Digital literacy impact in medical engineering education

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Abstract: A new area access to the information was developing by using, not only in educational area, but also in research area, the digital literature. For young people using modern technology is not only an opportunity, but, in the same times a modality of living. New technology give to young generation a possibility to communicate, to be informed about the news, to have access to the research results, and more and more to the educational fields. But using technology could raise some problems, like reducing the communication face to face, or developing some diseases like addiction. That’s why is very important to use in a critical way this facilities and to develop all the skill which are needed not only for using this new methods in education, but for ensure the widespread of knowledge and scientific information. The debate now is about ‘digital literacy’. Article is presenting one qualitative marketing research about opinion of medical engineering students about open access principle and using of these electronic resources properly.

Key Words: digital literacy, open access, medical engineering, education technologies

1. Introduction

We live know, more and more in an IT society, based by computer and internet. Information Society Technology become, in the last decade, important not only on the work but also at leisure; even if we are involved in education, health, industry, commercial or other activities is difficult to think that it could be possible to develop activities without using this kind of facilities.

Communication – official or scientific is based – more and more by internet, which suppose that we must develop on the education field skills in ICT, as is mention in EU Commission paper (2006):  “It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet.” [12]

The principal activities which use internet are: present in the next figure:

Developing digital literacy all over the world means in the same time to develop for young, adults or older people some skills and to prepare them to accept that the new technology are able to process information independent from human brain, after is establish a general pathway. ICT are able to assess, manage, evaluate or create, like is show in the next figure:

Fig no.1 – Internet – way to use

Fig no.2 – Components of ICT
Developing digital literacy and use it more and more in educational and research fields needs also to recognize and develop some individual or community skills, to increase the role of technical abilities in our everyday life and to recognized, prevent or treat the disease induce by using computer or internet. (fig.no.3)

Fig no.3 – Skills and ICT

The level of ICT skills are different for young or older people: If young people have a high level of technical skills, and a great abilities and desire of using internet for communication, the older people are more selective when they use internet.

But, for both of them are useful resources and a effective instruments in their personal or social life, and a easy way to be connected with the information. [3, 5]

In Budapest in 2002 it was establish the following definition of Open Access: “free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited. (“Budapest Open Access Initiative,” p. 3) [1]

Today the phenomena of globalization are a reality. Globalization means in the same time access to the information and in the scientific world means to remove the barriers made by financial problems or by distance between the researchers.

Is clear for all of us today that “All citizens in informational society are authorized to use computers and network equally”. [9] That’s why universities try to encourage developing a system for increase the impact of their scientific publication and a possibility from their student to have access to more and more knowledge. But it is also very important to have access to the information which is scientific validate during a peer-review process.

Using Open Access Journal, developing a Open Access repository in every university could increase the accessibility to the information, but, in the same time is a way to accelerate the process of having more people educate and with better access to information, capable to developing a “humanity common intellectually languages” and in that context to increase the humanity welfare.

After Berlin Declaration (October 2003), when it became obvious that internet could support the new way of development, 227 academic and governmental institutions signed this statement and made forward steps to put in motion its concepts.

The implementation of this declaration lead to two main forms, both of them focused on scientific journals:
- The “green road”: deposits of copies of already-published, peer-reviewed research articles in institutional repositories
- The “golden road”: either publishing in “financed Open Access publishers” (through publishing fees or public funds) or publishing in print for a fee and in an electronic version for free.

2. Informational resources found in institutional repositories

Institutional repositories— An increasing number of academic and research institutions are relying on repositories to showcase their research. This section offers several guides and directories to repositories, (Figure no.4). In addition, several prominent repositories are singled out.

Figure 4. Image from directory of open access directory

OpenDOAR – The Directory of Open Access Repositories

This is an international and comprehensive listing of repositories. By November 2008, it included 1,200
entries, (Figure 5). According to its editorial policy, each repository has been visited and its value verified. This directory has, in addition to an alphabetical list, an index by major continental areas and countries within each of them. It also has a search engine for searching and browsing repositories according to several parameters: subject area, content type, repository type, country, language, and software. A summary attached to each repository includes: name, organization, description, software, size, subjects, content, language, and policies. The section of Statistical Charts provides a graphical description by several criteria such as: types, subject, languages, etc. Housed at the University of Nottingham, UK, OpenDOAR is recognized as an authoritative source and it is supported by the Open Society Institute (OSI), along with the Joint Information Systems Committee (JISC), the Consortium of Research Libraries (CURL) and SPARCEurope. [6]

Digital literacy is based on information literacy. We are convince that “The main reason of the existence of the educational institutions is to help people to acquire the competences, knowledge and skills they need as individuals in the political, economic, social and cultural life of a society” [11]; in that context we try to develop institutional repository in academic field.

The academic world of Romania suffers from lack of information literacy education, lack of institutional repositories and open access publishing. The first institutional repository in the country was developed at Transylvania University of Brasov. The institutional repository and open access publishing have been introduced into the information literacy course for the first year students in the engineering department.

3. Research method

A pilot survey was conducted in the winter semester of 2009. We analyze here just the answer regarding Open Access perception. Survey responses were coded and put into the SPSS statistical package for analysis and the hypotheses presented above were tested.

4. Questionnaire.

In view of the study Attitudes, opinions and behavior of students regarding direct access to scientific information please be kind to answer these questions. We assure the confidentiality of your answers. Their accuracy is of great importance for our research success. Publication in open access means free access online by anyone and anywhere to the document published. Thank you for participating!

In this study it is hypothesized that:

H1: Students who have been taught about open access principle are very interested to use these documentary sources.

H2: Students accept open access principles.

H3: Students have no information about open access principles.

4. Results and discussion

Data from 142 usable surveys showed that the class was composed of first year engineering mechanical faculty, department of medical engineering.

The students were asking to answer to few questions, about open access.

93.7% of them give a valid answer.

Only 34% think that they have enough knowledge about open access, as we can see in the fig.no.6

![Figure 6. How you appreciate your volume of information about how to publish in open access?](image)

For us like teacher is very clear that is necessary to have an institutional repository in our institution. The student opinion, as we can see in the fig.no.7, is that is very important to develop this repository.
We are convince that “ICT will have a profound impact on education in coming years, and that implies the need of new tools for every subject” [10], including in open access space, because, as it could be saw in our research student accept the open access principles (90%).

5. Ethics and digital literacy – an educational approach

Even if the students are not familiarized with open access journal more than three quarters of them consider that open access means in the same time to have access to information (fig.no.9).

This study, a preliminary one, must be develop in the next years, by compare the students perception from different study program and from different level of education (license, master, PhD).

References:
[2].Moisil I. - A model of the student behaviour in a virtual educational environment, IJCCC, Int. J.


