# Digital Inclusion

Digital inclusion is the term used to encompass activities related to the achievement of an inclusive information society. It requires removing barriers to take up or adoption of particular digital technologies for individuals and groups that are currently not participating or have difficulty in participating for whatever reason.

**The candidate will demonstrate understanding of key issues related to digital inclusion** in the context of work activities that are at times non-routine or unfamiliar. As a result of reviewing their work, they will be able to identify issues related to digital inclusion including actions to increase accessibility to digital information. Any aspect that is unfamiliar will require support and advice from other people.

**A work activity will typically be 'non-routine' or unfamiliar because** the task or context is likely to require some preparation, clarification or research to separate the components and to identify what factors need to be considered. For example, the economic effect of lock-in to proprietary products and standards, cost and implications of change, convenience, data protection, licensing restrictions, time available, impact on minority interest groups and e-safety. The analysis required will involve a number of steps and at times be non-routine or unfamiliar.

**Example of context** – Issues involved in using web pages to communicate and present information as opposed to a proprietary desktop publishing products.

## Activities supporting the assessment of this award (needs to be linked)

Example of work at this level [1]

## Assessment criteria

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|---|---|---|---|
| 1. Understand digital ownership [2] | 2. Understand interoperability [3] | 3. Participate effectively in on-line communities [4] | 4. Understand accessibility [5] |
| 1.1 name key types of intellectual property [6] | 2.1 name important iso standards for data storage and transfer [7] | 3.1 identify communities that can support IT user skills [8] | 4.1 recognise common accessibility issues for digital information [9] |
| 1.2 explain how copyright and licensing work together [10] | 2.2 explain why standards are important in transfer of information [11] | 3.2 classify communities by type [12] | 4.2 describe a use case that takes account of restriced access. [13] |
| 1.3 describe effects of end-user licenses [14] | 2.3 describe the advantages and disadvantages of ISO and proprietary standards [15] | 3.3 join a relevant community [16] | |
| 1.4 describe the effects of terms and conditions for using digital systems. [17] | 2.4 describe an important protocol and its significance [18] | 3.4 contribute usefully to an on-line community [19] | |
| | | 3.5 describe safety issues associated with on-line communities [20] | |

# Digital Inclusion Level 2

Set the scene [21]

## 1. Understand digital ownership

Intellectual property and digital ownership are important in inclusion because the law empowers owners of digital resources to exclude people directly or indirectly through the way their intellectual property is licensed. Litigation surrounding intellectual property can increase costs and provide risks and threats and these too have an effect on digital inclusion.

## Assessment criteria

**1.1 explain key types of intellectual property (trademarks, copyright, patents)**

**Additional information for teachers and assessors**
Trademarks [22] are names and images owned by organisations. If they are registered they can only be used within the relevant context by the organisation owning them unless the owner provides permission to the user. You should always acknowledge the owner of a trade mark when referring to it. Sometimes trade marks will be accompanied by the letters TM to make it clear that this is a trademark and the owner needs acknowledgement. An example of a trademark is the brand name Google.

Copyright [23] is owned by any individual originating an original work. That individual has the right to say who can use their work and under what circumstances. They do this by specifying a license. The term "copyright free" is often used in error to mean work that is liberally licensed. ie the owner of the copyright has licensed the work to be used freely. Some licenses actively encourage sharing of digital content. For example a very common license is the Creative Commons Sharealike license [24]. This says that you can copy and modify the work but the results must also be licensed for free use. This is the license used by Wikipedia. [25]

A patent [26]is a limited monopoly provided by a government for new inventions in return for their public disclosure. Digital information can not be patented, the correct form of protection for this type of intellectual property is copyright and licensing. Software is a controversial area for patenting. Software patents [27] are very common in the USA but do not have the same standing in Europe. A proprietary software application can be licensed so that the user must pay money to use it. That is simply applying copyright and a license. Under European law it is perfectly legal to write a new program that provides the same functions as a competitors as long as the code is original. Under US law it might be illegal to do this if a patent has been granted for a particular way in which the software works. For example, Apple sued Microsoft for copying the idea for a Windowing user interface but they lost the case. (Apple took the idea from Xerox!) Although patents were originally intended to protect individual inventors, large companies keep patent portfolios simply for the purpose of countering other patent claims. Often the company with the deepest pockets [28] will win a patent battle. This is why many people believe software patents are a bad thing and potentially damaging to open source where there is little organised money to defend lawsuits.

