Assessors handbook - Silver INGOT assessment criteria

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UNIT 1

Silver INGOT (unit 1) **Open Standards and the use of files and file types**	**(unit 1)** **Being responsible in a network environment**
I know that certain types of files have particular names and purposes	I understand that it is bad practice to share my password with someone else and why
I know that I have to choose the right type of application to open certain types of file	I understand that I should not try and get access to other people's areas on the network and why
I know that some applications can create very big files e.g. video, audio and graphics	I understand that I should not install or download unauthorized materials on the network and why
I know that the size of files can be a problem in transferring them from place to place	I know that access to the network is a privilege that can be taken away if it is abused
I know which places my files go to when I save them	I know in a cable network which cable connects my machine to the network and how to check this is in place if there is a problem logging onto the network
I can make a link to video and audio clips from other applications	I understand the need to backup important files.
I can source images from cameras and scanners using appropriate techniques to cope with their size	I am always co-operative when working with other people.
I know that CD ISO images can be downloaded from the internet to make installation discs for all the major software tools most people need.	I know that network connections can be wireless and that the quality of the connection depends on what is between the client machine and the network wireless access point
I understand why open standards for file formats are important	I understand that up to date virus checkers are essential on Windows networks

UNIT 2

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(unit 2) Practical use of the internet. Searching for and using information	(unit 2) Practical use of the internet. Setting up an e-portfolio
I can use a search engine to find useful information from the Internet	I can set up an account on a community web site
I can transfer information from several sources into a document or presentation	I can create a new web page and make it available on the internet
When using information from other sources I say where I got it from	I can make a heading, links to other web pages using URLS and lists in HTML
I know I should not pass off the work of others as my own	I can use the skills above to make an index page organized into sections
I know that E-mail lists are available to provide free support for a range of applications	I can upload files to my web space and make a link so other people can download the file
I have observed a discussion thread on Usenet, a mailing list or forum to gain additional insight into a topic.	I can use the above skills to make an e-portfolio for my work
I can find a useful product from the Internet that would be good value in supporting work in an office	I can use image editing software to prepare images for use on the web
I can use information from the Internet to support an argument	I can insert an image in HTML
I can find some information and show that it is incorrect by finding evidence from other information sources	I can use the above skills to insert images into my e-portfolio.

UNIT 3

(unit 3) Practical use of office tools Using spreadsheets	(unit 3) Practical use of office tools Using databases
I can start a new spreadsheet and arrange rows, columns and styles to achieve an appropriate layout	I know that a database is a file or system of connected files
I can arrange for the results of adding,	I know that database files consist of records that

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subtracting, multiplying and dividing numbers to appear in a cell	are divided up into fields
I can format numbers in cells appropriately	I can set up a database table consisting of records and fields
I understand how to make a fixed cell reference e.g. to store VAT so that copying references across rows and columns always refers to that cell	I can sort a database into different orders based on fields e.g. in ascending order, descending order, date order.
I can link two spreadsheets so that changes in one make changes in the other	I can search a database for information using simple queries
I can use a range of numbers to produce a graph	I can design a form to give a particular view of the information in a database
I understand how copying formulae automatically increases cell reference numbers e.g. =A1+1 copied down a column will produce the value in A2+1 in cell A3	I can present information from a database in graphical form
I can compare the functions of spreadsheets and databases to choose the best tool for the job	I understand that Structured Query Language (SQL) is an important database standard allowing a common approach to extracting information from a wide variety of data files
	I know that many Internet Web sites are effectively large SQL databases with information displayed through a web page.

Assessors' Guide to Silver INGOT

General Information

- This is an Level 1 qualification also known as the Silver INGOT
- Level 1 qualifications recognize basic knowledge and skills and the ability to apply learning with guidance or supervision. Learning at this level is about activities that mostly relate to everyday situations and may be specifically linked to job competence. Learning at this level involves building basic knowledge and skills in preparation for the world of work and further learning.
- The Level 1 Silver Award has three levels of success. Pass, Merit, Distinction. This helps provide a natural transition from the Entry level to the Level 2 qualifications.
- The criteria are designed to help promote numeracy, literacy, economic understanding and social skills as well as ICT capability.

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- The specification for the Level 1 Silver certificate provides an outcome framework for assessment and is not intended to dictate any particular context for learning. This allows flexibility to meet local needs.

Requirements

- Must be assessed by a trained Silver INGOT Assessor or higher

- Assessors must, at a minimum, record assessment judgements as entries in the on-line mark book on the INGOTs.org certification site and keep such records as necessary to support high quality outcomes for learners. In Centers with more than one assessor, all assessors should attend an annual meeting conducted by the Principal Assessor to ensure standards are consistent.

- It is expected that there will be routine evidence of work used for judging assessment outcomes in the candidates' records of their day to day work.

- Different approaches to learning will be required in order to match differing needs, for example, the needs of children will be different from the needs of adults.

- Completing the criteria for Silver INGOT entitles the candidate to the Award of the Level 1 certificate in Open Systems and Office Applications. The candidate should demonstrate that criteria of the type "I am always co-operative when working with other people." are sustained over time.

- The Silver INGOT is presented in 3 units. We expect at least 20 hours of guided study to be under-taken for each unit before the certificates are awarded to those new to computers but discretion can be used to take account of prior learning where this is sensible in individual cases. In terms of making the award, what matters is outcomes.

Optional general certificates

There is an optional general certificate for Silver INGOT which can be awarded by the assessor, using their discretion, as an added motivator. This increases the number of rewards that the assessor can provide to act as positive motivators. The general certificates can be printed at any time on any paper and there is no additional charge for them.

