ASSESSMENT OF INFORMATION LITERACY COURSES FOR PHD STUDENTS

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Abstract: :Information literacy courses for PhD students have to be designed with new requirement of information technology. One survey was developed to doctoral school at Transilvania university of Brasov and PhD students of University Library of Crete. It was focused on information literacy and needs of PhD students, current practices and strategies on: Finding resources for your literature review and beyond, Good academic practice when writing your thesis, The databases that help you choose where to publish, Citation searching, , Measuring and Improving your research impact with bibliometrics. It will be present survey results, comparison between the two institutions and one model of curricula for information literacy course for doctoral students.
Key words: information literacy, PhD students, citations, bibliometric, copyright.

1. INTRODUCTION

The information quality is concerning us all, especially those in academic environment. The information quantity available to us creates a complex framework of access and use in the informational society. We have tools to retrieve information, the internet as an extraordinary environment of communicating information, search and retrieval engines and tools for publications classification.
The use of web information becomes an increasingly used practice. There are more and more available sources and their access easier. Gils proposes a model of information quality "based on the observations that objects (dubbed artefacts in our work) can play different roles (i.e., perform different functions). An artefact can be of high quality in one role but of poor quality in another. Even more, the notion of quality is highly personal." (van Gils, 2007)
Various definitions exist for the term information quality (Eppler, 2006). They use different criteria for good quality of information such as completeness, accessibility, accuracy, precision, objectivity, consistency, relevancy, timeliness, and comprehensibility. Some studies measured the quality of information in several databases in terms of data-availability (Voigt, 2006) or satisfaction level for search results. (Brünger-Weilandt, 2011)

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In information society, researchers have at their disposal new technologies and services that allow them to discover, locate, gain access to and create information resources on their desktops. However, there is evidence that research information skills have not kept up with the rapid change in this area. This raises important questions about how researchers acquire the appropriate skills in information handling, and the take-up of the training opportunities provided. Information literacy concepts have to be harmonic with this level of research. PhD students are the future researchers and they need special skills to be successful in information explosion and information technology developing. The report *Mind the skills gap: Information-handling training for* researchers (Pilerot, 2011) concludes that training for researchers on information seeking and management is uncoordinated and generally not based on any systematic assessment of needs. The report focuses on the information-related training for researchers that is provided by universities and other higher education institutions. It looks at the roles that librarians and other specialists play and how the training that they provide it with the wider training provision. As an example, Wageningen Graduate Schools from United States of America organised Information Literacy courses to PhD students and post-doc researchers of Wageningen UR and organised by the Wageningen UR Library. It covers the following topics: Effective use of UR Digital Library, including My Library, bibliographic databases on different platforms, portals, electronic journals, etcetera, Getting to know the different types of scientific information sources: when to use what, How to select proper information sources for your research, Introduction to Citation Search and getting acquainted with Impact Factors of journals, Individual instruction and help in developing a balanced search plan, that will be beneficial throughout your PhD period.

"PhD students can be said to have the same, if not a greater, need to be information literate as any other university student. But there is one information related aspect that seems to be of a greater importance for PhD students: the ability to handle large amounts of research information is of particular importance for this group of students. Their studies are often taking place over a long period of time and they tend to penetrate their subjects thoroughly, hence they are subjected to and collect large amounts of information. The majority of the students participating in the course indicated that it is very important to be able to organize and develop rational ways for easy and quick access to information." (Research Information Network, 2009). Information management for knowledge creation, information management for PhD-candidates, is one project developed by University of Bergen, Norway in collaboration with Bergen University College, Norwegian School of Economics and Business Administration, University of Oslo Library, University of Aalborg Library-http://inma.b.uib.no/ . The aim of the project is to develop information literacy education modules for PhD students. The modules will be tailored to this target group by taking into account their information searching behaviour and information needs, as documented in the existing literature and as revealed by the project own findings. The modules will contain open access online resources

and teaching portfolios for seminars within PhD programmed. The project will be run as collaboration between five Nordic academic libraries. (Information management for knowledge creation, 2010)