**1.2 describe how copyright and licensing work together (copyright ownership, public domain, creative commons, open source, proprietary, commercial)**

**Additional information for teachers and assessors**
There are two distinct elements to the protection of intellectual property using copyright. The copyright itself is the user's right to license their work and it lasts for a fixed time usually 70 years in the UK. Terms such as "copyright free" are misleading because the owner maintains the copyright and defines how the work can be used through the associated license while the copyright is unexpired. Work in the Public Domain [29] has no copyright. One reason might be because the copyright time has expired. A copyright owner can declare their work to be in the public domain or they can license it for free use or use with certain restrictions. The term copyleft was devised to emphasise licenses that are designed to be viral and spread the work because normally copyright is associated with restricting circulation of the work. The copyleft symbol [30] is a mirror image of the copyright symbol. There are sound commercial reasons for licensing that is viral. If the owner of the work wants maximum take up they need to remove barriers and a restrictive license is such a barrier. This can be seen in the music industry where an artist might release their work to make it popular so that more people will come to their live concerts. In the IT industry programmers will make contributions to a prestige project because it enhances their CV, Learners can provide evidence of their IT user skills by contributing to community projects but they need to understand the copyright and licensing implications. In general lower barriers promote inclusion.

One other limitation of copyright is "Fair Use" [31] (USA) (or Fair Dealing (UK)). Under fair use short extracts of copyright work can be freely used by critics, for education and general reference.

**1.3 describe effects of end-user licenses (ownership, costs, lock-in, rights, responsibilities, inclusion, exclusion)**

**Additional information for teachers and assessors**
Copyright licenses [32] are complex and there are a wide range of them. At one end of the scale, licenses can be very restrictive and complex [33]. At the other end of the spectrum is the Public Domain [29] where one line can confer everyone the right to do anything that they like with the work. Clearly there is risk in using licensed work particularly for end-users that do not fully appreciate the legal implications of how they use the work. That also has implications for employers when employees might use a range of digital resources in the course of their work. In general, the simpler and more liberal the license is the less risk to the user and that low risk adds value in itself. Some useful broad classifications of license are: Proprietary, viral, liberal and restrictive.
A proprietary license [34] is one where the copyright is owned by an organisation that normally wants payment of a license fee for the use of their work. Proprietary licenses are themselves very variable and the onus is on the user agreeing to the license to abide by its terms and conditions. License owners will even audit companies to check there is no unlicensed software in use and can take legal action if there is. It is therefore advisable for companies to regularly audit their systems and this adds to the cost of owning proprietary software. One important effect of proprietary software licenses is that they can in effect restrict the users' own information. If that user creates information and the creating software is the only means of accessing it, the owner of the software could change the license terms and effectively prevent them from using their own information (or force them to pay more). It also means that if the person wants to share their information with other people, those people also have to pay license fees to the owner of the software license. If that software was subject to a patent, it would be impossible to write software independently to access the user's information. This "Lock-in" [35] to a single supplier interest has some important consequences for inclusion. IT Users should understand the licenses they are signed up to, particualrly since in some cases their employer or another third party might have agreed to the license on their behalf. Proprietary licenses are often restrictive but they don't have to be. Shareware is an example of less restrictive licensing that is still designed to achive direct payment for use.

Viral licenses [36] are designed to proliferate. Again there is a wide range of variations. They normally specify that the work can be copied, improved and redistributed but any work derived from the original must also be licensed in the same way. This prevents someone taking the work, making a few changes and then re-licensing it with a restrictive proprietary license. On the other hand it can also cause problems for those that need to integrate proprietary licensed work with the virally licensed work. The most important viral licenses are the Gnu Public Licenses [37] (GPL) usually associated with Open Source Software and Creative Comons [38] Sharealike, usually associated with information, music and similar works in the arts. Viral licenses must be "liberal" or they wouldn't enable the work to spread. They are not entirely liberal because they restrict the user to make derived work available under the same license. Other Open Source licenses such as the BSD license [39] enabled Apple to take the open source work in the form of BSD Unix and create the Mac Operating System which they now tightly control.