Assessment Method

Assessors can use the criteria to determine levels of prior learning through dialogue with the candidate, direct observation and any other appropriate and relevant evidence. They can score each of the criteria 0,1 or 2. A zero indicates no observed capability. A one indicates some capability but some help still required. A two indicates self-sufficient capability. When the great majority of criteria are assessed as a two, the assessor uses the web site mark book to request the Awarding Body set tasks or in the case of on-line work, moderation. The tasks and test are used to verify the criteria matching recorded by the assessor. They are completed under controlled conditions.

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Details of the basis of the Award

The Silver Award is made up of three units.

1. Open standards, general knowledge, and working responsibly on networks
2. Practical use of the internet
3. Practical uses of office productivity tools

The first, unit is largely knowledge based, the second, and third applied learning and practical skills based.

Unit 1

There are 18 criteria to match. The assessor should use on-going assessment against the criteria in accordance with the guidance below, encouraging self and peer assessment throughout the unit. There are 18 criteria that should be scored 0,1 or 2. 0 if the candidate has yet to demonstrate competence, 1 if they demonstrate competence but need some support from others and 2 if they are self-sufficient and fully competent. Candidates should score at least 1 on all the criteria and at least 32 in total before taking the test. The test is a multiple choice exercise with 25 questions worth 25 unit marks. For criteria matching, 5 marks should be awarded to candidates that fully meet the criteria in their every day work with a score of 36, 4 marks if they score 35, 3 marks if they score 34, 2 marks if they score 33 and 1 mark if they score 32. Any serious failure in the co-operation criterion should result in withholding certification until the candidate shows some ability to sustain co-operative behavior. Candidates with less than 1 mark from the criteria matching should not be entered for the test as they will be unlikely to do well and the aim should be for all those taking the test to at least pass.

When the assessor is confident that the candidate(s) is/are ready to take the test they should contact their Account Manager who will make a test available to them. All paper copies should be held securely until the test is taken and destroyed immediately afterwards. The unit score is made up from the total of the number of correct answers in the multiple choice test (0-25) and the number of unit marks from criteria matching (0-5). A total of 18 marks or more constitutes a pass, 21 to 24 a pass with merit and 25 or more a pass with distinction.

Unit 2

For the first part of this unit, the candidate should meet all the criteria for searching for and using information by researching an internet community project. This will require analysis of the task taking into account the information they will need for their presentations. They need to provide a

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presentation that answers the questions below. In keeping with the requirements for L1 projects, assessors can provide guidance as long as the candidate can demonstrate competence against each of the criteria on an individual basis. This work builds on the general knowledge acquired in the Bronze INGOT Entry level certificates and provides a progression link to the Gold INGOT community service project. The assessor should allocate 2 marks for each of the 9 criteria in the searching for and using information section. Award 2 marks if the candidate provides evidence of secure capability and 1 if there is capability but a need for continuing support (See expansion of criteria below for more details). An additional 2 marks can be awarded if the candidate answers the 14 questions listed below. 1 mark for the answers and 1 mark for structuring the presentation so that it is easy to follow . The presentation method can be using any appropriate means eg a Word Processed document, a desktop or web presentation.

The candidate should be guided by the assessor to provide specific evidence in their presentation that they have matched the criteria, for example, using a variety of sources and referencing them. Wikipedia is a good source of information as are the web sites of the projects themselves. Some of the language and terminology will be difficult for candidates new to the topic but dealing with something unfamiliar is a good learning experience in its own right. Gaining help from community members including colleagues, mentors, teachers, parents and employers in explaining concepts and broadening vocabulary is encouraged. The main issue is that the candidate can find relevant information and with help transfer it to a form that they can understand, learning something about the internet based community project they have chosen to study. E-mailing people and asking questions is a legitimate strategy but care needs to be exercised so that any one individual is not inundated with many similar requests from different people. Encourage use of the web site forums. Again this is a practical exercise in community participation and so candidates need to become sensitive and discerning about how they relate to others. They should spend about 10 hours of supported study on this task and provide evidence of their research in a set of summary answers to the questions below in an appropriate presentation.

1. What is the name of the project you are researching?

2. What is the address of its website?

3. What is the main purpose of the project?

4. If the purpose of the project is to produce software, what license is used to distribute the software?

5. When was the project set up?

6. Where does the project get its resources? (Fund raising, volunteers, large company funding etc)

7. Who is the main person or people associated with the project?

8. What country or countries are the people in?

9. What interesting things can you find out about these people?

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- Is the project their full-time job or part-time?
- How did they get involved in the project?

1. Has the project any competitors?
2. What is the project's advantages over its competitors?
3. Has the project any weaknesses compared to its competitors?
4. How easy is it to contribute to the project? Does the project web site explain how to take part? Does the project seem welcoming to a newcomer?
5. What is your opinion of the project now you have looked at it in some detail? How could it be improved? If you were a member of the project what would you do to improve it.?

Below there is a list of popular projects. It is not exhaustive (Try www.sourceforge.net [2] for a very comprehensive list of thousands of projects) but should give some indication of where to look. Note that some projects are very technical and others more about communities and sharing ideas. Some projects might be dormant while others are very active. Candidates might look at a few of these initially and then pick one to study in more depth. Spending an hour or two choosing which project to look at in depth is a reasonable approach but the candidate should demonstrate that they have used this time productively.

SchoolforgeUK = Project to share knowledge and information about free and open resources useful to to schools.

Openstreetmap.org = Project to provide a streetmap of the world through contributions by ordinary people

The OpenScienceProject = Project to promote open resources for learning about science

Lilypond = Music project for typesetting music (also Mutopia)

Audacity = Project to provide digital sound recording software

NVU = Project to develop software for web site development

Moodle = Virtual learning environment project

OpenCascade= Open Source 3D CAD project

GIMP = GNU Image manipulation project. Graphics application similar to Adobe Photoshop.

Mozilla = Web browser project similar to Internet Explorer but with some more advanced features.

