Aspects of Information Literacy in Higher Education : An Overview

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Abstract. *The paper presents the concepts of information society and knowledge society, their importance for general social development and improvement, with an emphasis on the role and contribution of higher education and academic libraries in the realization of these concepts. Their implementation and full development potential depends on training students to navigate information abundance, search, evaluate and use information, in other words – on improving their information literacy skills. Information literacy has been extracted as a key component that libraries in higher education must include in their new, redefined approach to their work and support provided to sudents by the home institution. In order to achieve this, it is necessary to implement information literacy in the curriculum. Information literacy skills are particularly important in today's business environment that is increasingly dependent on knowledge management systems.*

Keywords. Information society, information literacy, academic libraries, knowledge management

1 Introduction

The changes faced by modern society have necessarily initiated changes in the higher education system, whose basic tasks and goals must be harmonized with the basic features and requirements of the information society and the knowledge society. Terms such as information society, networked society, knowledge society or new economy all refer to the achievement of a common goal, which is global social and cultural development. The process of globalization and its impact on the world economy, politics and culture has benefited most from the developed world, and implies constant participation and investment in knowledge, technology and development. People, their knowledge, skills and ideas have been identified as the most important resources in this process. The prosperity and progress of the society are most closely linked to the ability and willingness to monitor and anticipate change, wherein one of the important conditions is a satisfactory number of highly educated individuals who are able to actively participate in the modern information society. In this sense, higher education has a key role to play in preparing citizens for inclusion and participation in the information society, which is determined by knowledge and technology. It is not surprising, therefore, that the term information literacy originated in the academic sector where it achieved its greatest rise. Information literacy plays an important role as a driver of change in higher education, which is increasingly determined by the dependence of national economies on knowledge (Špiranec, 2008). The quality of the educational process is closely related to the skills that are relevant and competitive in the labor market. It is information literacy that provides the competencies through which students - future employees, are trained to solve problems, find and use available information sources, and thus be prepared for lifelong learning.

The paper proposes models of integrated or embedded approaches to information literacy at the higher education level, because in this way they develop not only generic but also specific skills of information literacy, with information literacy itself included in the learning outcomes within the institution's curricula. This extends the activities of higher education institutions to address broader issues of society. The paper is organized as follows: The following chapter gives a brief overview of the origin and development of the concept of information literacy and its impact on the knowledge economy. Section 3 explains the importance of information literacy in business. Section 4 discusses the importance of information literacy and its relationship with the academic environment. Changes in higher education have necessarily triggered changes in the organization and operation of academic libraries. This is particularly pronounced in the context of information literacy, which in the academic environment begins precisely in libraries. The section of the paper therefore emphasis systematic advocacy and encouragement of various forms and models of user education as a regular activity found in most libraries of Croatian higher education institutions. Models and types of information literacy in higher education are presented. Chapter 5 introduces a case study on the ways and possibilities of implementing information literacy in higher education institutions in

Croatia on examples of particular academic libraries. Finally, Section 6 concludes the paper.

2 The Role of Information Literacy in Information Society

The World Summit on the Information Society (WSIS, 2015), held in two phases - in 2003 in Geneva and in 2005 in Tunisia, adopted the basic starting points of the United Nations member states on global development goals in the field of information society, as well as established the obligation to meet the set goals. In its first phase, held in Geneva, the chapter entitled Capacity Building discussed education and information literacy as key factors in building the information society in a way to enable each person the opportunity to acquire the necessary skills and knowledge to understand, actively participate and make full use of the benefits offered by the information society and the knowledge economy. To become a full member of the information society depends to a large extent on the possibilities of increased capacity building in the field of education, know-how technology and access to information, which are the main factors in determining development and competitiveness. In his article Foundations of information literacy, the library science theorist Badke (2010), gives an overview of the work of Paul Zurkowski, who first used the term information literacy over forty years ago, including a quote from the Report to the Narional Commission for Libraries and Information Science by Zurkowski: "Information is not knowledge; it is concepts or ideas which enter a person's field of perception, are evaluated and assimilated reinforcing or changing the individual's concept of reality and/or ability to act ." To clarify this concept, Zurkowski continues: "People trained in the application of information resources to their work can be called information literates. They have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in molding information solutions to their problems" (Badke, 2010). In the review of his work it is also argued that Zurkowski saw the information age as a new reality, a completely new age in which our ability to possess and use the best information means the maintenance and prosperity of the society. He believed that every citizen, in the interest of democracy and personal well-being, must be as information literate as possible (Badke, 2010). Since the introduction of the term information literacy, many theorists have been concerned with defining that concept. One of the most commonly used definitions is certainly one that is published by the American Library Association (ALA), which defines information literacy as a set of individual abilities which allow an individual to recognize when information is needed and enable them to locate, evaluate and use the required information effectively. Furthermore, information literate individuals are those who have learned how to learn, because they know how knowledge is organized, how to find information and how to use it in a way that others can learn from them. They are prepared for lifelong learning, because they can always find the information for any task or decision (American Library Association [ALA], 1989). Such skills appear to be particularly important in a business environment. Knowledge-management-oriented organizations often face challenges that can be more easily addressed through information literacy. Regardless of the presence of the technological infrastructure, the skills that employees have to convert information into resources needed for problem solving and decision making are also necessary (Špiranec, 2008).