The benefits of liberal licensing are not intuitive. Many people still see them as a threat or at best irrelevant to them. More recently, even prominent politicians have realised the potential benefits to business.

The term "commercial" is deliberately avoided since both proprietary and viral licenses can be intended to support commercial gain but using different business models. Google uses open source software (and hardware design) in the Android Smartphones [40]. They expect to make money from using this strategy to grow their search and advertising business making it easier for third party developers to build compatible 'phones. So the viral aspect of open source is a key part of their business strategy, selling software licenses is not part of that strategy because it would increase barriers to adoption and reduce their competitiveness.

For most users the main advantage in using work that is liberally licensed is greater convenience and greater inclusion. There is less risk [41] in inadvertently using software illegally, they can use, modify and re-use work to provide new works. eg a re-mix [42]of video footage. Not having to pay licenses enables legal participation by economically disenfranchised groups and minority groups can make adjustments to fit their needs. An example is localisation [43] in a minority language where it might not be economic for the proprietary owner to provide the language and the license prevents anyone else from doing so.

**1.4 describe the effects of terms and conditions for using digital systems (ownership, costs, lock-in, rights, responsibilities, inclusion, exclusion)**

**Additional information for teachers and assessors** Using applications and accessing communities on the Internet usually requires making an account. These accounts nearly always have a set of terms and conditions [44] associated with them and these are legally binding and so users should have some idea of the implications. The snag is that some are so long and involved they rarely get read. There could be a requirement to pay (although this is relatively uncommon except in niche products because it puts too high a barrier in the way for take up), provision of an e-mail address, behaviour towards other people and ownership of the user data, agreement to install "cookies" [45] etc. Does the user know what a cookie is and why it might or might not be desirable?

IT users should be aware that if they supply their e-mail address it could end up on "spam" [46] databases unless they specify that it should not be, their data could be viewable by people working for the provider without them knowing. There could be limits on how they use their account and they might have to assign ownership [47] of the copyright of their work to the provider. They ought to be aware of the balance between the pros and cons of taking part in order to make informed decisions. They should demonstrate that they understand the effects of some of the on-line services that they use.

# 2. Understand the importance of interoperability

Interoperability is important because without it monopolies can arise increasing prices and excluding the economically disadvantaged. By definition interoperability is digitally inclusive because it enables anyone to develop resources that can be included in the common information pool.

## Assessment criteria

**2.1 name important iso standards for data storage and transfer (eg .html, .svg, .png, .jpg, .mpg, .txt, .pdf, .odf)**

**Additional information for teachers and assessors**
ISO standards [48] are mandated by world trade agreements [49]. This emphasises the importance of open standards in providing a fair playing field for competition. Historically, IT has been an exception in that de facto proprietary standards for data quickly grew up as individual suppliers tried to establish monopolies on particular types of application. The shift from proprietary to open standards [50] in mature IT products is one of the most significant technological changes since the start of the microelectronic age. It has been catalysed by the Internet and supported by industry sponsored organisations such as OASIS [51] as well as large companies such as Google and IBM. The internet is fundamentally based on open standards with the World Wide Web Consortium [52] their custodian. This has enabled many providers to have competing products that interoperate [53]. HTML [54] is the standard that enables web browsers from different providers to consistently display web pages.
HTML is a free and open, fully documented open standard [55] used for displaying pages of information on the web. HTML provides the tags to give styles to text. It has been improved and extended over time so that complex on-line documents can be displayed using HTML. Open Document Format .odf is a more recent ISO standard. It is based on XML [56] another more fundamental and widely used open standard. ODF [57] is intended for desktop office type technologies enabling them to integrate their data seamlessly with web based documents. ODF is widely used but is not well-supported by MS Office which has the biggest market share at about 80% [58] although it is slowly declining. At least part of the reason for sustaining this high percentage of the market is lock-in to proprietary file formats and a lack of transferable skills in the office work force. This is why some understanding of digital inclusion and the implications of open standards is important to all IT users in a functional democracy. .pdf format [59] is an example of an open standard that developed from a proprietary standard. It is designed to produce pages for printing to paper. It is worth noting that a lot of the content attached to web pages as pdfs would be more appropriately displayed directly in HTML. This would reduce the proliferation of files and enable information systems to be better integrated with other user systems particularly on government web sites. The reason for this is again at least partly related to user skills and work flows locked into the desktop office paradigm.

