



## Changes in Croatian LIS Education: The Influence of Bologna Process

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*Theme: "Recognition of qualifications and quality of LIS education: the Bologna process challenges in a changing world"*

### Abstract:

*The purpose of this paper is to determine how the influences of changeable environment, like growingly common ICT usage and increasingly bigger number of information available through different information systems, as well as introduction of Bologna process have affected LIS education in Croatia. The aim of this paper is to show how the regulations of Bologna declaration have reflected on the reform of existing educational programs of individual departments and which changes are being implemented. Besides the fact that the old programs are being completely changed by enabling new profiles of experts necessary for e-economy, e-publishing, e-learning and by increased mobility of students and teachers, special attention is on giving contents and skills necessary for competent work, which is being increasingly based on the application of new technologies, usage of new information sources and application of new communication modes. It is especially important to point out to knowledge and skills which are being acquired by students at the undergraduate and graduate levels, and to find out whether, and to what extent, they differ between individual LIS departments at Croatian universities.*

### 1. Bologna and Changes in High Education

Under the influence of fast changes which resulted from the advance of information and communication technologies and increasingly larger number of information sources, our society is being transformed into 'knowledge society'. P.J.Lor and J.J.Britz (2004) have set four pillars of knowledge society: ICT and connectivity, content and usability thereof,

infrastructure other than ICTs, human capacity. Modern ICTs have created many opportunities for information society and knowledge society, opening up space for dialogue, participation and creativity (Lor&Brizt 2007). European universities facing political, economic, social and technological changes have to adapt in order to modernize the high education system and to implement higher quality level teachings and researches. Virkus and Wood (2004) put the resulting changes into 6 main categories: the increased demand for high education in lifelong learning context; the internationalization of education and research; the need to develop co-operation between universities and industry; the proliferation of places where knowledge is produced; the reorganization of knowledge and the emergence of new expectations. Since the Lisbon European Council in 2003, the main goal of EU is to create Europe of knowledge (Horvat, 2005). All the changes and challenges which occur in European high education happen under the patronage of Bologna Process. In 2001 at the ministerial conference in Prague, Croatia became a signatory of Bologna Declaration, with which it obliged to adapt its high education system to the demands of Bologna Process by the year 2010:

- implementation of easily recognizable and comparable academic and expert degrees as well as a supplement to degree with textual description of passed courses in order to promote employment of European citizens and international competitiveness of European high education system.
- Acceptance of a unique high education system in two cycles:
  - undergraduate* – during the period of 3 to 4 years students are being qualified for graduate degree and are acquiring skills and competences necessary for employment in specific expert positions;
  - graduate* – during the period of 1 to 2 years students are being qualified for postgraduate degree and are acquiring skills and competences necessary for employment in complex expert positions
- implementation of European system of the transfer of ECTS
- points, which enable recognition of work results at European universities via the usage of generally accepted measures, grades and points;
- Mobility promotion and solving all the barriers in student's and professor's choice of work place;
- Establishment of the national system for monitoring and quality guarantee of high education institutions;
- Promotion of a necessary European dimension in high education, especially in the development of educational programs, interinstitutional cooperation, schemes of mobility and integrated study programs, training and research[1].

By fulfilling these terms, Croatia becomes a part of European Higher Education Area, which has developed as an answer to the general process of globalization and technological development.

## **2. Development of LIS Departments in Croatia**

Although the university education of librarians in Europe started at the beginning of 20<sup>th</sup> century, most studies were established in 1960s. Formal education of librarians in Croatia started in 1961 when the Postgraduate Study of Librarianship, Documentation and Information Studies was established at the Faculty of Natural Sciences and Mathematics of the University of Zagreb. Undergraduate study of Librarianship was established at the Faculty of Philosophy in Zagreb in 1976. First postgraduate study called Organization of Knowledge and Cultural Heritage Theories was established in 1994, and several years later

new modules were started: Archivistics, Informatology, Librarianship and Museology. In the period of 1967 to 1978 there was a Librarianship Study at the Pedagogical Academy in Rijeka, where students could acquire higher professional qualification. Pedagogical Faculty in Osijek started a librarianship study in 1998 [2].

