



Robinson, E. and McMenemy, D. (2020) 'To be understood as to understand': a readability analysis of public library acceptable use policies. *Journal of Librarianship and Information Science*, 52(3), pp. 713-725. (doi: [10.1177/0961000619871598](https://doi.org/10.1177/0961000619871598))

The material cannot be used for any other purpose without further permission of the publisher and is for private use only.

There may be differences between this version and the published version. You are advised to consult the publisher's version if you wish to cite from it.

<https://eprints.gla.ac.uk/262879/>

Deposited on 05 February 2024

Enlighten – Research publications by members of the University of
Glasgow

<http://eprints.gla.ac.uk>

‘To be understood as to understand’: a readability analysis of public library acceptable use policies

Elaine Robinson

Management, Work and Organisation

University of Stirling

David McMenemy

Computer and Information Sciences

University of Strathclyde

Abstract

Acceptable Use Policies (AUPs) are documents stating the limitations users must agree to when first accessing information and communications technologies (ICTs) in organisations, such as employers, educational institutions, and public libraries. AUPs lay out the parameters of acceptable use expected of someone accessing the ICT services provided, and should state in clear and understandable terms what behaviours will attract sanctions, both legal and in terms of restricting future access. Utilising a range of standard readability tests used to measure how understandable documents are, the paper investigates how readable the AUPs presented to public library patrons in the UK are in practice. 200 of the 206 AUPs in use across the local government departments who manage public library services were obtained and subjected to a range of readability testing procedures. Four readability tests were used for analysis, the Flesch Reading Ease, the Coleman-Liau Index, the Gunning Fog Index, and the SMOG Grade. Results for all four readability tests administered on all AUPs raise significant questions. For the Flesch Reading Ease score only 5.5% of AUPs scored at the standard readability level or higher (60+), and 8% scored at a very high level of difficulty akin to a piece of scientific writing. Similarly, for SMOG, only 7.5% of the 200 AUPs scored at the recommended level of 10. Likewise, very few AUPs scored at levels recommended for a general audience with either the Gunning Fog Index (11.5%) or the Coleman-Liau Index (2%). With such variability in readability, the fitness for purpose of the average AUP as a contract patrons must agree to can be called into question. This paper presents the first ever analysis of the readability of library AUPs in the literature. Recommendations are made as to how public library services may improve this aspect of practice.

Introduction

A key challenge of living in the digital age is that while “a multitude of people work, play, and learn through digital technologies, many individuals still don't know how to be responsible citizens in the digital society, and often many do not know where to begin” (Ribble, 2015, p.1). These concerns are encompassed within the notion of digital citizenship, defined as “the norms of appropriate, responsible technology use” and a crucial element of living in the modern world (Ribble, 2017).

Internet acceptable use policies (hereafter AUPs) provide “camouflaged” direction on digital citizenship, with their emphasis on what to do and what not to do while using Internet technologies (Ohler, 2010, p.192). As such they can be a key mechanism for how the values of digital citizenship are transmitted within civil society via public bodies. However, to do so effectively, they need to be written clearly, and be easily understood by the majority of the patrons who will sign them. This paper expands our understanding of how the values of digital citizenship are communicated to the wider population through the AUPs used by public bodies, in this case the public library services of the United Kingdom (UK).

Analysing the AUPs from 97% of UK public library services in the UK, this paper presents the first published findings related to the readability of AUPs from a public library perspective. It begins by discussing the importance of AUP design and purpose, followed by a discussion of the concept of readability in its broad sense. It then presents the findings from the analysis of the UK AUPs obtained for the study, followed by a discussion of the implications of the findings.

Research context

In the United Kingdom, public libraries are a key provider of Internet and computer access, and are a central figure in helping to overcome the digital divide (McMenemy, 2009: 7). For their *Taking Part Survey*, The Department of Culture, Media and Sport found that in England those living in most deprived areas visit the public library more often than those in less deprived areas (36.8% in the most deprived compared to 31.5% in the least deprived) (Department of Culture Media and Sport, 2015). Despite the ubiquity of the mobile smartphone and its Internet capabilities, there are some aspects of computer usage that the mobile phone simply cannot replicate fully, and there is still a need for the digital access that the public library environment can provide (Donner and Walton, 2013: 358).

To help facilitate this access, public libraries, both across the world and in the UK, utilise AUPs, sometimes referred to as a computer usage policy or Internet access policy. As part of its overall access management strategy the AUP is an integral part of getting patrons online, and it is considered to be one of the “most important interface documents between the user and the library in the modern era” (McMenemy, 2014: 2). The AUP is essentially a set of terms and conditions between the user and the public library. Originally formed in part as a means of assuaging fears over Internet users (such as young children) accessing content that may be deemed offensive or harmful (Palgi, 1996, Rusk, 2001), the AUP now also acts as a user guide for patrons, outlining what the library expects of them, and what they should expect from the library. The AUP is a means of outlining limits (Chapman, 2003), defending against misuse (Young, 2010), and it provides information on what is seen as acceptable use of the library’s computer and Internet facilities (McMenemy, 2009). An AUP can also be used against censorship; a well-written AUP can be informative and lessen the need for filtering (Palgi, 1996). Information in the AUP may include how long the patron has access for, what sort of filtering software is installed on the computer they are using, whether they are allowed to download certain materials, and what steps the library will take if the patron downloads files that are protected by copyright. These terms are usually enforced through both physical and electronic observation. The AUP is also a way to support the objectives of the library, and to set forth the library’s commitment to professional ethics. Importantly, the AUP should be able to inform the patron why the library has need of such a policy (American Library Association, 2012).

It is recommended that in order to be effective, an AUP should not be written in an effort to control users, but instead should help guide their usage (Kallman and Grillo, 1998, Siau et al., 2002).

Indeed, the AUP can be an especially useful and instructive tool for those still finding their way around the Internet and what it has to offer: “effective AUPs can help to establish, and reinforce, safe and responsible online behaviours” (BECTA, 2009: 1). It is crucial that the AUP be written in such a way as to facilitate this understanding. Considering the importance of the AUP for both the public library patron and the public library authority itself, research in this area has been minimal. Towards that end, this paper provides an analysis of UK AUP policies from the point of view of readability. There has been no full-scale content analysis of public library AUPs across the UK. There have been small-scale studies using discourse analysis (Gallagher et al., 2015, McMenemy, 2014), mystery-shopping type research to investigate usage of AUPs as access management tools and consistency of their application (Poulter et al, 2009), and some large scale research studies involving surveys and statistical analysis, particularly in regards to the construction and implementation of the AUP (Brophy, 2003, Spacey et al., 2013, Willson and Oulton, 2000). However, in terms of analysis of the actual content of the AUPs, there is a significant gap in the literature which this research seeks to address. The key question posed by this paper is, what are the levels of readability of AUPs that public library patrons are required to agree to, and what implications might this have for the rights of users?

The design of AUPs

AUPs can and often do differ in length, style and tone, as the requirements they will place on the user will differ depending on the kind of organisation that the AUP is constructed for. In a public service where only adults may be using the ICT facilities there may be less concern with users accessing content not deemed appropriate for young people, whereas in a public space the organisation will be rightly concerned with materials being accessed that could possibly be viewed by a vulnerable or young person and be deemed to be offensive or inappropriate.

Guidance exists on how best to design an AUP, however, ultimately the design and implementation of an AUP document is usually something that is carried out within an organisation itself. Each organisation must decide the limitations they wish to place on usage, and which aspects of inappropriate or illegal activity they wish to highlight in the document. From a user perspective it is vital that these parameters are clearly understood and that any such breach of the limitations are not done so because the user did not understand the agreement fully.