2. CASE STUDY AT TRASILVANIA UNIVERSITY OF BRASOV VERSUS CRETE UNIVERSITY LIBRARY

2.1 Transilvania University

Transilvania University developed an information skills program integrated into the first year engineering subject **"Documentation techniques"**. As a problem based learning subject it requires the students to work through and report on an engineering project. Over the past four years the program has transformed radically as a result of applying an action research framework which is primarily concerned with continual improvement and change in practice. Currently the information skills program consists of a student-led orientation tour, an integrated subject web page (developed using **RESEARCH AND WRITE** tutorial). The students are provided in their curricula with the Information Literacy course including the following s**pecific accumulated competencies:**

Professional competencies	C1: Determine the extent of information needed. C2: Access the needed information effectively and efficiently. C3: Evaluate information and its sources critically. C4: Incorporate selected information into one's knowledge base. C5: Use information effectively to accomplish a specific purpose. C6: Understand the economic, legal and social issues surrounding the use of information. C7: Access and use information ethically and legally.
Transversal skills	CT1 Solving in a realistic way – both by theoretical and practical argumentation – of some usual professional situations, in order to accomplish their effective and deontological solution CT2 Applying effective intellectual activities techniques in a multidisciplinary team CT3 Self-evaluation of professional training need in order to insert and adjust to the labour market requirements

1 General objective of the course	The purpose of Information Literacy course is to enhance students' ability to locate, gather and evaluate information in any format. Overall objectives are to support the university curricula and participate in the academic communication process to promote lifelong learning skills and continuous educational achievement. General skills concerning information culture - *information literacy* – are structured upon 3 components: *information access, assessment and use.* Within the course the students will gain the specific competencies required by the documentation activity and then to communicate the scientific information.
2 Specific objectives	After completing this course, students should be able to: 1. Formulate a research strategy to find information about a selected topic. 2. Find materials in the online catalogue and obtain them for use. 3. Search library online databases for articles and information. 4. Use search engines and directories to find information on the World Wide Web. 5. Evaluate information sources for accuracy, authority, objectivity, purpose, currency, and appropriateness. 6. Demonstrate a basic understanding of plagiarism and copyright as applied to the research process. 7. Read and write citations using APA, MLA, Turabian, Harvard, ISO or others documentation styles.

2.2 University of Crete

University of Crete Library has developed, with regard to Information Literacy, a comprehensive and integrated approach that includes all library facilities, tools and services, extending from library premises to electronic tools design. It employs a multifaceted strategy that involves all UOC agents, in an effort to

help users achieve information literacy, as a life-long process of turning information into knowledge.
In this conception, the library is *a lively cell* in the heart of the university: a place to meet, to search and study and to find help and instruction in study and research. At the same time we have made every effort to ensure that our electronic resources will be available to our registered users from everywhere (library premises, campus or home) on a 24/7 basis.

Critical mass of available scientific information

Together with academic quality, we consider the critical mass of available information resources also a crucial factor for study and research in a university environment. We have tried to create comprehensive, specialized collections in the fields covered within the university. Specifically regarding e-resources, a key factor in coping with the costs necessary to cover the increasing need for quality information sources lies in networking, cooperating and sharing. UOC Library is one of the founding members of the Hellenic Academic Libraries Network (HEAL-link). A big part of our subscriptions is done through consortia agreements within the frame of HEAL-link, while the rest of our users needs are covered with bilateral agreements.

Support and promotion of Open Access

On the other hand, we have also directed our efforts in the promotion and support of Open Access initiatives, both to the support of the academic work produced within the university, as well as to making widely available material of the library holdings through digitization. The library has been acknowledged as the proper place to deposit, administer, preserve and disseminate all the scientific work produced within the University, for which it operates an institutional repository since 1998. The library has also taken serious action in the field of digitization of the rare and valuable material of its Closed Collections, which it makes available online through ANEMI Digital Library of Modern Greek Studies.