3 The Importance of Information Literacy in Business

Knowledge-based economy is one of determinants of modern business.. In the knowledge-based economy, high priority is put on knowledge which means that most jobs require highly skilled workers (i.e. human capital) for problem-solving activities, technological innovations of new products and processes (i.e. research community), use of information and communication technologies (including big data management, effective work and exchange of knowledge, performance measurement, and similar), learning organization (acquiring and creating new knowledge through collaborative relationships), among others (Sekovanić and Lovrenčić, 2019). Timely access to information and knowledge is an important strength of an organization (Mizintseva and Gerbina, 2018), which is why business is increasingly focused on knowledge management (KM). In short, KM implies the processes of creating, managing, sharing and using organizational knowledge and information (Girard & Girard, 2015). People are a source of knowledge (in particular, valuable tacit knowledge), so they are the most important element of KM. In addition to people, KM technologies are especially important as support for ensuring information flow. In general, KM technologies include a range of support for communication, collaboration, dynamic learning, problem solving, strategic planning, and decision support. Graph databases, knowledge bases, learning managment system (LMS), conferencing tools, webinasr, data analytics and visualisation, document management systems (DMS), decision support systems (DSS), expertise localization systems and artificial intelligence technologies are just some of the examples of KM technologies. There are also many new technologies that can be incorporated in KM, such as big data and analytics, semantic

technology and natural language processing, machine learning, cognitive computing, augmented reality, Internet of Things and smart machines (Lovrenčić and Sekovanić, 2019). KM technologies make people's work easier (daily work or routine, quick access to information and knowledge regardless of the source or location of employees, decision support, learning, codification of knowledge, establishment of an innovation platform, and so on), provided that they know how to use them, in other words - that they are information literate. Contemporary business requires effective knowledge exchange and better job performance (Mizintseva and Gerbina, 2018), improved productivity, innovation, customer satisfaction, competitive advantage, and improved organizational performance (Gholami, Asli, Nazari-Shirkouhi and Noruzy, 2013), as well as constant improvements in learning and problem-solving skills (Akram andHilman, 2018) and organization's decision making process, teamwork, among others. Employees become a source of knowledge, ideas and improvements for products, services, new business models, strategies, organizational or technology processes and applications, and so on (Sekovanić and Lovrenčić, 2019). Employee knowledge, expertise and commitment are crucial elements of innovation (Fındıklı, Yozgat and Rofcanin, 2015). Activating acquiring, creating, or integrating capabilities of the organization would not be feasible without knowledgeable and skilled employees (Akram and Hilman, 2018). The complexity of the job increasingly requires information literate individuals. A man who works poorly in a modern job (not information literate) is holding back a job and cannot survive in a particular occupation in the long run. It is therefore extremely important to prepare students for the changing labor market so that they know, not only how to retrieve information, but also how to turn it into knowledge.

4 Information Literacy and Academic Libraries

4.1 The Role of Libraries in Academic Information Literacy Education

One of the documents that elaborates and describes in great detail the elements of information literacy that are specifically relevant to the higher education level.is the American Society for Higher Education Libraries' Information Literacy Standards. In that document an information literate person is described as a person who is able to:
• Determine the scope of the information need
• Access the necessary information effectively and efficiently
• Critically evaluate information and its sources
• Use information in a way to achieve a specific goal