An organisation implementing an AUP must be sure that it represents a legitimate agreement between it and the service user, one that has a proper legal basis and that can be relied on to ensure protection for the organisation if the rules are breached. Equally, public service organisations have an ethical duty to ensure service users are properly informed regarding the services they are provided with, and understand the liabilities they may be agreeing to when using them.

Scott and Voss considered this issue as far back as 1994 when designing their 7 Ps model for the design of computing use policies (Scott and Voss, 1994) with number 6 on their list being “Phog Phactor: ensuring readability of the document.”

Laughton suggests that an AUP has 3 main purposes:

1. Educating users about activities that may be harmful to the organization
2. Providing legal notice of unacceptable behaviour and the penalties for such behaviour
3. Protecting an organization from liabilities it may incur from misuse of the Internet and other computer facilities (Laughton, 2008).

Clearly here we see points 1 and 2 have significant readability elements to them. An AUP needs to educate a user, but also warn them, and in both cases a crucial measure of success is that the text of the AUP is understood by the user. In doing so, Laughton believes the AUP then respects the rights of the user, as well as merely providing protection for the organisation.

Readability

Readability is defined as how easy a piece of writing can be read and understood (Grewal et al., 2012). Readability is a significant aspect of writing; it impacts the understanding of a text (Badarudeen and Sabharwal, 2010: 2572), and this becomes a more important principle the more general an audience is (Klare, 2000). For a policy document such as the AUP in the public library, it is essential that it is designed for a variety of readers, who will be at varying levels of literacy. As Seely observes: "It is safest to assume little or no prior knowledge of your subject, unless you have good reason to believe otherwise. Far more people have been put off reading a text because they could not understand it than because they were offended at being treated like idiots" (Seely, 2013: 124). Those who use their local library will differ vastly in age, education, and reading ability, thus the public library's AUP must serve a variety of people. Data from 2014-2015 showed that 35% of adults in the UK had visited a public library in the previous 12 months, with the largest demographic being adults in the 25-44 age category.¹

In a survey of epilepsy information websites and their readability, Brigo et al. note that having the information available is not enough; the information made available must also be understood by the reader (Brigo et al., 2015: 35). The same principle applies to the library AUP; it is not enough for the policy to simply exist, it must be clear and intelligible to those it was written for. Furthermore, as a contract and a quasi-legal (McMenemy, 2014: 1) document, it is essential that the AUP is written in such a way as to be clearly understood by the patron. They must understand the implications of what they are clicking "I agree" to, otherwise the AUP is ethically questionable.

A person's reading ability is usually dependent on how much education they have received (Bluman et al., 2009). The National Literacy Trust note that around 5.1 million adults in England are functionally illiterate (National Literacy Trust, 2017a), and a 2011 survey of the literacy, numeracy and ICT skills of those aged 16-65 in England by the Department for Business, Innovation, and Skills recorded that:

- 5% achieved Entry Level 1 (National School curriculum equivalent for attainment age 5-6) or below (approximately 1.7 million people). Adults below Entry Level 1 may not be able to write short messages to family or select floor numbers in lifts.
- 2.1% achieved Entry Level 2 (National School curriculum equivalent for attainment age 7-9) or below (approximately 730,000 people). Adults with below Entry Level 2 may not be able to describe a child's symptoms to a doctor or use a cash point to withdraw cash.
- 7.8% achieved Entry Level 3 (National School curriculum equivalent for attainment age 9-11) (approximately 1.7 million people). Adults with skills below Entry Level 3 may not be able to understand price labels on pre-packaged food or pay household bills.

(Department for Business Innovation and Skills, 2011: xxvii-xxviii).

¹ Library facts – Available from: <https://readingagency.org.uk/about/impact/001-library-facts/> Last accessed: 31st August 2017

Readability testing is widely performed on health materials, such as the quality of healthcare information available online (e.g. Agarwal et al., 2013, Best et al., 2015, Brigo et al., 2015, Hansberry et al., 2014, Svider et al., 2013), health information leaflets and documents, including consent forms (Corcoran and Ahmad, 2016, Eltorai et al., 2015, Graham et al., 2015, Hedman, 2008, Kasabwala et al., 2012, Walters and Hamrell, 2008), and health education (Lee and Belden, 1966). It has also been used for reports in other areas of science, such as forensics (Howes et al., 2014a, Howes et al., 2013, Howes et al., 2014b) and also for business management (Lo et al., 2017). In the case of the library and information science profession, however, research into the readability of materials and documentation in the library – such as policy documents like the AUP – is limited. Readability testing studies have been conducted with regards to student research (Gray, 2012) and university library websites (Lim, 2010, Muswazi, 2009). A comprehensive but easily read AUP is encouraged and promoted by library groups (American Library Association, 2012, CILIP, 2009). However, readability testing is not actively practiced in the profession. Considering the importance of these documents – outlining the agreement between the user and the library, this indicates a significant gap in the literature, and as a result, in the professional practice of UK librarianship.

Methods

This study carried out readability testing on AUPs in the UK. There are 206 public library authorities in the UK overall (CILIP, 2015) and each has its own AUP. Of these, 200 were obtained to test readability, representing a 97% coverage of UK library services.

The researchers obtained the AUP documents in a two-stage process, (1) via search engine and website, and (2) via Freedom of Information request. Firstly, the AUPs for each authority were searched for using Google, and when not found directly via the search engine, the websites of local authorities who administer the public library services were visited, and the AUPs were obtained there. This proved successful in 114 cases of the 200 AUPs obtained (57%).

For those AUPs not made available online, a Freedom of Information (FOI) request was emailed to the relevant local authority to obtain the documents. 86 of the documents obtained (43%) were done so via FOI request. An example of the FOI request that was sent can be found in Appendix 1. 6 of the 206 library services did not respond to the request to provide the AUP. While this paper is not focused on issues of information governance, it is worth noting that documents such as AUPs should be expected to be available for public consultation, and in the 6 cases where FOI requests were not responded to, issues of openness and transparency are also of potential concern.

AUPs were supplied as a mixture of Word documents, PDFs, and image files. Several of the AUPs were not actually text but rather images, with text appearing in a boxed area, unable to be “read” by readability calculators. The text was extracted from these using Microsoft OneNote 2016’s Optical Character Recognition (OCR) tool² on a Windows 10 computer, and then checked manually by the lead author to make sure they were complete and that the text had been successfully transferred over during extraction. AUPs were then put through four readability tests (Flesch Reading Ease, the Coleman-Liau Index, the Gunning Fog Index, and the SMOG (Simple Measure of Gobbledegook) Grade), using the readability testing website: readable.io (previously readability-score.com). The AUPs were uploaded to the readable.io website which processed the

² <https://support.office.com/en-gb/article/Copy-text-from-inserted-pictures-in-OneNote-2016-for-Windows-e633bd8f-0b97-4fb4-96e1-0f081541e52e>

files and gave the subsequent results as an Excel spreadsheet. These were then combined into one large spreadsheet for analysis.

To provide some contextual comparison to the AUP results, three other pieces of writing were also tested for comparison. The examples selected were done so to represent emblematic examples of types of writing of differing difficulty that could provide a reasonable comparator for the AUP content. The rubric behind selection of these comparison texts was not to select documents that were similar in nature to AUPs, but instead to select documents that demonstrated varied reading difficulties, to see where the AUPs being analysed would sit on that scale. The documents selected were:

- a 2016 article about quantum computing from *The New Yorker*³;
- the Terms and Conditions for using Apple's iTunes software⁴ ;
- and a BBC News profile of opal mining.⁵

The New Yorker article and Apple's Terms and Conditions for iTunes were both chosen for their perceived difficulty to allow the AUPs to be compared to documents with proven high readability scores. *The New Yorker* has been argued to form part of what has been pejoratively termed the "middlebrow": "devoted to the high but also to making it accessible to many; to bringing ideas that might remain trapped in ivory towers and academic books, or in high-art (or film or theatre) scenes, into the pages of a relatively inexpensive periodical that can be bought at bookstores and newsstands across the country (and now on the Internet)" (Halford, 2011).

iTunes Terms and Conditions in particular is a document widely regarded as being both lengthy and difficult to read (Hern, 2015, Kamen, 2015, Pidaparthi, 2011), and again this was selected to provide a readability benchmark. Perhaps closest in purpose to the AUPs of the documents selected for comparison (as it forms a contract between user and supplier) it has, as has been noted above, been widely criticised for its difficulty. The BBC website page was selected, as it consistently produces readability averages that are deemed by communications advisers to be worth benchmarking against for website providers.⁶ The purpose of the BBC to reach a wide audience was also deemed relevant here, as the public library also serves a similar mission, to be an accessible service to all.