Currently in Croatia there are three departments for education of information experts: Department of Information Sciences of the Faculty of Philosophy in Zagreb (active for more than twenty years), Department of LIS of the Faculty of Philosophy in Osijek (1998/1999) and LIS Department of the University of Zadar (2004).

In this paper I would like to show how the influences from changeable environment, like growingly common ICT usage and increasingly bigger number of information available through different information systems, as well as introduction of Bologna process, have affected on LIS education in Croatia. Via parallel analysis of educational programs and LIS department programs, I would like to indicate which changes have happened as a result of the implementation of Bologna Declaration into the educational programs, contents and skills necessary for competent work increasingly being based on the application of new technologies, usage of new information sources and application of new communication models. A special stress is being put on the knowledge and skills which are being acquired by students at the undergraduate and graduate levels, as well as on the individual differences between LIS departments at Croatian universities. The implementation of Bologna process in LIS education is a common topic of professional and scientific papers worldwide as well as in Croatia (Aparac-Jelušić, 2003; Horvat, 2003; Horvat, 2004; Tammaro, 2005; Virkus, 2007).

The methods which I used in this paper are parallel analysis and content analysis of educational programs published on the web pages of Department of Information Sciences of the University of Zagreb, Department of LIS of the University of Osijek and LIS Department of the University of Zadar.

### **3.1. Short Insight of the Department of Information Sciences of the Faculty of Philosophy in Zagreb**

First LIS department at the University of Zagreb and in Croatia in general was established in 1981. Since 1986/87 at this Department there has been a eight-semester study of Informatology with these modules: Archivistics, Librarianship, Museology and General Informatology, and as a two-year supplemental study of Archivistics, Librarianship, Museology and Information Sciences (Horvat, 2003). The eight-semester study has been envisioned as common for the first two years, while in the third and fourth year comes the orientation.

The LIS department today suggests one undergraduate study and more graduate studies which are set interdisciplinary and thus enable the development of diverse interests of students through the core and elective courses. Today the LIS department has five subdepartments: Subdepartment for Archivistics, Subdepartment for Librarianship, Subdepartment for Documentalistics, Subdepartment for Information Sciences and Subdepartment for Museology.

### **3.1.1 Undergraduate Study**

One undergraduate study (6 semesters) and more graduate studies (4 semesters) have been established and set interdisciplinary at the Department of Information Sciences. They ensure interferences of educational contents, as well as a possibility of choosing from a line of modules, which enable student specialization for particular discipline in the area of Information Sciences.

The aim of this study is to qualify students for work in organizations, institutions and information centers which demand the knowledge of retrieving, evaluating and selection of information, as well as understanding the basic terms of the Information Sciences disciplines and familiarization with basic knowledge of information institutions functioning (Horvat, 2005). Undergraduate study will qualify students for simpler positions in different information and cultural institutions, as well as in bodies of public administration and government, enterprises and companies which need people who can manage information in new technological environment, as well as for further study of Archivistics, Librarianship, Informatology and Museology and Heritage Management at the Faculty of Philosophy in Zagreb. The title which is being acquired is the Bachelor of Information Sciences with a focus on one of the five studies offered by the Department: Librarianship, Archivistics, Museology and Heritage Management, Informatics – teaching module, and Socio-humanistic Informatics.[3]

### **3.1.2. Graduate Study**

On the graduate level, during four semesters students acquire competences for developing relations between information producers, mediators and users; meet the life cycle of information, national and international legal and administrative regulations, acquire the ability of identification and evaluation of information corpus and sources. They acquire knowledge on how to manage collections and fonds, organize, search and find corpus and information, use information technology in libraries, and familiarize with managerial and advertizing procedures, and project planning and control. Students choose from one of the four available modules: Knowledge Organization, Libraries and Society, module which is intended for school librarians or module which is intended for the students who have not finished undergraduate study of Information Sciences.[4]

Except for the Librarianship Study, at the graduate level the Department offers also Study of Archivistics, Museology and Heritage Management, and Socio-humanistic Informatics. After finishing the studies, students acquire the title of master of sciences of one of the mentioned modules.

