Information Overloading: A new threat or opportunity to 21st century technological information literacy

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Abstract
Digital media tools, increasingly cheap and ubiquitous, have spawned a massive amount of creation at all levels, most notably from the ranks of the grassroots in contrast to traditional, one-to-many publications and broadcasts. The networks that made this possible have provided vast access to what people have created—potentially a global audience for anyone’s creation. The twenty-first century is a media saturated, technologically dependent, and globally connected world. The increasing number of information sources coupled with the development of the Internet and communication technologies has resulted in growing amounts of data and information that users need to process. The modern corporate citizen has to deal with more information than he/she can process. This is commonly known as information overload. IO has to be seen in the context of new media. The underlying context of new media, Web 2.0 is characterized by its simple and easy-to-use tools. This results in a mode of operation where users do most of the organizing and structuring for themselves. These users are encouraged to produce anything, without paying attention to its value, and they are discouraged from being critical. The majority of users are not aware of this. As the tools enable and encourage rapid updating and posting of new material, constant novelty is expected and easily achieved. Such expectations can be satisfied by producing ephemeral artefacts and by re-using existing material Information overloading is one of the phenomena which can be combated by efficient and goal-oriented information literacy (IL) education. This paper focuses on core concept of information overloading & gives insight to understand how the new media (Web 2.0 & web 3.0) techniques affect 21st century technological information literacy. This paper also helps to answers the “Should the information age be characterized by the sense of drowning in a sea of information or by new opportunities arising from a better supply of information?

Keywords: Information Overloading, Information Literacy, Digital Media Tools, New Media

1 Introduction
The shift from highly centralized corporations to distributed, networked "clouds" of micro-businesses is a hallmark of the Internet age, and it finds its expression most clearly in the rise of social media. Social media services can best be thought of as ad hoc organizations of contributors providing media content of some sort over the Web. The variety of such services is stunning: blogging, for editorial...
content; Flickr, for photographic postings; YouTube and similar services for video; Blip.fm for sharing of musical tracks; Twitter (more about the Twitter phenomenon below); Deviant Art for sharing graphical art; eBay for buying and selling; Craigslist for advertising just about anything, including job listings; LinkedIn for business profiles; Myspace for music profiles; Facebook for general profiles; Wikipedia for encyclopaedias entries; and so on. This short list doesn't even begin to consider the universe of related applications that provide value-add to a primary social media service. Do we really have to deal with an information overload, or are the developments in telecommunication just a great opportunity to become better informed? A more comprehensive sociotechnical, and even philosophical, perspective helps to reflect the significance of information overload in society and, therefore, in education. In general, we have some sense of the increasing amount of information to which we are exposed. More information—is it a threat or an opportunity? A way to begin this discussion may be to take an empirical view, although many statistical discrepancies offer room for interpretation. Such discrepancies include duplications (e.g., what is original and what is a copy? The size of the Internet—in particular of the World Wide Web—often illustrates the information overload in society today. However, to measure the Web we have to look at a major statistical problem, the so-called “invisible Web.” It is made up of information stored in databases. Unlike pages on the visible Web, information in databases is generally inaccessible to the software spiders and crawlers that compile search engine indexes and determine the size of the Web (Sherman, 2001). This is a vital problem because information offered on the invisible Web tends to be qualitative (e.g., newspaper archives) and grows faster than the visible Web. E-mail remains a major source of information overload, as people struggle to keep up with the rate of incoming messages. As well as filtering out unsolicited commercial messages (spam), users also have to contend with the growing use of email attachments in the form of lengthy reports, presentations and media files.

Figure 1: Information explosion & digital shift due to overloading of data

2 Information Literacy

A healthy democratic society requires a literate citizenry. But what is an informational literate citizenry in the information age? The ability to locate, organize, evaluate, and communicate information takes on new urgency in a world driven increasingly by information and the technologies developed to create, distribute, and manage it. Properly understood, information literacy goes beyond
access to the technology itself and addresses barriers to full, effective, and knowledgeable participation in an information society. The need to address information literacy as an important societal issue is strong and immediate. Those who are least able to navigate the channels of information will continue to fall further behind as information and the knowledge that it yields become the currencies of success in society. Information literacy is equally important to our economic wellbeing. Continued growth in markets for communications and information goods and services will hinge on a public that is adept at incorporating information into all aspects of daily life and adopting new skills for using information and technology. Literacy involves gaining the skills and knowledge to read, interpret, and produce certain types of texts and artefacts and to gain the intellectual tools and capacities to fully participate in one’s culture and society. Both traditionalists and reformists would probably agree that education and literacy are intimately connected. To the domains of reading, writing, and traditional print literacies one could argue that in an era of technological revolution educators must develop robust forms of media literacy, computer literacy, and multimedia literacies, thus cultivating “multiple literacies” in the restructuring of education. Computer and multimedia technologies demand novel skills and competencies and if education is to be relevant to the problems and challenges of contemporary life.

