive a person of property or any interest, estate, or right by a false representation of a matter of fact, whether by providing misleading information or by concealment of information." Something similar conveying the same overall meaning would be acceptable. (1)</p> <p>b) Students should pick any two examples and clearly explain these in terms of their relatives danger. For example, "you could be subject to Identity Theft, this is where someone gathers information from you, either by</p>	<p>AO1 – 1 mark for recall of the definition AO3 – 4 marks for analysing and evaluating the situation and making suggestions for improvement</p>

	<p>hacking or by impersonating something like your bank, in order to gain your personal details to be used at a later time. With these details, an attacker can then pretend to be you and purchase items or take money from bank accounts etc.” (1). Extortion could be another example, in this instance, “someone might hack into your small business and steal information about your customers and cause your computers to freeze. They will then ask you for money in order to give the information back or fix your broken computers”. (1).</p> <p>They could attend some workshops on how to identify fraudsters and what sort of things they might ask which would cause them to know they were not who they said they were. They should also be taught to not answer any calls from institutions such as their bank as they would not do this. (1) For both of the threats, they could increase the security of their network system to make sure that no one can gain access to their network. They can do this by using systems such as IDS (Intrusion Detection Systems) which will notify them to people getting inside their system so they can quickly respond. They could also invest in much a more powerful firewall and get a local expert to fine tune it to prevent penetration attacks. (1)</p>	
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<p>26. Most modern vehicles now have onboard systems that collect data about it while it is being used.</p> <p>a) Give three detailed descriptions of the possible data stored and with each example state clearly how it can be used as information.</p> <p>b) Some of this data is clearly used by the manufacturers of the cars. What kind of data would be most valuable to them and why?</p> <p style="text-align: right;">4 marks</p>	<p>Grade D*, Unit 1, 1.3</p> <p>Learners can use any vehicle in order to demonstrate their understanding and apply the knowledge they have gained through research and practical applications.</p> <p>The following is a guide to marking based on cars for reference, though any land, air or sea based vehicle will be suitable.</p> <p>a) One piece of data that would be collected about a car would be the amount of pollution it is creating. This can be read by a test station when the car has its MOT to make sure it complies with clean air laws (1). Another piece of information would be the amount of fuel that is not being burned due to engine problems. This can be used to diagnose problems with the ignition of fuel and perhaps point to bad electrical systems. (1). A third piece of data would be the mixture of fuel compared to air entering the engine as this would point to a blocked or partially blocked air filter. (1).</p> <p>b) As was seen recently with Volkswagen, the amount of pollution being created is important and if a number of cars fail these tests across the country, they might need to recall them and fix them before they suffer legal action.</p> <p>Similar example could be offered in relation to agricultural vehicles or boats.</p>	<p>a) AO1 – 3 marks - these are recall descriptions.</p> <p>b) AO3 – 1 mark for making a judgement or conclusion</p>
<p>27. Your digital ePortfolio is a</p>	<p>Grade D/D*, Unit 4, 5.3, 5.5</p>	<p>a) AO1 – 3 marks recalling</p>

<p>showcase to a potential employer or a college admissions tutor.</p> <p>Pick 3 aspects of your ePortfolio or coursework you are particularly proud of and for each one:</p> <p>a) Describe what the digital skill is on display with clear examples.</p> <p>b) Describe how each skill will help you in a certain aspect of your career or further education path.</p> <p style="text-align: right;">6 marks</p>	<p>Learners should demonstrate in detail 3 distinct skills they have used. The statements have to be clearly critical and reflective and not just simple statements.</p> <p>a) 3 marks for detailed descriptions of their skill, for example, "I used a professional level graphics program as part of an art course to make sure that I could add a number of layers to a graphics I was designing. The main tool I used for this was part of an add on filter menu. I was able to add detail to my image to enhance something that the camera did not show well enough.</p> <p>b) The other 3 marks will be in detailing how they think this skill will help them. For example, "I will be applying for an apprenticeship program at a local web design company and my skill in improving existing images will help me to be part of their team in fixing poor images that get sent in by clients".</p> <p>Full marks for 3 complete skills and their benefit.</p>	<p>information about their coursework that is relevant to the question.</p> <p>b) AO2 – 3 marks for applying this understanding to future job prospects</p>
<p>28. The increasing number of people using online facilities such as banks means that more and more cyber threats are being developed.</p> <p>a) List the most common type of cyber threat currently affecting digital applications. (1 mark)</p> <p>b) Describe briefly three applications or practices you would use to protect yourself or your family from potential online threats. (3 marks)</p>	<p>Grade D/D*, Unit 3 and 4</p> <p>This question is a more open question to test the student's ability to apply their skills and knowledge in a real-world situation. They should have done some basic research on cyber threats and know that Trojans are the most common type of threat for part a).</p> <p>b) They need to demonstrate that they understood the</p>	<p>a) AO1 – 1 mark for the main threats.</p> <p>b) AO1 – 3 marks to recall the 3 most used protections available</p> <p>c) AO1 – 1 mark for recall of main principles of an AUP</p> <p>AO2 – 3 marks for policy statement from their understanding</p> <p>AO3 – 2 marks for Analysing and making detailed judgements and conclusions</p>