## **3.2. Short insight of the Department of LIS of the Faculty of Philosophy in Osijek**

Although the first discussions about the establishment of librarianship study at the Faculty of Philosophy in Osijek had begun as early as 1989, a eight-semester graduate study of librarianship and supplementary two-year study-as-you-work course of librarianship were started in the academic year 1998/1999.[5]

The Study of Informatology today is organized as a regular six-semester undergraduate study and a four-semester graduate study. Currently Osijek has two

subdepartments: Subdepartment for Library Management and Information Organization and Subdepartment for Book History, Publishing and Bookselling.

### **3.2.1. Undergraduate Study**

At the undergraduate study students are being qualified for the title of the Bachelor of Informatology, with the focus on the information product and service formatting, or the information needs research, information usage and general communication with different user groups, or publishing-bookselling work. Students acquire basic knowledge and skills necessary for making plans, management and marketing of library and similar cultural-information institutions, for evaluation of information sources, public relations, making tables and summaries, selective dissemination of information, databases forming, setting and maintenance of web pages, digitalization and protection of corpus and information. Students who choose for elective module publishing/bookselling will be qualified for taking over simpler expert work related to electronic corpus, information aids, making publishing plans, managing of smaller publishing, bookselling and similar institutions, and usage and evaluation of information sources. [6]

### **3.2.2. Graduate Study**

Graduate study aims at preparing students for planning and managing information systems and networks in librarianship and/or publishing and bookselling, knowledge management and division of information sources, planning and doing scientific-research projects, implementation of educational programs related to mediation and usage of information in primary and secondary schools, and in academic institutions and institutions for life-long education in the field of information sciences.[7] After finishing graduate study students acquire the title of the master of librarianship/publishing and bookselling.

## **4. Short Insight of the LIS Department of the University of Zadar**

The LIS Department of the University of Zadar was started in 2004 as a regular eight-semester study according to the program of Osijek. In year 2005 a modified suggestion of plan and suggestion of the LIS Department was made adapted to the needs of the LIS study of the University of Zadar, with a vision of setting LIS study and basis for future study in the field of information sciences for directions of librarianship, archivistics and museology in the period until 2010.[8] Usage of new technologies enables students to acquire proper knowledge and skills for using new technologies in forming, choosing and evaluation of information systems and services in future working environment. The study is imagined in a way that it involves student and professor exchange and participation of foreign lecturers. The study is conceived at two levels: undergraduate of six semesters and graduate of four semesters.

### **4.1. Undergraduate Study**

Students at the undergraduate level acquire the title of the Bachelor of Librarianship with a focus on the organization, preservation and usage of written heritage, and they are qualified for graduate level.[9] Knowledge and skills which they acquire enable them to do

work related to forming, setting and organization of corpus collections and information institutions, to use and encourage usage of information aids for finding information on the corpus, to help in choosing and evaluating relevant information sources, communicate with users, help users during their use of library and other information services, help in communication between institution and public, and help in planning and managing the information institutions.

Students are expected to be qualified for helping in making of plans, managing and advertising in library and similar cultural-informational institutions, in evaluating the information institutions, communicating with closer and further public, in translating, in making contents and summaries, in implementation of selective dissemination of information, databases forming, setting and maintaining web pages, digitalizing and protecting corpus and information.

#### **4.2. Graduate Study**

Graduate study aims at preparing students for planning and managing information systems and networks in librarianship and/or publishing and bookselling, for knowledge management and division of information sources, planning and doing scientific-research projects, as well as implementation of educational programs related to mediation and usage of information. It is expected from students to master knowledge which will enable them to see problems in information institutions and networks, to master the methodology of developmental-research projects, and to contribute to the development of the field for which they are specializing. At this level students considerably more independently study literature so they are expected to understand basic theoretic concepts of information sciences, principles and methodology of managing information institutions, goals and principles of knowledge management, nature of interdisciplinary and multidisciplinary researches, as well as the issues of disciplines convergence within the field of information sciences.[10] After finishing graduate study students acquire the title of the master of librarianship/publishing and bookselling. These students can also enter Joint Graduate Study of Written Heritage in Digital Environment.