Plain Text [60] formats are simple and easy to translate between systems. Most computers have text editors that can exchange files with other applications. After text, the most used data types are graphics. There are 3 key ISO graphics standards. .jpg [61], .png [62] and .svg [63]. .jpg should be used for digital photographs [64] and scanned images. It enables the user to trade quality against file size. It can lose quite a lot of the data and still enable the image to be displayed in reasonable quality. .png keeps all the data but compresses it as much as possible. png files will generally be bigger than jpg files but the image will always contain all the original data. .png also provides the options for making parts of the image transparent [65]so that background colours will show through a foreground image. png is a replacement for the older gif format that was encumbered by patents and is now obsolete. .svg is a vector format based on XML and is therefore fully open and interoperable with other web based technologies and XML based desktop technologies. It is currently less widely adopted than jpg, gif or png because it is a complex format and only recently gained support in Internet Explorer. It is certain to become very much more important as time goes on. IT users should wherever possible use vector graphics for drawings, diagrams and clip art and look for applications that support import and export to svg. The results can be photorealistic [66] and vectors also support animation. .svg graphics can be scaled infinitely without loss of visual quality, often from very small files. The concept is not new but proprietary formats have dominated often making interoperability between applications difficult. The key strength of svg is that it is a W3C [52] open standard and inkscape [67] is a free open source editor for svg files with export to .png. It is another area where the internet is having a big influence in defining an open standard because browser use is bigger than any particular proprietary standard. The only reason that svg files are not currently used directly in web browsers is that older versions of Internet Explorer in particular will not display them. They therefore have to be converted to .jpg or png images which then loses benefits such as scalability and small file size.

Video and audio formats are heavily dominated by proprietary formats and there is no clear consensus on a single format. This is again changing slowly and the forthcoming HTML 5 [68] will bring an open standard that will simplify the use of embedded video. Why is that important to IT Users? It makes it more likely that whatever browser you choose, it will play video properly without having to download and install umpteen differentplugins [69]. It will also lower costs because free web based editors [70] are likely to improve providing equivalent function to Inkscape for svg files. The owner of a proprietary video standard can license a player for free use but is likely to forbid any other company from producing an editor. Currently the fact that you can embed and run a video from eg You Tube in a web page and be reasonably sure it will display properly in any web browser is down to open standards. For most end users, video editing requirements are along the lines of preparing clips for sharing on You Tube or Facebook. They can source video easily from a digital camera edit it (some smartphones now have video editing embedded) and up load the file to a video site making it available via a company web page. Audio files are most commonly in mp3 [71] format. mp3 is similar in concept to .jpg in that data is thrown away to keep file size small but in such a way that the sound output is still high quality. Unlike .jpg, mp3 is not an open standard. This means the owners of the mp3 patent can demand royalty payments for every mp3 player manufactured and that cost is passed on to users. But it is a lot more complicated as illustrated here. [72] Ogg vorbis [73] is an open standards competitor to mp3. It is making in-roads into [74] the audio market but it is likely to take time because of the dominant use of mp3. Again the point to be made is that even though there are no great interoperability problems with mp3, the migration to open standards for data formats will reduce business costs and IT Users need to be aware that it is in their interest to support take up of open systems rather than to allow monopoly control by individual commercial interests. A small number of open standards will also make it easier and less confusing to use a range of IT user tools on a common set of information.

