

Towards improvement of information literacy in the digital era through useful and meaningful educational programs

If you can't find it on Google, it does not exist?

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ABSTRACT

This is an account of the quest of a beginning lecturer in media publishing and ICT (higher education) who is trying to find the best way to make new students (more) information literate.

I started my quest in the classroom, giving assignments to my students. They had to write an essay for which they were supposed to do research.

During this process I collected their complaints about the problems they encountered. I wrote those down and analyzed them until I had a clear picture of their difficulties.

To get a better idea of their educational background, I read several reports on the teaching of information literacy in Dutch primary and secondary education which entailed among other things longitudinal and quantitative research on the use of ICT in education and reports on the skills of pupils and teachers.

Also I wanted to find out what people had already written about the shift in information seeking strategies and the impact of the digitized information age. This would help me put into perspective this so called 'Google generation'.

In order to find an answer to next question on how technology changes human behavior, I read many articles, theses and books to help me discover the nature of the issues the student have with finding relevant information. I found many articles and many views on the topic and decided to focus on a few recurring themes, which I related to the different problems my students

seemed to have.

I would like to use the Bobcatsss conference as a testing ground upon which I shall introduce recommendations for improving information literacy and awareness among students.

KEYWORDS: information literacy, media literacy searching strategies, higher education, Google generation, multitasking, Google, bot, database, Internet, digital archives, library, ubiquitous, information overload, focus, searching engines.

1. The Difference between Searching and Finding

In February 2008 I started as a lecturer at the Institute for Media and Information Management of the University of Applied Sciences in Amsterdam. One of the first courses I gave was called 'Trends in the Media'. Second year students had to choose a topic of their liking - within the main subject of the course- that they had to write a paper about. In order to do so, they needed to do research on their subject in small groups. My role was to tutor these groups of students, helping out with the choice of their subject, the structure of the paper and the research. Choosing a subject and structuring the thesis in smaller questions went quite well. The real difficulties came when the students had to do their research. They did search but could not easily find relevant information.

1.1. Context

At first it seemed logical to send the students to the library and to advise them to use the Lexis-Nexis database. In the Netherlands the LexisNexis database contains articles of Dutch periodicals and newspapers. I assumed that they, too, would understand that higher education demanded of them that they should look beyond that one big, popular search engine, Google. Clearly, I was wrong.

Three weeks after I had given the assignment, students approached me with a plea to change their group's topic, the reason being that they had searched 'everywhere' but were unable to find anything on their subject – the representation of women in Bollywood films. When I asked where they had tried to find information, looking at me as though they thought I was being silly, they replied: "Google".

"Did you go to the school library, the university library, the library of the film museum, or did you visit their websites, as I recommended you to do?"

"No" they answered. Apparently, they were convinced that if Google could not provide the information, it did not exist. And so the students had decided the only remedy was to pick another topic. I did not give in: with the deadline only 4 weeks ahead, I was concerned that the same strategy applied to a new topic would cause the same problems.

Two weeks later, we met again for consultation. The students proudly presented me with two books they had found, at the public library of Amsterdam! The books were somewhat outdated (they were written in the eighties) but the students seemed so proud to have found those that I did not dare tell them they might not be useful anymore. After all, they had been to a library...

Then the students asked me: "We found this book with all these texts in it, but how do we find out which of them are relevant for our research?"

For a moment I did not know what to say. Clearly these students had never learned that one way of finding out whether a text is relevant is by actually reading it!

1.2. My Findings

I decided that these students needed extra training in doing research in order to change their habits and get them better results. To decide on which training was needed I first needed to gain insight in the problems they struggled with. Here is what I gathered:

- Students had problems formulating useful key words and sometimes even typing in a whole phrase.
- As a result searching with the help of directories was difficult if not impossible
- They did not know how to categorize a subject
- They often did not know how to use more complex database interfaces.