#### **5. Joint Study of Written Heritage in Digital Environment**

This study was started by the Department of LIS of the University of Osijek in cooperation with the LIS Department of the University of Zadar and the Department of Cultural Heritage of the University of Parma. The purpose of the Joint Study is to jointly produce a qualified and adaptable graduated student who will be able to take over and do complex projects and processes of digitalization of cultural heritage and to develop digital information services. Students have opportunity to listen to the colleagues from the three universities and to participate in diverse projects and case studies. After finishing the study they acquire the title of the Master of Informatology – expert for written heritage in digital environment.[11] By finishing this study, students prepare for planning and managing information systems and networks, planning and performing digital projects, and implementation of educational programs related to mediation and usage of digital information in education. Learning results are divided into four basic groups of knowledge: conceptual knowledge, operational knowledge, technical skills and general skills. At the conceptual level, students learn the process of communicating written heritage, how to understand and describe digitalization of written heritage, and evaluate its influence on environment, understand the environment in which the digitalization is being executed, identify cultural

heritage in different social contexts, and understand social and technical aspects of written heritage information systems.

At the operational level students learn how to make decisions on digitalization projects on the basis of critical evaluation, idea development and project planning, digital services, implementation of international and national legislative, management of human, material and financial sources during the project, implementation of content and technical standards, ensuring sustainability, system and ICT based services quality.

Technical skills necessary for digitalization which students acquire are ability of working with technologies and methods for digitalization and technical understanding for further development of this skill through training and constant professional perfection. General skills which students need to acquire include ability to write a business plan, make an extended overview of references, structure research proposal, to independently plan, form, conduct and evaluate successful researches, to communicate and present in public successfully, and to acquire lingual and cultural skills based on their study staying in other European countries [12].

## **6. Comparison of courses at undergraduate and graduate levels of LIS Departments in Croatia**

For better understanding of changes which appeared after implementation of Bologna principles in LIS education programmes, this table gives an overview of mandatory courses from the area of librarianship at the three LIS Departments in Croatia. It does not contain elective courses, English Language, Physical Education nor the courses from other modules (Museology, Archivistics, Informatics, Socio-humanistic Informatics). The Department of Information Sciences of the University of Zagreb organizes the study at undergraduate level interdisciplinary, while the Department of LIS in Osijek and the LIS Department in Zadar offer only the study of librarianship and the study of publishing and bookselling, with a tendency of introducing interdisciplinary study by 2010. The same study program in Zadar and Osijek enables greater mobility of students and professors, which is one of the goals of Bologna Declaration (Aparac-Jelušić, 2004). At the Department of Information Sciences in Zagreb students are simultaneously being offered courses which are common for all the modules and certain courses from each individual module. During a semester, students choose the courses from the area of information sciences which they want to specialize for. Parallel analysis of educational plan and program has revealed that at undergraduate level all the departments offer courses which deal with information technologies, basics of classification and information work, databases, bibliographical information organization, information sources and services, and information institutions management. The presence of same groups of courses at the three departments indicates that the ability of managing the information technology, working with databases, knowledge of classification and bibliographic information organization, and managing the information institutions are basic knowledge and skills necessary for every information expert in their work after finishing undergraduate study. The Department of LIS in Osijek in the sixth semester offers three different modules: Informational, Pedagogic and Publishing/Bookselling.[13] An important characteristic of these modules is that they offer students a possibility of specialization in a certain domain. They also represent the foundation for continuance of studying at one of the graduate studies. The Department of LIS in Osijek and the LIS Department in Zadar both offer these courses: Oral and Written Heritage, Introduction to Research Methodology, Sociology of Book and Reading, Data Protection and Preservation of Materials, Information Systems in Education, Metadata and Identifications, Content Formatting for Digital Library.

The LIS Department in Zadar offers courses Heritage Institutions and Description of Old and Rare Materials. The Department of LIS in Osijek is the only one who, at this level, offers as a compulsory course Intellectual Property and Copyright, Web Programming and Information Architecture (Information Module), Basics of Pedagogy, Didactics, Education Methodology (Pedagogic Module), and Organisation and Management of Publishing Production, Bookselling Systems and Accounting (Publishing/Bookselling Module). By looking at the courses that they offer, it is obvious that the Department from Osijek is being directed towards the education of students in the area of publishing and bookselling, information services and services for children and youth.