Electronic tools and facilities

Our main effort is to provide to our users «one stop» WEB site pages, so that, although the various electronic tools that provide access to our material perfectly operate as self-sufficient points of access to their specific content, they also integrate with the other tools. We try to achieve the most possible cross-platform integration and interoperability by making wide use of broadly accepted metadata as well as interoperability standards. Through Library's web site, our users have access to the Library OPAC, E-journals catalog, Dbs catalog, Elocus Institutional repository, ANEMI Digital Library of Modern Greek Studies, Course Reserves, E-learning platform. Our users also have full access to Zephyr virtual union catalog of Greek academic libraries (a portal created, maintained and hosted by our Library), HEAL-Link e-resources catalog and the Collective Catalog of Journals in Greek Research Libraries. The Open

URL resolver we are using allows integration with the vast majority of our providers' sites, while we have also developed, using open source tools, Livesearch meta-search portal, which enables a cumulative, federated and faceted search for all our resources.

Collaboration with Faculty

We try to collaborate as close as possible with our faculty members, both on a departmental and on a personal basis, for the selection of relevant material. We also try to broaden the awareness and deepen the knowledge of the available library resources among faculty members, and count on the cooperation and feedback we receive from faculty members that are frequent library users.

We also take under serious consideration the needs and suggestions of our graduate students, who make heavy use of the library resources for their research, projects and theses. Graduate students, due to their advanced research needs and in combination with their adaptivity to new tools, resources and services, also act as a means to (further) activate their professors.

Course Reading lists

In addition to Course Reserves, we also catalog in our LIS the Course Reading lists provided by the faculty staff, a service very useful to our students, since it makes available topic-specific bibliographies regarding courses, seminars and training classes which can be searched/browsed by semester, department, course title/code, teacher's name, etc.

User Instruction

The main user groups to which we provide formally organized training and instructions are undergraduate and graduate students. Our orientation course, which is is a prerequisite to activate students' loan rights, mainly focuses on the use of library and its OPAC. We also hold throughout the year scheduled courses on the use of library's electronic tools and information sources, and scheduled databases tutorials which are in fact training sessions for students focused on comprehensive databases. Throughout the semesters the library, in co-operation with faculty members, offers on-demand, content-focused tutorials, which usually are 1-3 hours courses within the curricula.

Electronic dissemination

Apart from the announcements we publish in our web site, we also send electronic messages to faculties through their all-users lists, as well as faculty-specific messages. To promote and encourage the use of our information resources we also send replies with specific links and suggestions for the material required by the faculty staff, while we also encourage all our users to make use of the various alert and awareness services available either through our own tools or by our providers themselves.

Training material

We provide a wide variety of printed material (flyers, leaflets, quick reference

guides), homemade or made available by the various providers. All the print instructive material we create is also available in electronic format from our web site. We have also established an e-learning platform and in this pilot phase we are creating an online version of the library orientation course, and a course on our e-resources and tools.

To be done

As following steps, we feel we have to work with the university administration and the faculties in order to formally establish a course on information literacy either as a separate, core course in the curricula (adapted for different faculties), or one 2-3 hours core session within each course. At the same time we have to develop subject-focused, interactive training material, which will be available through our e-learning platform. (Koukourakis, 2009)

2.3 Data Analyses

Romania

We surveyed doctoral school PhD candidates from Transilvania University of Brasov- UTBV. Our data were collected in the first semester of 2012, during 2 weeks. We used one electronic survey, using the free tools site: https://www.surveymonkey.com. The survey was called: *Scientific information evaluation.* We sent invitations for this study on their entire discussion list. The sample was validated from the point of view of women-men proportion and from the point of view of the respondents' proportion in distribution of year of doctoral school stage and distribution on PhD field research.

Greece

We surveyed PhD candidates from Crete University (Faculties of Letters, Social Sciences and Techological Sciences & Engineering). Our data were collected in the first semester of 2012, during 2 weeks. We used one electronic survey, using this free tools site: http://www.surveymonkey.com/s/FDLHHXFThe survey was called: Αξιολόγηση της επιστημονικής πληροφόρησης.

2.3.1 Methods

Our survey contained two distinctive parts: information literacy and a scientometric elements part. The scientometric elements survey made use of a Likert scale.

The model and criteria of information quality assessment were based upon the matrix in figure 1.