OpenOffice.org = Office software suite similar to Microsoft Office

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OpenOffice Authors = Project to provide free manuals for the OpenOffice.org software

OpenDocumentFellowship = Project to promote the ISO26300 open document format

OpenClipArt = Project to develop a free and open clipart library

Wikipedia = Project to develop a free encyclopedia

Yellowikis = Free Yellow pages service for advertising businesses

Setting up and managing an on-line portfolio

The second part of unit 2 requires the candidate to demonstrate that they can set up their own account on a community web site and configure it to document their achievements. The candidate might use this to present their findings in their research project and to document their coursework. There is no need to be an expert in HTML for this, but some familiarity with HTML Tags and concepts is needed. The notes below will provide sufficient knowledge but there is also a free tutorial for HTML at http://www.html.net/ [3] for those that want to learn more. The assessor should allocate marks to the criteria as follows

I can set up an account on a community web site (2 marks)

The candidate should be able to go to a web forum, blog site or other type of community web site and create an account. This involves creating a user name and password. Point out to the candidates that it is prudent to choose a login name that will not make them personally identifiable.

To create an account on the Ingots community site, go to http://theingots.org/community [4] and click on the 'login' link at the top right corner of the page. On the login page, click on 'register'. Like most internet forums, the Ingot site requires an email address. This is so that, if the user forgets their password, a new one can be sent to the user.

Experienced internet users often have two email addresses: one for websites they trust, and one for unknown websites. Many websites will sell your email address to spammers. Having a redundant throw-away email address from Yahoo or Hotmail is a good technique for avoiding spam. The Learning Machine respects your privacy. We will not give your email address to spammers so you can be confident that using the community site is safe in this respect.

After an account is created, the website emails a one-time password to the user. After login you must immediately create a new password. You can always change your password: click on 'my account' on the left hand menu and then 'edit'.

Teach candidates about how to choose good passwords to remain safe on-line. Even experienced users use bad passwords, mostly because "common wisdom" about passwords is bad advice. Most advice is essentially to choose a password that is impossible to remember and never write it down. Fear of forgetting their password leads users to choosing bad passwords. Our advice on passwords is the following:

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- Write it down. This may seem surprising, but it's better to have a good password written down than a bad password. A hacker on the internet can't look at your wallet to read your password, but he can use a computer to try every word in the dictionary. If you are concerned about someone looking at your wallet, you probably have bigger things to worry about than your Ingot password!

- One way to create a secure password is to pick three simple words at random, that you can remember (e.g. green tree wood). Then insert numbers between the words (green2tree3wood). Most computer can't try every possible such password.

I can create a new web page and make it available on the internet (1 mark)

This will change somewhat between one web site and another. On the Ingot community site, after you login, click on 'create content' on the left hand menu, then click on 'page'. On the following page enter a title and a content body.

In some web sites the user has to use HTML code for paragraphs, like this:

** This is a paragraph. **

Otherwise all the text is grouped together as one big paragraph. The Ingot website does not require using the tag, but the assessor should be aware that it exists. Note that the / in the second tag is telling the system to end this attribute.

After entering the content, scroll down and click 'Submit'. Be careful to note down the URL of the newly created page. It is very easy to lose track of HTML pages created. This why, in this unit, candidates also learn to create an index page to keep track of created pages. If you lose track of a page on the INGOT site, go to http://theingots.org/community/node [5] to see a list of all pages on the site, ordered from the most recent to the least recent. You can also search for pages using key words.

I can make a heading in HTML (1 mark)

In HTML headings are marked with the tags <h1>, <h2>, ... down to <h6>. The top-level heading is <h1>. To get a clearer idea of how this works, create a new page with the following content and see the result:

<h1>Section 1</h1>

Hello

<h2>Section 1.1</h2>

<h3>Section 1.1.1</h3>

<h1>Section 2</h1>

<h2>Section 2.1</h2>

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I can make links to other web pages using URLs (1 mark)

At this point the candidates should already understand the concept of URLs (web site addresses) and hyper-links (Text usually in blue denoting a link to another page or web site). In HTML, the <a> tag creates a link to a URL, and it has the following syntax:

Please visit **The INGOT website.**

Notice that the 'href' attribute ('hypertext reference') indicates the URL where the link points to. Be careful with the quote marks " ". Avoid editing these in a word processor and cutting and pasting into your web page. The quote marks from the word processor will look the same as those edited in a text editor but they are different and will cause your link to go to unpredictable pages not necessarily the one yo intended.

I can make a list in HTML (1 mark)

To create a bulleted list in HTML, use the following syntax:

My favourite colors are:

<ul>

**
Red
**

**
Green
**

**
Blue
**

**
**

 stands for "un-ordered list" and <li> for "list item". Teach candidates to use bullet lists for items that do not have a specific order. For listing a sequence of items with a specific order, candidates should use ordered (ie. numbered) lists:

Example of an ordered list.

Recipe for cauliflower soup:

<ol>

**
Chop 1 cauliflower and 1 onion into small pieces.
**

**
Gently cook them in butter.
**

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**
Add 1 pint of white stock and simmer for 45min.
**

**
Remove from heat and pass through a sieve.
**

**
Add 1 pint of thin white sauce.
**

**
**

I can use the skills above to make an index page organized into sections (2 marks)

Index pages are necessary to keep track of all the pages and documents on a website. A good index page will use headings to organize the content into sections, and use a bulleted list of links. A final index should look somewhat like this:

<h1>e-Porfolio Index Page</h1>

<h2>Silver Ingot Work</h2>

<ul>

**
<a href="My Ingot blog"
**

**
<a href="My project proposal"
**

**
**

<h2>My Art Work</h2>

<ul>

**
<a href="My paintings"
**

**
<a href="My final project"
**

**
**

To receive full marks, the index page must include use of headings to separate sections, lists and hyper-links.