3 Digitizing Contents removed the Information Barriers

Digitizing content also removed barriers to another activity first made possible by the printing press: publishing new information. No longer restricted by centuries-old production and distribution costs, anyone can be a publisher today. (The internet, with its far-reaching and free distribution channels, wasn’t the only enabler. Consider how the word processor eliminated the need for a steno-pad equipped secretary, with ready access to typewriter and Wite-Out, who could help an executive bring a memo into the world.) In fact, a lot of new information personalized purchase recommendations from Amazon, for instance—is “published” and distributed without any active human input. With the information floodgates open, content rushes at us in countless formats: Text messages and Twitter tweets on our cell phones. Facebook friend alerts and voice mail on our BlackBerrys. Instant messages and direct-marketing sales pitches (no longer limited by the cost of postage) on our desktop computers. Not to mention the ultimate killer app: e-mail. (I, for one, have nearly expired during futile efforts to keep up with it.) Meanwhile, we’re drawn toward information that in the past didn’t exist or that we didn’t have access to but, now that it’s available, we dare not ignore. Online research reports and industry data. Blogs written by colleagues or by executives at rival companies. Wikis and discussion forums on topics we’re following. The corporate intranet. The latest banal musings of friends in our social networks.

So it’s a lot of stuff—but what precisely is the problem? Researchers say that the stress of not being able to process information as fast as it arrives combined with the personal and social expectation that, say, you will answer every e-mail message can deplete and demoralize you. Geography and financial resources used to be enormous barriers to communication in educational contexts. If you wanted to collaborate with someone living on the other side of a nation or the world, you had to travel to see them, write and mail letters, pay them to travel or pay phone charges to talk for a limited amount of time. The digital face of curriculum and communication tools has changed this. Free instant messaging software and services (www.aim.com, http://messenger.msn.com, http://messenger.yahoo.com) permit free and profuse text based communication on a wide range of devices, including cell phones and computers.
Free Internet-based telephony software and services (www.skype.com and www.talk.google.com) extend collaboration to voice chat, ignoring national and international boundary lines normally critical in calculating POTS (plain old telephone service) fee-based charges. Websites like ePals (www.epals.com) enable educators from around the world to connect and collaborate on projects of shared interest. Desktop videoconferencing is quickly becoming a viable technology for any Internet user. Peer-to-peer connections using software like Apple’s iChat (www.apple.com/macosx/features/ichat/) or server-based tools like MacroMedia Breeze (www.macromedia.com/software/breeze/) and Codian’s MCU and IPVCR (www.codian.com) permit people with standard desktop and laptop computers to engage in rich-media collaboration over any high-speed Internet connection.

### 4 Digital and Media Literacy

Children and young people are growing up in a world with more choices for information and entertainment than at any point in human history. Most Americans now live in “constantly connected” homes with broadband Internet access, 500+ channels of TV and on-demand movies, and with mobile phones offering on-screen interactive activities with the touch of a fingertip. Global media companies from Google to Viacom to News Corporation dominate the media landscape, despite the rapid growth of user-generated content. As entertainment and news aggregators replace editorial gatekeepers, people now have access to the widest variety of content—the good, the bad, and the ugly—in the history of the world. But in addition to mass media and popular culture leisure activities, many people are discovering the pleasures of participating in digital media culture, being able to stay connected to friends and family, share photos, learn about virtually anything, and exercise their creativity by contributing user-generated content on topics from cooking to politics to health, science, relationships, the arts and more. While at one time it was expensive and difficult to create and distribute videos and print publications, now anyone can publish his or her ideas on a blog or upload a video to YouTube. The rapid rate of change we are experiencing in the development of new communications technologies and the flow of information is likely to continue. Consequently, people need to engage
actively in lifelong learning starting as early as preschool and running well into old age in order to use evolving tools and resources that can help them accomplish personal, social, cultural and civic activities. At the same time, people are increasingly aware of the negative aspects of life in a media and information-saturated society. Such ubiquitous and easy access to so many information and entertainment choices requires that people acquire new knowledge and skills in order to make wise and responsible decisions. For people to achieve the personal, professional and social benefits of thriving in a digital age, these skills are not just optional or desirable—they are the essential elements of digital citizenship.