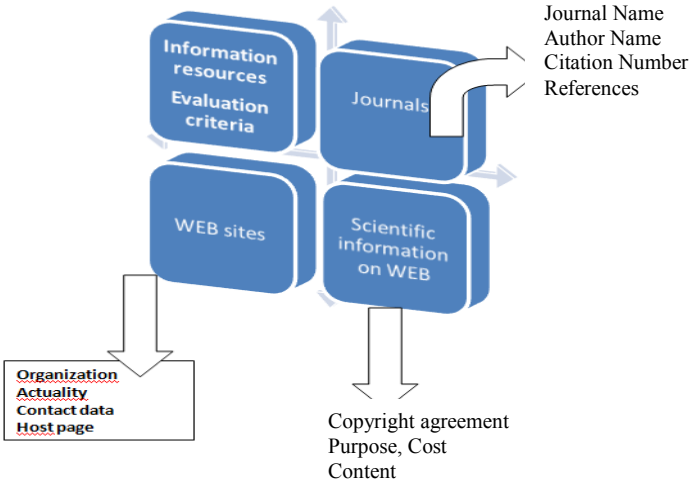

Fig. 1: Information quality assessment model

The fields in which the Transilvania university owns the skills of doctoral school development are: Engineering, Economical Sciences, Sports and Education, Medicine and Literature. The most respondents, 74%, belong to engineering field, which is a traditional domain within Transilvania University.

Most responses at University of Crete came from the Faculty of Literature (52.%), and the Faculty of economical science (45%) the two oldest Faculties of medicine (5%), with outstanding tradition in student education and research. (Figure 2)

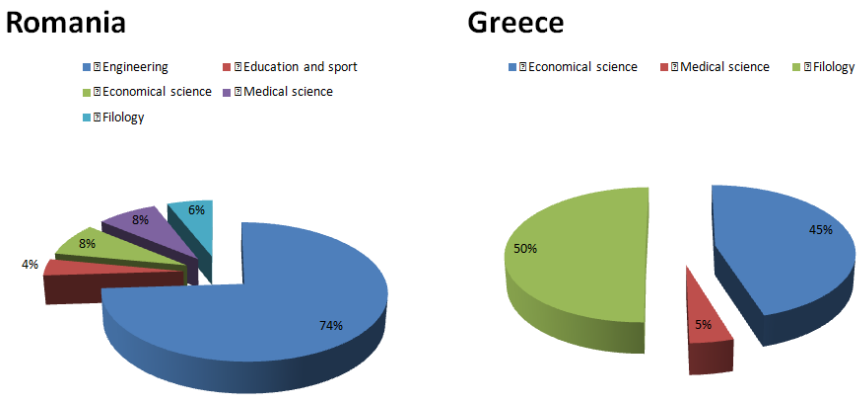

Fig.2: Topics of thesis

Referring to gender situation in Romanian case 56% are masculine and 44% feminine and in Greece case 59% are masculine and 41% feminine. (Figure 3)

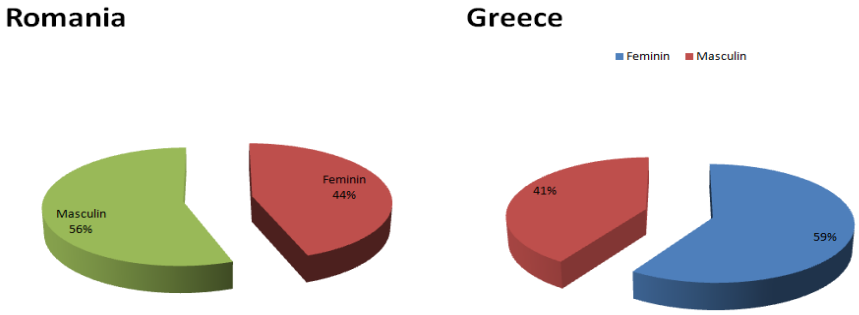

Fig.3: Gender segmentation

The main sources of documentation are the scientific databases to which university has subscribed for 61 % of the PhD students. The databases are sources of documentation for 3% of the PhD students, and the university library represents the place where students get access to their resources for 10%. Although they are the Google generation, only 2% access Google Scholar, Google Academic and only 4% institutional digital repositories.