<p>c) Write a short policy document to help your school or college deal with three distinct cyber threats and give some practical tips on how people can make themselves safe online. (6 marks)</p> <p>10 marks total</p>	<p>coursework and can give some relevant examples and apply them to the scenario. For example, recommending to their family to get a more advanced router so that it has more defensive options.</p> <p>c) They need to demonstrate that they can put together a well written piece showing their skills and understanding of policies that will help the school or college deal with threats. For each of the examples they cite, they will need to give clear examples of why they might help.</p>	
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Annexe D – Moderation of Coursework

Students must produce evidence for all of the criteria listed in the guidance which will be moderated and approved by TLM staff.

TLM use an online Markbook to track the assessment of each criterion and these are marked by assessors and moderated by TLM staff as: N, L, S, H.

- N means "no evidence" - "N" denotes no evidence is yet available that match this criterion and this is the default starting point.
- L means "lower" - If there is some evidence but insufficient to award an "S" e.g. because additional help and support is needed, "L" is assigned.
- S means "secure" - If they are fully competent and self-sufficiently secure in matching the assessment criterion "S" is assigned to the criterion statement.
- H means "higher" - If they are operating beyond the core requirements outlined in the criterion guidance, "H" is assigned. The awarding of H shows a detailed level of additional research beyond the need of the criterion from the students and would designate some of the characteristics of higher thinking skills and practical knowledge.

The following screenshot shows the way these are awarded in the Markbook.



ID	Note	Forename	Surname	Status	1.1	1.2	1.3	1.4
215325		bedak2	blogg1234	2/2 - Ready for moderation	S	S	S	S
215326		bedak3	blogg1234	2/2 - Ready for moderation	S	S	S	S
ID	Note	Forename	Surname	Status	1.1	1.2	1.3	1.4

Each of the units has to be marked as S across the entire range of available criterion to be considered complete. Once this has taken place and been confirmed by the TLM moderation team, students will gain the following marks.

A candidate must meet all of the published unit criteria in order to achieve a minimum of 20 marks to indicate that they are ready for the examination. If students fail to meet the S or H mark across any of the criteria that make up a unit or collection of units, the assessor would be advised to enter them for a Level 1 qualification.

Additional Marks Available

Each unit can be awarded additional marks if students demonstrate exceptional quality of material which clearly demonstrates the higher grading characteristics exhibited in the grading guidelines in section 8 above. That is, they consistently demonstrate a comprehensive understanding of concepts and apply their knowledge and skills in an evaluative and logical way, or show a detailed level of additional research or analysis beyond the need of the criterion. Each unit will attract the following additional marks, designated by an H in the Markbook. Some students will be stronger in specific units, or all units. They will therefore be rewarded for their perseverance and advanced thinking skills.

The following table summarises the number of marks available and the rationale underpinning the marking decisions. This also means that students have already achieved an S across all their coursework and have therefore completed this element successfully.

Unit	Additional Marks Available	Rationale
1	1-2	In general terms, this will be a demonstration of a comprehensive understanding of digital platforms in general and open standards in particular. Students will have been awarded 1-2 H grades in this unit.
2	1-2	In general terms this will be a demonstration of high levels of management of systems and the application of competence with digital skills. Students will have been awarded 1-2 H grades in this unit.
3	1-2	In general terms this will be a demonstration of a comprehensive understanding of digital threats and the ability to apply practical competence in countering these threats. Students will have been awarded 1-2 H grades in this unit.
4	1-4	In general terms this will show a competence and ability shown in planning, executing and evaluating their online system and a quality system overall that shows them in a very professional manner for employment or college applications. Students will have been awarded 1-4 H grades in this unit.

Possible themed routes through TLM coursework for reference

Digital Communications	Digital Data Handler	Digital Designer	Digital Entertainer
Website	Website	Website	Website
Blog / Vlog	Blog / Vlog	Blog / Vlog	Blog / Vlog
Supporting documents	Supporting documents	Supporting documents	Supporting documents
2 from	2 from	1 or 2 from	1 or 2 from
Digital Newsletter (multipage)	Database solution	Digital Animation	Digital Video
Digital publication e.g product handbook	Spreadsheet solution	Digital Imagery	Digital App
Both the above to contain digital imagery edited by the learner for the specific needs of the publication			Digital Arcade Game

Centres are free to explore other methods as appropriate and if available.

Annexe E - Sample student Digital ePortfolio

The following screen shots show the output of a sample student ePortfolio using an online platform. The completed student portfolios will be more comprehensive, but these images give a flavour of some of the elements that will be showcased.

The ePortfolio provided for free by TLM has the ability to send a secret URL which would only be visible to the people it was sent to. The following is the one used as an example.

