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**Digitization of Cultural and Scientific
Heritage as a Prerequisite for Distance
Learning**

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Dr. Gregory T. Papanikos
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Digitization of Cultural and Scientific Heritage as a Prerequisite for Distance Learning

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Abstract

Increased application of digital technologies in Higher Education Area did not only brought a new understanding of learning, teaching and education in general, but also created better conditions for distance learning. The positive impact that these technologies have on students learning outcomes is constantly showing. Concept of e-learning, although it seems new, having its beginnings in possibilities of mass multiplication, in correspondence schools, through radio and television, more recently over the Internet, gets on quality through the process of digitalization of cultural heritage. Regional collections and special archival collections are one country's cultural heritage, historical retrospective and national identification in a global world. The Faculty of Philology of the University of Belgrade believes that its Digital Library is an excellent and successful example of digitization of cultural heritage. The main aim of our project was to provide easier access to the rare copies of books and documents, which would otherwise be partially or completely unavailable to students and even professors. This paper will consider the advantages of the application of modern digital technologies and the importance of future investments in the use of digital technologies within the university framework, particularly in enhancing conditions for distance learning through digitization of cultural and scientific heritage.

Keywords: digital technologies, digitization, distance learning, cultural and scientific heritage, digital library, Faculty of Philology;

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Digital technologies have become an indispensable part of modern life, as is the necessity of its application in the university educational context. The impact of these technologies on learning outcomes is extremely beneficial, since they enable more efficient, effective and intense teaching. One of the main advantages is certainly easier access to learning content through digital libraries and learning management systems, which globally provide conditions for the development of the distance learning concept, as well as the possibility to have the feedback, and the opportunity for the interaction and discussion between students and professors, as well as better self-management by learners themselves. While some claim that there is an insignificant relationship between computer use and improvement in student's test scores (Weaver, 2000)¹, others emphasize the positive aspects of the application of ICT in the educational framework (Parr & Fung, 2000²; Andrews et al. 2002³; Hartley, 2007⁴).

The importance of digitization of cultural and scientific heritage

At the end of twentieth century the attention of experts focused on digitizing collections of book and non-book materials. They were guided by two main reasons: protection of copies and availability of publications and information. Digitized form is actually a surrogate for the original, created with the desire to remember the current image of the document, so that the external influences could not hurt it, as well as to open, in the spatial, temporal, legal terms the use of that copy. Easy searchability and high level of informativeness are the overall qualities of the digitization.

Archives, museums and libraries are "the focal points of the community"; these institutions provide "a harmonious blend of rationality and dreams"⁵. The essence of traditional archives and libraries, as well as digital ones, is an intellectual product, but it is the digital form, meticulous bibliographic data and normative file of this product that provides better and lasting duration and diffusion of it. Digital collections are based on a formal, objective, professional, but also regional, local, national principle. It is important to plan

¹Weaver, G.C. (2000) An examination of the National Educational Longitudinal Study Database to Probe the Correlation Between Computer Use in School and Improvement in Test Scores. *Journal of Science and Technology* 9.2: 121-133

²Parr, J. M. & Fung (2000) *A review of the literature on computer-assisted learning, particularly integrated learning systems, and outcomes with respect to literacy and numeracy* Auckland: University of Auckland. Retrieved from: <http://www.educationcounts.govt.nz/publications/ict/5927>

³Andrews R., Burn A., Leach J., Locke T., Low G.D. & Torgerson C. (2002) *A Systematic Review of the Impact of Networked ICT on 5-16 year olds' literacy in English*. In: Research Evidence in Education Library. Issue 1. London: EPPICentre, Social Science Research Unit, Institute of Education.

⁴Hartley, J. (2007) Teaching, learning and new technology: a review for teachers *British Journal of Educational Technology* 38.1: 42-62.