More than half of the responders (33%) from UOC prefer Google Scholar as their first source of information, their second choice being the OPACs of the Greek libraries (12%). The university library OPAC and the scientific databases to which the library has subscriptions equally value as their third choice (10%), while they also equally resource to OPACs of libraries abroad and Open Access Material (10%). The Institutional Repository and the Faculty Courses are also an important source of information (5%). (Figure 4)

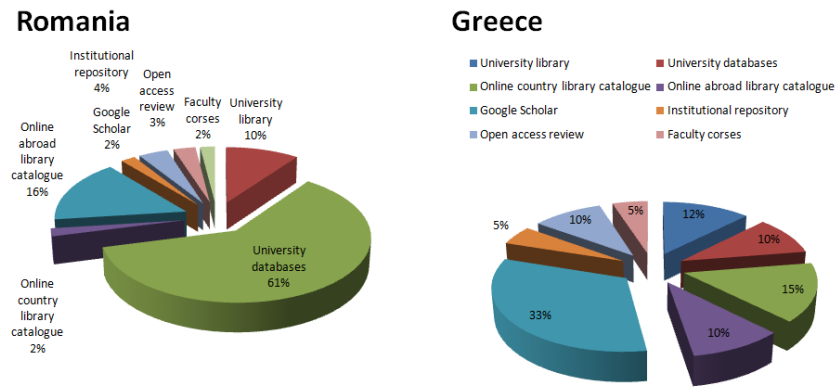

Fig. 4: Information sources

68% of PhD students prefer online resources, 24% traditional and only 8% media resources.
UOC PhD students also heavily prefer online resources over traditional ones or the media, although the respective figures show a quite increased preference for the online material (79%), and a much less interest in traditional sources (18%) or in media (3%). (Figure 5)

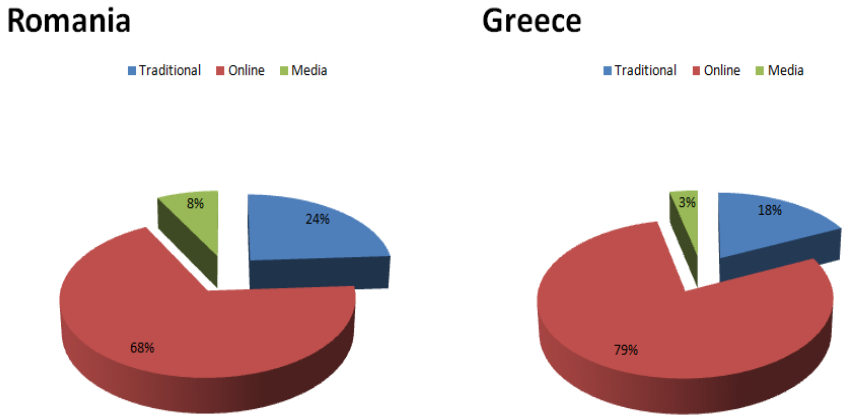

Fig.5: Preferences about information resources

Referring to knowledge level of scientific information evaluation only 10% have a high level of information evaluation, 58% have a low level and 32% have a medium level.

UOC PhD students are quite confident regarding their level of scientific information evaluation, since more than half consider they have a high level of information evaluation (56.52%), while the rest (43.48%) have a medium level. (Figure 6)

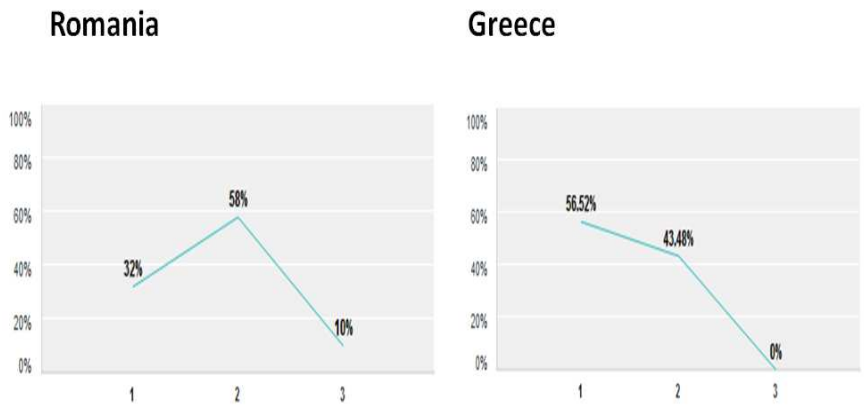

Fig.6: Knowledge level of scientific information evaluation (1- low level, 2-medium level, 3- high level)

