Journal of Information Literacy

ISSN 1750-5968

Volume 6 Issue 2

December 2012

Article

Miller, C. and Bartlett, J. 2012. 'Digital fluency': towards young people's critical use of the internet. *Journal of Information Literacy*, 6(2), pp. 35-55.

http://ojs.lboro.ac.uk/ojs/index.php/JIL/article/view/PRA-V6-I2-2012-3

‘Digital fluency’: towards young people’s critical use of the internet

Carl Miller, Associate, Demos
Email: carl.miller@demos.co.uk

Jamie Bartlett, Head, Violence and Extremism Programme, Demos
Email: jamie.bartlett@demos.co.uk

Abstract

The rise of the internet as the greatest source of information for people living in the UK today poses an acute challenge to the information literacy (IL) community. The amount and type of material available a mouse click away is both liberating and asphyxiating. There are more e-books, trustworthy journalism, niche expertise and accurate facts at our fingertips than ever before, but also mistakes, half-truths, propaganda and misinformation. This article presents research on how well young people are being equipped to meet the challenge of sorting good information from bad. It reviews current literature on the subject, and presents a new poll of over 500 teachers. With analysis supplemented by additional correspondence from librarians and other IL professionals, it argues that there is strong evidence that the web is fundamental to pupils’ learning and lives, but that many are not careful, discerning users of the internet. They are unable to find the information they are looking for, or they trust the first thing they see. This makes them vulnerable to the pitfalls of ignorance, falsehoods, cons and scams. The article proposes the appropriate response to be to embed ‘digital fluency’ – a tripartite concept constituting critical thinking, net savviness and diversity – at the heart of learning, in order to create a pedagogical framework fit for the information consumption habits of the digital age.

It should be noted that both authors recognise the importance of non-teaching information literacy professionals in these debates. They recognise that the poll’s focus on teachers was too narrow, and have endeavoured, subsequent to the poll, to consult more widely in their research.

Keywords

information literacy; digital literacy; secondary education, primary education; children; teaching

---

1. Introduction

In 2009, to celebrate the 40th anniversary of the internet, the Defense Advanced Research Projects Agency (DARPA) released ten red weather balloons across nine American states. DARPA offered $40,000 to whichever team could locate them all first (Wikipedia 2009). After just nine hours a team from Massachusetts Institute of Technology (MIT) had won by using Facebook and Twitter to spread the promise of reward for a correct location far and wide. As it intended, the competition showed the power of online techniques to acquire information quickly. From complex visual recognition algorithms trawling millions of images, to social media campaigns generating enough ‘hype’ or ‘buzz’ to influence tens of thousands, all the contenders focused on online strategies. It was the only way to be in the running.

The crucial lesson, however, was revealed in the post-mortem. The leading teams agreed the main difficulty was not getting hold of good information but knowing what information to trust. The MIT team received more than 200 submissions of balloon sightings, only 30 or 40 of which turned out to be accurate (Tang 2011). Some were genuine mistakes (oddly, a large red non-DARPA balloon happened to be hanging over Royal Oak, Michigan, on the same day), while others were deliberate – there were false reports and faked photographs, even sophisticated 'leaks' from other teams.

This article is about what this lesson – that the effective use of the internet is staked on distinguishing good information from bad - means for the IL community, and how it can respond. It begins by discussing the novel literacy challenges of the digital world. It goes on to present two bodies of research, both examining the contemporary state of digital fluency in the UK. First, a literature review of recent publications containing evidence of the state of digital literacy in the UK at the time of writing. Second, a survey of 509 primary and secondary school teachers in England and Wales about their views on their pupils' ability to critically engage with online information, and how this ability might be taught in school. Using this research, the article builds the case for the tripartite concept of 'digital fluency' as the body of competencies and knowledge necessary to critically engage with online content yet one which many young people do not have. It concludes that, given the importance of the internet as a source of information that influences many consequential, even life-changing decisions that young people will make, there must be a shift to place digital fluency at the heart of learning.

2. The information literacy challenge of the digital age

The internet is fast becoming the most important source of information for people living in the UK. In 2009, 91 per cent of people checked a fact online, 90 per cent investigated topics of personal interest and 71 per cent looked up the definition of a word (Dutton, Helsper and Gerber 2009). We use it to inform the most consequential decisions that we take, from advice about health problems to who to vote for (Smith 2011). It is central to forming our world-views, our attitudes, and our beliefs.

The sheer amount of information available to make these decisions is entirely unprecedented. When we go online, we can choose from over 250 million different websites, and 150 million blogs. Over 25 billion tweets were sent in 2010, four billion images are hosted on Flickr, and 24 hours of YouTube footage is uploaded every minute. Last year alone, the content created was several million times more than the amount of information in every book ever written (Palfrey and Gasser 2009).

Much of this content consists of trustworthy journalism, niche expertise, and accurate information. But this information is amply companioned with lazy mistakes, selective half-truths, deliberate propaganda, misinformation, disinformation and general nonsense. An estimated 89 per cent of the 107 trillion emails sent in 2010 were spam-related (Cantone 2011). By 2009, the Simon Wiesenthal Centre was already warning about the rise of extremist activity on the internet as 'hate 2.0'. The Centre (Emery 2009) estimated that the number of hate and terrorist websites had grown by a third that year, to over 8,000. They particularly pointed out the explosive growth and potential influence of such groups on social media, especially Facebook groups.

The personal and social contribution of this vast and rapidly increasing corpus of information is staked on how easily and effectively information and disinformation can be disentangled. The key to harnessing and exploiting the internet is to spot the fakes: to know how to tell the truth from the lies, and how to negotiate the grey areas of comment, opinion and propaganda in between. The

key challenge is that the specific nature of the internet makes telling the difference between viable and unviable truth claims particularly difficult. Many of the processes and strategies we use to do this offline either no longer apply, or have become more difficult and less reliable:

> *Anonymity and the pedigree problem:* No single person knows enough about every subject to make direct judgments about the truth or falsehood of every claim made. In a complex and specialised world, and often without the first-hand knowledge ourselves, we must believe information because of who provides it. John Hardwig (1991) calls this the 'novice/expert problem'. However, much of the discussion on the internet occurs under the cloak of anonymity, or where identity (and therefore authority) can be easily faked.
>
> *Absence of gatekeepers*: As a society, we sometimes create social epistemological structures and processes to order and categorise information according to its value and 'truth'. The peer-reviewed academic journal and the edited school textbook act as gatekeepers, at least in theory expertly posing certain tests of veracity before content is permitted into the public sphere. Especially since the explosion of 'Web 2.0' and user-generated content, these helpful mediators are, to a much greater extent, absent online.
>
> *Generational divide:* Parents are typically the main guardians of information for their children. With the internet, this supervision is often absent: 48 per cent of parents think their child knows more than them about the internet, rising to 70 per cent of parents of 12-15 year olds (Ofcom 2011, p.59).
>
> *Pseudo-sites and propaganda:* Many websites are not what they seem and some are created for nefarious purposes and are specifically designed to appear trustworthy. For example, the website www.martinlutherking.org purports to present 'a true historical examination' and a 'resource for students and teachers' (Stormfront, 2012) of Martin Luther King, Jr. The website, however, is a veiled attack on King's reputation and is hosted by the White supremacist group StormFront.
>
> *Use of imagery:* Image manipulation techniques are increasingly allowing misinformation to be powerfully and attractively packaged. Decisions about information quality are often based on site design, rather than more accurate checks: 15 per cent of 12-15 year olds don't consider the veracity of search term results and just visit the sites they 'like the look of' (Bartlett and Miller, 2011, p.16).
>
> *Echo chambers:* Our consumption of internet-borne information is increasingly mediated by 'filter bubbles' – algorithms used in increasingly personalised web services that, through guessing what the user would like to see, create an online universe for each of us populated by essentially agreeable information (Pariser 2011). Experts, including US academic Cass Sunstein (2009), argue that the consequence of only encountering information that corroborates a particular viewpoint is increasingly levels of polarisation, even radicalisation.
>
> *'Skittering' and 'bouncing':* The way we consume information on the internet militates against critical, deep, single-source reading. We 'bounce', visiting only one to three pages from the thousands that are available, propelled along by powerful search engines. We also 'skitter', viewing more than reading. An article is on average viewed for around five minutes, and summaries are read much more than the full content. The user moves horizontally across the internet, with frequent and light contacts rather than progressively deeper research of a single source (Nicholas 2008). This is 'associative' rather than 'linear' thinking (Telegraph 2010, p.1).

The urgent challenge, therefore, for those with a stake in IL is that in less than two decades the internet has redrawn the way in which people find, consume, understand, share and produce information, and, as a consequence, has caused an explosion in available information of vastly differing quality.

2.1 Meeting this challenge: introducing digital fluency

IL has persisted as a core concept of the library and information sciences for decades. Over this time, a number of IL frameworks have been proposed defining what IL is, and therefore what it means to be 'literate'. Whilst many share overlapping attributes and emphases, they nonetheless also often disagree. The 1989 definition from the American Library Association for instance emphasised 'knowing', 'identifying', 'finding', 'evaluating', 'organizing' and 'using' (American Library Association 1989) whilst the 1999 Seven Pillars Model of the UK Society of College, National and University Libraries (SCONUL) framework also included strategies for locating information and the ability to build upon existing information to create new knowledge (SCONUL 1999). This debate, essentially focussing on the boundaries of what IL is, has in recent years been especially driven by the explosion of digital, online and participatory media. The debate continues on the extent to which literacy frameworks – and therefore definitions of skills, knowledge and proficiencies - are now required to adequately capture literacy in online and especially participatory Web environments. Some digital literacy frameworks, such as Laura Gurak's, are transpositions of essentially unchanged IL frameworks onto a digital environment, with the emphasised abilities being those needed to locate, organise, understand, evaluate and analyse information using digital technology (Gurak 2001). Others, such as Thomas Mackey and Trudi Jacobson, argue that these frameworks were "all developed prior to the astonishing rise of social media and collaborative online communities, and do not fully address the information knowledge required to participate in these new environments" (Mackey and Jacobson 2011, p. 63). A profusion of different terms - digital literacy, media literacy, cyberliteracy, visual literacy, information technology fluency – have emerged that reflect these different approaches to the problem of literacy online.

A second related yet distinct discussion exists on what specific and practical skills, bodies of knowledge, proficiences and competencies are needed to realise the generic capabilities laid out in literacy frameworks. Commonly addressed amongst all major accepted literacy framework definitions is the importance of criticality: the ability to judge, 'evaluate', 'analyse', or 'interpret' the veracity, bias, and integrity of the information that one encounters. The discussion of the skills that are practically needed to be a critical consumer of information has, also in recent years, also been framed and driven by the widespread adoption of online information technologies. It is within this second debate, and explicitly within the discussion of what Paul Gilster calls "the ability to make informed judgements about what you find on-line" (Gilster 1997, p.1) that this article intervenes.

It is this paper's suggestion that the epistemological hazards particular to the online realm require a new mixture of competencies. It collectively terms these skills 'digital fluency' rather than digital literacy to capture the cross-cutting, transecting nature of the skills required to meet the challenge of critical engagement with online information: traditional critical thinking skills, but also internet-specific technical knowledge and ICT-specfic competencies. The 'digital fluency' of this paper, and the 'digital literacy' of the information sciences community are therefore interrelated, yet insofar as the Association of College and Research Libraries (2000, p.2) is correct to suggest that "information literacy initiates, sustains and extends lifelong learning through abilities which may use technologies but are ultimately independent of them", digital fluency is not digital literacy. We suggest digital fluency, the applied and contemporary set of skills necessary to exercise one important aspect of IL - criticality - is, by definition, eminently rooted in digital technology.

Digital fluency has three components:

Net-savviness, a practical understanding of the way the internet works, for instance: the basics of how search engines return results; how user-generated feedback functions; how websites are designed and built; how identity can be established and faked; how images and videos can be altered.

Critical evaluative techniques, the knowledge and use of basic checks, techniques and principles that can be applied to assess the trustworthiness and accuracy of information. These are both general critical thinking skills (such as whether users fact-check, triangulate sources, understand the difference between quality of evidence, search for provenance, or distinguish between different qualities of information) and specific online skills such as how filter programmes work, how to make videos and Wikipedia's process of peer editing.

Diversity, the extent to which users' online consumption is broad, varied and diverse. Do users access and consume different and competing pieces of information? Are they aware of the cognitive biases that we are exposed to? Can users identify the *a priori* ideological basis of a particular comment or opinion piece, and place it within the wider fabric of a debate? Are they aware of, and do they use, the websites that have grown up specifically to counter the urban legends, hoaxes and scams that the internet allowed to bloom? For example, www.snopes.com. In a crowdsourcing effort, people can enter the information they have heard online, and members of the snopes community research the claim. Of course, it is possible that this site contains disinformation too, but the site fully publishes all the research material used to investigate each claim that people can check for themselves. Checking controversial or extravagant claims against other sources, including debunking websites, should become second nature – as habitual as shredding your bills.