I can upload files to my web space and make a link so other people can download the file (2 marks)

The method to upload files is slightly different on every web site. On the INGOT web site, go to the page where you will use the file and click 'edit'. Locate the Attachments section below the the content body, then do the following:

1. Click Browse and select the file to attach from your file system.

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2. Click Add.

3. Scroll again to the Attachments section, and note down the URL where the file is located.

4. THEN scroll down and click Submit.

If you don't do the 'Submit' step, the file will not be added! This is a "feature" of the Drupal software environment!

I can use the above skills to make an e-portfolio for my work and maintain it myself (5 marks)

An e-portfolio should include several HTML pages, and should be organized through an index page. An e-portfolio will often include additional files that the candidate has uploaded as samples of their work.

I can use image editing software to prepare images for use on the web (3 marks)

At this point the candidate should be aware of file format issues and file size issues.

File formats: The proper graphics file formats for use on the web are JPEG for photographs (.jpg) and PNG for drawings. (.png) A popular format is GIF, but this format is out-dated and should be replaced by PNG. Other file formats may not work on all web browsers so they should be avoided. svg is the standard for vector graphics but browser support for it has been quite slow.

Image size: The download size for an image should, in general, not exceed 200 KB. The candidate must also consider the proper dimensions of the image (width and height) so that it looks good on a web browser. The image should not exceed 300 x 200 pixels (width x height) unless there are exceptional circumstances, and the candidate should aim to make them smaller if possible. The proper image size will depend on where the image is used and what information it is intended to convey so the candidate should use good judgment. Practice and experimenting with feedback will support learning.

I can insert an image in HTML (1 mark)

After an image file has been uploaded (as explained above) you can insert it into an HTML page with the following:

<img src="http://mywebsite.org/mypicture.png [7]">

Here the 'src' attribute is the source address of the image's location. The system has to know where to find the image. It contains the URL where the image is located. This is like the 'href' attribute in

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the <a> tag for making hyper-links. On the INGOT website, a typical image reference will look like this:

<img src="http://theingots.org/community/sites/default/files/active/0/myphoto.jpg [8]">

I can use the above skills to insert images into my e-portfolio. (1 mark)

While it is not necessary for an e-portfolio to contain any images, sometimes an image can add character and make the e-portfolio attractive or illustrate a piece of text. For example, use clip-art icons for download links (free clip-art available at http://openclipart.org [9]). Teach candidates not to over-use images and avoid animations. An excessive use of images and animations makes their e-portfolio hard to read, and amateurish. This is particularly so if the images are all irregular sizes and styles and set out in random positions.

TIP:

If the e-portfolio includes art work, the candidate can upload a high-resolution version and a small version of the image to serve as a preview. This makes pages load quicker because the small images have less data to call up to display.

Combining images and hyper-links so that when the user clicks on the preview they receive the full-size image is quite straightforward. Here is an example to show the general form of the HTML markup :

<img src="http://mywebsite.org/preview.jpg **[11]">**

Note that the a href tag points to the place where the large picture is stored and links to the small picture instead of the usual text that you click on. Compare with.

The INGOT website.

You can see that the preview picture replaces the INGOT text as the link and the ing src tag tells the page where to find the preview image.

If after setting up their community account by following instructions the candidate can repeat the steps needed unprompted award 2 marks. If help is required but the candidate gets there in the end

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and can provide the gist of what to do afterwards award 1 mark.

For the criteria indicated as potentially worth 1 mark, candidates should demonstrate that they can achieve the outcome consistently after being shown how in the first instance. For making an index, award 2 marks if the candidate is capable of replicating the task on their own. 1 mark if they need some help. For image editing, award 3 marks if the candidate can scale images to fit a range of circumstances and they show appreciation of file size and resolution. 2 marks if they can mainly get images to work appropriately but still need occasional help. 1 mark if they achieve success but need significant on-going support. 1 mark for uploading files self-sufficiently and 1 mark for making appropriate links and ensuring files are a sensible size. For their e-portfolio, 5 marks if they achieve a workable portfolio and show capability in maintaining it self-sufficiently. 4 marks if they need on-going occasional help to maintain their portfolio. 3 marks if they get a working portfolio after some significant help and need occasional help in maintenance. 2 marks if they fully achieve a working portfolio but require significant on-going help. 1 mark if they achieve some of the outcomes require significant help to get there in the end.

Moderation

The Account Manager will use the assessor's marks and the displayed outcomes of candidate portfolios to moderate work before authorising certification. The pass mark for this unit is 22 or more marks out of 40 (55%). For pass with merit 26 or more and for pass with distinction 32 or more.

Unit 3

Unit 3 is assessed through Awarding Body set tasks and criteria matching. Specimens of the set tasks are provided at the end of this section. The assessor should use on-going assessment against the criteria for this unit in accordance with the guidance in the expansion of the criteria. Encourage self and peer assessment throughout the unit. There are 17 criteria for this unit that should be scored 0,1 or 2. 0 if the candidate has yet to demonstrate competence, 1 if they demonstrate competence but need some support from others and 2 if they are self-sufficient and fully competent. Candidates should score at least 1 on all the criteria and at least 30 in total before taking the tasks and the mark book will not allow scores to be entered for tasks until the criteria matching data is in place. 5 marks will be awarded to candidates that fully meet the criteria in their every day work with a score of 34, 4 marks if they score 33, 3 marks if they score 32, 2 marks if they score 31 and 1 mark if they score 30. Any serious failure in the co-operation criteria should result in withholding certification. The marks from the task are added to the marks for criteria matching giving a possible total of 30. This is done automatically when the data is entered in the on-line mark book. Candidates achieving 18 marks or more pass this unit. Candidates achieving 21 to 24 marks achieve a pass with merit and candidates achieving 25 marks or more achieve a distinction. The criteria matching process should ensure that all candidates taking the tests achieve at least a pass by preparing them and checking they are ready.