**2.4 describe an important protocol and its significance (HTTP, TCP/IP)**

**Additional information for teachers and assessors**
Protocols are rules for exchanging information between IT systems. They are important because a system receiving information has to understand the way that information is being sent. So both the sending and receiving systems need to agree on the format of the data in the information. Note that the details of the content are not important, the protocol is just saying things like "this is the start of new information", "this information contains so many bits of information", "this is the end of the information", "this information is corrupt please send it again". Once the information is received intact, it is the job of a program on the receiving system to make sense of the data in the file. So for interoperability [75] we need systems that have protocols that enable them to send and receive information from other devices reliably no matter who makes the device. It is easy to see why a proprietary protocol could create problems. If one company owns the protocol they could either monopolise the hardware of all the devices sending and receiving information or they could charge a royalty on every message sent.

Skype is a good example of a VOIP [76] service based on proprietary protocols. It could be that without the proprietary protocols Skype would not be profitable. The danger is that if Skype took over global telecommunications as a monopoly provider, the owners could command a substantial premium from users. If it is quick and easy to install alternative VOIP systems (and there are already a number competitors including open alternatives [77]) the lock-in to Skype will be weak and so the scope to exploit the monopoly will be weak. Skype supports inclusion because it is cross-platform and it lowers the cost of telephony providing disruptive competition to the traditional suppliers. It is possible though that Skype could work against inclusion in the future.

A good example of a protocol that has promoted inclusion is http [78] (hypertext transfer protocol) that you see in every web URL. This is an open protocol devised by Sir Tim Berners-Lee [79]. It enables web servers to communicate with web clients so that web pages can be requested by a client machine and sent from a server. Apache [80] is an Open Source web server based on the HTTP standard and MS IIS [81] is a proprietary product based on the standard. Again it is important not to have a proprietary monopoly or prices are likely to rise excluding those that can not afford to buy the licenses.

Probably the most important protocol on the internet is TCP/IP [82]. This protocol enables packets of information to be reliably sent around the internet working with the IP address system that enables URLs to find information for users. HTTP and TCP/IP are open standards so all companies can use them on an even footing. This helps to ensure no-one can monopolise the internet and this in turn promotes digital inclusion.

# 3. Participate effectively in on-line communities

The capacity to participate in on-line communities, safely, enables digital inclusion because such communities provide learning and support for any members. This requires the physical access to the network but also the education and support to be able to do it safely.

## Assessment criteria

**3.1 identify communities that can support IT user skills (support communities, development communities)**

**Additional information for teachers and assessors**
Specialist communities have grown up with the internet to support a wide range of technologies and interests. IT users should know how to search for such communities and how to participate in them with due regard to safety. This will contribute to their on-going lifelong learning and enable them to keep digitally literate as technologies develop and change. This will benefit their employers as well as themselves, improving competitiveness and inclusion on the development of useful technologies. They should be able to identify at least one community that would be beneficial to their work. There are literally 10's of thousands of communities to choose from. Try putting Inkscape community into a search and you will find links to the community supporting the free Inkscape drawing application.

**3.2 identify communities by type (Open source, Creative Commons, business networks, social networks, sector specific)**

**Additional information for teachers and assessors** Some internet communities work collaboratively to develop software applications that are free and open for all to use. These are called Open Source [83] projects because the source code of the application is open for all to see. True open source applications are free to copy, free to modify and free to distribute. Quite often there is an Open Source reference application related to an open standard eg Open Office [83] and Open Document [83], Inkscape [83]and .svg [83]. Apache [83] and HTTP [83]. This is useful because it prevents an individual commercial interest from monopolising the standard and charging excessively for associated proprietary applications.

Open source communities are most common in major areas such as programming languages [83], operating systems, [83] content management [83], CRM [83], office applications [83], web browsers [83], graphics [83] and audio, [83] It is perfectly possible to run a business using these applications saving all the licensing costs. A company can also customise software to meet it's own needs without having to re-write all the code. They need only change perhaps a small part of the code to make the software work in a way that is very specific to their needs.

