Aspects Concerning Information Literacy in the 21st Century

Milan Tuba[1], Ioana Moisil[2]

[1] Megatrend University Belgrade, Faculty of Computer Science,
Bulevar umetnosti 29, N. Belgrade, 11070, Serbia,
tubamilan@ptt.rs

[2] *Lucian Blaga* University of Sibiu, *Hermann Oberth* Faculty of Engineering
4 Emil Cioran st., Sibiu, 550025, Romania,
ioana.moisil@ulbsibiu.ro

Abstract: The researchers based their studies on information literacy around the following questions: A) How to organize and implement better solutions that will enable a greater number of people to acquire the necessary information literacy skills? and B) What is the role of information literacy and what are the possible pitfalls? Concerning the first issue, the authors propose a standard for the information literacy skills certification as an extension of the already existing computer literacy ECDL/ICDL standard. Such a combined standard can be included in the regular university curriculum, based on the experience of already successful implementation of the ECDL standard as a university course *Introduction to Informatics*. For the second issue which is a more philosophical one, the authors draw some parallel between Internet, as a source of information, and older radio and TV broadcasting technologies, concluding that there is a significant danger that each new and promising technology, after passing the challenging, difficult and inspiring pioneering phase, becomes boring and over-commercialized. There is a hope that awareness of such danger will help to avoid it.

Keywords: Information literacy, Computer literacy, Standardization, University education

1. Introduction

Information literacy is becoming increasingly important [1]. The concept of literacy changed over time. It once meant mere ability to recognize letters; newer definitions of literacy include comprehension of some standard materials, from bank slips and home-appliance manuals to short stories. Recently computer literacy was introduced and it is often considered today as a necessary part of general literacy. The newest addition to the body of required skills is information literacy. It consists of ability to search and use information or more precisely "Information literacy involves forming a set of theoretical and practical knowledge, allowing the identification of information needs, followed by locating, evaluating and using retrieved information, in such a manner as to solve problem, to find a response and to communicate the retrieved and processed information, by a new value-added product". To some extent information literacy existed long time ago but was limited to library usage, mostly for scholarly reasons. Today its use and necessity spreads to everyone [2] and goes to such everyday life details [3] as finding tax information or weather forecast or money exchange rate or theatre program.

For each problem there are two aspects, one is, as once was said, more in the western civilization tradition and concerned with practical issues of *how* to do something, the other is (sometimes considered more eastern) concerned with *why* or with the purpose, strategic role and philosophical aspects of the problem.

This paper examines both of these aspects concerning information literacy and it is organized as follows: Section 2 describes recent overwhelming process of digitalization which includes all types of information. Section 3 deals with computer literacy which is a prerequisite and essential part of the information literacy. It particularly examines process of standardization which can be extended to the information literacy. Section 4 is devoted to the second aspect of the information literacy, the question of the meaning of the whole process and possible pitfalls.

2. Digitalization

The whole world is today in the process of fast and wide digitalization. The process started about twenty years ago with the invention of the CD and digitalization is spreading exponentially ever since [4]. The advantages of digitalization are numerous and

important: it is possible to make exact copies, and thus it is possible to preserve content indefinitely, the quality is uniform, and its processing is easy.

Information is digital

We must first notice that when we speak about information nowadays, we almost certainly speak about digital information. The situation changed very quickly, for example only a few years ago there were many film cameras and within few years they were completely forgotten, almost all cameras have now become digital.

Today when we think of a photograph, we think of digital photograph (*jpeg* files), when we think about a movie we probably think of a digital movie (Blue-ray or DVD, *mpeg* format), when we think about music we think of digital music (*mp3* format), when we think about journal it is likely an electronic version (*pdf* format) and even books are today digital. If this digitalization is absolutely good, may be another question. While most people would agree that having an article from a journal available quickly over Internet in electronic form is good, reading electronic book may not be the same thing as having a real, paper book, but then it may be only the nostalgia of older generations and not something objective.

Digital means computers

We established that today almost all information is digital. However, digital necessarily involves computers. Computers are inherently digital (specifically, binary) devices and all digital processing involves computers. These are not necessarily regular, recognizable computers (desktop or laptop); digital cameras, mobile phones, supermarket cash-registers, ultrasound medical instruments etc. are essentially computers with some important peripherals. So, the conclusion is: today dealing with information means dealing with digital information, and dealing with anything digital means dealing with computers (of some kind). That means that information literacy can only be a consequence of computer literacy.