Moderation/verification

The Account Manager will request evidence from up to 20 candidates depending on the size of the cohort. The exact details should be discussed with the Account Manager prior to certification.

Expansion of criteria for further assessor guidance

Use of files and file types

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In this section, the candidate should build on the knowledge gained in the Entry level Bronze INGOT certificates to improve understanding of the principles of file types in relation to data compatibility, building on and extending it to a wider range of applications and practical situations. This knowledge is important in developing the practical capability to be discriminating in their choice of ICT tools.

They should be familiar with common file types such as jpg (compressed images), bmp (uncompressed images), png (images with attributes such as transparency) svg (scalable vector graphics) and html (web pages) and realize that some applications can make use of a range of different data types and some are very specific to one. They should build on their understanding that some file types are open eg the Open Document Format family that are an ISO standard developed in order to make it easier to share information between applications. Closed formats are often only applicable to a single application and can lead to monopolies for vendors. This should be related to analysis of the requirements of tasks with information about file types as a necessary knowledge to make software choices. They should use their learning to develop increasing ability to be discriminating in their choice of applications even though at this stage they will need significant guidance. They should transfer this knowledge in the practical support of learning and to enhance the quality of their work eg by choosing more economical file formats for storage or internet transfer.

Expansion of the assessment criteria

I know that certain types of files have particular names and purposes

Candidates should be familiar with common file extensions and icons and the applications they relate to. e.g. jpg for compressed photographic images, pdf and odf for documents, svg for graphics illustrations and clip art where the image might need to be enlarged but keep its resolution ie it should not go fuzzy or dotty and lines should stay crisp and sharp. bmp for bit maps, wmf for windows vector graphics, .doc .xls .ppt .pub as Microsoft proprietary formats.

I know that I have to choose the right type of application to open certain types of file

They should realize that a spreadsheet is unlikely to be a suitable application to open a music file and that some files of the same family are sometimes supported by one application and not another. e.g. MS Office will not open OpenOffice.org files but OpenOffice.org can open MS Office files. This should simply be a matter of providing more opportunity to reinforce the ideas in the Entry Level 3 Bronze building deeper understanding and broader practical capability eg through use of their e-portfolio.

I know that some applications can create very big files e.g. video, audio and graphics

This is most likely to be important in scanning images or recording film clips. There is no point in scanning at very high resolution and generating enormous files if there is no visual benefit. Candidates need to do some experimentation with images so they understand that often it's possible to reduce an image file to a small fraction of its original size without making any significant difference to the application in which the image is used. It is always a good idea to reduce image sizes to the minimum that is good enough for the purpose. They should also realize that paying a lot of money for a very high resolution scanner is not a good idea if they are unlikely to scan at high resolution because the files produced are too big to be manageable. Recording audio and video is similarly constrained. Candidates should also compare the size of a range of files from different applications e.g. Compare a Word document, OpenOffice.org Writer document and pdf file and decide which would be best to use for download from an Internet web site when many people might have only a 56k modem. Also look at jpg, png and vector formats such as svg (The W3C open

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standard) http://www.inkscape.org [12] provides a free editor for svg which is in fact a full graphics illustration application. OpenOffice.org Draw produces drawings based on svg but at the present time not to the full svg standard. In general, vector graphics will produce much more efficient clip art and diagrams to illustrate work. These drawings are also infinitely scalable without going "grainy" and losing quality.

I know that the size of files can be a problem in transferring them from place to place

Consider the use of a compression tool to make files more compact for storage and transfer but it's best to choose the correct file types in the first place. Understand that its usually a waste of time trying to compress video files because they are already highly compressed. Get them to check this through experiment. eg zip a video clip and see what difference it makes. Which types of files compress the best and why? A few minutes of reasonable quality video optimally compressed will produce 10s of megabytes of data. Its definitely not a good idea to try and send digital video by E-mail attachment unless you are sure you and the recipients have fast broadband and even then it can take a long time and might not get through service provider limits on the maximum size files allowed to be transferred.

I know which places my files go to when I save them

Candidates should understand directory paths and the idea of how files are organized and how to find them using search tools.

I can source images from cameras and scanners using appropriate techniques to cope with their size

Candidates should be able to get images from a variety of sources and use them practically, taking account of their size and the available storage media and file transfer media.

I can make a link to a video and audio clips from other applications

Candidates should be able to make links to audio and video players to enhance presentations with due regard to the size of files and the available data bandwidth. It might be better in some cases to make a link to a video file on a web site designed to deliver video rather than storing it on their own site eg in their e-portfolio. You Tube is designed for this purpose.

I know that CD ISO images can be downloaded from the internet to make installation discs for all the major software tools most people need.

Traditionally, software has been installed from floppy discs and then CDs or DVDs mainly because the amount of data is very large. Even with broadband, many repeated downloads of operating system software and large productivity suites is very time consuming. The trend is increasingly to get a base installation on the computer and then to update this with smaller amounts of software directly from the internet. Security updates are now routinely distributed by this method. In the world of free and open source software, where there are no license restrictions, distribution of software from the internet is very convenient. CDs and even DVDs full of software can be downloaded to make an installation CD. These CDs are then used to install the software more quickly to as many computers as needed. USB memory is also increasing in size and reducing in price and its possible to run an entire system from a USB key just as it is also possible to do this from a CD or

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DVD. Candidates should be aware that they can obtain just about any software they are likely to need from a functional point of view freely from the internet and that they can make their own installations CDs using commonly available CD burning software. For convenience, software is often distributed as one big file that is the image of all the software on the installation CD. They need to know that its not simply a matter of copying this file to a CD but burning it to the CD as an ISO image. Most CD burning software has options to do this.