The rise of the internet as being the most important source of information, and especially social media as the vehicle whereby people filter and select the information that they encounter, has introduced a number of new difficulties specific to the digital world. The essence of digital fluency is to make core critical thinking and IL skills relevant to the new IL challenges of this environment. This is why digital fluency combines old techniques – those classic skills necessary for any critical engagement with information – with new and specific knowledge bases about how the internet works, and how, given how it works, it can inadvertently deceive or be deliberately used to deceive.

3. The digital fluency of young people in the UK: literature review

An extensive literature review of current evidence sets out the state of digital fluency in the UK. Firstly, an explicit statement of purpose was constructed: to review the evidence of the current ability of young people (broadly understood to be 12-18, but interpreted flexibly) to critically engage with information they encounter online. Search terms were built by researchers based on an initial informal survey and naturally expanded throughout the literature review. Searches were conducted across a number of platforms, including Google Scholar, JSTOR, the Education Information Gateway, the Social Science Citation Index, JISC and MIMAS. A number of sources containing non-peer reviewed sources were also searched, including the direct communications of research providers (such as Pew), current affairs news hubs such as the BBC, and the personal websites and blogs of identified researchers in the relevant fields. A 'Really Simple Syndication' (RSS) aggregation was established using LexisNexis and targeted searches to ensure that information published during the research project would also be identified. No selection criteria was established regarding research design. The geographic criteria was widened to include papers from the US after it was noticed early in the research process that there was a paucity of recent research dealing specifically with digital IL in a UK context. It was therefore decided to include the US, which has a long tradition of work on media literacy and a number of important and relevant studies, in the review. In total, we examined 17 pieces of research, conducted in the UK (with some supplementary papers from the US) between 2005 and 2011.

The gaps in the literature that this research intends to address are threefold. Firstly, to gather the views of a large number of education professionals on the state of their pupils' digital IL. The research design recognised the propensity of young people to over-report their ability to critically engage with online material, and therefore deliberately avoided a self-reporting model. Secondly, it was to propose a definition for how digital IL could be attained – our concept of 'digital fluency' – and therein contribute to the body of conceptual work in this area. It was noticed that a clearer proposition for the definition of digital literacy (the three-component model of diversity, critical-evaluative skills and net savviness) could be a useful basis for further work. Thirdly, and most importantly, it was to provide a clear contribution to the continuing debates on educational reform and the role of critical thinking and ICT within it, and to suggest new ideas for how IL can, in its digital form, be promoted.

3.1 Net savviness

Knowing how the internet works is important. Digital fluency relies on understanding how websites are made (and copied), how to check who hosts a website, how search engines apply non-neutral processes to find you information, how to recognise authentic websites from inauthentic ones, how pictures and video footage can be manipulated and how the provenance of user-generated content can be traced.

Search engines are of particular importance because of the central role they play in systematically prioritising the information that people view. First, search skills are important: subtle differences in the semantic construction of search queries, including the ordering of Boolean operators, the use of synonyms, antonyms and abbreviates can return hugely different results. Second, it is important to know the nature of the returns to these searches. The mechanisms of search engines can be – and often are – manipulated to inflate the relevance of websites, a little like an advertiser hijacking the Dewey Decimal System. There is also a commercial element to web page ranking, and search engines often offer 'sponsored links' to websites that pay to be prominently displayed. Different search engines apply different mechanisms to search different indexes and therefore, of course, return different results. No search engine produces a neutral, definitive, or representative reflection of what is on the internet.

It is not clear that this complexity is reflected in people's understanding of search engines. 44 per cent of 12-15 year olds who use search engines make some type of critical judgment about search engine results, thinking that some of the sites returned will be truthful while others may not be (Ofcom 2011, p.47). However, 31 per cent believe that if a search engine lists information then it must be truthful and 15 per cent don't consider the veracity of results but just visit the sites 'they like the look of'. These proportions have not changed since 2009, suggesting that nearly half of 12-15 year olds who use search engine websites are not critically aware of the provenance of their content (Ofcom 2011, p.47). A teacher interviewed for this research commented that:

> *It was noticeable that they [the children] would always go for whatever came up first on the [search engine] hit list, and take that as a total fact.*
>
> ICT Co-ordinator, Enfield

3.2 Critical evaluative techniques

Assessing online information for accuracy or trustworthiness depends on both classic techniques of fact-checking and new, sometimes quite specific, skills that apply these techniques to the internet.

In 2009, internet users rated the reliability and accuracy of the internet on average 3.6 out of 5. This compares to 3.5 for television, 3.5 for radio and 2.9 for newspapers, making the internet the most trusted medium (Dutton, Helsper and Gerber 2011). Providers of internet are more trusted (Blank 2010) than the people running government, running newspapers or running major corporations. 'Digital natives', or those that were born after the widepsread introduction and adoption of digital technologies, are especially vulnerable to over-estimating their critical abilities. As experience and use of the internet have been shown to to be the primary factor in shaping trust in the internet, it is unsurpirising that those who have grown up with and used digital technologies trust it highly: 89 per cent felt fairly or very confident in their usage (Dutton and Shepard 2006, p.434).

This confidence might be misplaced. Only 33 per cent of 9-19 year olds have been taught how to judge the reliability of online information (Livingstone and Bober 2005, p.2). In 2005, 30 per cent of 9-19 year old pupils report having received no lessons at all on using the internet (Livingstone and Bober 2005, p.2). Many young people do not know how easily they can be manipulated, and do little to ensure that they are not. One recent survey asked what checks children aged 12-15 who use the internet at home apply before visiting a new website. Around a quarter said they made no checks at all. Only 8 per cent of 12-15 year old check who created the site and why; only 17 per cent compare information across sites; and 26 per cent ask someone else if they have been to the website (Ofcom 2011, p.52). The 'checks' that are made can be superficial: such as whether the website looks and feels legitimate. Research has revealed information quality does not appear to be of significance to many digital natives, and that decisions about information quality are based on site design, rather than more accurate checks (Palfrey and Gasser 2009, p. 161).

Trust in the internet is not absolute and unreserved of course. A 2005 study (Livingstone and Bober, p.14) showed that 38 per cent of pupils aged 9-19 trust most of the information of the internet, 49 per cent trust some of it, and only 10 per cent are sceptical about much of the information online. Another study (Dutton and Shepard 2006, p.440) showed that whilst people rated their confidence in the reliability of online information as 6 out of 10, only 3 per cent of respondents expressed total confidence, suggesting recognition of some of the possible biases and inaccuracies.