3. Computer Literacy

Computer literacy at different times meant different things. Once it required programming and hardware knowledge. As computers (both, hardware and software) became more advanced and user-friendly it became obsolete to expect literate users to know details about system interrupts or programming languages. The focus shifted to standard applications where again the notation of standard application changed over time.

Computer literacy is a prerequisite for information literacy. Any information retrieval is done with (possible special purpose) computers.

Since computer literacy is older than information literacy (computer literacy become most important with personal computer revolution, information literacy evolved with Internet), over time some facts were established. One of the most important is that standardization is good.

Standardization

The question of standardization arises in most areas and in general it is considered to be the only normal approach to develop and control systems. Freedom and improvisation can be good in poetry, but for large systems standards are necessary. For computer literacy during many years there were different attempts to define what the necessary computers skills are. Usually, at the university level, there is an introductory course titled *Introduction to Informatics*, but different departments often try to give some special flavour to such course and change title to something like *Introduction to Informatics for Biologists* or *Introduction to Informatics for Pharmacists*. This usually emphasises the personal opinion (or prejudice) of the instructor who is often not an expert on computers. Such approach may be good for the second course in informatics, but the first course about basic computer literacy should be uniform.

European standard

Thousands of experts worked many years on the European computer literacy standard. The result was a non-profit, vendor and platform

independent, organization ECDL Foundation which defines a computer literacy test ECDL/ICDL (European/ International Computer Drivers Licence) which is recognized as an official proof of computer literacy in more than hundred countries. The test really resembles the driver licence test in the sense that it is a low level test without guarantee of any special and very high quality skills, but guarantees the basic necessary minimum of skills for everybody. The test consists of 7 modules:

1. Information and communication technologies concepts and terminology

2. Using the computer and managing files

3. Word processing

4. Spreadsheets

5. Using databases

6. Presentations

7. Internet, mail and web

There are also advanced tests 3-6.

University implementation

ECDL standard should eventually move to the secondary school level but now there are still too many students that are not yet at the expected computer literacy level so that it can become an introductory university course. The ECDL test, where strict standards exist about syllabus and administration of the seven module exams, is not as such directly appropriate for a university course. At Megatrend University of Belgrade, the third largest university in Serbia, we implemented ECDL standard as an introductory university course *Introduction to Informatics*. We solved all logistic problems and applied it to more than 1,000 students each year with success. It was necessary to fit it into the university format with midterms, final exams and system of grading. This is an interesting topic that was reported on regional meetings of ECDL Foundation in Opatija, Croatia in 2007 and Bled, Slovenia in 2008 and attracted a lot of attention. For this paper about information literacy it is important that it is possible to adjust one such standard to the format of a university course, that it was successfully done and that all technical and logistic problems were solved.

Information literacy standardization

There is a lot of discussion about how and where to do information literacy education and how to standardize [5], [6] and assess it [7], [8], [9]. Proposals are from short lectures, workshops and seminars to short courses given in libraries, evening meetings, in the classrooms etc.

We propose that information literacy be incorporated in already standardized computer literacy. The right place can be extension of the Module 7 in the ECDL standard or possible introduction of Module 8 as a separate module dedicated to information literacy and as a separate, fifth ECDL advanced module. Such combined and standardized computer and information literacy syllabus can then be fitted as described before in the formal university education.

The question is if there is a place for this new standard to be incorporated into the formal university education. It is easier to answer than it may seem at the first sight. All universities find themselves at different stages of the education reform or so called "Bologna process". This process has a lot of undeserved opposition and misunderstanding. The essence of this process - and it seems that nobody likes to say it, is that it represents Americanisation of European universities. After tons of counter-arguments, it is enough just to look at the titles: bachelor, master. Are these French or German words? European universities were made for different times, more elite and today are less appropriate than American universities that look more like extension of the secondary school. Many European universities pretend to apply this reform but really want to hold most things as they were. One typical example is dilemma should bachelor's degree require 4 or 3 years of studies. American secondary (actually extended primary) schools are notoriously weak. After that, four university years include more than two years of general courses and only a few major specific courses. With European better secondary schools and university concentration on major specific courses, three years is more than enough. And even then, to make it comparable to American universities and easier for students, which is one of the proclaimed goals of the reform, the

curriculum should be relaxed of too many major specific courses and diversified with foreign language, communication skills, writing and certainly computer and information literacy courses. So not only that there is a place in the formal university education for courses devoted to information literacy, but they should be included for these other reasons of helping reform and making studies easier and more diverse.