- To some students the advanced search mode in Google was new and hard to figure out.
- They did not have a plan before they started their research; they started without first thinking where they were most likely to find information on the subject.
- They did not keep track of their searches and key words used, in fact finding this idea totally useless and a waste of time. The result was that in the end they did not know which key words they had used and which of them gave the best results.
- They hardly took the time to evaluate the information or its source.
- They did not check if the information came from a national newspaper or a personal blog.
- They did not save the reports and articles they found and when I asked why, they answered that because they found the information once they could easily find it again.

Our Trends in the Media course, offered the students more than enough time to visit the library. In spite of the many times I recommended them to do so, the majority did not. When I asked why, they told me that were afraid to look stupid because they did not know how to find their way around. This at least indicates that they do acknowledge that this is an ability that might be expected of them. Obviously, students needed some serious training teaching these issues.

2. Analysis

In higher education students are expected to deliver higher quality assignments and papers. Simple Google searches do not meet these expectations. Students find that hard to cope with because they have gotten used to their way of doing research and they find what they need. Why change their habits?

2.1. Previous training

How did my students do their research in primary and secondary education? Did they read one or more full textbooks and write down notes? Or did they 'power browse' the Internet, scanning sites, skimming articles and cutting and pasting together their assignment from parts of texts they found online?

Over the past decade, innovations in education led to an increasing use of computers and ICT in schools. Recent studies in the Netherlands are moderately enthusiastic about this increase, but they are critical about the way ICT is used.

The main problem lies in the way the teachers coach the pupils' research. In 2008, there is one computer for every six pupils in Dutch schools.

The computers are mostly used for remedial teaching.

Only 13 percent of the time spent behind a school's computer is used to do research on the Internet.

(Kennisnet 2008)

“97% of all secondary school teachers tell its pupils to look for information on the Internet for their assignments. Pupils do this at home. A quarter of the teachers gives these kinds of assignments weekly. Only 40% of the pupils thinks the teachers instructions how to search for information the Internet are useful and effective.”

(Kennisnet, 2008) Basically, the pupils had to find out for themselves how to do research.

The fact that pupils seem to have the technical skills to use the Internet as a tool in managing their social network, often makes teachers think it is not necessary to train them in usage of Internet resources and research in general: their technical skills were over-estimated and mistaken for information literacy.

Meanwhile, they were not taught the skills needed to do proper research. The way information is disclosed has changed so rapidly and still is changing.

For teachers it might be hard to keep up with the changes and at the same time transfer their knowledge of the use and quality of digital sources to their students.

I think it is highly likely that pupils would be able to Google and copy paste their assignments and even get a good mark.

In the Kennisnet Education and ICT Monitor Drent et al (2008) clearly formulate the far-reaching consequences of this problem.

Different reports on the subject clearly point out the relationship between the capacities to integrate ICT in education and the output of the pupils.

A teacher can improve output and quality of education using ICT in a good way but wrongly used applications can lead to negative effects on study results and the quality of education.

2.2. Information overload

Some facts that need no further explanation:

- In 2002 the people of the world produced 5 exabytes (EB) of information. One EB is 10^{18} bytes. Five EB of information would equal all words ever spoken by mankind.
- In 2008 there are 2.7 billion Google searches each month.
- Wikipedia contains over 9.25 million articles in more then 250 languages and is growing everyday with the help of almost 300.000 contributors.
- The surface of the Internet contains approximately 170 terabytes of information. The amount of information on deep web (searchable

databases, dynamic pages, pages with limited access) should be about 500 times larger.

(Quoniam L, 2008)

It is obvious that technological innovations and digitization projects have led to an explosion of content. It is possible to download unimaginable amounts of information to any connected electronic device, every hour a day. They are downloading and uploading information, consuming media and producing new information.

How to find your way in this jungle of information, in thousands of different formats? Note that we are not just talking about written texts: pod casts, photos, videos, PowerPoint presentations, mind maps, video reports and animations: all is information.