Children are also able to rudimentarily discern quality of information. For example, in the 8-11 and 12-15 age groups, children are more likely to believe that documentary or news programmes are a better reflection of real life than reality TV programmes such as Big Brother (Ofcom 2011, p.48). Something similar occurs online, too. 12-15 year olds are more likely to believe that most of the information available on news sites is true (87 per cent) and sites used for homework (88 per cent), than on blogs or user generated sites (48 per cent). There are no differences in belief by gender or by socio-economic group and there has been no change in attitudes among 12-15 year olds since 2009 (Ofcom 2011, p.50).

3.3 Diversity and variety of evidence

It is an essential and underlying tenet of the philosophy of science that to establish a rule, we must try to prove it false. This is Karl Popper's (1959, section 6) famous 'falsifiability' test. However, numerous studies (such as Wason 1966) show that humans, in practice, do not try to falsify their own beliefs but instead search for evidence to prove their own theories, and are more aware of flaws in studies that present evidence that challenge their beliefs than those that confirm them (Sutherland 2007, pp.104-112).

This general human proclivity to try to prove ourselves right rather than wrong interacts with another human predilection: 'homophily' – the principle that similarity breeds connection

(McPherson et al 2001). One of the (increasingly important) ways in which people manage their internet is through the 'social web' – a selection of filtering, grading and ordering sites. There are many new programmes and filters that help people to distinguish between information of varying quality. Cass Sunstein (2009) has argued that people increasingly tailor their own consumption to match their preferences, a new form of newspaper he calls the *Daily Me.* The general trend toward internet means we are seeing the *World Wide Me* too. Eli Pariser's latest work (2011), for instance, indicates that as search engines, online retailers and social media increasingly filter according to their intimate insight of who we are and what we like, we increasingly live in our own, custom-made 'filter bubbles': a unique universe of information for each of us.

Being surrounded by networks of like-minded people who influence the kinds of information we want to see can lead to what what Pariser calls 'invisible auto-propaganda', and has serious consequences. The possibility of serendipity – of fortuitously stumbling across something one didn't expect – decreases. More seriously, and taken to extremes, not being confronted by alternative news, ideas, or viewpoints can be dangerous – leading to greater polarisation, even radicalisation, of political views (Bosker 2011). Cass Sunstein (2009) calls this 'group polarisation' – where like-minded people, after discussing, confirming and validating these positions, all end up taking a position more extreme than any started with. As people's views find social encouragement, they become more confident holding a more extreme position. This has been evidenced through hundreds of studies (see Brown 2003, pp.203-226). Cass Sunstein argues that the processes of group polarisation are increasingly happening in internet venues, including forums.

4. The digital fluency of young people in the UK: survey of teachers

Between May 16th and June 30th 2011, a poll was conducted to survey 509 primary and secondary school teachers in England and Wales about their views on their pupils' digital judgment, and how it might be taught in school. It should be noted at the forefront that both authors recognise the importance of non-teaching information literacy professionals in these debates. They recognise that the poll's focus on teachers is a methodological shortcoming, and have endeavoured, subsequent to the poll, to consult more widely in their research.

4.1 Research methodology

Prior to the administration of the survey, the questions were stress-tested by the research team for relevance to the existing literature on digital literacy. The prototype survey was then piloted on a small number of teachers, to test for transparency of research purpose, clarity of questioning, and ease of answering. Changes were made according to teacher feedback, and approved by the research leader. The final survey contained 14 questions (with 3 divided into sub-questions) organised around the broad themes of importance of the internet, extent of evidence of lack of digital fluency and possible steps forward. The questionnaire is included in full as Appendix 1.

The survey was an internet survey hosted by *Survey Monkey* (www.surveymonkey.com), which allows respondents to complete the survey online. Internet surveys are limited by coverage and sampling difficulties. It is noted, however, that the most significant limitation in this respect occurs when the internet is used as the source for general population surveys (Das et al 2011). This is mainly because of the variation in internet use and ease using the internet differs according to demographic indicators, even in countries with high overall penetration levels. Internet surveys are considered more appropriate for targeted populations, such as professional groups, where internet use is high (probably higher than landline telephone access).

Because there is no whole-of-population sample frame (e.g. email addresses for every teacher) that would allow for a random sample, we decided to use a 'snowballing' sampling technique. We identified and recruited a number of individuals and schools spread across geographical regions, subject areas, age groups and types of school. These individuals would then publicise the survey through their own professional networks. It was understood that the extent of local penetration would differ. In some places a larger professional network could be leveraged – resulting in high numbers of teachers filling out the survey. In others the professional network would be smaller, and the local distribution of the survey smaller. The survey dissemination took a number of specific forms, with the aim of our starting point being varied and broadly representative of the overall teaching profession:

> *Internet promotion:* we approached a number of organisations to include advertisements on their websites. The survey was promoted on the Institute for Ideas teachers' forum, Bold Creative's website, the authors' website, the Nominet Trust's website and the E-learning Foundation's website.
>
> *Targeted adverts through Teach First networks*: regional Teach First networks conduct circular communications to all members in their area. We received confirmed that the survey was publicised in a North-west London mail-out, a Liverpool area mail-out and a Southeast region mail-out.
>
> *Social media promotion*: we approached a number of high-visibility groups and individuals to publicise the survey through their social media presence. These included the National Association of Head teachers, Demos' email list and Twitter account, the Teach First Network and the Challenge Network. They were chosen opportunistically to promote the poll to give it the widest geographic, professional and demographic spread as possible whilst remaining affordable. A number of these groups and individuals did this through their Facebook pages and Twitter accounts.
>
> *Direct recruitment*: we placed emphasis on as diverse a direct recruitment effort as possible, ranging from first year teachers, Heads of Departments, Principals and Supply Teachers, and to as many Departments as possible, including ICT, Humanities, Science, PE and Art. We had confirmed successful distributions throughout the school for five Birmingham inner-city secondary state schools, seven London inner-city secondary schools, four state secondary schools in Outer London, four London private schools, one Cambridgeshire state secondary school, one Leeds state secondary school, one Exeter secondary state school, one Liverpool secondary state school, eight Birmingham state primary schools, two Manchester state primary schools, and three Cambridgeshire state primary schools.
>
> *Mailshots:* we approached the Teach First Network, the National Association of Head Teachers and the Challenge Network to request that the survey was included in mass emails to all teachers on their mailing lists. This was successfully done to the Heads of Religious Studies and Philosophy at all English sixth form schools and Further Education Colleges [n=2800].

It is important to note the weaknesses in this type of sampling technique. Although the starting points were intentionally varied, it is not possible to ascertain the full distribution of the survey beyond the first point of contact. We considered that the sampling method would result in a number of biases.