4. Possible Problems - Future

Having information, being able to efficiently and quickly explore it is certainly good [10], but there is also the other side of that abundance. We already have a lot of problems with too much information, with increasing proportion of noise, irrelevant and inaccurate information. We already witnessed almost choking of e-mail system with spam and junk mail.

The technology is advancing, posting queries is easier and results are closer to desirable. Should we be optimistic and believe that everything is going in the right direction? Paradoxically, there are many examples that pioneering times with lots of technical obstacles are actually prosperity times and with advances boredom and commercialization appear. We can hope that computer literacy as a prerequisite for information literacy will disappear, that in the future voice recognition will be so good that without technical skills as a mediator, we will be able to directly obtain required information. But will it really be better? Here are some examples of the past promising technologies that should put us at guard.

Radio. In the second quarter of the previous century the radio was dominating and promising technology. It opened new possibilities, communication over the whole planet in a fraction of a second, reaching every remote corner of the world. It was in the pioneering phase, it was unreliable, but may be just because of that it was challenging, some people devoted lives to investigating and experimenting with strange, large antennas. It was necessary to know properties of different electromagnetic waves of different wavelengths, it was necessary to be able to repair and maintain equipment. But, radio was delivering enormous service,

people in villages had usually only one radio receiver, but all gathered around and had cultural contents, radio dramas, music and quality information and education delivered. There was a natural desire for progress and technological advances and radio become more and more technically perfect. At the end it become perfect, it costs almost nothing, it can be incorporated in a pen, let alone mobile telephone, it has invisible miniature antenna, it does not need maintenance. But, in that technological progress, somehow for purely psychological reasons, it lost its attractiveness, people become bored and the radio programs changed accordingly. Today, there are thousands of stations but they are lifeless, they are mere automats that emit 24/7 only folk music, only evergreens, only news, but not real news with a sound understanding of events, only endless repetition of exactly the same sentences translated into all world languages. Nobody today believes that the radio will play any significant role in the future, let alone to change the world. The potential is the same; the interest was lost alongside the technological perfection. One of the reasons for the demise of the radio may be the appearance of an even better medium: the TV. But is it so?

TV. The whole story of the radio technology progress was repeated in the third quarter of the previous century with TV. Again, great enthusiasm, great expectations, great opportunities. And, for some years, TV was the "window to the world", there were many quality education programs, culture, information. And, again, it was pioneering time, elaborate antennas were required etc. There were usually one or two channels in a country, the program was only few hours in the evening, but it had great and positive impact. With technological advances receivers become cheap and reliable, everybody could have one in each room, the number of channels became large, the program time approached 24/7. But commercials took one half of the time, the other become the basis that is most appropriate for commercials, cheapest entertainment. PBS (public broadcasting systems, non-commercial) try to balance that but with limited results. It became fashionable for intellectuals to brag that they do not possess TV.

Internet. Last decade and a half is the time of Internet. The same story repeats so far. In the beginning it was imperfect, tedious but challenging. Search engines had limited coverage, questions were syntactically difficult. To get information required skill, luck and inspiration, it was necessary to try with many different questions. But the information was valuable. As technology progresses, billions of pages are included in data bases, search machines become very intelligent. They can correctly guess what the user meant, they immediately give good response. But, they are becoming less interesting and commercialized. It is known that Google introduced payment for being on the top of the search list. This can become in the future more hidden and subtle. Then the trust will gradually decrease and Internet may be another great expectation unfulfilled.

It seems that it is something inherent to mankind, that we are saying that "it is not the goal what is important, but the journey". It is our psychological characteristic, not a technical issue and we can only hope that we can fight it. So far we have been unsuccessful, extrapolation of the previous experiences is not encouraging, but we can be aware of the problem and win this time for the better future.

5. Conclusions

We examined the present and future role of information literacy. From the practical point of view, we propose that information literacy be included in the formal university education as a two-step process: first to make information literacy a part of the already standardized computer literacy in the ECDL system, included in Module 7, alternatively as a new Module 8 and as a fifth "Advanced module"; and secondly, to design a combined literacy course (or courses) as a regular university course, having the additional goal of supporting "Bologna reform", making studies easier and more diversified. From the strategic point of view we recommend caution in order to avoid the danger that is always present with new, promising technologies as demonstrated by what happened to the older radio and TV broadcasting technologies.

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