I understand why open standards for file formats are important

Continue to develop and reinforce the work in the Entry level 3 qualification. To be a truly open standard the file format should be controlled by several rather than one interest group or a committee with broad representation, and it should not be possible to restrict use through patents either now or any time in the future. In fact there are not many truly open standards for file formats but the issue is becoming increasingly important. Some people believe that if their data is locked into a closed standard they could be left in a situation where they were unable to access it. ISO standards are good examples to cite as there are internationally agreed eg ISO 26300 that was introduced in the Bronze Entry Level 3 work. ISO 26300 is the file format used by OpenOffice.org, Star Office, Koffice and Google's web based Word processor in Google Docs. In contrast the MS Word .doc format is a "De Facto" standard. De facto standards are standards simply established on the grounds of popularity. Truly open standards tend to emerge as technologies mature. In general, governments prefer to use ISO standards because they provide a level playing field for manufacturers and provide consistency to consumers. ISO is the International Organization for Standardization and the pre-fix ISO in English is derived from the Greek word for equal. eg Isobar (Same pressure) Isotherm (Same temperature) Isomer (Same chemical formula). Another important regulator of open standards is W3C the World Wide Web Consortium headed by Tim Berners-Lee, the inventor of the Web. W3C standards ensure that there is a choice of web browsers and that information transfer on the internet is independent of any particular computer system or manufacturer's commercial interests.

Being responsible in a network environment

In this section there is an emphasis on user responsibility. This fits well with the balance between rights and responsibilities and the relationship with citizenship. While there are some technical skills and knowledge involved, successful candidates need also to demonstrate that they take the right attitude to problem solving and to being good citizens in the technological community. This aspect is more difficult to assess but it is at least as important as the demonstration of technical skills. A candidate should not be awarded a Silver certificate unless they show that they are willing to be co-operative, adopt a problem solving approach to technical difficulties and take responsibility for their own actions. This is more about attitudes than it is about high levels of proficiency at this stage.

I understand that it is bad practice to share my password with someone else and why

Candidates should realize that their password is their responsibility. If someone steals their password and does damage to the system under their name they could be held responsible and might not be able to prove it wasn't them. The onus is on them to keep their password secure. Assessors should show a good example by having secure passwords longer than 6 characters and containing numbers as well as letters. Words that are in standard dictionaries make bad passwords because programs can be written that just try every word in the dictionary very quickly. See also the section on setting up an e-portfolio for useful hints about passwords.

I understand that I should not try and get access to other people's areas on the network

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and why

Candidates should not even try to test the system security and should not abuse security even if it is weak. Being found doing so is just as much an offense as successfully hacking a system where security is high. Making networks secure and managing them can be an expensive business so any distractions for the technical support staff are to be discouraged. Emphasize the balance between rights and responsibilities and relate to citizenship. Be prepared to suspend the accounts of those that do not show appropriate responsibility and withhold certification at least until attitudes change.

I understand that I should not install or download unauthorized materials on the network and why

The plague of viruses is partly due to badly designed software, but poor understanding by users is a significant factor too. Any unauthorized installation that contains a new virus not filtered by existing anti-virus software could cost a lot of money in system disruption and for home users without technical support it can lead to an unworkable computer. Candidates should realize that persistent poor software design in relation to security is probably a consequence of lack of competition in desktop operating systems in the recent past. At the time of writing there is no virus problem with Linux desktop computers even though they are in widespread use so design does make a difference. Breaking rules about installing unauthorized materials should result in a ban from using the facilities or some similar sanction but equally, the system support technicians should be open to reasonable requests to install applications that are of educational benefit or good value.

I know that network connections can be wireless and that the quality of the connection depends on what is between the client machine and the network wireless access point

If their machine won't connect to the network, the candidate should be able to eliminate obvious reasons such as someone taking the fly lead from the back of their machine or someone moving the location of their machine out of range of a wireless access point. (This can also result in slow data transfer) Encourage basic self-sufficiency and problem solving. Candidates need to take responsibility for their wider technological literacy and problem solving skills rather than abdicate that responsibility and thus becoming unnecessarily dependent on technical "specialists" for what are essentially trivial problems.

I know in a cable network which cable connects my machine to the network and how to check this is in place if there is a problem logging onto the network.

Usually there will be a green flashing LED on the back of the network card in the computer that shows that data is traveling back and forwards between the network and the machine. If the light is off the chances are there is a hardware fault or the lead is not connected properly.

I know that access to the network is a privilege that can be taken away if it is abused.

Candidates should realize that abuse of a network results in them being banned from using it, either for a period or permanently. Again an opportunity to bring out the balance between rights and responsibilities and the relationship with Citizenship.

I am always co-operative when working with other people.

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Candidates should be given credit for a positive and co-operative attitudes to work building on the social skills expected in the entry level certificate. They should become increasingly self-sufficient in preparation for their community work at Level 2. Working with other people includes those in the wider community who they might never meet apart from an e-mail exchange. Such exchanges should be polite and courteous even if the sentiments are not reciprocated. Candidates need to learn to be above any provocation that is inevitable from time to time.

I understand the need to backup important files

candidates should appreciate that hardware failures or file corruption could cause them to lose their work. They should consider how safe it is to trust the network back up systems or whether they need to take copies of important files off site themselves on eg a USB stick.

I understand that up to date virus checkers are essential on Windows networks.

candidates should appreciate that any computer running MS Windows connected to the internet is likely to get infected by viruses very quickly if not protected by up to date anti-virus software. It's worth noting that there is no significant virus problem on computers running Unix operating systems such as Linux, Solaris or BSD Unix and Windows viruses only affect Windows applications. Anti-virus software is implemented on unix systems but mainly to prevent infection being transmitted from one set of Windows computers to another when information passes through a Unix server.