> *Geographical bias:* Although we aimed for (and achieved) a wide geographic spread of survey distribution, we judged that a sample perfectly representative of UK geography would not be necessary. Based on our literature review, and an assessment of national demographics, there was nothing to indicate that teacher attitudes and region would be bi-variates. While a small literature (Ofcom 2007) does indicate that relevant socio-geographic inequalities do exist (such as access to ICT), our survey would only be able to gather data

by broad region, and not with a granularity that would allow us to meaningfully relate it to this literature.

Teacher subject bias: One of the major concerns was that certain teachers – either through chance or inherent bias in the starting point in our sampling – would be over-represented in our sample. In order to make our sample more representative of the national cohort of teachers across these characteristics, we conducted a post-collection weighting of the data, where the data showed significant bias.

To calculate whether there was significant variation in the data set according to subject taught we conducted a test to calculate the standard deviation from the norm, according to each teacher subject response. Jelke Bethlehem (2007), a leading expert on online sampling techniques, has suggested that reliability can be increased by post-stratification data weighting against offline demographics. In short, this means that if in our sample a certain teacher type is over-represented, this is corrected in the final percentages. We therefore collected baseline data of the teaching profession in England and Wales, and re-weighted the data to correct variation. This was available from the 2010 School Workforce Census (Department of Education 2012).

The proportions of teachers by subject of the whole teacher workforce, given in the School Workforce Census, and on which the weightings are based, are given in Table 1.

Table 1: proportions of teachers by subject of the whole teacher workforce

Subject	Proportion of subject to entire teacher workforce
English	15.2%
Mathematics	13.7%
Science	13.9%
Citizenship	4.7%
Religious Education	6.5%
Art and Design	5.1%
Geography	5.6%
History	6.3%
ICT	7.7%
Modern Languages	12.6%

In those questions where there were responses greater than twice the standard deviation – which suggests outliers – we conducted a post-stratification weighting. The following questions required re-weighting: Q4 (SD=0.105); Q.5a (SD=0.141); Q5c (SD=0.21); Q5d

(SD=0.336); Q7a (SD=0.116); Q7d (SD=0.132); and Q9c (SD=0.08). The percentages shown in the paper are post-weighted.

Self-selection and non-response rate bias: Internet surveys have both strengths and weaknesses in respect of self-selection and response/non-response bias. The main concern is that, because the survey is optional, only people who are interested in the subject, or comfortable with the internet are likely to complete it (for example, teachers who taught ICT). All surveys where the respondents self-select, as opposed to recruited panel surveys, suffer from this potential bias. In order to minimise the risk of teachers self-selecting, we divulged very limited information about the survey before asking teachers to complete it. Internet surveys are also known (Das et al, p.31) to have very low response rate – usually between 30 and 40 per cent (around six to ten per cent lower than other survey modes), but with a very high standard deviation, suggesting response rate is highly variable. Although this can be improved through the use of incentives, none were used in this survey. Because we do not know the total number of views that this survey had, we do not know the total response rate. This means we are not able to correct for non-response rate. 580 people started the survey, and 509 agreed to the consent page. 412 finished every question.

It is with these caveats in mind that we present these data, and the results should be seen as an exploration of trends that set out some general themes that teachers are concerned about. It is not, and should not be seen as, a perfectly representative sample of teachers. Data were analysed through the Survey Monkey site, which has a number of tools that allows for both filtering and cross tabulation. Because the survey is indicative and explorative, we provide only baseline vital statistics to each question asked.

To aid the comparison of answers from different selected cohorts within our sample, we sometimes present the results as a question 'rating'. Each possible response was assigned a corresponding numeric value, with higher frequency responses receiving lower assigned values. For example: 'Daily basis' = 1; 'Weekly basis' = 2; 'Monthly basis' = 3; 'Occasionally' = 4; 'Never' = 5. The 'rating' of each question is calculated by dividing the total added value of each respondent by the number of respondents. This tells us the averaged response for this question. A rating of 1, for example, would mean every respondent answered 'daily basis', whilst a rating of 5 meant every respondent answered 'never'. We removed those who answered 'don't know' in order to avoid distorting the process of averaging.

4.2 Results

Through a targeted snowball sampling technique, we received 509 responses. This is the largest UK survey of its kind ever conducted. We present the overall data below, and in places present some simple cross-tabulations to determine if particular sub-groups of our sample responded in a significantly different way to the total sample. As noted in the methodology, a post-stratification weighting was applied according to subject taught, on questions where there was a variation of twice the standard deviation (questions 4, 5a, 5c, 5d, 7a, 7d, and 9c – see the list of questions in Appendix 1). Post-weighting percentages for these questions are given in brackets.

We provided participants with a definition of digital literacy. 'Digital literacy' was used rather than 'digital fluency' because the first surveys were designed and received responses before 'digital fluency' had been conceived. This terminology was thereafter retained throughout the survey to keep the survey internally consistent. Digital literacy was defined as 'the ability to critically assess and understand different sources of online information.'

4.2.1 Internet and school

Table 2: how important participants regarded internet-based research for their students' schoolwork

	Very important	Quite important	Quite unimportant	Very unimportant	Don't know
Total sample	38.0% (36.6%)	50.8% (51.9%)	9.0% (9.0%)	2.0% (2.2%)	0.3% (0.2%)

(n=400)

Table 3: how important participants regarded internet-based content to be in the formation and validation of the beliefs their students hold

	Very important	Quite important	Quite unimportant	Very unimportant	Don't know
Total sample	22.3%	54.2%	16.1%	2.5%	5.0%

(n=404)

Table 4: whether and how often participants had ever experienced a number of internet issues in the classroom

	On a daily basis	On a weekly basis	On a monthly basis	Occasion-ally	Never	Don't know
Set internet research for homework	3.1% (1.1%)	24.3% (25.8%)	31.7% (25.4%)	35.1% (36.7%)	5.5% (11.1%)	0.2% (0.0%)
Students bring information they have discovered from the internet into class discussions	5.3%	27.6%	27.1%	36.2%	3.8%	0.0%

(n=422)

Tables 2, 3 and 4 demonstrate that teachers regarded the internet as an important tool of learning: internet-based research was considered important for their students' schoolwork, the content of the internet was important for the formation of their pupil's beliefs, and digital information was used in homework and class discussions at least occasionally.