The selection of comparative documents, then, forms a useful benchmark for the AUPs to be compared against based on best practice.

The readability tests

The four readability tests used for analysis were Flesch Reading Ease, the Coleman-Liau Index, the Gunning Fog Index, and the SMOG (Simple Measure Of Gobbledegook) Grade. The four tests use a combination of word complexity, polysyllabic word count, character count, and sentence length to calculate the readability of a piece of text, with the specific formulas utilised in each test presented in Table 1.

Table 1. Readability Formulas (from readable.io).

³ "Hacking, Cryptography, and the Countdown to Quantum Computing" found at:

<http://www.newyorker.com/tech/elements/hacking-cryptography-and-the-countdown-to-quantum-computing>

⁴ found at: <https://www.apple.com/legal/internet-services/itunes/us/terms.html>

⁵ "Glittering prize: The booming demand for opals" found at: <http://www.bbc.co.uk/news/business-40416656>

⁶ <https://www.wyliedcomm.com/2017/08/benchmark-your-readability-against-the-bbc/>

READABILITY INDEX	FORMULA	OUTPUT
FLESCH READING EASE	$206.835 - (1.015 \times \text{ASL}) - (84.6 \times \text{ASW})$ where ASL = Average Sentence Length (words divided by sentences) and ASW = Average Syllables per Word (syllables divided by words)	Index Score
GUNNING FOG	$0.4 (\text{ASL} + \text{PHW})$ where ASL = Average Sentence Length (words divided by sentences) and PHW = Percent Hard Words (words of 3+ syllables divided by words)	US Grade Level
SMOG	$\sqrt{(\text{total polysyllabic words} \times [30/\text{total sentences}])} + 3$	US Grade Level
COLEMAN-LIAU	$0.0588 L - 0.296S - 15.8$ where L = average number of letters per 100 words and S = average number of sentences per 100 words	US Grade Level

These four readability tests were chosen to undertake this analysis because they are among the most commonly used and well-known readability formulas (Kondilis et al., 2010, Svider et al., 2013, Kugar et al., 2017). Specifically, the Flesch Reading Ease test was selected because of its accuracy and simplicity (Kondilis et al., 2010, Rudd, 2010); the SMOG Grade test is both widely used and considered to be a very reliable instrument of measuring readability (Best et al., 2015, Kondilis et al., 2010, Rudd, 2010, Fitzsimmons et al., 2010, Hedman, 2008) and has been found to be consistent performance-wise (Wang et al., 2013). The Coleman-Liau Index was also selected for its simplicity (Wilson et al., 1997); and the Gunning Fog Index because of its frequency of use, especially in regards to information materials concerning health and medicine (Hamnes et al., 2016, Luk and Aslani, 2011).

The Flesch Reading Ease test works by measuring average sentence length in words and average word length in syllables. The output is a score from 0-100 with higher scores indicating easier levels of readability. Figure 2 reflects the difficulty of scores and corresponding literature types, adapted from Flesch's own calculations (Flesch, 1948). The higher the score is, the easier the readability of a piece of text. Scores of 60-70 should be understandable by those aged 13-15 years old (Grewal et al., 2012).

Table 2. Flesch Literature Types.

Score	Typical Magazine	Difficulty
0-30	Scientific	Very Difficult
30-50	Academic	Difficult
50-60	Quality	Fairly Difficult
60-70	Digests	Standard
70-80	Slick Fiction	Fairly Easy
80-90	Pulp Fiction	Easy
90-100	Comics	Very Easy

The remaining three tests all output a corresponding US school grade level, a breakdown of which can be found in Table 3, along with reflective age numbers.

Table 3. US Grading System

Grade	Age Range
1st	6-7
2nd	7-8
3rd	8-9
4th	9-10
5th	10-11
6th	11-12
7th	12-13
8th	13-14
9th	14-15
10th	15-16
11th	16-17
12th	17-18

The Gunning Fog Index was conceived by the college textbook publisher, Robert Gunning in 1952 in an aim to make writing easier for readers, as a lot of written material is full of fog – too many lengthy words and sentences (Cantore and Passmore, 2012, Seely, 2013). The Gunning Fog Index relies on sentence length and syllables, with “foggy” words being 3 syllables or more. The Gunning Fog Index grades text, with higher scores indicating a higher level of reading difficulty. A rating of 7 or below should be understood by schoolchildren, those of about 15 should be able to understand text at level 10, and a score of 12 or higher indicates university level or above (Cantore and Passmore, 2012, Seely, 2013). Text should aim for a score of 7-8, with anything over 12 becoming too difficult for a general audience (Grewal et al., 2012: 1463).

The SMOG Grade test works by selecting sentences from the beginning, middle and end of the piece of writing, and counting the number of words in each that contain 3+ syllables, designed to

be a simple yet strong test (Fitzsimmons et al., 2010, McLaughlin, 1969). A score of 13 or over requires the reader to have some kind of college or university education, 17 or over requiring graduate training, and anything over 19 a higher professional qualification (McLaughlin, 1969: 645). For a general audience, the National Literacy Trust recommend that writing should have a SMOG score of about 10 (National Literacy Trust, 2017b).

The Coleman-Liau Index, developed by Coleman and Liau in 1975, relies on characters rather than syllables per word in order to be easier and more economically feasible for large organisations such as the US Department of Education, with the resulting calculation outputting a US Grade level (Coleman and Liau, 1975). Like the Gunning-Fog index and the SMOG readability formula, the lower the Coleman-Liau Index score is, the easier the writing should be to read. A score of 14 equates to college sophomore or 2nd level undergraduate (about 19-20 years old) (Wong and Levi, 2016). Standard writing should aim for a score of 7-8 in this test (Wilson et al., 1997).

To contextualise our discussion, the UK's National Literacy Trust recommended score on a test that utilises the US grade system is 10 (in this paper 3 are using this method are used, Coleman-Liau Index, the Gunning Fog Index, and SMOG), as it is argued that the majority of the population will understand a document that is assessed at this level.⁷