At the graduate level, the structure of the study is considerably more different between the Department of Information Sciences in Zagreb and the other two. In Zagreb the study has been set in such a way that at the graduate level students can choose one of the subdepartments (Museology, Archivistics, Librarianship, Informatics, Socio-humanistic Informatics) for which they want to specialize. At the Subdepartment for Librarianship there are four different modules: Knowledge Management, Libraries and Society, Library Services for Children and Youth, and a special module for students who have not finished undergraduate study of information sciences. The Department of LIS in Osijek and LIS Department in Zadar have the same program for graduate study. There are three different modules: Librarianship, Publishing and Bookselling, and Joint Study of Written Heritage in Digital Environment at the University of Parma. At the first year of study, all students of the Modules Librarianship and Publishing/Bookselling attend together all courses (Information Society, Principles of Information Retrieval, Collection Management, Research Methods in Information Sciences, Evaluation of Information Services), while at the second year they choose the desired module. Module Written Heritage in Digital Environment qualifies students for working with written cultural heritage in digital environment which is becoming wider in Europe and in the world. The advantage of starting a joint study is in the fact that the universities in that way direct towards European educational strategy which predicts cooperation of different institutions in order to achieve high quality of education and optimal mobility of students and teachers between Zadar, Osijek and Parma, but also the other universities which signed cooperation agreement.[14] Starting of interdisciplinary study is exceptionally important for successful participation of universities in the process of implementation of Bologna principles in high education.

	<b>Department of information science, University of Zagreb</b>	<b>Department of information science, University of Osijek</b>	<b>Department of library and information science, University of Zadar</b>
<b>Undergraduate level</b>			
<b>1.semester</b>	-Information Technology -Classification	-Information Technology I. -Information Science I -Oral and Written Heritage - Introduction to Research Methodology	-Information Technology I. -Information Science I -Oral and Written Heritage -Introduction to Research Methodology
<b>2.semester</b>	-Basics of Librarianship -Basics of Communication Technology [15]	- Information Science I -Publishing and Bookselling -Website Development	- Information Science II -Sociology of Book and Reading - Information Technology II
<b>3.semester</b>	-Databases -Bibliographic Organisation I	-Information Organisation I -Management of Information Systems I. -Database Development and Management I -Sociology of Book and Reading I	-Organisation of Information I. -Management of Information Systems I. -Database Development and Management I. -Data Protection and Preservation of Materials
<b>4.semester</b>	- Classification Systems	-Organisation of Information II. -Database Development and Management II. -Management of Information Systems II	-Organisation of Information II. -Database Development and Management II. -Heritage Institutions -Management of Information Systems II
<b>5.semester</b>	-Reference Services	-Reference Services I -Management of Information Systems II	- Reference Services I - Metadata -Information Systems in Education
<b>6.semester</b>	-Management of Information Institutions	-Reference Services II -Intellectual Property and Copyright  <b>Information module</b> -Web Programming -Metadata/identifiers -Digital libraries -Information architecture  <b>Pedagogic module</b> Basics of Pedagogy Didactics Education Methodology  <b>Publishing and Bookselling module</b> -Organisation and Management of Publishing Production I / II -Bookselling Systems -Accounting	- Reference Services II - Description of Old and Rare Materials - Digital Libraries

<b>Graduate level</b>			
<b>1. semester</b>	<p><b>MODUL: Organisation of Knowledge</b></p> <ul style="list-style-type: none"> <li>- Subject Indexing and Retrieving</li> <li>-Special Libraries and Collections</li> <li>-Bibliographic Organisation II</li> </ul> <p><b>MODUL: Libraries and Society</b></p> <ul style="list-style-type: none"> <li>-Sociology of Culture</li> <li>-Library Management</li> </ul> <p><b>MODUL: Library Services for Children and Youth</b></p> <ul style="list-style-type: none"> <li>-School Libraries</li> <li>-Reading and Literacy</li> <li>-Libraries for Children and Youth</li> </ul> <p><b>MODUL [16]</b></p> <ul style="list-style-type: none"> <li>-Bibliographic Organisation I.</li> <li>-Probability and Statistics</li> </ul>	<ul style="list-style-type: none"> <li>-Information Society</li> <li>-Principles of Information Retrieval</li> <li>- Collection Management</li> </ul>	<ul style="list-style-type: none"> <li>-Information Society</li> <li>-Principles of Information Retrieval</li> <li>- Collection Management</li> </ul>
<b>2. semester</b>	<p><b>MODUL: Knowledge Management</b></p> <ul style="list-style-type: none"> <li>-Index Languages</li> <li>-Questionnaire Methods</li> </ul> <p><b>MODULE: Libraries and Society</b></p> <ul style="list-style-type: none"> <li>-Information Law and Ethics</li> <li>- Questionnaire Methods</li> </ul> <p><b>MODULE: Library Services for Children and Youth</b></p> <ul style="list-style-type: none"> <li>-Creative Education Workshop in School Library</li> <li>-Information Technologies in Education</li> </ul> <p><b>MODULE</b></p> <ul style="list-style-type: none"> <li>-Basics of Librarianship</li> <li>-Classification Systems</li> </ul>	<ul style="list-style-type: none"> <li>- Research Methods in Information Sciences</li> <li>- Evaluation of Information Services</li> </ul>	<ul style="list-style-type: none"> <li>- Research Methods in Information Sciences</li> <li>- Evaluation of Information Services</li> </ul>