One of the arguments against this method of software production is lack of support. This does depend to an extent on the application but for most there is plenty of support through community mailing lists and forums that costs nothing but personal time. Many see that as a personal investment in their own lifelong learning [83]. In addition, commercial companies will provide additional support for payment. Examples are Canonical [83]supporting Ubuntu Linux, Oracle [83], Novel [83] and Google [83] supporting Openoffice.org and IBM' [83]s supporting Red Hat [83]. IT users can be invloved in product support, development and marketing to any degree they choose. Open Source software has become more and more significant because it has fundamental advantages in the efficiency of resource development when compared to the closed source method, particularly with mass take up products such as office productivity tools, web browsers and drawing software. The difficulty with closed source products is that even very similar applications would have to be written from scratch because of license restrictions. Closed source tends to generate megalithic applications whereas many small applications working together is more likely with Open Source. This is why Open Source and Open standards are closely linked. Different groups can contribute modules to a larger resource that then works seamlessly as a single larger application. This is a much more flexible approach because only those parts that are needed are included. The Drupal CMS [83] is a good example with hundreds of modules that can be chosen and mixed and matched for different purposes. OpenOffice.org is a megalithic Open Source application reflecting the fact that it's design was already in place before it was re-licensed Open Source.

In addition to encouraging smaller more co-operative applications, Open Source largely eliminates the high cost marketing and sales that is needed to establish a closed source product in the market place. Anyone can try out open source software, pass it to their friends or business aquaintances without the barriers of having to buy licenses, limited time trials or deal with copy protection. The marketing is sometimes called viral because of the way the information spreads from person to person rather than because of any danger presented. The internet has been a key influence in these changes. Nevertheless, some resources [83] are generally needed for open source development and sometimes this is donations, sometimes advertising and merchandise surrounding the product, commercial support or dual licensing [84] to different sectors.

Another commuity type is one that develops content and related information. OpenClipArt.org [85] provides a free on-line library of graphics, mostly in svg format, mostly in the public domain. This means these drawings and designs can be used and copied freely and adapted without worrying about infinging intellectual property.

Wikipedia [25] is probably the biggest single source of organised information on the internet. It's content is provided using the Creative Commons Share-alike Attribution license and in general its graphics and similar resources are liberally licensed. If you need an image that you can freely copy and use, try searching Wikipedia and theWikimedia [86] foundation [86]. The Wikipedia community is anyone that contributes. Some people think that for this reason Wikipedia is unreliable but in factual areas, research shows Wikipedia is at least as accurate as commercial competitors. Where there is information on individual celebrities or controversial areas such as disputed history, more care is needed but that is true of traditional sources such as newspapers. In fact the quality of "facts" in newspapers. [83]is very variable because there is a commercial driver to be "sensationalist" in order to attract readers that is absent from Wikipedia and hopefully commercial sources of information. Information resources such as Wikipedia are a threat to the traditional media so care has to be exercised in accepting what traditional media sources say about these newer methods.

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Social network communites such as Facebook [87] and Twitter [88] are often seen as frivolous distractions but if used discriminatingly they can provide useful support and development. LinkedIn [89] and similar business oriented networks provide clear benefits through facilitiating professional groups. These are relatively new and so their advantages and disadvantages are just beginning to be understood. Mostly joining such groups is free and therefore inclusive with options to pay for an enhanced service. They may also carry advertising as a way of generating the income needed for sustainable development. Again this illustrates that barriers to entry that seem small can make or break an internet business. Even a page loading slowly can be a barrier to take up. This is why Google [90]'s home page is simple and carries no advertising even though it is probably the most viewed page on the internet and would attract very high advertising rates. Competition between web sites is fierce and so any that require a payment fee are likely to get nowhere. That provides pressure to find alternative business models and advertising is the most obvious but not the only possibility.

There are many sector specific communities. In education there are subject associations, in the health section forums on particular diseases and so on. A forum is most likely to be effective if it attracts global interest since statistically, the bigger the population the more likely it is that some individuals will be intrested enough to contribute. This is why most succesful Open source projects are based on applications that will have mass global interest.

**3.3 join a relevant community (set up an account, check terms and conditions)**
The learner should have practical experience of registering with a community that can provide relevant support for their work. They should demonstrate that they understand any terms and conditions that they are required to agree.
The learner should have practical experience of registering with a community that can provide relevant support for their work. They should demonstrate that they understand any terms and conditions to which they are required to agree.