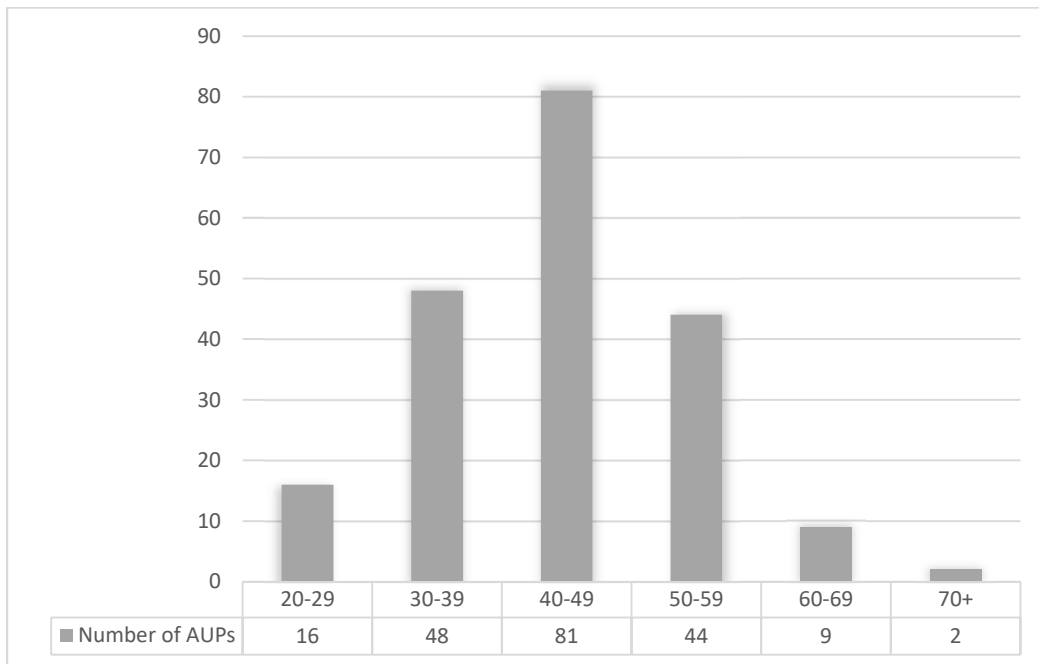
Results

Overall the majority of AUPs tended to score at difficult reading levels across all four tests, with a considerable level of variability within each test. The section below presents the results of each test of the AUPs in chart form.

Figure 1 presents the result from the Flesch Reading Ease test, Figure 2 presents the results of the Gunning Fog test, Figure 3 presents the results of the SMOG test, and Figure 4 presents the results of the Coleman-Liau test. In Figures 1 thru 4 the charts are presented in bar format, and the dark shaded bars on each chart represent results that would qualify as being in the recommended range of results in terms of readability for a general audience.

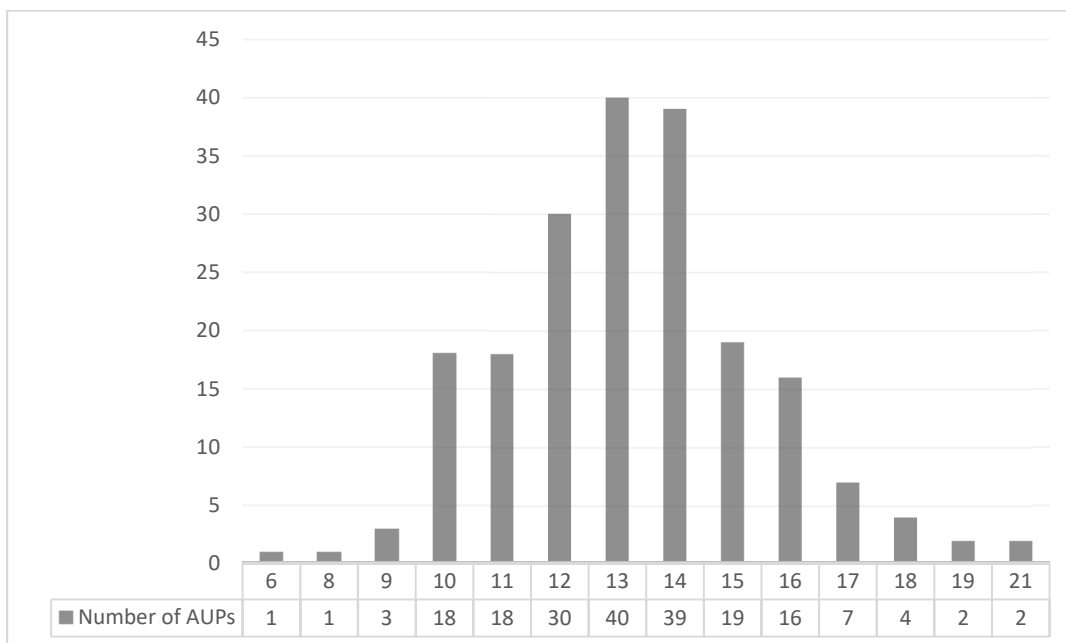
Figure 1. Flesch Reading Ease

⁷ <http://www.literacytrust.org.uk/about/faqs/710> how can i assess the readability of my document or write more clearly



The average Flesch Reading Ease score was 44, rated as difficult (Table 2 above provides the full list and reading complexity of each level). The largest block of AUPs (40.5%) fell within the 40-49 mark, with 64 AUPs (32%) scoring 39 or less, which is at the very difficult range. Only 11 (5.5%) of the AUPs scored 60+, which is considered standard reading level.

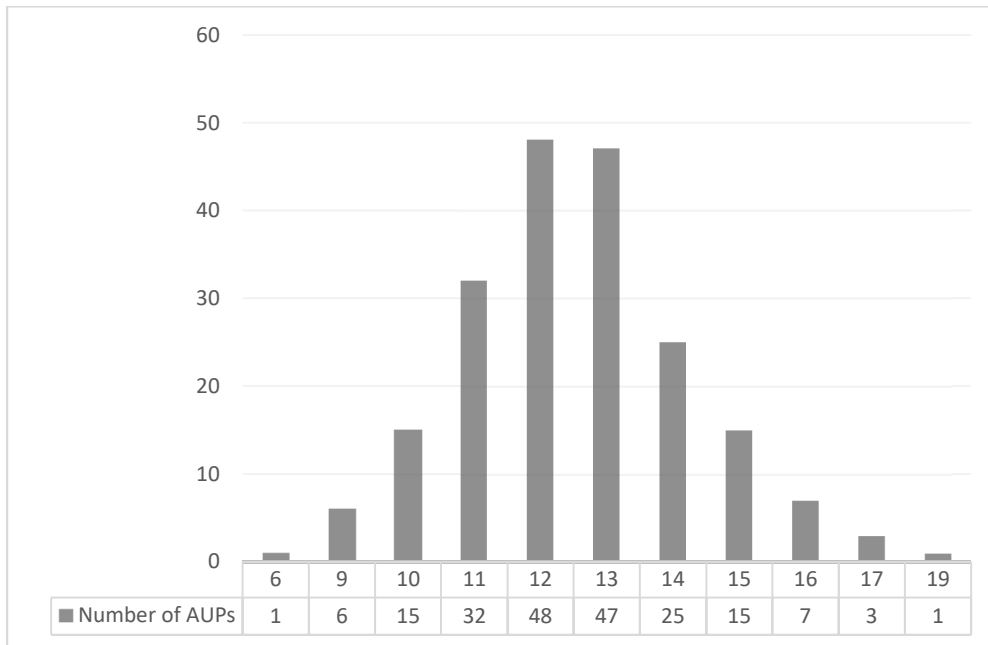
Figure 2. Gunning Fog



The average Gunning Fog score was 14, well above the level recommended by Grewal et al of 7-8 (2012: 1463). Utilising the National Literacy Trust recommended score of 10 for US Grade tests, 23 AUPs (11.5%) were of that score or below. The highest Gunning Fog score was 21.