4.2.2 Levels of pupils' digital fluency

Table 5: whether participants thought digital fluency was an important skill to possess

	Very important	Quite important	Quite Unimportant	Very unimportant	Don't know
Total sample	79.8%	19.5%	0.7%	0.0%	0.0%

(n=411)

Table 6: whether and how frequently participants had witnessed the following to occur in their classrooms

	Daily basis	Weekly basis	Monthly basis	Occasio-nally	Never	Don't know
Encounter arguments within lessons or submitted schoolwork that contain inaccurate internet-based content you regard as being deliberately packaged by the producers to be misleading or deceitful (for example, holocaust denialism packaged to be radical historical revisionism)	1.7% (1.1%)	8.9% (6.1%)	7.7% (4.0%)	41.5% (35.8%)	35.5% (47.7%)	4.8% (5.2%)
Encounter arguments within lessons relating to conspiracy theories	0.5% (0.5%)	7.9% (4.8%)	12.5% (7.3%)	37.8% (35.7%)	35.1% (41.5%)	5.9% (10.1%)

(n=422)

Table 7: the participant's rating of their pupil's digital fluency across a number of domains

	Excellent	Good	Average	Poor	Very poor	Don't know
Understand how search engines operate	13.7% (11.6%)	35.3% (33.6%)	30.9% (32.9%)	12.9% (13.7%)	2.3% (5.1%)	3.4% (3.1%)
Understand the difference in quality of information, for example between statistics and anecdotes	2.2%	13.9%	37.0%	35.3%	8.7%	2.9%
Apply fact-checks or other source verification on the online information they consume	1.2%	7.0%	24.3%	44.8%	19.5%	3.1%
Recognise bias or propaganda	1.0% (0.4%)	14.0% (8.9%)	33.1% (34.8%)	38.4% (38.3%)	11.6% (14.8%)	1.9% (2.8%)
Visit a wide variety of websites with different perspectives	2.2%	11.1%	32.2%	36.3%	15.1%	3.1%

(n=422)

Table 8: the average ratings of Table 7

With 1 being ‘excellent’ and 5 being ‘very poor’ is possible to rank these skills according to their level of perceived proficiency:

Internet skill	Average Rating
Understand how search engines operate	2.57
Understand the difference in quality of information, for example between statistics and anecdotes	3.35
Recognise bias or propaganda	3.45
Visit a wide variety of websites with different perspectives	3.53
Apply fact-checks or other source verification on the online information they consume	3.77

Section 4.2.3 presents an overwhelming majority of teachers regarding IL as a ‘very important’ skill to possess, and over half of teachers encountering the presumed evidence of a lack of digital literacy in their classrooms – deliberate misinformation and conspiracy theories. Moving next to teachers’ estimations of their pupil’s current digital literacy competencies, the survey found that teachers thought their students best able to understand how search engines operate, and least able to apply fact-checks or source verification. With an ‘average’ proficiency scoring a 3, teachers thought, with the exception of understanding how a search engine works, that their pupils were ‘below average’ (i.e. with a score of less than three) at all other skills.

4.2.3 Teaching digital fluency

Table 9: whether digital fluency and other types of critical thinking are taught in participant’s schools

	Yes – a lot	Yes – a little	No	Don’t know
Digital fluency	10.1%	59.9%	14.0%	15.9%
Other critical thinking	34.2%	55.5%	4.6%	5.6%

(n=416)

Table 10: whether digital fluency should be given greater prominence in the National Curriculum

	Yes – a lot	Yes – a little	No – it is about right	No – there is too much already	Don’t know
Total sample	48.8% (50.5%)	38.3% (37.3%)	11.9% (10.6%)	1.3% (0.5%)	2.4% (1.1%)

(n=412)

Table 11: if participants felt confident teaching digital literacy themselves

	Very confident	Quite confident	Quite unconfident	Very unconfident	Not applicable
Total sample	24.0%	53.6%	18.2%	3.4%	0.7%

(n=412)

Section 4.2.3 demonstrates that, whilst some level of digital literacy was taught in most (but by no means all) respondent's schools, 87 per cent of respondents thought it should be given greater prominence, and were on the whole confident in being able to teach it. Interestingly, when asked in what subject digital fluency might be taught, there was a remarkable array of different subjects proposed. The most popular response was (perhaps unsurprisingly) Information Technology, with 80 per cent. But a very large number of subjects also scored very highly: English (80 per cent), History (74 per cent), Citizenship (72 per cent), Religious Education (64 per cent) and Politics (62 per cent). This suggests that teachers felt that digital fluency is a core competency, one that should be taught across several subjects.

4.2.4 Assistance needed to teach digital fluency

The final question in our survey related to the assistance that teachers thought they would need if they were to teach digital literacy in their school. The responses were open. We coded them manually into themed groups. The intent is to indicatively show teachers' opinions about the best ways forward, hence, when some teachers gave more than one response, these were treated as separate responses.

	Number of responses	**Proportion of total responses**
Training	38	35.8%
Teaching resources	31	29.2%
Time in the curriculum	18	16.9%
Reference materials	11	10.4%
ICT infrastructure	8	7.5%

Training was most popularly regarded to be necessary for digital fluency teaching. Even some experienced teachers wanted a thorough development regime:

> *Even as a skilled Media Studies teacher, I feel I would want training. I think I know (more or less) how search engines work and how to get the most reliable sources [but] that's only through personal trial and error and exploration.*
>
> Secondary School, Head of Department

There was division over whether the training could be conducted in-house (and was therefore more a question of time, for instance Inset Days allocation) or whether external supervision was required. However, there was agreement that the training should both be general and subject-specific – with both general principles of digital fluency, and also how digital fluency teaching could be integrated to their specific subject areas. Teachers felt a range of materials would be important. These would include strategic documents – such as a digital fluency syllabus and explanation of context – and also classroom-specific material, including schemes of work, suggested approaches, worksheets, examples, and written materials on detecting bias and verification strategies. Comparisons of information and misinformation, partial and impartial websites were thought to be particularly helpful, with *'links to resources which compare the content on a particular aspect but from different angles'* (ICT and Business Studies, Secondary School). One teacher suggested that

this could be achieved through *'resources on the internet mock ups perhaps'* (Key Stage 2, Head of Year).

Many suggested materials and teaching aids would be most helpful if they were hosted online, and universally accessible. Some suggested all materials should be organized around *'constructed websites that provide a context for teaching digital literacy … in an interactive way'* (Key Stage 1/2, Deputy Head). Some suggested that the material be subject-specific, exploiting the digital fluency learning opportunities in each subject. Others thought a *'syllabus of nationally agreed content'* (Key Stage 3/4, Deputy Head Teacher) would be more useful.