⁵Gorman, M., (2007). Naše neprolazne vrednosti (Our Enduring Values). Belgrade.

entire process of digitalization, from setting goals, selecting funds, methods, procedures and techniques, equipment, through staff training, finding sources of funding, which all leads to timely achievement of defined objectives. The lack of a plan or its inconsistency will result in a loss of money and information.

Before digitizing contents that belong to scientific and cultural heritage of one country, priorities must be determined. First requirement would be the insight into archival or library fund as an independent entity, as well as in its structure, relationship to other funds in the archive, its social role and significance. If the process of digitization is well prepared, detection, identification and retrieval of digital resources will seem simple to any user. The information must be transferred to electronic form in regular and quality manner, equipped with appropriate indexes and consistent metadata that allows multiple searches of their contents. Cultural institutions have to cooperate in the project of digitization of the national heritage in order to properly meet expectations and requirements of this valuable process. Protection and sustainability of legibility of information, completely independent of changes in hardware and software solutions of the digitization, originality and creativity of digital databases, preservation of copyrights and satisfaction of user claims with no economic barriers, will also contribute to this.

Based on the fact that “the true nature of business (...) of the information”¹ (Davidow & Malone, 1992), handling of it, its storage, processing and distribution, are the basic requirements for each profession, it addresses librarians and archivists as specialized scientific disciplines that deal with the organization of knowledge. Resolution of the International Council on Archives (ICA) in Quebec emphasized two basic truths: 1) that libraries, museums and archives are “institutions dealing with the protection of documentary heritage,” and that their collaboration yields positive effects” in terms of investments, profitability and quality of customer service “, 2) that funds of libraries, archives and museums” are integral part of the world documentary heritage” and as such they are equally important for the development of digitization project called Memory of the World.

During the meeting held in Lund in 2001² regarding the implementation of framework for digitisation , it was concluded that successful digitization process provides a key mechanism for the use of the unique European cultural heritage and supports cultural diversity, education, and the development of content industries. After the Lund Action Plan was defined, many countries have dedicated themselves to the process of creating a digital framework of their scientific and cultural heritage. In accordance with the guidelines articulated in this action plan and in order to answer demands of the modern age, numerous educational, scientific and cultural institutions are committing to the virtual world of knowledge.

¹Davidow, W. H. &Malone, M. S. (1992). *The Virtual Corporation – Structuring and Revitalizing the Corporation for the 21st Century*. New York, p.65.

²Coordination of digitization mechanisms. (April 2001). *European content in global networks, coordination mechanisms for digitization programmes*. Lund.

Serbia's efforts to digitize its cultural and scientific heritage

The process of digitization is neither ideologically nor practically completed in Serbia and it must not be left to the chance, to be more precise, to the enthusiasm of individuals, the financial advantages of individual institutions, the arbitrariness of local government, the attractiveness of individual projects. Serbian educational, scientific and cultural institutions, as the essential factors that should contribute to the implementation of the digitization project, should participate in it together and in timely manner. “A clear national strategy can stimulate greater participation at the global level”¹. (Bultmann, 2005) Digitization of Serbian cultural heritage is one of the main goals of our national system and for the purpose of its establishment and maintenance of its importance in the international context this process should be guided in meaningful and methodical manner.

The observation of previous experiences and real needs of users imposes a phased approach to the digitization work. First requirement is the introduction to the digitization guidelines formulated by *International Federation of Library Associations (IFLA)* and *International Council on Archives (ICA)*, which is a result of summarized conclusions of these two institutions submitted to the *United Nations Educational, Scientific and Cultural Organization*. These guidelines² concentrate primarily on digitization projects of the collections in the public domain, particularly those in libraries and archives, bearing in mind that there cannot be a general set of recommendations fully acceptable in every institution. It is also recommended to explore existing software, which can be used free of charge, as well as to consider the possibility of ordering software to the needs of archives and libraries, consortia pooling for project tasks in order to protect their interests, development of national policies and guidelines for digitization in which it should be precisely defined: its purpose, content, value, physical state of the material, intellectual property and copyright regulations, the necessary infrastructure, project cost and source of funding, as well as to provide professional development for the staff capable of responding to the new needs and to involve in international projects, both because of the financial impact that libraries and archives can have, but also because of the general public and the involvement of local digital collections in the global system.