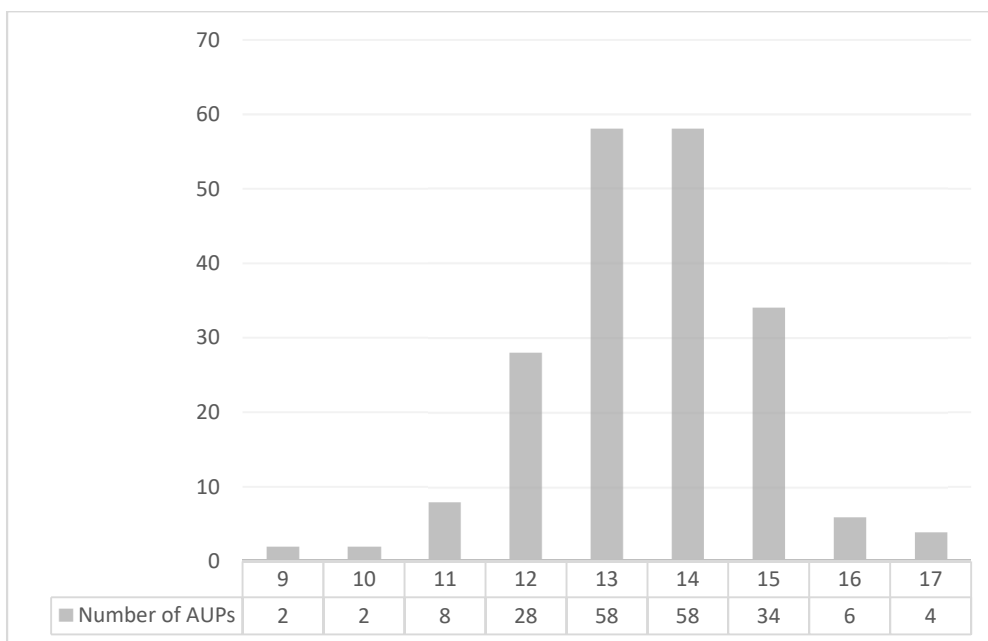
Only 5 AUPs (2.5%) scored 9 or less. 129 of the AUPs scored above 12 (64.5%), which indicates a reading level requiring tertiary (post high school) education.

Figure 3. SMOG



The average SMOG score was 13, above the National Literacy Trust's recommended reading score of 10. Again results were varied – 102 AUPs (51%) scored 12 or below, and 98 (49%) scored 13 or above. Only 22 of the AUPs (11%) scored 10 (National Literacy Trust recommended level) or below.

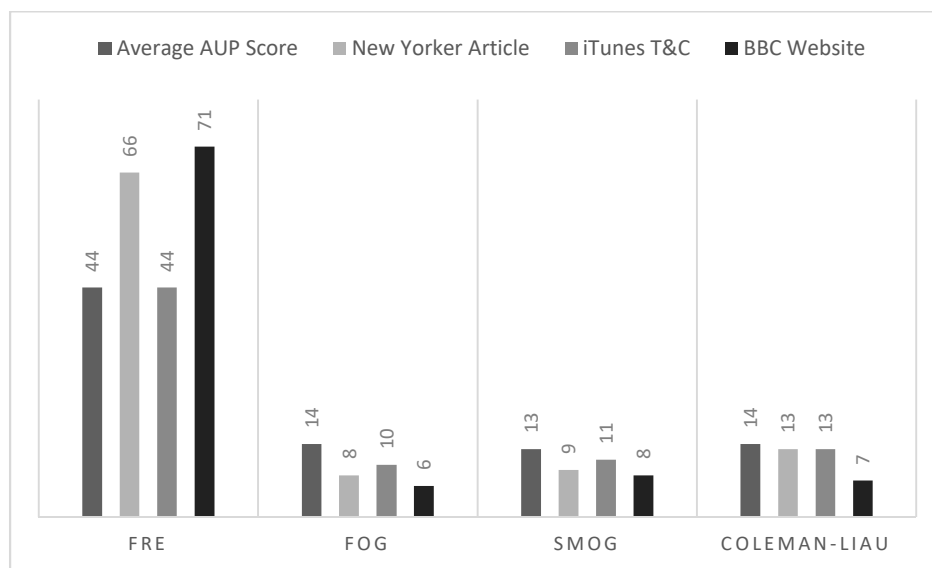
Figure 4. Coleman-Liau



The average Coleman-Liau score was 14, at the higher difficulty level – suggesting reading levels requiring further education. 102 of the AUPs (51%) scored at this level or above, with four AUPs scoring 17. Only 4 AUPs (2%) scored 10 or below, the National Literacy Trust recommended score.

Figure 5 indicates the average AUP scores across each test as compared with the other three pieces of text used for comparison, viz *The New Yorker* article, the iTunes Terms and Conditions, and the BBC website article. Again, these examples have been included purely to provide other examples of popular documents that could be used as a comparator for differing difficulties of document.

Figure 5. Averages of AUPs compared with other texts.



The three other pieces of text scored for comparison tended to score at easier levels than the average AUP, as can be clearly seen in Figure 5. In particular, the BBC website, aimed at a broad audience, scores at easier levels across all four tests by a considerable amount. The iTunes Terms and Conditions document – previously noted for its length and difficulty - scored closest to the AUPs across the four tests. This is a startling finding when we compare the purpose of an AUP and the iTunes ToC, the former to ensure efficient but informed access to the internet for a public library patron, the latter to protect a corporation’s intellectual property rights.

Discussion

Results across all four tests suggest that a high number of AUPs utilised by UK library services are not easily readable, leading to the significant concern that library patrons are agreeing to a set of regulations many may not understand. In addition to this, there is a significant variability in the reading levels of the documents, suggesting a lack of joined-up practice within the sector in the UK with regards to design and implementation of these vital documents.

For the Flesch Reading Ease score for example, only 11 of the 200 AUPs scored at the standard readability level or higher (60+), and 16 scored at a very high level of difficulty. The AUP average for the Flesch Reading Ease score was 44. Rudolf Flesch’s research has found that the *Harvard*

Business Review and the *Wall Street Journal* both score at this level (both of them score 43), and that the 30-50 mark should be aimed at those with a college or university level of education (Flesch). For a policy document to have this level of readability in a public library is a major concern. As has been previously mentioned, the AUP should be able to serve anyone who uses a computer in the public library, and this can and will include patrons from various backgrounds, of varying age, literacy and education levels. It is grossly unfair to potential patrons that, using the Flesch test, just under 6% of public library authorities in the UK provide AUPs that are relatively straightforward to understand, whilst at the other extreme 8% provide AUPs that are on par with a scientific piece of writing.

Similarly, for SMOG, only 7.5% of the 200 AUPs scored at the National Literacy Trust's recommended level of 10. Likewise, with the Gunning Fog Index and the Coleman-Liau Index very few AUPs scored at levels recommended for a general audience. Clearly the pattern across all four tests is for the vast majority of the AUPs to be revealed as above the recommended reading age for public documents.

The AUP must serve whoever accesses the public library, meaning that it must be fit for a general audience and written in such a way that those with minimal education or lower levels of literacy may read it and understand the potential consequences of agreeing to it. An AUP will cover issues of appropriate use, legality and sanctions, and also consider issues of surveillance and monitoring of Internet use. These are important concepts that public libraries must strive for patrons to understand.

With such variability between AUPs, the fairness of the average AUP for the patrons of UK public libraries is called into question. There will always be some sort of variation in library service across the UK, per locale, council provisions, and population, however, it should not matter where a patron lives in the UK – their terms of access should be consistent across the country, and this lack of consistency is a cause for concern.

As noted before, there is some frustration that Terms and Conditions such as that pertaining to Apple's iTunes software are prohibitively long and often very difficult to read, which has prompted some enterprising minds to illustrate the Terms and Conditions in comic format, in order to make them more understandable (Sikoryak, 2015). This same apathy towards such documentation can be witnessed in the public library environment: during a mystery shopping type conducted in public libraries in 2008, a researcher attempted to access the Internet in 14 different library authorities across the UK with access being granted in 12 of them. It was noted that in 2 of the 12 accessed, the AUP was simply bypassed by the member of staff as they helped the researcher to log-on (McMenemy, 2008). Part of the challenge here no doubt is the nature of policy documents which are often bland in subject matter and very dry to read.