A smaller, but still significant number of teachers thought that time in an otherwise already crowded curriculum was the only barrier:

> *If written into the curriculum I could easily put aside a lesson for discussing digital literacy and how to effectively use the Internet [for] research.*
>
> Secondary School, Design & Technology teacher

4.2.5 Key findings

The data suggests a series of important insights into the perspective of teachers on how young people in the UK select, critically evaluate and understand information. First, that the internet is an important medium through which pupils' acquire and use information. 88 per cent of teachers surveyed consider internet-based research to be important for their pupils' schoolwork and 95 per cent report that their pupils have brought information into the classroom they have found online. Internet-borne information was also considered to be influential, with most respondents reporting that their students bring internet-based information into the classroom at least occasionally, and 75 per cent of respondents reporting internet-based content to be important in the formation and validation of their pupils' beliefs.

The second key finding was that teachers rated their pupils' digital fluency abilities, on average, poor. 'Understand how search engines operate' was the only skill rated above average. Other digital fluency skills – understanding differences in the quality of information, recognising bias or propaganda, visiting a variety of informational sources and applying source verification strategies – were all rated below average.

The third key finding was that teachers reported evidence of the consequences of their pupils' ineffective critical engagement with online information. 59.8 per cent of teachers report encountering arguments that contain 'inaccurate internet-based content' that is considered (by the teacher) to be 'deliberately packaged by the producers to be misleading or deceitful'. Most of these teachers, however, only reported this phenomenon 'occasionally'.

The fourth, and perhaps most important key finding, was the overwhelming support from the teaching community itself for the more prominent teaching of the ability to 'critically assess and understand different sources of online information'. Strikingly, 99 per cent of teachers surveyed consider this an important skill for young people to possess and 88 per cent that it should be given more prominence in the National Curriculum.

5. Implications

Overall, it is our contention that IL teaching in schools is struggling to keep pace with the rise of the internet. The internet has become central to learning, but the skills to use it appropriately and well have not become central to learning how to learn. The era of mass, unmediated information needs to be attended by a new educational paradigm based on a renewal of critical, sceptical, savvy thought fit for the online age. Doubtless, today's teachers and librarians deserve sympathy because the speed of change has been very rapid and education curricula have as little free time as education and literacy professionals do. However, education must keep pace with society's turbulence, not vice versa.

There are some promising initiatives in some schools, but, as many librarians commented to us, coverage is patchy, self-initiated and sometimes non-existent. Digital literacy provision depends on the support of the schools' senior leadership, availability of funds and time. Yet digital literacy is too important for such inconsistent provision; it is this information landscape – not just the Dewey Decimal one – that young people navigate, and that most meaningfully impacts upon their lives. Throughout their lives, young people will make important, even momentous decisions – on health, life, love and politics – based on what they encounter and believe online.

6. Recommendations: from information literacy to digital fluency

Professor Byron (2008) in her independent review has already laid out a powerful ethos for managing risk entailed by going online: to think less about the internet causing harm, and to focus more on what young people bring to these technologies, namely empowering young people with the skills they need to manage the risks entailed by inhabiting the digital world. The onus must be on individual users to apply careful, reasoned judgments.

In essence, the solution we propose is one that involves critical thinking skills, but made relevant to the disruptive revolution in information retrieval and consumption caused by the innovation of the internet. The questions and skills that we now think need to be imbued as a fundamental habit of all young people are as important as it once was to ask who funds the newspapers, how are they produced and under what nature of editorial control do journalists work?

Critical thinking is already a core part of the curriculum, and a really important cross-curricular learning objective. The crucial point is that the rise of the internet as being the most important source of information, and especially social media as the vehicle whereby people filter and select the information that they encounter has introduced a number of new difficulties specific to the digital world.

This is why the concept we suggest – digital fluency – is a combination of new and old techniques: a mix of the classic tropes of any discerning historian or journalist with some very specific knowledge about how the internet works. It is an amalgam of established critical thinking and information literacy skills, but also bodies of knowledge and techniques that allow these skills to be applied to a new context posing new challenges and opportunities.

Precisely how this is taught is still unsettled. Whatever form it takes, digital fluency teaching will act in competition with pieces of internet-borne disinformation that are catchy, viral, and coolly anti-Establishment. An A4 handout delivered in a classroom cannot compete with a trending *YouTube* conspiracy theory with explosive graphics and a good soundtrack. The materials that promote the principles of digital fluency should leverage social media, be presented in viral, transmissible formats, use powerful presentational techniques and offer, through the use of independent critical thinking, the opportunity to critique the actions and decisions of the Establishment.

This is not the property of any one subject. Indeed, in our survey, when asked in what subject digital fluency might be taught, there was a remarkable array of different subjects proposed; IT,

English, History, Citizenship, RE, Politics. This suggests that teachers felt that digital fluency is a core competency, one that should be taught across several subjects.

This is why school librarians and the IL community are so important to the future of digital fluency: they sit atop any specific subject area, and can see opportunities in each. As IL sits at the centre of their vocation, so, this article has argued, must digital fluency. In today's world, digital fluency must be put at the heart of education, and toward this end those with a stake in information will play a key, perhaps decisive, role.

References

American Library Assocation. 1989. *Presidential Committee on Information Literacy: Final Report.* [Online] Available at: http://www.ala.org/ala/mgrps/divs/acrl/publicaitons/whitepapers/presidential.cfm [Accessed 1 October 2012].

Association of College and Research Libraries. 2000. *Information literacy competency standards for higher education.* Chicago.

Bartlett, J. and Miller, C. 2011. *Truth, lies and the internet: a report into young people's digital fluency,* London: Demos.

Bartlett, J. and Miller, C. 2010. *The power of unreason: conspiracy theories, extremism and counter-terrorism.* London: Demos

Bethlehem, J. 2007. Reducing the bias of web survey-based estimates. *Statistics Netherlands Discussion Paper 07001.* The Netherlands: The Hague.

Blank, G. 2010. Trust on the internet now exceeds trust in other major institutions. *Oxford Internet Surveys.* [Online] Available at: http://microsites.oii.ox.ac.uk/oxis/blog/2010/trust-internet-now-exceeds-trust-other-major-institutions [Accessed 6 January 2012].

Bosker, B. 2011. As internet use grows, is it polarizing political views? *Huffington Post.* [Online] Available at: http://www.huffingtonpost.com/2011/03/29/internet-polarizing-politics_n_842263.html [Accessed 3 October 2012].

Brown, R. 2003. *Social psychology. 2nd edn.* New York: Simon & Schuster.

Byron, T. 2008. Safer children in a digital world: the report of the Byron review. *Byron Review: Children and new technology.* London, UK: Crown Copyright.