In 2002, year that UNESCO declared the year of the protection of the world cultural heritage, several most prominent Serbian institutions got united around joint task to form much needed *National Centre for Digitization*, such as: Archeological Institute SANU, Archives of Serbia, the Yugoslav Film Archive, Faculty of Mathematics in Belgrade, Mathematical institute SANU, the National Library of Serbia, the National Museum in Belgrade and Republic Institute for Protection of Cultural Heritage, and were supported by the Library

¹Bultmann, B., (2005). A call for a national digitization strategy in the United Kingdom. Alexandria. 17, 2. p. 89-96.

² “Guidelines for Digitization Projects for collections and holdings in the public domain, particularly those held by libraries and archives”. IFLA, March 2002.

Museum, Matica Srpska and Archives of Yugoslavia (Archives of Serbia and Montenegro). This *Centre* is a “prototype model of cooperation between scientific and cultural institutions in the twenty-first century information society.” In accordance with the mission of the *National Centre for Digitization*, digitized and adequately embodied national heritage in the era of modern computer-oriented societies represents “a sort of proof of the existence and continuity of the nation in time and space, the possibility of collaborating with our national communities in the region and abroad, the opportunity for cooperation with developing countries in the field of computer sciences and their applications in the culture, and of everything that can, in overall economic terms, bring financial gain in different ways.”¹ Measures need to be taken in order to enable that an excellent initiative, such as the process of establishing the National Centre for Digitization and concern for the process of digitalization does not live separately from libraries, archives and other cultural, scientific and educational institutions. Even high-quality implementation of the digitization of cultural heritage can be a wasted investment if it does not provide the conditions for its sustainability and availability of results, not to mention the economic return effects of the commercialization regarding the use of digital media.

In years to come, during which Serbia should organize and thoughtfully construct the system of virtual information and communication services, for which shared cataloging is an essential prerequisite, trademark of each region will survive in regional, local funds of libraries and in archival materials, which will differentiate one from the others and facilitate the involvement in the national scientific research projects, in accordance with the *Universal Declaration on Cultural Diversity* (UNESCO 2001) and the *UN Convention for the Safeguarding of the Intangible Cultural Heritage* (2003), that Serbia, by fulfilling its international obligations in the EU accession process, ratified in 2010.

Digital Library of the Faculty of Philology as an example of successful digitization of cultural heritage

Digital Library is a powerful tool of comparisons and research that arose from the scientific, cultural, social and educational necessity to create the medium which can transcend economic, political and national boundaries. At the same time it represents an important initiative of directing collective efforts towards a common goal of developing e-learning. According to Arms² (Arms, 2000), the informal definition of a digital library is controlled, i.e. systematically organized collection of information, with associated services, where the information is stored in digital format and can be accessed over the network. From the standpoint of the usage of digital collections the fact of their

¹<http://www.ncd.matf.bg.ac.rs/?page=first&lang=en>, accessed on 10/04/2013.

²Arms, W. Y. (2000). *Digital libraries*, The MIT Press, Cambridge, Massachusetts, London, England.

maximum availability during all 24 hours a day all year round and worldwide is always accentuated. Bearing in mind that *European Digital Library* (*Europeana Digital Library*) and the *Memory of the World* are made of a set of digitized national library and archive collections, and willing to participate and contribute to the preservation of the cultural and scientific heritage from this part of the world, Faculty of Philology has created Digital Library.