• Understand the economic, legal and social issues of using information, and access and use information in an ethical and legal manner (The Association of College and Research Libraries [ACRL], 2000).
The mission of every higher education institution as well as any library that operates within it is to produce educated young people who are able to successfully participate in a society based on knowledge and technology. As higjlighted in Divjak et al. (2008), the mission of a modern university is to participate in the development of the society, and for achieving this goal its fundamental educational role must be completed, which ultimately results in enabling the student to learn, understand and know how to do it. In a society whose main potential lies in highly educated people, the importance of the higher education system with higher education libraries as a systematic support for action comes to attention. Libraries in higher education as units within higher education institutions have always been considered as an active partner in the process of learning and knowledge production. However, in the current circumstances, they inevitably have to change the ways and patterns of action. Since libraries, as an important part of the higher education system, are faced with changes in the way they work and operate, they must necessarily follow modern social concepts and trends. This is primarily realized in their support for the new, modern education system, whereby libraries can contribute to the excellence of their home institutions. The skills of searching, evaluating and using information are the skills of an information literate person that are necessary for successful inclusion in the modern information society. Active participation of libraries in educational programs that enable and train students for independent learning and research is therefore vital. In this way, higher education libraries partly take on the role of bridging towards successful inclusion in the information society. Information literacy is recognized as a key category in the process through which higher education libraries should fulfil their task of advancing academic education and thus in encouraging information literacy projects, as highlighted by IFLA, ACRL and other professional associations. Providing training about searching, evaluating and using information to all students is a requirement set by the information society today to higher education institutions. Teaching about searching, evaluating and using information must be provided to all students and this is what the information society today sets as a requirement for higher education institutions. Librarians have begun to recognize the need to move away from a library and information retrieval centred view of information literacy towards a broader understanding of the role of information literacy and the librarians as information professionals in fostering student learning (Bruce, 2003). Literacy means cooperation and joint action of higher education libraries and teaching. In particular, by adopting and advancing through undergraduate and graduate

programs, students must have the ability to continually search, evaluate, manage, and apply information gathered from a variety of sources and obtained through research methods for a particular discipline. This trend is best reflected in the well-known concept of transforming learning from tool-based learning to concept-based learning. This means that, owing the changing technologies, it is necessary to move away from teaching students how they work, and instead focus on the concepts of solving information problems regardless of space or medium (Špiranec and Banek Zorica, 2008, 96-97). Achieving information literacy in such a way implies an understanding that it is a development that follows the curriculum, and represents an integral part of its content, structure and outcomes. Likewise, information literacy is not the outcome of a single subject or course, it is a cumulative experience, shaped by a series of subjects and learning-based experiences, that together create an information literate person (Bundy, 2004).

4.2 Information Literacy Models for Higher Education

Bruce (2003) highlights four critical components of an information literacy program:
1. Resources that enable the learning of specific skills, e.g. web based information skills enhancement packages and other point of need, or self-paced instruction.
2. Curriculum that provides the opportunity to learn specific skills at the beginning of the course or at point of need (integrated)
3. Curriculum that requires engagement in learning activities that require interaction with the information environment (embedded)
4. Curriculum that provides opportunities for reflection and documentation of learning about effective information practices (embedded).
Based on the above division, the current practice of designing information literacy curricula incorporates a mix of generic, parallel, integrated and embedded components and could be presented as four basic models of information literacy (Table 1):

Table 1: Information literacy program components

Generic	Extra curricular classes and/or self paced packages
Parallel	Extra curricular classes and/or self paced packages that complement the curriculum
Integrated	Classes and packages that are part of the curriculum
Embedded	Curriculum design where students have ongoing interaction and reflection with information

Source: Australian over New Zealand information literacy framework: principles, standards and practice.

/ editor Alan Bundy. Adelaide: Australian and New Zealand institute of information literacy, 2004.

The most effective model is the embedding of information literacy throughout the curriculum where information literacy is included into learning objectives and outcomes as an integral part of the curriculum. The contents of course in such a curriculum is interlaced with information literacy, which improves the quality of teaching, and is implemented through a partnership between teachers and librarians. On the other hand, extra curricular or parallel and generic models are courses of a general type focused on neutral skills and techniques of searching and finding information, and are conducted by librarians themselves. In the integrated model, classes are offered in addition to a course and are organized by the librarian at the request of the teaching staff. Like two previous models, the integrated model is not effective enough because of a lack of systematic and continuous processes in its implementation.

5 Academic Libraries in Croatia - A Case Study on the Inclusion of Information Literacy in the Curriculum

In most cases academic libraries in Croatia maintain their own information literacy programs and methods of implementation. As a consequence, no unique model of information literacy exists, as can be seen in published reviews of libraries' experiences. The most common forms of lectures are workshops with voluntary participation, although there are some examples of the inclusion of information literacy in the curriculum.