This introduces another challenge: the place where about 97 % of the people start their research does not only offer information, but also offers a great deal of entertainment, which provides easy diversion from perceivably dull school assignments.

At the same time, the vastness of the available information, falsely leads to the assumption of 'completeness'. Hence, students believe that all information is available online, not realizing that there are still large amounts of very relevant and important information that have not (yet) been disclosed through the Internet.

2.3. The Google Myth

In July 2008 Nicholas Carr confessed in *Is Google making us stupid* that he has more difficulties reading longer texts than a couple of years ago. In this essay he concludes in a McLuhan tradition that the way information is usually presented to us, influences the way we process this information and even the way we structure our thoughts.

In early 2008 the Ciber/British Library published a report (British Library, 2008: 8) stating that the enormous changes in the information landscape are transforming learning, the role of the teacher and even scholarly communication. They drew a picture of this generation that I would like to use as a basis for a description for the Google generation. Afterwards, I will mix this with my own experiences in the classroom as well as results from other reports on young people and media literacy.

I would like to summarize their most importing conclusions on the subject of student's information literacy combining their findings with my experiences.

The access to technology has not improved information literacy of young people, in fact their technical skills using the computers disguises their incompetence in conductive knowledge. The speed of their searching activities shows that they are very good at handling the handles but not pay a lot of attention to what they find. They hardly read the information they find, printing

reports after only a glance at the first pages, They do not take account of the relevance, the accuracy or the authority of a piece of information.

Young people are easily satisfied and lack a critical attitude. Young people have a poor understanding of their information needs; they do not know what to search for in trying to solve a problem or answering a question. Therefore they have trouble develop search strategies and find it hard to transfer the collected information into a logical report that answers their initial question.

They also have difficulty formulating the right key words needed for effective research strategies. This is also a result of their poor understanding of information needs. They do not know what kind of information they need to find to answer their question if it is not answered literary. 89 % of the students use search engines to so begin an information search. Sometimes it is a good way to get to a specialized database or institute you had never heard of before, but thinking beforehand where it is likely to find specific information works much better.

Also search engines have a high 'satisfaction score'. Almost 93% of the users is satisfied with the results presented by their search engine and use one of the hits presented on the first page.

Students state that search engines fit their life styles better than physical libraries. Their strict opening hours are inconvenient and to travel to get to a library is unnecessary when everything is traceable on the Internet.

These statements do also apply to a technology generation earlier; (using cd-roms and early online service systems) in fact the lack of longitudinal studies on information retrieval keeps us from drawing definitive conclusions on generation differences in information literacy.

However, it becomes clearer every year that the major changes in the information landscape and the changes in the ways information is disclosed have their impact on the way we handle information, the way people perform their information requests or research. Ubiquitous use of Internet and access to information makes people believe that any question can be found easily and instantly.

The popularity of web brands (like Google, and Yahoo) makes that the appreciation of Internet is solely based one brand, ignoring the fact that the Internet is a collection of networked resources with endless different providers of content

Ubiquitous access to information leads to a lack of focus and working with intuitive interfaces, leads to a lack of technical skills one needs to work with complex database interfaces.

2.4. "We are how we read."

Carr (2008) quotes developmental psychologist Marianne

Wolfs: "We are how we read".

"Wolf worries that the style of reading promoted by the Net, a style that puts "efficiency" and "immediacy" above all else, may be weakening our capacity for the kind of deep reading that emerged when an earlier technology, the printing press, made long and complex works of prose commonplace. "When we read online", she says, we tend to become "mere decoders of information." Our ability to interpret text, to make the rich mental connections that form when we read deeply and without distraction, remains largely disengaged." (Carr, 2008)

Our busy daily schedules force us to efficiency. We simply do not have enough time to keep up with everything. Instead of making choices on themes or subjects, most of us do not want to choose. Since we are confronted with such a vast array of information we have accustomed ourselves to briefly skimming and skinning the bits of information that we do access. Note that this in fact is only the *assumption* of efficiency, very likely we do not properly judge the information at hand.