Inheriting two hundred years of higher education tradition, visible and unique at the educational map of Serbia and Europe, considering the number of languages taught at its premises, its resources, personnel and interests, Faculty of Philology of the University of Belgrade opted to create a virtual library and put it into a function of distance learning. Therefore, we began the process of digitization of cultural heritage of our own editions first, which are the backbone of scientific thought in the fields of study of 34 languages, literatures and cultures, as well as in the fields of library, information and archival sciences. By recognizing these social sciences and humanities as the basis of culture of every country, we believe that the electronic library, which allows absolute searchability of articles, represents a significant contribution to the educational and scientific process. Until now we have managed to digitize and made absolutely searchable 127,000 pages of important editions: prominent periodicals, editions of PhD dissertations defended at the Faculty of Philology, proceedings from international scientific conferences, monographs, anthologies, collections, which are all fully cross-searchable, both by author, title, subject, chronological criterion, and by every word of the text, with equality of queries and responses in both of our letters, in Cyrillic as well as in Latin alphabet.

This is the only digital library in Serbia completely available to all factors and participants of culture, education and science, especially to all students. Faculty of Philology launched together with the Ivo Andric Foundation, SANU Archives, where Andric's manuscripts are being kept, and the National Library of Serbia, the preparation and publication of complete works of Ivo Andric, a critical edition, with appropriate textual apparatus which would not be possible without handwriting analysis. Therefore, within five months time we have digitized documents stored in 82 archival binders, containing 50 Andric's notebooks and correspondence precious for historical, political and literary reasoning, as well as numerous other Andric's texts unknown to the cultural community. In this way, we are creating the basis for textological research and provide safe-keeping, protection and quality searchability of handwritten materials. This is a unique digital library in the country and the region, and we are not aware of any digital library of that significance, scope and profile, dealing with one author to that extent. Digital Library of the Faculty of Philology is an integral part of a larger project, under the direction of the Mathematical Institute SANU, that aims at establishing a Serbian forum, through which the digitized material is absolutely and multiply available in other browsers (like Google). Through the Serbian forum, that includes 100 institutions, a unique opportunity to access the digital cultural heritage of Serbia is being offered.

While including all editions of the Faculty of Philology, which encloses two hundred years of tradition of various publications and periodicals, the faculty dedicated itself to the digital processing of the written legacy of Serbian Nobel prize winner Ivo Andric, after which we will approach the digitization of manuscripts of poets Ivan V. Lalic, Aleksandar Vuco and Desanka Maksimovic. These writers marked profoundly Serbian literature of the twentieth century. This is the first digital library in Serbia that will incorporate the entire written legacy of prominent writers, and we believe that it is also one of the few in the world. This process has opened a number of questions related to the digitization of book and manuscript material, or archival material in general, as well as the issues related to its further use.

Conclusions

Due to the excellence and speed of technological progress, on the one hand, and the focused efforts of the *United Nations Educational, Scientific and Cultural Organization*, on the other, the culture is emphasized in the first decade of the 21st century as an essential factor of globalization and a pledge of inter-ethnic dialogues. Specialized digitized collections are every country's heritage, historical retrospective, national identification in the global "alienated" world. In this century in which cultural and educational institutions are being recognized as information, communication and "transactional" services, a common concern for the preservation and presentation of cultural heritage establishes a strong link between the local and ethnic community, history, science and culture, contributes to the general cultural map of unique funds fostered by these institutions, as well as to the integrity of the common memory through globalization.

On the "open road" of shaping the world memory and facing with the challenges of education, universities contribute, as always, to spreading information literacy and general enlightenment, digital preservation, safe-keeping and use of documentary-historical, cultural and scientific heritage, refinement of the national and global memory, investment in the intellectual development and the advancement of democracy of knowledge. Digital Library of the Faculty of Philology, as an important educational resource for all researchers and students, will facilitate Distance Learning and will have a special significance for the development of master courses organized jointly with foreign universities. We believe that, with its creation, we have provided more efficient and effective conditions for Distance Learning, and that we have contributed, through digitization of written legacies of our greatest writers and thinkers, to the promotion of the Serbian scientific and cultural heritage.

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