5.1 Library of the University of Zagreb, Faculty of Organization and Informatics

The Library of the University of Zagreb Faculty of Organization and Informatics is systematically developing services intended for user education in the form of training and printed and online tutorials. There are several different forms and ways of training that the library conducts. In addition to the workshops that take place in the library, they are also organized and performed within particular courses at the invitation of the teaching staff. Workshops that take place in the library represent the so-called extracurricular or parallel information literacy model to which students respond voluntarily and on their own initiative. The content of such workshops can be thematically determined and organized for smaller groups of participants. Library workshops at the invitation of the teaching staff within one of the courses are organized

and conducted at the beginning of each academic year. All students enrolled in the first year of study undergo an education that includes an introduction to library services and broader aspects of academic literacy. This type of workshop corresponds to the intercurricular or integrated model where information literacy is offered as a supplement to the subject, and the presence of students in the workshops is mandatory. The library provides its educational content to users through printed and online tutorials, and is also present on Moodle with topics in the field of searching and using available resources, through which the library has become involved in e-learning.

5.2 Best Practices in Information Literacy

5.2.1 Central Medical Library of the University of Zagreb, School of Medicine

The Central Medical Library of the University of Zagreb, School of Medicine has the longest tradition of participating in the curriculum with its own information literacy modules. There is a compulsory course at the graduate study called *Introduction to Scientific Work in Medicine*, which is performed entirely by the Central Medical Library. The course is taught in the second and fifth year of medicine, and is combined with two other subjects - Medical Statistics and Medical Informatics. The total of hours, including lectures, seminars and exercises is 30. In addition to this compulsory course, at the graduate level of study there is an elective course named *It is important to find valid evidence* that also focuses on student information literacy processes. Both courses represent an embedded model of information literacy, which is an integral part of the curriculum.

5.2.2 Library of the University of Rijeka, Faculty of Law

In cooperation with the teaching staff and librarians, the Faculty organizes and carries out different programs for developing information literacy, such as workshop and lectures, intended for students at different years of study and in different courses. Such activities are carried out at the first year of the integrated study of Law and Administrative Studies in the course - Legal Writing, as well as at the third year of the integrated Study of law, as part of the research seminar - European Law II. The library has developed a model of embedded approach to information literacy within which information literacy is included in the goals and outcomes of each course in the field of law (Golenko, 2016).

5.2.3 Library of the University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture

The Library of the Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb is a partner in a course called *Academic Literacy,* where the librarian conducts laboratory exercises for students. The course consists of 30 hours of lectures and 15 hours of laboratory exercises, which totals 45 hours, which amounts to 6 ECTS credits. The aim of the course is to provide students with the knowledge and skills necessary for quality information retrieval and analysis, to enable them to evaluate information sources, for written expression and publication, as well as for lifelong learning. The course represents an embedded model of information literacy, which has been identified as the most acceptable model.

5.2.4 University Library of Zadar

At the Universiti of Zadar, information literacy is carried out in the form of an elective course which is also an example of the embedded model of information literacy. It is intended primarily for first-year undergraduate students, but can also be enrolled by senior students. The course *Information Literacy* is commonly taught by teachers from the Department of Information Sciences and librarians from the University Library of Zadar. The aim of the course is to enable students to search, find, evaluate and use information and information sources in academic education. The course amounts 3 ECTS credits.

6 Conclusion

Information literacy is a concept that represents the umbrella literacy of the information society. Education in this area is the activator needed for the transition of the information society to the knowledge society as the society of the future. Successful participation in the new knowledge-based society requires information literate citizens trained for lifelong learning. It follows that information literacy with its basic goals and tasks largely solves this problem. The technology and skills needed to use it are no longer sufficient, as information management skills are needed to fully exploit the potential of the information society. In a business sense knowledge is a crucial asset that enables organizations to act while ensuring a positive return (e.g. competitive advantage, innovation, improvements in productivity, financial and staff performance, customer satisafaction, among others). In the field of higher education, academic libraries have been developing models and strategies for including information literacy in the curriculum to enable a more efficient preparation for the knowledge society. In this sense, it is necessary to encourage the development of information literacy programs in accordance with models based on collaborative and integrative approaches of academic and library staff in curriculum design. In this both generic and contextual information literacy skills of students in different educational fields can be equally developed.

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