However, in "a context in which political and public debate on data infrastructures is significantly shaped by different interests and structural constraints, the question of *how* (our italics) citizens actually understand and negotiate digital environments becomes central" (Hintz, Dencik, and Wahl-Jorgensen, 2019, p.103). In this context we argue that the design of AUPs must be more formulated around larger concepts of digital citizenship, and rather than merely being documents aimed at contractually protecting the library service against any patron misuse, should also seek to impart positive behaviour values and norms that support good digital citizenship. As Ohler states, while documents like AUPs "might appear to be straightforward informational documents or contractual arrangements, they specify moral, ethical, and behavioral parameters for using

technology... they set expectations about character related to digital citizenship” (Ohler, 2010, p.192). Library services need to balance both roles, the contract with the patron re potential misuse, and the contract with wider society to help develop citizenship.

The results suggest that the AUPs for public libraries in the UK are not easily readable for library patrons. The variability between documents also highlights a lack of cohesion between one PLA and the next. Overall the majority of AUPs tended to score at difficult reading levels across all four tests, with a considerable level of variability within each test. In all four of the readability categories – the Gunning Fog Index, the SMOG Grade, the Coleman-Liau Index, and Flesch Reading Ease – the AUPs scored at a high level of difficulty, and in some instances were considerably higher than the other documents tested, such as the BBC News website article, which is also designed for a mass audience. This high score reflects other studies that have found a lack of clarity regarding some features of public library AUPs such as filtering (McMenemy 2008; Spacey et al., 2014), and the variable and often lacking content of AUPs generally (Stewart, 2000; Doherty et al., 2011).

As a contract between the library service and the user, it is paramount that this document is written in a clear and understandable way, to make sure patrons understand the terms of access to the computing facilities and not expose the library service to any unnecessary risk (Gaunt, 1998; Höne and Eloff, 2002; McMenemy, 2014). With comprehension hampered, the library patron is less likely to understand the consequences if they were to misuse the facilities, putting both themselves and the library service at risk. As well as the risk of possible misuse, having a difficult readability level can also hamper the patron’s awareness of how the library service can be beneficial to them (McMenemy, 2014). An AUP document that is not easily comprehended for patrons does a disservice.

Recommendations

Research on how to write a good AUP suggests that for a policy to be most effective, ideally everyone who it affects should be involved in its production (BECTA, 2001, BECTA, 2009, Höne and Eloff, 2002). In a public library, this could be achieved through surveys or public engagement. The library is an institution that is funded by those who use it, so it should work to serve its community, as well as its own objectives. The authors of the AUP must keep the document completely user-focussed in order for it work:

“At the end of the day, the users will determine how effective the information security policy really is. This means that the information security policy, and all supporting activities, should be completely user focussed — from the writing style and the way in which it is presented to the deployment of the document” (Höne and Eloff, 2002: 14).

One way to make the AUP more user-focussed is to invite users into the design process.

Despite being such an integral part of the library user’s computer experience, there is no set standard for how the AUP should look, or how it should be written. There are suggested guidelines on what the AUP should contain (e.g. American Library Association, 2012, Laughton, 2008, Scott and Voss, 1994, Sturges, 2002), however in the UK there is no uniform AUP for public libraries, instead, each public library authority has the responsibility to compose the document how they see fit, and the patron is then at the mercy of whichever particular authority they use for their library services. It may be beneficial for libraries to work together on the AUP. That way, patrons are not subjected to different terms of service where they access their Internet and libraries do not have to spend time creating policies from scratch. Having a standard AUP would help create

better understanding and put forward a more universal service (McMenemy, 2014). Currently, the ultimate decision of what is to go in and what is to be left out in an AUP lies with each local authority, meaning service is not standard across libraries.

The authors recommend the following activities for public libraries:

- Utilise readability testing in the design of all patron-facing documents, but especially those that indicate sanction or similar for patrons, such as AUPs, as standard
- Urgently move towards developing a single AUP document that can represent the needs of all UK public libraries
- Involve all stakeholders in the design of this single document, and ensure it is seen and understood by a wide range of patrons

Limitations of study

Whilst they are revealing, using readability formulas to test writing does not guarantee that a document will be understood if it has an easy readability score. Bogert notes that whilst readability testing is useful, the tests are not a magic formula that translates into a text being simple to read: “They [readability formulas] reduce a complex concept to only two variables, sentence and word length, but making sentences shorter does not necessarily make them more readable” (Bogert, 1985: 9). Just because a piece of writing has a readability score suggesting it is easy to read, this does not mean that it necessarily is so. Despite this, Seely notes that “the assessment of word frequency and familiarity is still an important feature of the creation of texts that are easy to read” (Seely, 2013: 122) and readability testing is a widely used method of document testing, particularly in the health literacy field.

Also, this study has only focussed on a particular set of readability calculations, and does not use other measurements of comprehension; layout and style can also prohibit or encourage understanding of a text, as can the way that the document is deployed. It should also be noted that whilst the AUP should contain enough necessary information for those logging on, it is not the only source of information available to the patron. The library staff are on hand to help and information leaflets may be disseminated to give patrons more detail on computer usage in the public library.

Another limitation of the study is that it did not consider how individual AUPs differed across the four different types of test to see if specific AUPs scored better or worse under each type, rather seeking to build a national picture of AUP usage. This would be a useful study to undertake for the future, and could help aid in good design. Indeed, the selection of which readability metrics to use to analyse AUPs is an interesting question that this kind of research could help inform.

Conclusion

It is important that AUPs are written in a way that can be understood by as many of its users as possible. This means catering to a wide range of literacy levels. The results of this study indicate that the average AUP used UK public libraries is at a very high level of reading difficulty, thus patrons may not understand important parts of an agreement that they are signing or agreeing to. Considering the significant role Internet access now has in our lives, the importance of having a public library to help facilitate that access, and the access management role that the AUP plays, it is of vital importance that the AUP should be a document that is easy to read and understand.

Whether the subject matter under discussion refers to technical matters such as filtering or computer hardware, or legal information pertaining to the *Computer Misuse Act* or copyright

regulations, the AUP should be written and phrased in such a way as to provide clarity and transparency for the user, the AUP should be: “clear and concise, and written in a tone appropriate to the age and understanding of the users” (BECTA, 2009: 10). Although an AUP can function as an effective defence against liability and misuse, and also as an educational tool to help navigate the Internet, unless the patron understands what they are reading, it arguably has no function at all.

An AUP can only be effective if it is easy to understand. The difficulty in constructing an ideal AUP that works for everyone is that the public library has to serve so many different members of the community. When patrons have to sign an agreement, or click “I Agree” to get past such documentation in order to use the library computing facilities, that documentation should be clear, concise, and easily comprehended. There is no easy answer or solution – AUPs must contain enough information for the patron to be informed but should not become so bogged down in terms that the message gets lost. Getting the balance right between necessary information whilst using plain language and being concise is not a straightforward task. Not only is the issue of comprehension of importance for the individual, it also affects the public library institution – can a patron be held liable for damage or misuse of a computer in the public library if they have not understood the terms they are agreeing to? The library has an ethical duty to its patrons, to keep them informed. If an AUP is not easily comprehended, this hampers its functionality as a user-focussed document.

In summary, this paper has demonstrated that most existing AUPs used by public libraries in the UK are not fit for purpose due to readability issues, in turn doing a disservice to the UK public. If library services wish to fulfil their historic mission of developing citizen capabilities, they need to seek to make sure that their AUPs become easily understandable documents that balance the need to protect the organisation from potential legal liability, with the equally important role of enhancing digital citizenship skills within wider society.

APPENDIX 1:

Dear whom it may concern,

I am seeking a copy of the Acceptable Use Policy made available for users of computer facilities in public libraries in your local authority, preferably in electronic format.

Many thanks,

[Anonymised for review]

References

AGARWAL, N., CHAUDHARI, A., HANSBERRY, D. R., TOMEI, K. L. & PRESTIGIACOMO, C. J. 2013. A comparative analysis of neurosurgical online education materials to assess patient comprehension. *Journal of Clinical Neuroscience*, 20, 1357-1361.