**3.4 contribute usefully to an on-line community (information relevant to IT users)**
The learner should demonstrate a practical capability in making a contribution to an on-line community. This could be providing information, contributing original digital work or making the community known to others that might benefit from participation. Assessors need to be sure that the contribution is not going to annoy other community members and that the learner is conforming to any conditions of membership and general netiquette [91]. Learner should demonstrate that they can get information from a community group in order to support solving an identified user problem. This could be how to do something in a particular application, advice on suitable alternative applications, availability on a particular computer platform. Care needs to be exercised in avoiding saturating any particular community with multiple frivolous or repeating requests for the same information. The information required could be in the community faq and it is good practice to search this first, before posting to an on-line forum or mailing list.

**3.5 describe safety issues associated with participation in on-line communities (Good citizens and exploiters, identity theft, persistence of information)**

The basic theme of safety is that many people participate in on-line communities and simple statistics mean that some individuals and possibly even groups are there to do harm. This means that disclosure of any personal details has some associated risk. A starting point could be to do a simple risk analysis. There are many sources of tips about e-safety [83] and a lot would be seen to be common sense but it is well known that common sense is not all that common and what is common sense in hindsight might not have appeared as such at the time particularly for young people. Good citizens in a community are there to be helpful and for the benefit of others. Bad citizens tend at best to simply take from the community without putting anything back and at worst might be disinterested in the topics for discussion and simply want to get access to members that they think they can exploit. That exploitation could be financial, physical, psychological or emotional. All learners should know about the Child Exploitation and Online Protection Centre [83] site.

Some links related to cyber safety

http://www.cyber-safety.com/ [92]

Related to Facebook [83]

Related to Google [83]

General Teen [83]

Bullying [83]

You Tube simple [83]

You Tube [83]

# 4. Understand issues related to accessibility

## Assessment criteria

4.1 **Identify common accessibility issues for digital information (physical disabilities, economic constraints, geographical constraints, educational constraints)**

Digital inclusion requires considering the full range of possible reasons [93] that an individual would have difficulties in participating. Economic reasons are covered in detail elsewhere. Physical disabilities can usually be mitigated by providing different input devices but the concept of "Design for All [94]" is intended to ensure that initial design is inclusive rather than adding facilities as an after-thought later. There are examples here [95]. Adapted keyboards, touch screens, and speech are examples of technology adaptations to support inclusion. Usually these non-standard devices are expensive which brings back cost-constraints. W3C publish detailed content accessibility guidelines [96]. It is not expected that the learner is fully conversant with all the details but they should be aware of a range of possible issues and demonstrate an ability to use relevant sources for reference.

**4.2 Describe a use case that takes account of restriced access** (provide information in open formats, ensure colours are viewable, reduce files sizes to support slow internet access, make available free software tools, provide text with graphics for web pages)

To satisfy this criterion candidates will need to show that they have applied accessibility principles to their own work. They should document at least one project showing how they have taken into account digital inclusion in the design and implementation. They might make information available in open formats as well as in popular proprietary formats so that other people are not forced to buy particular applications. They can describe how the colours used to present textual information have been chosen for high contrast and away from colours that becom indestinguishable for colour blind people. They could provide links to free software tools that can access and edit the information they provide, they can license work so that it is free to modify and share. When providing images in web pages they might provide text in order that text to speech synthesis can work. They might check that their information is compact and will download reasonably quickly on a slow internet connection. The key requirement is too take a digital project that is part of their normal work and describe the steps they have taken to make it digitally inclusive.

BSkyB [97]and Nomensa [98]developed a BS8878 [99] compliant system by taking the BSD [39] licensed Django [100]content management system and reworked it. This would not have been possible with a proprietary web-out-of-box solution.



## Links
[1] http://theingots.org/community/sites/default/files/uploads/user4/PupilFNC7.pdf
[2] http://theingots.org/community/Digital_inclusion#1
[3] http://theingots.org/community/Digital_inclusion#2
[4] http://theingots.org/community/Digital_inclusion#3
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[17] http://theingots.org/community/Digital_inclusion#1.4
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(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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(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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