In order to assess information several different criteria were proposed. The criteria for scientific information evaluation were accepted as follows: Author's name 28%, number of citations 27%, journal's name 24% and article references 21%.

When assessing the value of a scientific article, UOC PhD students value more the number of citations obtained (32%) and article references and bibliography (28%). Journal's name is also judged as quite important (24%), while Author's name is their last criterion (16%). (Figure 7)

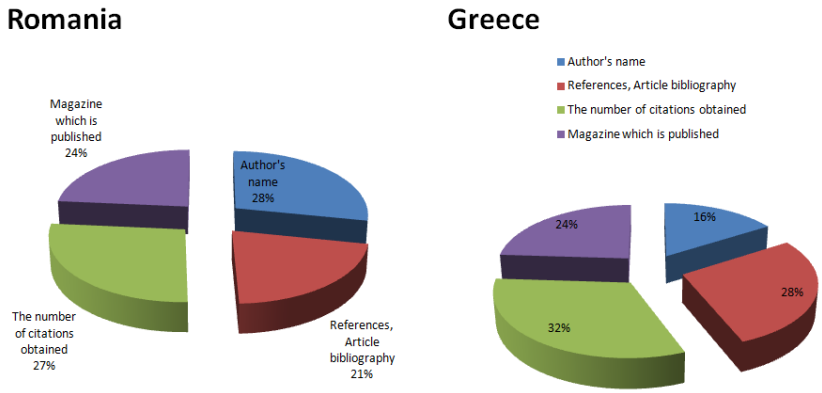

Fig.7: Criteria to evaluate scientific information

The criteria proposed to evaluate websites obtained the following results: 34% of the respondents use the criterion of site organization during their assessment, equally, meaning that 27% check the site host and author's data while 12% are interested in how up to date the site is.

For UOC students the prevailing criterion in evaluating the credibility of a web site is its organization (46 %) and actualization (33%). They do not value as much the host page (17%) while the author's data are not so important for them (4%). (Figure 8)

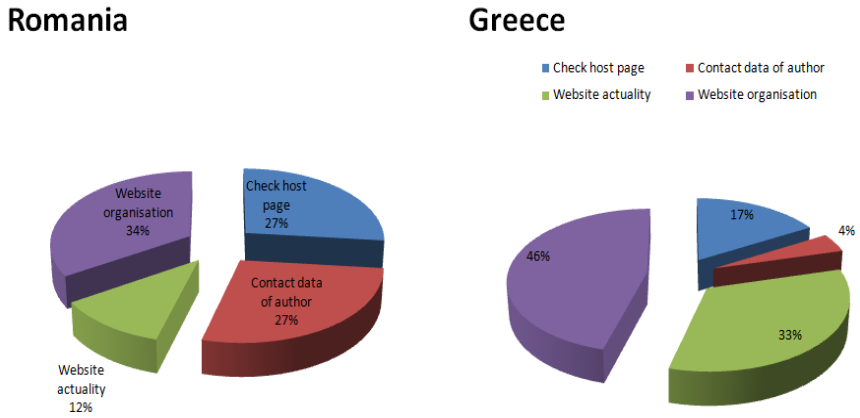

Fig.8: Criteria for credibility in web site evaluation

Regarding the assessment criteria of the scientific information quality disseminated by the web pages, all respondents consider the content most important 33%, the copyright restrictions 13%, scope 18%, information costs 18%, form and availability 18%.