AMERICAN LIBRARY ASSOCIATION. 2012. Libraries and the Internet Toolkit [Online]. Available: <http://www.ala.org/advocacy/sites/ala.org.advocacy/files/content/intfreedom/iftoolkits/litoolkit/2012internettoolkit.pdf> [Accessed 24/02/2017].

BADARUDEEN, S. & SABHARWAL, S. 2010. Assessing Readability of Patient Education Materials: Current Role in Orthopaedics. *Clinical Orthopaedics and Related Research*®, 468, 2572-2580.

BECTA. 2001. Information Sheet On: Acceptable Use of the Internet in Schools [Online]. Available: http://homepages.shu.ac.uk/~edsjlc/ict/becta/information_sheets/accept.pdf [Accessed 07/03/2017].

BECTA. 2009. AUPs in context: Establishing Safe and Responsible Online Behaviours [Online]. Available: http://www.wisekids.org.uk/BECTA%20Publications/aups_context_online_behaviours.pdf [Accessed 08/02/17].

BEST, J., MUZAFFAR, J. & MITCHELL-INNES, A. 2015. Quality of information available via the internet for patients with head and neck cancer: are we improving? *European Archives of Oto-Rhino-Laryngology*, 272, 3499-3505.

BLUMAN, E. M., FOLEY, R. P. & CHIODO, C. P. 2009. Readability of the Patient Education Section of the AOFAS Website. *Foot & Ankle International*, 30, 287-291.

BOGERT, J. 1985. In Defense of the Fog Index. *Business and Professional Communication Quarterly*, 48, 9-12.

BRIGO, F., OTTE, W. M., IGWE, S. C., TEZZON, F. & NARDONE, R. 2015. Clearly written, easily comprehended? The readability of websites providing information on epilepsy. *Epilepsy & Behavior*, 44, 35-39.

BROPHY, P. 2003. The People's Network: a turning point for public libraries: first findings [Online]. Resource: The Council for Museums, Archives and Libraries. Available: http://www.slainte.org.uk/SLIC/peoplesnet/pn_a_turning_point_2002.pdf [Accessed 15/3/18].

CANTORE, S. & PASSMORE, J. 2012. *Top Business Psychology Models: 50 Transforming Ideas for Leaders, Consultants and Coaches*, London, Kogan Page.

CHAPMAN, L. 2003. Acceptable Use Policy. In: FEATHER, J. & STURGES, R. P. (eds.) *International encyclopedia of information and library science* 2nd ed. London: Routledge.

CILIP. 2009. User privacy in libraries: guidelines for the reflective practitioner [Online]. Available: https://www.cilip.org.uk/sites/default/files/documents/Privacy_June_AW.pdf [Accessed 01/03/2017].

CILIP 2015. *Libraries and information services in the United Kingdom and the Republic of Ireland 2015*, London, Facet.

- COLEMAN, M. & LIAU, T. L. 1975. A computer readability formula designed for machine scoring. *Journal of Applied Psychology*, 60, 283-284.
- CORCORAN, N. & AHMAD, F. 2016. The readability and suitability of sexual health promotion leaflets. *Patient Education and Counseling*, 99, 284-286.
- DEPARTMENT FOR BUSINESS INNOVATION & SKILLS. 2011. The 2011 Skills for Life Survey: a survey of literacy, numeracy, and ICT levels in England [Online]. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/36000/12-p168-2011-skills-for-life-survey.pdf [Accessed 01/03/2018].
- DEPARTMENT OF CULTURE MEDIA & SPORT. 2015. Taking Part 2015/16 Quarter Two: Report [Online]. Available: <https://www.gov.uk/government/statistics/taking-part-201516-quarter-2-statistical-release> [Accessed 03/02/2017].
- DONNER, J. & WALTON, M. 2013. Your Phone Has Internet - Why Are You at a Library PC? Re-imagining Public Access in the Mobile Internet Era. In: KOTZÉ, P., MARSDEN, G., LINDGAARD, G., WESSON, J. & WINCKLER, M. (eds.) Human-Computer Interaction – INTERACT 2013: 14th IFIP TC 13 International Conference, Cape Town, South Africa, September 2-6, 2013, Proceedings, Part I. Berlin, Heidelberg: Springer Berlin Heidelberg.
- ELTORAI, A. E. M., NAQVI, S. S., GHANIAN, S., EBERSON, C. P., WEISS, A.-P. C., BORN, C. T. & DANIELS, A. H. 2015. Readability of Invasive Procedure Consent Forms. *Clinical and Translational Science*, 8, 830-833.
- FITZSIMMONS, P. R., MICHAEL, B. D., HULLEY, J. L. & SCOTT, G. O. 2010. A readability assessment of online Parkinson's disease information. *The journal of the Royal College of Physicians of Edinburgh*, 40, 292-6.
- FLESCH, R. How to Write Plain English [Online]. University of Canterbury. Available: http://www.mang.canterbury.ac.nz/writing_guide/writing/flesch.shtml [Accessed 27/01/17].
- FLESCH, R. 1948. A new readability yardstick. *Journal of Applied Psychology*, 32, 221-233.
- GALLAGHER, C., MCMENEMY, D. & POULTER, A. 2015. Management of acceptable use of computing facilities in the public library: avoiding a panoptic gaze? *Journal of Documentation*, 71, 572-590.
- GRAHAM, C., REYNARD, J. M. & TURNEY, B. W. 2015. Consent information leaflets – readable or unreadable? *Journal of Clinical Urology*, 8, 177-182.
- GRAY, C. J. 2012. Readability: A Factor in Student Research? *The Reference Librarian*, 53, 194-205.
- GREWAL, P., WILLIAMS, B., ALAGARATNAM, S., NEFFENDORF, J. & SOOBRAH, R. 2012. Quality of vascular surgery Web sites on the Internet. *Journal of Vascular Surgery*, 56, 1461-1467.
- HALFORD, M. 2011. "On highbrow" *The New Yorker*. February 10th. Available: <https://www.newyorker.com/books/page-turner/on-middlebrow> [Accessed 15/06/17].
- HAMNES, B., VAN EIJK-HUSTINGS, Y. & PRIMDAHL, J. 2016. Readability of patient information and consent documents in rheumatological studies. *BMC Medical Ethics*, 17, 42.