5 The T-Blogger as the New Journalist
Blogging represents one of the most immediate threats to traditional journalism, to the extent of likely supplanting it completely within the next decade. A blog consists of a do-it-yourself article published on the Web by means of easy-to-use content management tools. What makes a blog so devastating, however, is that once it's posted, that blog content is syndicated through specialized news feeds, which means that anyone who has subscribed to it will be notified (in one way or another) of every new post. That solved one of the major problems of the Web: knowing when new material was posted to a given site. However, it also had an unintended side effect. The first large news sites on the Web were not that radically different from newspapers or magazines, in that competing effectively required a significant investment in infrastructure: servers, content management systems, customized programming and so forth. The investment in printing presses served as a barrier to entry against anyone becoming a publisher in the 1930s, and that looked to be holding increasingly true for the Web in the early 1990s, as large media corporations set up their "Web presence" with multimillion dollar Web site roll-outs. Blogging, however, changed the dynamics of publishing on the Web completely. Anyone could set up a blog within perhaps an hour tops and at little to no cost; could post content to it as often as desired; and lay out that content in a way that appeared visually identical to what was being published by the large news organizations (or could go the other direction and make the output unique).Early on, most blogs were, ironically, journals that recorded day to day personal experiences. Yet over time, different styles of writing emerged as people with different talents, interests and needs-to-communicate started writing. Some bloggers began to treat their entries like news articles, reporting on local events or even on global events as their means permitted. Some began to concentrate on analysis writing -- particularly those people in areas such as financial services, who could provide their own opinions about trends in the markets; or political analysts, who performed the same service in the halls of power. Some became reviewers and critics of everything from consumer electronics to food to film and theatre, and some concentrated on writing tutorials or technical articles. The upshot of all this has been that a second area of journalism -- the creation of "news" content -- is increasingly shifting from the domain of the "professional journalist" to the "dedicated amateur." For a relatively short period of time, this arguably reduced the overall quality of news content. Certainly, that is the opinion of many dedicated professional journalists, and there's some merit in it.

6 The fundamental features of the new information environment
When considering literacy for the digital age, it is essential that we first define the fundamental features of the information environment within which our children will work and play. There are three
ways that information has changed that are critical to the basic skills of operating in this environment. Information today is
• Networked
• Digital
• Overwhelming

Information is increasingly networked. If you did not access the information you are using directly from a local area network or the larger Internet, then at some point during its life it has ridden the pipes of a network in the process of becoming the information product you are holding. The networked nature of information has enormous implications for literacy. Before networking, information was produced at great expense. Editors and publishers selected only the information that was valuable in terms of its acceptability and worth to customers. In addition, information was made available in containers, such as books, magazines, newspapers, bookstores and libraries. Each container would hold only so much information, limiting our access to only that information that was immediately and physically available. In this published, print-based information environment, the principal literacy skill was the ability to read the information that was in front of you. But as the nature of information and how we access it evolves, that is no longer the case. Educators need to replace practices that teach students to assume the authority of the content around them and instead teach students to prove the authority. Finding valuable information in this environment requires a new set of skills. We must understand and think about the problem we are trying to solve, imagine the information that will help us solve it and identify a keyword or combination of keywords in order to search for and find information. Then there is the added task of evaluating our results, refining our search strategies and going at it again. Factor in the use of hypertext to explore cross references, and reading becomes as much about how we get to the information as it is about decoding the text. These are not skills that should be taught, assessed, checked off and filed away, any more than reading skills should be taught only up to the third grade. Both finding and reading information are working skills involved in learning to learn, and both are elements of literacy.

7 Conclusion

Information is increasing. We are overwhelmed by the abundance of information that is available to us. Our task, from a literacy point of view, is deciding what information to use and how to present it so it successfully competes for our audience’s attention. This is why, as we teach students how to write, we must also and for the same reasons teach them how to communicate with images, sound, animation and video. Communicating through the information storm is part of being a teacher today. We, ourselves, are competing for the attention of students who take for granted a multimedia, interactive and increasingly ubiquitous information environment. Chalk and talk mean little to them. Competing for their attention requires presentations that move and change. Our information must glow. It is not enough to use linear presentation software that mimics paper-based communications. Teachers and students both must use information that expresses itself compellingly. This means making conscious decisions about whether to use video, animation, sound or text, or a combination that will most likely lead to learning. We learned to write so that we could communicate. Mastering these other mediums is about the same thing – communicating. Students can be taught to communicate in these other mediums through such exercises as preparing slide presentations that teach aspects of a current unit, but without using text on the slides, or they can capture video or still
images that illustrate a concept in science and then have the class choose which concept is being demonstrated. On an ongoing basis, teachers can encourage students to express what they have learned using the most appropriate mediums and explain why they have chosen a specific medium and how it enhances communication.

8 Future suggestions

The fundamentals of literacy remain at the core of what all people should be able to do with information. However, in this new information environment, these skills are richer and much more interesting. Reading expands into a range of skills involved in exposing the truth about information in a networked information environment. Writing expands into a range of skills involved in expressing ideas compellingly despite the overwhelming amount of information that surrounds us. And our responsibility becomes understanding the influence we have by accessing, working and expressing information to uphold the ethics of the new information environment.

9 References

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[7] • CIESE’s K–12 Education Projects http://njnie.dl.stevens-tech.edu/currichome.html supported by the Center for Innovation and Engineering in Science Education at the Stevens Institute of Technology