Another characteristic of the Internet is "immediacy". Because all Internet users are potential producers of content and limited technical skills are necessary to upload information. So any more or less important news fact can become breaking world news within hours. Such as the new dancing steps your next-door neighbor just learned. But also the video of Saddam Hussein's execution, secretly filmed by mobile. The importance of immediacy for breaking world news is very clear to us all. But nowadays any little thing that happens in people's personal lives is published with an urgency that does not match its global impact.

Breaking and personals news spreads quickly but also practical applications, which depend on immediacy of information, are very popular, such as weather reporting services and traffic information services. All these constantly updated news sites; applications, blogs and web channels give users a constant feeling of urgency. They are always afraid to miss something, to not know the latest news about the economy, technology or politics.

The urge for immediacy and efficiency is triggered by frequent use of the Internet leads to a new kind of browsing, power browsing.

2.5. Power browsing

In the Ciber briefing paper, the British Library introduces the term power browsing to describe the way people nowadays do their research, not only pupils and students but also other frequent web users, teachers, scholars and professors. Power browsing is skimming websites, scanning indexes, reading the first page of an article and

downloading reports in great amount but not doing any in depth research. This is horizontal information seeking, not research.

Is it because the enormous increase of available information that quantity seems to become important than quality? The information landscape has not only changed dramatically it is growing at a pace that accelerates everyday. (British Library, 2008: 10)

By using the web, we automatically use a hyper structured interface and start to think in hyper structure. The linear way of telling stories will become more difficult for us to follow and pay full attention to.

2.6. The Myth of Multitasking

A few years ago a new buzzword became popular amongst parents, educators and marketers, multitasking. Multitasking is performing two or more tasks simultaneously. Some trendy marketers tried to persuade us that especially children were very well capable in doing this. Their parents and teacher should understand and acknowledge this fact and take this into account when educating them. Young people's brains had evolved quickly through the arrival of 'new media' bringing new information structures.

But soon others began to doubt these statements: "Really to multitask is extremely difficult; our brain is not made for it. Try and talk to two persons on different subjects simultaneously or follow three table conversations in a restaurant at the same time."

(Pardoen, 2007)

In the end, you really have to focus to get things done, to write that paper or to study for that test.

Until only a few years ago the first place to go to when doing research was a library or a specialized institution. There the only thing one could do was reading searching and studying in silence. No checking your MSN to see if there were any friends online, your mobile phone had to be switched off and at the computer the only service was the library's database. It was not possible to play a game of poker, watch the latest episode of South Park or do other very useful but time consuming online 'activities'. I notice it myself, working on this paper on searching strategies and the web I constantly feel the urge to check this fact or to find out if there is not another article about research strategies, multitasking, data design etc. And the more articles I find, the more difficult I find determine the most important issues and to focus on those.

"Amid the glittering promise of our new technology and the wondrous potential of our scientific gains, we are nurturing a culture of fragmentation and detachment. In this new world, something is missing and that something is attention." (Jackson, M. 2008 Information overload)

The chance to be distracted while doing online research is

a zillion times bigger than in a library or a closed database environment. And more distraction is less focus and attention and that has its affect on the quality of work.

2.7. Tools and toys

New technology brings new possibilities: video on the web, RSS feeds that constantly feed you with new information, integrated search engines that "predict" your next online buy and tries to advise you on your choices.

But also social networking sites that let you share your interest with other web users and give your access to information they found during their web searches. Your scope on the world is not only yours but also that of your (online) friends and co-workers. That means you can find even more information to skim and scan and download it to probably never read it.

Also we have been getting used to using the Internet for daily life trivialities for which we only have to brows and click a few times. We check the online weather reports before we plan a hike, we use the Internet to find the best-priced secondhand car or to compare the quality and technical specifications on different mobile phones. Because these tasks are relatively simple we might have come to think that more difficult assignments are as easy to resolve because we use the Internet.