- HANSBERRY, D. R., AGARWAL, N., GONZALES, S. F. & BAKER, S. R. 2014. Are we effectively informing patients? A quantitative analysis of on-line patient education resources from the American Society of Neuroradiology. *AJNR. American journal of neuroradiology*, 35, 1270-5.
- HEDMAN, A. S. 2008. Using the SMOG Formula to Revise a Health-Related Document. *American Journal of Health Education*, 39, 61-64.
- HERN, A. 2015. I Read All the Small Print on the Internet and It Made Me Want To Die. *The Guardian* [Online]. Available: <https://www.theguardian.com/technology/2015/jun/15/i-read-all-the-small-print-on-the-internet> [Accessed 15/06/15].
- HINTZ, A., DENCİK, L., & WAHL-JORGENSEN, K. 2019. *Digital citizenship in a datafied society*. Cambridge: Polity Press
- HÖNE, K. & ELOFF, J. H. P. 2002. What Makes an Effective Information Security Policy? *Network Security*, 2002, 14-16.
- HOWES, L. M., JULIAN, R., KELTY, S. F., KEMP, N. & KIRKBRIDE, K. P. 2014a. The readability of expert reports for non-scientist report-users: Reports of DNA analysis. *Forensic Science International*, 237, 7-18.
- HOWES, L. M., KIRKBRIDE, K. P., KELTY, S. F., JULIAN, R. & KEMP, N. 2013. Forensic scientists' conclusions: How readable are they for non-scientist report-users? *Forensic Science International*, 231, 102-112.
- HOWES, L. M., KIRKBRIDE, K. P., KELTY, S. F., JULIAN, R. & KEMP, N. 2014b. The readability of expert reports for non-scientist report-users: Reports of forensic comparison of glass. *Forensic Science International*, 236, 54-66.
- KALLMAN, E. A. & GRILLO, J. P. 1998. *Ethical decision making and information technology: an introduction with cases*, New York, McGraw-Hill.
- KAMEN, M. 2015. This Graphic Novel Makes iTunes T&Cs Actually Readable. *Wired* [Online]. Available: <http://www.wired.co.uk/article/itunes-graphic-novel> [Accessed 25/10/16].
- KASABWALA, K., AGARWAL, N., HANSBERRY, D. R., BAREDES, S. & ELOY, J. A. 2012. Readability Assessment of Patient Education Materials from the American Academy of Otolaryngology—Head and Neck Surgery Foundation. *Otolaryngology—Head and Neck Surgery*, 147, 466-471.
- KLARE, G. R. 2000. The measurement of readability: useful information for communicators. *ACM Journal of Computer Documentation*, 24, 107-121.
- KONDILIS, B. K., AKRIVOS, P. D., SARDI, T. A., SOTERIADES, E. S. & FALAGAS, M. E. 2010. Readability levels of health pamphlets distributed in hospitals and health centres in Athens, Greece. *Public Health*, 124, 547-552.
- KUGAR, M. A., COHEN, A. C., WOODEN, W., THOLPADY, S. S. & CHU, M. W. 2017. The readability of psychosocial wellness patient resources: improving surgical outcomes. *Journal of Surgical Research*, 218, 43-48.
- LAUGHTON, P. 2008. Hierarchical analysis of acceptable use policies. *South African Journal of Information Management*, 10, 2-6.

- LEE, W. D. & BELDEN, B. R. 1966. A Cross-Validation Readability Study of General Psychology Textbook Material and the Dale-Chall Readability Formula. *The Journal of Educational Research*, 59, 369-373.
- LIM, A. 2010. The readability of information literacy content on academic library web sites. *Journal of Academic Librarianship*, 36, 296-303.
- LO, K., RAMOS, F. & ROGO, R. 2017. Earnings management and annual report readability. *Journal of Accounting and Economics*, 63, 1-25.
- LUK, A. & ASLANI, P. 2011. Tools Used to Evaluate Written Medicine and Health Information. *Health Education & Behavior*, 38, 389-403.
- MCLAUGHLIN, G. H. 1969. SMOG grading-a new readability formula. *Journal of reading*, 12, 639-646.
- MCMENEMY, D. (2008). Internet access in UK public libraries: Notes and queries from a small scale study: Editorial. *Library Review*, 57(7), 485-489
- MCMENEMY, D. 2009. *The Public Library*, London, Facet.
- MCMENEMY, D. 2014. Towards a public library standard for acceptable use of computing facilities. IFLA WLIC 2014 - Lyon - Libraries, Citizens, Societies: Confluence for Knowledge in Session 72 - Committee on Standards. In: IFLA WLIC 2014, Lyon, France: IFLA.
- MUSWAZI, P. 2009. Usability of University Library Home Pages in Southern Africa: a case study. *Information Development*, 25, 51-60.
- NATIONAL LITERACY TRUST. 2017a. Adult Literacy: How many illiterate adults are there in England? [Online]. Available: http://www.literacytrust.org.uk/adult_literacy/illiterate_adults_in_england [Accessed 08/02/18].
- NATIONAL LITERACY TRUST. 2017b. How can I assess the readability of my document or write more clearly? [Online]. Available: <http://www.literacytrust.org.uk/about/faqs#q710> [Accessed 08/02/17].
- OHLER, J. 2010. *Digital Community, Digital Citizen*. Thousand Oaks, CA., Corwin Press.
- PALGI, R. D. 1996. Rules of the Road: Why You Need an Acceptable Use Policy. *School Library Journal*, 42, 32-33.
- PIDAPARTHY, U. 2011. What You Should Know About iTunes' 56-Page Legal Terms [Online]. CNN. Available: <http://edition.cnn.com/2011/TECH/web/05/06/itunes.terms/> [Accessed 25/10/18].
- POULTER, A., FERGUSON, I. , MCMENEMY, D. AND GLASSEY, R.J. 2009. Question: where would you go to escape detection if you wanted to do something illegal on the internet? Hint: shush! In: JAHANKHANI, H. H., A. G. AND HSU F. (ed.) *Global Security, Safety and Sustainability: 5th International Conference, ICGS3. Communications in Computer and Information Science* (1st). London: Springer-Verlag.
- RIBBLE, M. 2015. *Digital Citizenship in Schools*. 3rd edition. Eugene, OR: Arlington, VA, International Society for Technology in Education.

- RIBBLE, M. 2017. Digital Citizenship: Using Technology Appropriately. [Online] Available: <http://www.digitalcitizenship.net/>
- RUDD, R. E. 2010. Harvard School of Public Health: Health Literacy [Online].. Available: <https://www.hsph.harvard.edu/healthliteracy/assessing-materials/> [Accessed 7/7/18].
- RUSK, M. 2001. Acceptable Use Policies: Four Examples from Community College Libraries. *Community & Junior College Libraries*, 10, 83-90.
- SCOTT, T. J. & VOSS, R. B. Ethics and the 7 "P's" of computer use policies. *Proceedings of the conference on Ethics in the computer age, 1994*. ACM, 61-67.
- SEELY, J. 2013. *The Oxford Guide to Effective Writing and Speaking*, Oxford, Oxford University Press.
- SIAU, K., NAH, F. F.-H. & TENG, L. 2002. Acceptable internet use policy. *Communications of the ACM*, 45, 75-79.
- SIKORYAK, R. 2015. ITUNES terms and conditions: The Graphic Novel [Online]. Available: <http://itunestandc.tumblr.com> [Accessed 25/10/16].
- SPACEY, R., COOKE, L., CREASER, C. & MUIR, A. 2013. Regulating Internet access and content in UK public libraries: Findings from the MAIPLE project. *Journal of Librarianship and Information Science*, 47, 71-84.
- STURGES, R. P. 2002. *Public internet access in libraries and information services*, London, Facet.
- SVIDER, P. F., AGARWAL, N., CHOUDHRY, O. J., HAJART, A. F., BAREDES, S., LIU, J. K. & ELOY, J. A. 2013. Readability assessment of online patient education materials from academic otolaryngology–head and neck surgery departments. *American Journal of Otolaryngology--Head and Neck Medicine and Surgery*, 34, 31-35.
- WALTERS, K. A. & HAMRELL, M. R. 2008. Consent Forms, Lower Reading Levels, and Using Flesch-Kincaid Readability Software. *Therapeutic Innovation & Regulatory Science*, 42, 385-394.
- WANG, L.-W., MILLER, M. J., SCHMITT, M. R. & WEN, F. K. 2013. Assessing readability formula differences with written health information materials: Application, results, and recommendations. *Research in Social and Administrative Pharmacy*, 9, 503-516.
- WILLSON, J. & OULTON, T. 2000. Controlling access to the Internet in UK public libraries. *OCLC Systems & Services: International digital library perspectives*, 16, 194-201.
- WILSON, W. M., ROSENBERG, L. H. & HYATT, L. E. 1997. Automated analysis of requirement specifications. *Proceedings of the 19th international conference on Software engineering*. Boston, Massachusetts, USA: ACM.
- WONG, K. & LEVI, J. R. 2016. Partial Tonsillectomy: Content and Readability of Online Health Information. *The Annals of otology, rhinology, and laryngology*, 126, 192-8.
- YOUNG, K. 2010. Policies and procedures to manage employee Internet abuse. *Computers in Human Behavior*, 26, 1467-1471.