Searching for and using information

I can use a search engine to find useful information from the Internet

Candidates should be familiar with commonly available search engines such as Google, Alta Vista, Clusty and Ask Jeeves. They should be starting to consider different search strategies such as trying a different search engine or phrasing their search words in different ways. They should be experimenting with the advanced search tools on at least one search engine to see how much these help when searches are not fruitful. They should also know that Wikipedia (www.wikipedia.org [13]) is a good place to search for organized information, but some caution is needed to be sure the information is free from bias, particularly in controversial topics.

I can transfer information from several sources into a document or presentation

Candidates should be able to cut and paste information direct from the internet but also know how to save target objects to a temporary store in say their user directory, edit the file stored e.g. in a graphics package such as GIMP and then use the result in their own work.

When using information from other sources I say where I got it from

Candidates need to acknowledge the work of others by using quotes and/or references where appropriate. References should provide enough information for someone else to find the original source. This might simply be a web site address.

I know I should not pass off the work of others as my own

(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){ (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o), m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m) })(window,document,'script','//www.google-analytics.com/analytics.js','ga'); ga('create', 'UA-46896377-2', 'auto'); ga('send', 'pageview');

Candidates need to understand that plagiarism will prevent the award of a Silver INGOT and could result in further disciplinary action. Positively reward candidates that acknowledge their sources and constantly nag those that don't! Reinforce ideas about licensing and point out that in some circumstances using the work of others without acknowledgment can result in criminal prosecution. Even work licensed for free use often requires recognition of the source.

I know that E-mail lists and forums are available to provide free support for a range of applications

Although there is a lot of information on web sites, there is still a lot more information in the heads of people. For certain types of question candidates should appreciate that asking people might be the best option. As with all mailing lists and forums, observation is fine, but make sure that any posts with requests for information are genuinely required or the list will become swamped and other users will be annoyed. Candidates should appreciate good manners in using lists, newsgroups and forums. Bad manners when communicating with e-communities should be treated in the same way as for lack of co-operation with certificates being withheld. In some circumstances in extreme cases certification can be revoked.

I can find a useful product from the Internet that would be good value in supporting work in an office

Candidates should be able to search the Internet successfully for particular products and make simple comparisons on the basis of cost and function. candidates need to appreciate the practical value of the Internet in seeking out good value products for their own use or that in their place of work.

I have observed a discussion thread on Usenet, a mailing list or forum to gain additional insight to a topic.

This can be tackled by following a line of argument in a debate and discussing who is making the most convincing case. There is no need to contribute at this level, as quite often just observing (lurking) can be the source of useful learning.

I can use information from the Internet to support an argument

The candidate should be able to present an opinion on a topic of some controversy and use information from several sources to back up that opinion. For example, information from a web page search and an E-mail discussion list. Wikipedia is particularly useful in this respect but remember, there is no absolute guarantee that information in Wikipedia is accurate, particularly in controversial subjects.

I can find some information and show that it is incorrect by finding evidence from other information

Candidates should appreciate that not everything they find on the Internet is correct, valid or true. They should browse to find something they disagree with and then find the evidence to support that disagreement or to change their mind. This might be something factually incorrect or an opinion where there is no definitive answer. The important thing is to be able to find evidence to support an

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argument. Look , for example, at http://www.alaska.net/~clund/e_djublonskopf/Flatearthsociety.htm [14]. Also http://www.amasci.com/miscon/miscon4.html#mis [15]

Using Spreadsheets

Candidates with a Silver INGOT should be confident enough to use a spreadsheet to build straight forward financial models such as a petty cash book and to make simple financial models and projections comparing the use of the computer with manual methods. They will be familiar with common functions available in most spreadsheets and know how to find and use less common ones when needed. They should be encouraged to try out more than one spreadsheet program to make comparisons between them and understand that in most cases vast arrays of features and functions are probably of no value to them. Internet based programs are becoming available that will provide the basic functions most people need directly from a web browser eg http://www.google.com/a/ [16] and http://numsum.com/ [17]

I can start a new spreadsheet and arrange rows, columns and styles to achieve an appropriate layout

Experience from the Bronze INGOT should make dealing with general layout reasonably straight forward. candidates should be able to change column and row dimensions and put titles in appropriate places in appropriate typefaces. They should be able to change cell attributes to produce simple but clear and well presented tables of figures.

I can arrange for the results of adding, subtracting, multiplying and dividing numbers to appear in a cell

Candidates should be able to use the common operators +, -, /, x and common functions such as SUM.

I can format numbers in cells appropriately

Candidates should be able to set the attributes of cells so that numbers display to a sensible number of decimal places or can be automatically be shown as percentages or in a particular currency.

I can use a range of numbers to produce a graph

The type of graph should be appropriate to the particular data set e.g. a continuous function such as distance traveled over time should not be presented as a pie chart.

I understand how to make a fixed cell reference e.g. to store Value Added Tax (VAT) so that copying references across rows and columns always refers to that cell

Candidates should know how to fix references for individual cells, rows and columns independently. e.g. in Calc inserting the $ character before the column and row references fixes either the column or row referred to, or both to fix the cell.

I can link two spreadsheets so that changes in one make changes in the other

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Candidates should be able to use one spreadsheet model to affect another by linking two sheets together e.g. in the case of one sheet producing a result that is needed in another.

I understand how copying formulae automatically increases cell reference numbers e.g. =A1+1 copied down a column will produce the value in A2+1 in cell A3

Candidates should understand the copy function and how it can be used to save time in entering data but also that care has to be taken to be sure that the numbers entered in cells are actually as intended.

I can compare the functions of spreadsheets and databases to choose the best tool for the job

Candidates should appreciate that for simple tables there is often not much to choose between using a spreadsheet and a database. For large applications with a variety of different types of data (text, graphics, numbers, audio and video) database managers are most useful. Where the main purpose is mathematical and the dominant need is numeric, spreadsheets are the best choice.