**[https://eportfolio.tlm.org.uk/view/view.php?
t=IZpubQYr1dvlkDcHVE6O](https://eportfolio.tlm.org.uk/view/view.php?t=IZpubQYr1dvlkDcHVE6O)**

CV

The students can use the ePortfolio to apply for college places and employment opportunities and therefore incorporate a CV into the design. The CV can be customised by students to make sure that they “sell” themselves as effectively as possible using their digital skills and knowledge acquired at their school or college.

The design of the ePortfolio should allow students to incorporate and share only the things they feel most suitable to their application.

The following shows some personal details and background. The system will allow them to control how much or how little is displayed.

Jim's CV

by Jim Yokohama
Tags: CV

[Edit this page](#) [Copy](#)

My achievements so far.

[My entire résumé](#)

Interests

I am a keen cyclist and play the guitar. I have grade 2 guitar.

Personal information

Date of birth	2 February 2003
Place of birth	Anytown
Citizenship	British
Gender	Male

Goals

Personal goals

I would really like to become a designer of unmanned vehicles or a system administrator for a large corporation. I am good at badminton and have been playing since I was 9, so would also like to achieve a high level and perhaps play for county.

Academic goals

I would like to get 5 good grades at GCSE so that I can study A levels and I want to do an Apprenticeship in Engineering or IT.

Career goals

I would like to design a microsatellite to help with monitoring climate change. I would also like to work on a super computer that helps work out the weather patterns in the world.

They can also include skills and experiences and possibly a cover letter, which in this case would be a web page.

Skills

Personal skills

I can read and write some Japanese and speak some French quite well.

Academic skills

I am quite good at maths and science and like some design and technology.

Work skills

I am hard working and help out other students when they are struggling. I also help out coaching a local Year 4 football team.

History

Employment history

Paper Delivery Person at Tamworth News and Sweet Emporium
01/02/16

Education history

GCSE (Level 2) at TLM Stem Academy
04/09/14 - 31/7/21

Certifications, accreditations and awards

Year 9 Award
01/06/17

The above page shows all of their skills and experiences as well as any work experience undertaken.

Coursework Highlights

As well as their CV, they students can share with employers and college admissions officers some of their best pieces of work. The following example is some of the work carried out for this qualification. The student chooses what work to share and how it is presented.

1 Understanding

This work will cover 1.1 to 1.5

1.1

Digital material, to me, is anything that is on a computer or device. When I first started school, everything was on paper and in books, but now everything seems to be on a website and seems a lot easier to find.

1.2

Some examples I found of digital material are the following:

- An image that I take with my phone while on holiday that I post on line
- some music I purchased for my mp3 player
- a podcast I had to listen to for my science homework

1.3 - Data logger video



1.4

There will be an attachment here as a class based

2 Planning

This will cover some planning and demonstrations, 2.1 to 2.5.

2.1 Sample files

 Online Safety.pdf

 tales_of_the_road.pdf

[Details](#)

2.2 Video of file types



 file-filters.mp4 [4.41MB]

[Details](#)

2.3 - 2.4 videos/files etc

 document-security.mp4

Security settings on files

 file-filters.mp4

3 Evaluation

This will look at how well different things work that I used and will cover 3.1 to 3.5.

3.1 Control of information

 Posted by Jim Yokohama on 27 July 2017, 4:03 PM

Too many people online are looking to steal information from me or others. They might use it just to be mean to me, but also to spy and take things from me or for me. A lot of people use other people's identity so that they don't get in trouble themselves when doing bad things. In order to try and stop this, or at least make it less likely to happen, I am always careful to use strong passwords and not give out my personal details easily.

[Add comment](#) [Details](#)

Security video

 online-safety.mp4 - Thursday, 27 July 2017

[1.1MB]

Security settings on email

3.2 Report on misuse



Depending on how the system works, it could incorporate samples of their own work. This could be written documents and other digital files, as well as media such as video and audio recordings.

The could also incorporate their own reflective blogs and journals which give more insight into their personal learning journey. In this sample system, they can also integrate external feeds, so if they are part of a club which is not part of school, but gives them opportunities to showcase their digital skills, such as a local sport club, these can be incorporated as a more rounded picture of what the student is capable of achieving with digital skills and knowledge.

Feedback

The system will allow feedback and advice both internally and externally, so students can show how they acted on advice and feedback from their teachers and assessors, as well as other people. For example they might ask for advice on some graphics they have designed for a local company from the company CEO.

Comprehensive

Due to the nature of digital communication systems, it is likely that students will be creating, sharing and evaluating data and information as much outside lessons as inside lessons. With the TLM ePortfolio, students can use mobile devices to upload materials and reflective notes to their space whenever they like. This means that they can use their skills and knowledge in a more efficient and practical way. This is also more reflective and commensurate with how they will be working once they leave the current school or college and will prepare them for lifelong learning.