<b>3.semester</b>	<b>MODULE: Knowledge Organisation</b> -Digital Library II -Management of Information and Knowledge  <b>MODULE: Libraries and Society</b> -Library Statistics -Digital Library II  <b>MODULE: Library Services for Children and Youth</b> -Pedagogical group of courses  <b>MODULE</b> -Reference Services -History of Books and Libraries	<b>MODUL: Librarianship</b> -Theory and Practice of Organisation of Information -Marketing of Library Products and Services  <b>MODUL: Publishing and Bookselling</b> -Management of Publishing and Bookselling -Marketing of Publishing and Bookselling	<b>MODUL: Librarianship</b> -Theory and Practice of Organisation of Information -Marketing of Library Products and Services  <b>MODUL: Publishing and Bookselling</b> -Management of Publishing and Bookselling -Marketing of Publishing and Bookselling
<b>4.semester</b>	<b>MODUL</b> -Digital Library I. -Preservation of Library and Archive	-Master paper	-Master paper
<b>Joint Study of Written Heritage in Digital Environment</b>		-Introduction to Digital Libraries -Electronic Documents and Formats -Cultural Heritage and Digitisation Management -Metadata and Identifiers -Research Methods in Information Sciences -Delivering Digital Library Services -Subject Indexing and Retrieving -Memory Institutions and Learning -Master paper	

Table 1. Comparison of courses in LIS departments

Since the programs of education of future information experts adapted to the regulations of Bologna Declaration are based on the concept of active participation of students in the education, as well as the cooperation of students, professors and information experts, the students of all the three departments are included in different scientific and research programs and projects, organization of different expert congresses, round tables and workshops, in which they often present their own papers and research results. They also work on publishing the magazines which deal with LIS topics. The majority of activities happen within the program of student associations.[17] Students participate in different scientific and research programs and projects, organization of round tables and workshops. Students from the Department in Osijek work actively on the LIBROS Magazine, which aims at contributing to better information acquiring and cultural and expert education of students.[18] Every year, students from Zadar and Osijek participate in the organization of annual LIDA conference, and in 2008 they organized student BOBCATSSS conference. With an aim of

closer cooperation, students of the three departments organized Days of Young Librarians in 2008, with a tendency to continue with this gathering every year.

Although at undergraduate and graduate levels of all three departments similar knowledge and skills are being acquired, there are certain differences. Since the departments in Zadar and Osijek have similar program, students acquire almost identical competences. However, since the department in Zagreb has a different study structure, differences in competences acquired at each level are visible. All three departments at undergraduate level qualify students for continuing to graduate study. The department in Zagreb at this level qualifies student for simpler positions in information and cultural institutions, bodies of public administration and government, and enterprises. The students in Zadar and Osijek at undergraduate level become competent for doing expert works of managing collections and informational aids, choosing and evaluating relevant information sources, communication with users and public, planning and management of information institutions, making tables and summaries, selective dissemination of information, forming and management of databases and web pages, digitalization and protection of corpus and information. At graduate level of all three departments students acquire competences for planning and managing information systems, i.e. understanding relations between producer, mediator and user, planning and leading projects, and evaluation and planning of information services and service providers. With regards to the interdisciplinary nature of undergraduate study in Zagreb, certain knowledge and skills in librarianship, which are being acquired by students from Zadar and Osijek at the undergraduate level, are being acquired by students from Zagreb at graduate level. This refers to expert work of managing collections and information aids, managing information institutions, identification and evaluation of information sources, working with users and using information technology in libraries.