When assessing the quality of scientific information disseminated by web pages, UOC students also equally consider copyright restrictions, scope, information costs, content, form and availability. (Figure 9)

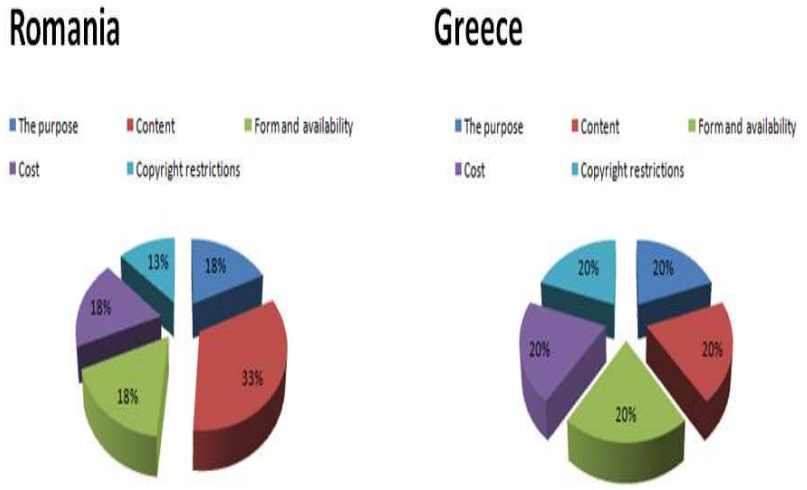

Fig.9: Assessing web pages criteria

The most used criterion in assessing the content of a scientific paper is accuracy, 23% followed by originality 21%. The other criteria, in order of importance are the references – 15%, the evolution of the presented phenomenon – 14%, links to other resources and quality of expression – 11% also the scientific committee – 5%.

University of Crete students also value most the accuracy of a scientific paper (20%), closely followed by originality (19%) and the evolution of the phenomenon presented (17%). Links to other resources (14%), quality of expression (13%) and references (12%) are also valued as important. Scientific committee is the less valued criterion (5%). (Figure 10)

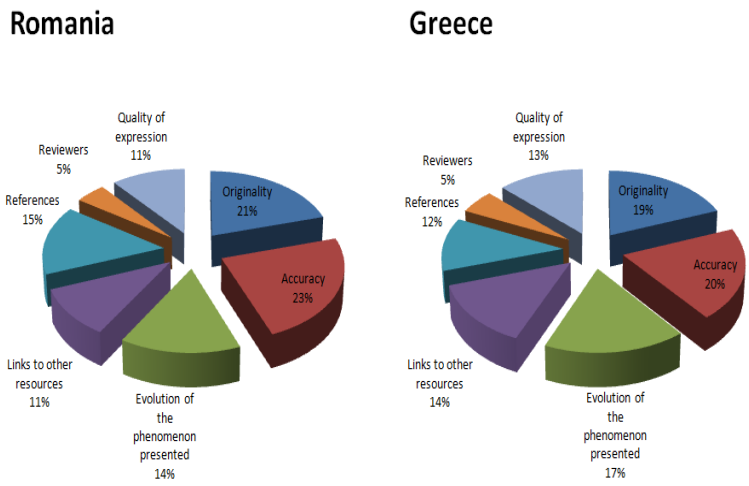

Fig. 10: Assessing content of scientific article

In case of a blog or website evaluation, criteria are considered at the same extent, namely: is the scope clear?, what is it dealt with?, novelty, format and presentation thoroughness.

For Romania 25% are interesting in novelty, 24% what issues are treated, 21% depth of presentation, 19% in clear scope, 11% in format. For UOC there are equal considerations. (Figure 11)