Cantone, J. 2011. How much data will humans create and store this year? *Mashable.* [Online] Available at: http://mashable.com/2011/06/28/data-infographic/ [Accessed 1 February 2012].

Das, M., Ester, P. and Kaczmirek, L. 2011. *Social and behavioural research and the internet: advances in applied methods and research strategies.* New York: Taylor and Francis.

Department for Education and Department for Business, Innovation and Skills. 2012. *The 2010 school workforce census.* [Online] Available at: http://www.education.gov.uk/rsgateway/DB/SFR/s000997/index.shtml [Accessed 25 July 2012].

Dutton, W., Helsper, E.J., and Gerber, M.M. 2009. *The Internet Britain 2009.* Oxford: Oxford Internet Surveys.

Dutton, W. and Shepard, A. 2006. Trust in the internet as an experience technology. *Information, Communication and Society* 9(4), p.433-451.

Emery, D. 2009. The rise of hate 2.0. *BBC News* 22 June 2009. [Online] Available at: http://news.bbc.co.uk/1/hi/technology/8097979.stm [Accessed 11 May 2012].

Gilster, Paul. 1997. *Digital literacy*. New York: John Wiley & Sons.

Gurak, L. 2001. *Cyberliteracy.* New Haven: Yale University Press.

Hardwig, J. 1991. The role of trust in knowledge. *Journal of Philosophy* 88 (12), pp. 693-708.

Livingstone, S. and Bober, M. 2005. UK children go online: final report of key project findings. *London School of Economics and Political Science.* [Online] Available at: http://www.lse.ac.uk/collections/children-go-online/UKCGO_Final_report.pdf [Accessed 21 July 2011].

Mackey, T. P. and Jacobson, T. E. 2011. Reframing information literacy as a metaliteracy. *College and Research Libraries* 72 (1), pp.62-78.

McPherson, M., Smith-Lovin, L. and Cook, J.M. 2001. Birds of a feather flock together. *Annual Review of Sociology* 27, pp.415-444.

Nicolas, D. 2008. Information behavior of the researcher of the future. *University College London CIBER Project*, 11 January 2008. [Online] Available at: http://www.jisc.ac.uk/media/documents/programmes/reppres/gg_final_keynote_11012008.pdf [Accessed 21 July 2011].

Ofcom. 2011. *UK children's media literacy.* [Online] Available at: http://stakeholders.ofcom.org.uk/binaries/research/media-literacy/media-lit11/childrens.pdf [Accessed 7 May 2012].

Ofcom. 2007. *Social inclusion and communications: a review of the literature*. London: The Consumer Panel.

Palfrey, J. and Gasser, U. 2009. *Born digital: understanding the first generation of digital natives.* London: Basic Books.

Pariser, E. 2011. *The filter bubble: what the internet is hiding from you.* London: Penguin.

Popper, K. 1959. *The logic of scientific discovery.* New York: Basic Books.

Prensky, M. 2001. Digital natives, digital immigrants. *On the Horizon* 9(5), pp.1-6.

Smith, A. 2011. The Internet Campaign 2010. *Pew Internet American Life Project* [Online]. Available at: http://pewinternet.org/Reports/2011/The-Internet-and-Campaign-2010.aspx [Accessed 10 May 2011].

Society of College, National and University Libraries (SCONUL). 1999. *Briefing paper: information skills in higher education.* [Online] Available at: http://www.sconul.ac.uk/groups/information_literacy/papers/Seven_pillars2.pdf [Accessed 1 October 2012].

StormFront. 2012. *Martin Luther King Jr. A true historical examination.* [Online] Available at: http://www.martinlutherking.org [Accessed 1 October 2012].

Sunstein, C. 2009. To become an extremist, hang around with people you agree with. *Spectator* July 2009, pp.11-14.

Sutherland, S. 2007. *Irrationality*. London: Pinter & Martin.

Tang, John C., et al. 2011. Reflecting on the DARPA red balloon challenge. *Communications of the ACM,* 54(4), pp.78-85.

Telegraph. 2010. Students brains 'rewired' by the internet. *Daily Telegraph.* [Online] Available at: http://www.ucl.ac.uk/infostudies/research/ciber/telegraph.pdf [Accessed 11 Feb 2010].

Wason, P.C. 1966. Reasoning. In: Foss, B.M. ed. *New horizons in psychology.* London Penguin: 1966, pp.135-151.

Wikipedia. 2009. *Map of balloon locations* [Online]. Available at: http://upload.wikimedia.org/wikipedia/en/a/a0/DARPABalloonMap.jpg [Accessed 18 May 2012].

Resources

For the debate regarding the definition of information literacy (and associated literacies) in an age of online, digital and participatory media, see Paul Gilster's 1997 *Digital literacy* (New York, John Wiley & Sons), The Center for Media Literacy's 2008 contribution, *Literacy for the 21st century*, and the 2007 International ICT Literacy Panel, *Digital transformation: a framework for ICT literacy*.

Appendix 1: Full list of survey questions

1. What is your current position, or if retired, most recent position?
2. What subjects are you/were you teaching?
3. What age group/key stage group are you/were you teaching?
4. How important do you regard internet-based research for your students' schoolwork?
5. How often does the following occur?
    a. Set internet-based research for homework;
    b. Students bring information they have discovered from the Internet class discussions;
    c. Encounter arguments within lessons or submitted schoolwork that contain inaccurate internet-based content you regard as being deliberately packaged by the producers to be misleading or deceitful (for example, holocaust denialism packaged to be radical historical revisionism);
    d. Encounter arguments within lessons relating to conspiracy theories.
6. How important do you regard internet-based content to be in the formation and validation of the beliefs your students hold?
7. We refer to 'digital literacy' as the ability to critically assess and understand different sources of online information. This has several components. As best you can, please rate your students' ability in the following competencies with reference to online material:
    a. Understand how search engines operate;
    b. Understand the difference in quality of information, for example between statistics and anecdotes;
    c. Apply fact-checks or other source verification on the online information they consume;
    d. Recognise bias or propaganda;
    e. Visit a variety of sources offering different perspectives.
8. Keeping that definition of digital literacy in mind, please answer the following: do you consider digital literacy to be an important skill for young people to possess?
9. Keeping that definition of digital literacy in mind, please answer the following:
    a. Is digital literacy taught in your school?
    b. Are other types of critical thinking taught in your school?
    c. Do you think that digital literacy should be given greater prominence within the national curriculum?
    d. Would you feel confident teaching your students about digital literacy?
10. What subject(s) should teach digital literacy (tick as many as you'd like)?
11. What support would you need in teaching digital literacy?