Tool use is as ancient as human nature.

"Tool use is an anthropological given of the human species" (Kirkpatrick, 2004: 2). Tools are always designed to make life easy and more pleasurable to create more result with less effort in less time.

"Anything we grow up with is not technology to us. It simply is." (Kranenburg, 2008: 13)

Google is a tool made to find everything we need.

In the mind of many young people Google simply is there. Google makes it easy to anyone who can come up with a keyword to produce a lot of search results. Whether they are relevant or not, people tend to use those.

Students are used to Google and think they are really good in searching and finding information, because they will get of great quantity of results. Every key word will bring up a somewhat relevant links and they did not develop yet a critical attitude towards these results.

Also do not know that Google only covers 40% of the information stored on the World Wide Web (surface) and that the figure drops to around 15% if we take in account deep web. Many people prefer convenience to quality and take poor results for granted.

2.8. Design for simplicity/ WYSIWIG culture

In our WYSIWIG (what you see is what you get) media culture, graphical user interfaces are tested on usability and intuitiveness everyday. People are increasingly getting used to intuitive and simple design: for instance,

Apple's new I web a software application to create website can be used by everyone who can drag and drop. This design standard of simplicity and intuitiveness makes technology less visible. Applications are designed in such a way that every beginning user is able to perform the tasks without having to think.

Google's design fits this perfectly; in normal search mode the search engine only has one box where you fill in one word and click 'search the web'. Nowadays people are not used to more complex information structures and do not have the skills use them properly. That applies to students too.

2.9. Logarithms and bots

Most users are unaware of (or unaffected by) the fact that Google uses algorithms to search the web, placing the most popular and most visited site at the top of the list. Google also uses location-based information to provide you with local information. Google uses bots 'to do the math'. Bots are searching the Internet and although we think that using bots instead of human researchers wins us a lot of time, the quality of the found information disappoints.

Not only do bots find a very high percentage of off topic information, bots also do not have access to information that is found in databases. They cannot access to secured websites and sites where a user account is obligated. Information generated by dynamic websites is also not traceable by bots.

The most popular sites, which Google's places at the top of their list do not always provide the most relevant information. The first ten results presented in Google are often the most used but not the best results.

Students do not know this and I wonder how I can make them understand this in order to get better results.

3. Conclusion

We are facing a rapidly expanding media landscape. Information is digitized at a quick pace. The Internet has become the main gateway to retrieve this information. Since it does not only offer information but also entertainment as a result people using the Internet for educational purposes are easily distracted.

We have grown accustomed to the Internet as being immediate and efficient. But we have forgotten the importance of accuracy and authority.

We seem to have forgotten that different tasks require different skills

The expanding amount of information on the Internet makes it the main gateway but also makes it more difficult to trace the origin of the information.

Although the Internet seems to be a very transparent medium information is blurred simply because there is so much of it

And there are so many contributors.

Young people have not been properly taught how to evaluate information on accuracy and authority. Trough this lack of transparency the actual task of evaluating is more difficult than ever.

Students have to be taught more technical skills on working with less intuitive systems and more complex databases. But most of all they need to get a more critical attitude towards their own researching strategies and the information they find.

These are the troubles I experienced in my first year as a lecturer. And I think those troubles are in the mind of every educator. I do not have the answers yet. This semester I will train second and third year students to do efficient and effective Internet research, using digital libraries and databases of the institute of media and information management

Using these analyses as a basis for those lectures I will make new assignments to improve their information literacy and research skills. I will take them to a library and get an introduction. I will challenge them by introducing a *zero Google Friday* during the course. In order to get them to learn how to use alternative searching strategies (as an analogy to the IBM *zero-email Fridays*)

At the Bocatsss conference I will present you the effects on my new approach.

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