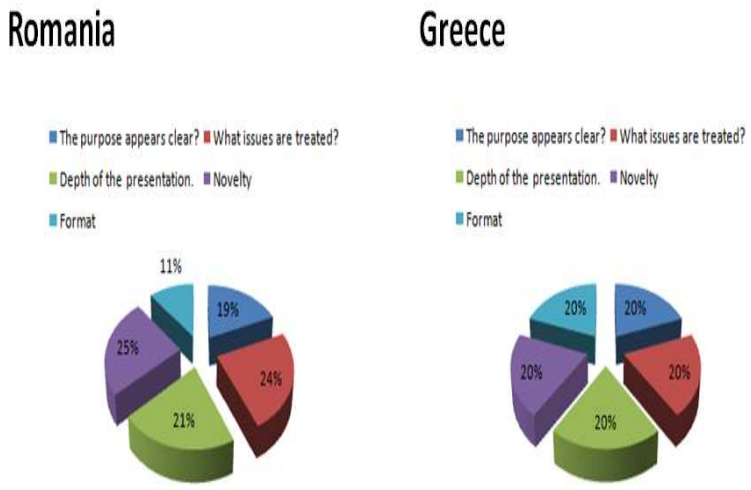

Fig.11: Assessing criteria for blogs and websites

3. CONCLUSIONS

The period of research and writing PhD thesis is an edifying stage in the future researcher's development. During this period the PhD students must have research skills. Information literacy - which is necessary to any student through his/ her abilities to identify the need of information, to localize sources, to evaluate and use these sources efficiently, to use them in the process of learning and content creating and then to be able to generate knowledge - becomes impetuously necessary during the doctoral school.

The dissemination of the PhD students' research studies must be guided through presenting and acquiring knowledge of scientometrics, academic communication and critical evaluation of the obtained information.

A surprise element in the UTBV survey is the fact that a small percentage of PhD students use Google Scholar as a source of information. Google Scholar is a free scientometric base which comprises only documents that are academically indexed by Google. Every indexed document has the indexed on Google Scholar quotations enclosed as well. Another surprise is the low level of knowledge regarding the scientometric databases, especially because the most PhD students use as main sources of information the databases to which university has subscribed, among which there are also the two scientometric databases, ISI Web of Science and Scopus. We think that the fact that they do not know the institutional digital repositories, free resources comprising scientific production of universities, is at their disadvantage and at the disadvantage of the scientific research community. The principles of open access to information, namely the *green way,* the institutional digital repositories should be promoted in order to change the researchers' mentality. The results of research studies do not achieve their mission if they are not displayed at the community's disposal by open access. The research surveys are financed through public money and consequently they have to reach the community.

The high percentage of UOC students that use Google Scholar as their first source of information can be explained by the fact that most of the databases to which UOC Library subscribes are indexed in Google Scholar, so UOC users have access to the material through Scholar without realizing it is not free. At the same time, our OpenUrl resolver's integration with the vast majority of the Library's licensed material makes thinks easier to the users, because a link is provided both in Google Scholar and in most of the databases that directs them to all other sources that provide access to the requested material. The high percentage of Greek catalogs can be explained by the parallel existence of two search portals that act as union catalogs to all Greek academic Libraries: Zephyr portal (http://zephyr.lib.uoc.gr) is a virtual union catalog that provides real-time searching of Greek academic libraries using z39.50 protocol, while HALUC (www.unioncatalog.gr) is a physical union catalogue of Greek academic libraries updated once per year. At the same time the National

Documentation Centre's Argo search portal (http://argo.ekt.gr) provides the same functionality for Greek public and special libraries. The satisfactory percentage of usage of Institutional Repository and Open Access material can be explained by the fact that the Library has devoted significant efforts in the promotion and support of Open Access initiatives: the Library's Institutional Repository was the first of its kind created in the Greek academic environment and is well established in UOC academic community, while it is also registered at the top institutional repositories on an international basis. The fact that when assessing the value of a scientific article, UOC PhD students value more the number of citations obtained and article references and bibliography can be explained by the strong emphasis the library but also the faculty has in instructing students about the values of papers with international acknowledgement. PhD students have stable knowledge regarding the scientometric databases, which they heavily use in their research. The two main scientometric databases, ISI Web of Science and Scopus are provided to all Greek academic libraries via the HEAL-Link consortium.

The information assessment criteria in the web space should be promoted and compulsory skills must be generated for Ph.D. students and university researchers and others.

The fact that the majority of the PhD students, who know these notions, know them due to their individual study imposes the organization of some presentation of the above mentioned notions.

Information Evaluation as a Decision Support has to be developed in university. This should lead to the clarification of the notion of information evaluation.

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