Using databases

I know that a database is a file or system of connected files

Candidates should realise that the database is the data, not the program that operates on the data. Candidates should be provided with a tabular structure so that they understand the concepts of files, records and fields bring out the similarity with a spreadsheet but also emphasise that spreadsheets are really specialized databases for mathematical models and have limitations when the data is not mainly focussed on calculations.

I know that database files consist of records that are divided up into fields

Candidates should understand field types and data types and relate to the work on file types. They should understand that databases can consist of a wide mixture of data types from text and numbers to graphics and multimedia.

I can set up a database table consisting of records and fields

Data entry can take a lot of time. Rather than sitting and inputting large quantities of data, it is sufficient for the Silver INGOT that the candidate understands the concept of setting up a table and that once the data is in the table it can be manipulated and viewed in a very versatile set of ways depending on the software used to manage the data.

I can sort a database into different orders based on fields e.g. in ascending order, descending order, date order etc

Candidates should be familiar with sorting and the fact that many applications with sorts are in fact databases of one type or another e.g. the list of entries in an E-mail client.

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I can search a data base for information using simple queries

Candidates should be able to compare searching combinations of fields in a database with a general query using an Internet search engine. The reason for using Internet based databases is that these are the most common types that the candidate is likely to use.

I can design a form to give a particular view of the information in a data base

Candidates should be able to provide a view of a data set that includes only relevant fields in a layout that is logical and convenient.

I can present information from a data base in graphical form

The candidate should be able to use numerical data from a data base to produce graphs and charts to show relationships between different elements in the data. They can export data from a data base to a chart drawing program to do this eg the Chart application in Open Office.

I understand that Structured Query Language is an important database standard allowing a common approach to extracting information from a wide variety of data files

The candidate should understand the importance of open standards in the interoperability of software and that SQL is such a standard that makes data exchange between databases more straightforward. They do not need to know any details of SQL databases or the language itself but if they have an interest don't discourage them from finding out more. There are several on-line SQL tutorials available. Just search for SQL tutorial in Google.

I know that many Internet Web sites are effectively large SQL databases with information displayed through a web page

Candidates should realise that the internet is in a sense the ultimate data base and that searching the Internet with a search engine is in effect querying a large set of interconnected databases. Most web sites used for e-commerce or more sophisticated information storage and manipulation are SQL databases with a web browser "front-end". One of the most popular and fastest growing methods of achieving this is using the "LAMP" stack. LAMP stands for Linux, Apache, MySQL and PHP. The web site is based on a Linux server, a MySQL data base with PHP script language used to generate HTML pages which are served from Apache webserver. The INGOTs web site is based on this principle and is in fact three databases serving different purposes. All the software is free from licensing costs as well as technological lock-in to any particular supplier.

Specimen tasks for unit 3

Task 1 - 5 marks

Open a new spreadsheet and make a table as shown in the diagram

(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){ (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o), m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m) })(window,document,'script','//www.google-analytics.com/analytics.js','ga'); ga('create', 'UA-46896377-2', 'auto'); ga('send', 'pageview');

One	Two	Three	Four	Five
1	2	3	4	5
7	7	7	7	7
5	4	3	2	1

Use the spreadsheet to add up the values in each column putting the result in the empty cells at the bottom of each column. Take off one mark for each error.

(5 marks)

Save the file with your name in the title and Task1 eg JaneSmithTask1

Task 2 - 5 marks

Start a new spreadsheet and define a style called newstyle that displays numbers to two decimal places in a sans serif font with 2 pt thick cell borders (3 marks)

Enter the numbers from 1 to 3 in cells B3 to D3, 4 to 6 in cells B4 to D4 and 7 to 8 in cells B5 to D5. (1 mark)

Apply the style newstyle to these numbers. (1 mark)

Save the file with your name in the title and Task2 eg JaneSmithTask2

Task 3 - 5 marks

Open a spreadsheet and starting with the number 1 in cell A1 provide a column of numbers running from 1 to 50. (1 mark)

In cell G1 enter the number 0.18. (1 mark)

Use a fixed cell reference to multiply each of the numbers in column A by the number in cell G1 putting the result in column B (2 marks)

Divide all the numbers in column B by 4 by only making an entry in a single cell (1 mark)

(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){ (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o), m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m) })(window,document,'script','//www.google-analytics.com/analytics.js','ga'); ga('create', 'UA-46896377-2', 'auto'); ga('send', 'pageview');

Save the file with your name in the title and Task3 eg JaneSmithTask3

Task 4 - 5 marks

Set up a data base table with fields called Name, Address1, Address2, post code (2 marks)

Design a form to present the fields in the layout below

Name: Address1:

Address2:

Post Code:

(2 marks)

Add 3 records to your database with the following names. Jim, Ahmed, Safi, who live at North Street, Newtown NT2 3WZ, South Avenue, Old Town, OT7 8XC and West Road, Twin City, TC9 7TY respectively.

(1 mark)

Save the file with your name in the title and Task4 eg JaneSmithTask4

Task 5 - 5 marks

Answer the following questions

1. If I wanted to set up a model to work out the pay for 20 employees based on the current tax and pay rates would it be best to use a spreadsheet or a database? (1 mark)

2. If I wanted to set up a web site to access information about my company's products from anywhere in the world is it best to use a spreadsheet or a database? (1 mark)

3. Give an example of how information in databases is kept secure (1 mark)

4. What is the difference between a record and a field in a database? (1 mark)

5. What is the most common language used for data base queries? (1 mark)

(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){ (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o), m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m) })(window,document,'script','//www.google-analytics.com/analytics.js','ga'); ga('create', 'UA-46896377-2', 'auto'); ga('send', 'pageview');

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