At this level, students from Zadar and Osijek also acquire competences for knowledge management, performance of educational programs with regards to information sources and their usage, acquiring planning methodology and conduction of development and research projects, qualification for noticing problems in information institutions, making developmental plans, and contributing to the field for which they specialize.

## **7. Conclusion**

Croatian LIS departments are, like other universities around the world, faced with the challenges of globalization, competition, ensuring high quality education and research, and modernization of department and curriculum structure and organization. By signing Bologna Declaration in 2001, Croatia has obliged to adapt its high education system to regulations of Bologna Declaration by 2010. Compliant with that agreement, LIS Departments in Croatia are obliged to change their educational plans and programs. As most important changes which occurred by adapting LIS education to Bologna Declaration, I would stress the introduction of academic and expert levels (bachelor/master) and supplement to degree with textual description of passed courses, studying in two cycles: undergraduate and graduate, introduction of ECTS points, which enable recognition of work results at European universities, and mobility of students and professors. As a result of changes introduced with a process of Bologna students of Informatology from Osijek and Librarianship from Zadar have participated in student exchange with the Academy of Information Science in Eisenstadt, Austria, as a part of CEEPUS Project.

By adapting the existing educational programs, among others, the Departments want to enable education of modern profiles of experts necessary for so-called e-economy, e-

government, e-learning and e-publishing and to increase horizontal and vertical mobility of students in national and international space of high education. Special attention is given to enabling the information expert, after undergraduate and graduate studies, contents and skills necessary for competent work based on the application of new technologies, usage of new information sources and application of new forms of communication with users of information products (Aparac-Jelušić, 2004).

New LIS programs adapted to the regulations of Bologna Declaration are based on the concept of active participation of students in the education, as well as the cooperation of students, professors and information experts with regards to usage of new technologies in education.

## Notes

1. [http://www.uniri.hr/component/option.com\\_wrapper/Itemid,218/](http://www.uniri.hr/component/option.com_wrapper/Itemid,218/) (accessed 20 January 2009).
2. <http://dzs.ffzg.hr/text/bibliotekarstvo.htm> (accessed 02 February 2009).
3. <http://www.unizd.hr/Va%C5%BEidokumenti/tabid/1077/Default.aspx> (accessed 15 March 2009).
4. [http://www.ffzg.hr/infoz/web2/index.php?option=com\\_content&task=view&id=937&Itemid=363](http://www.ffzg.hr/infoz/web2/index.php?option=com_content&task=view&id=937&Itemid=363)
5. <http://web.ffos.hr/infoznanosti/home.php> (accessed 21 January 2009)
6. Available at: <http://web.ffos.hr/infoznanosti/?id=70> (accessed 03 February 2009)
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8. <http://www.unizd.hr/Va%C5%BEidokumenti/tabid/1077/Default.aspx> (accessed at 19 February 2009).
9. <http://www.unizd.hr/Va%C5%BEidokumenti/tabid/1077/Default.aspx> (accessed at 19 February 2009)
10. <http://www.unizd.hr/Va%C5%BEidokumenti/tabid/1077/Default.aspx> (accessed at 19 February 2009)
11. <http://web.ffos.hr/infoznanosti/?id=86> (accessed 01 March 2009)
12. <http://web.ffos.hr/infoznanosti/?id=86> (accessed 01 March 2009)
13. <http://web.ffos.hr/infoznanosti/home.php> (accessed 21 January 2009)
14. <http://web.ffos.hr/infoznanosti/?id=86> (accessed 01 March 2009)
15. Students choose between courses Basics of Communication Technology and Introduction to Natural Language Management.
16. Module for students who have not finished undergraduate study of information sciences.
17. <http://infoz.ffzg.hr/ksiz/index.php> (accessed 20 March 2009)
18. <http://oziz.ffos.hr/libros/> (accessed 20 March 2009)

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