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ARCHAEOLOGY AND LIFELONG LEARNING

ABSTRACT

We live in a world of technological innovations and it has never been easier to gain knowledge. New information technologies make it possible to always broaden our knowledge and enable us to use our advanced knowledge for an improved way of life. The concept of lifelong learning has a tendency to turn the modern society into an educated society – a society based on knowledge, actually a society that learns. All of the social sectors are included in these new tendencies of everyday learning and archaeology is no exception. Gaining knowledge from the field of archaeology by using new information technologies should especially be designed for children, students, the employed, senior citizens and scientist dealing with archaeological research.

KEYWORDS: ARCHAEOLOGY, LIFELONG LEARNING, EDUCATED SOCIETY, INFORMATION TECHNOLOGIES, LIFELONG EDUCATION.

INTRODUCTION¹

Once, education was limited to primary and secondary schools, then choosing a profession, studying and gaining a diploma and finally working as an expert of the knowledge gained so far. Not long ago, learning could have been defined according to the institution in which the knowledge was gained (a specific school, faculty, specific town etc.) and according to the length i.e. the

number of years spent in education. Today, such a concept is mostly outdated. Gaining knowledge, learning, is now defined as a process which continues throughout life. This is not a new idea, as it has been true since ancient times. Learning is a psychological process which normally appeals to all people of all ages and it does not stop after the completion of obligatory classical school education. On the contrary, after finishing classical education, it is necessary to continue learning in order to develop and upgrade the already existing knowledge.

The existence of personal computers and their wide use during the 1980's and 90's, the development of the web and its global usage during the 1990's changed the lives of people worldwide, therefore changing methods of learning.

¹ The article results from the project: *IRS - Viminacium, Roman city and military legion camp – research of the material and non material culture of inhabitants by using the modern technologies of remote detection, geophysics, GIS, digitalisation and 3D visualisation (no 47018)*, funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

The accessibility of knowledge became global. People worldwide have an opportunity to access huge resources of knowledge in a fast, easy and cheap way, 24 hours a day. Archaeology needed to adjust to these changes and make it possible for everyone who wished, regardless of their previous knowledge level and their age, to gain new, or to broaden their already existing, education in archaeology.

LIFELONG LEARNING – THE TERM

In modern times, when success is measured with applied knowledge, one speaks more and more about the concept of lifelong learning and lifelong education. After the Second World War, these terms were applied in English language (Sharma 2002). The most common definitions which apply to lifelong learning are included in the documents of the European Commission² (European Commission 2001), UNESCO report³ (Delors J. et al. 1996), Report of the Australian Department of Education⁴ (Watson 2003) and the National Agency for Education, Stockholm⁵ (Skolverket, 2000). Through the prism of these definitions it can be noticed that lifelong learning, in its widest sense, can be observed as a *concept of life* in which we

2 European Commission, “Making a European area of lifelong learning a reality”, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0678:FIN:EN:PDF>, 01.05.2015.

3 Jacques Delors, et al., “Learning: The treasure within Report to UNESCO of the International Commission on Education for the Twenty-first Century”, http://www.unesco.org/education/pdf/15_62.pdf, 02.05.2015.

4 Louse Watson, *Lifelong learning in Australia*, Department of Education, Science and Training, Canberra, 2003.

5 Skolverket, “Lifelong Learning and Lifewide Learning”, http://www.skolverket.se/om-skolverket/publikationer/visa-enskild-publikation?_xurl_=http%3A%2F%2Fwww5.skolverket.se%2Fwtpub%2Fws%2Fskolbok%2Fwpubext%2Ftrycksak%2FBlob%2Fpdf638.pdf%3Fk%3D638, 01.05.2015.

always implement accessible, continuous, diverse and flexible *learning regardless of time and place, broadening our knowledge and skills*. This has a double benefit, on one hand it broadens our knowledge and skills necessary for employment and on the other hand, a person achieves personal fulfilment (personal specialisation). Therefore, learning does not stop at the end of school. Much scientific research shows that the human brain is capable of lifelong learning. Through a process called neuro-plasticism (Sprenger 1999), our brain is capable of changes, the restructuring and reorganisation of neural nets with the assistance of new inputs and experiences aimed at better adjusting to a new situation (ZIKZ 2014)⁶.

The Japanese have a word describing lifelong improvement – “kaizen” (the word *kai* means change, while *zen* means good). This means that learning never ends (it takes place regardless of time and place), and it defines our development. As professionals, we continue learning only by broadening the process started at birth and continued through our schooling (Krasnic 2012). Lifelong learning is actually a continuous process which starts at birth and ends when we die.

According to Krasnic, lifelong learning has its necessities (Krasnic 2012):

- Keeping the brain stimulated during one’s lifetime
- Rejecting old ways which have proven to lack results
- Accepting responsibility for one’s success and changing what has proven useless in the sense of increasing success
- Remaining informed and engaged
- Becoming an independent thinker and taking on leadership roles
- Being inspired to produce new thoughts and ideas
- Transforming information into knowledge through learning
- Learning new skills for life

6 <http://www.zikz.hr/neuroplasti%C4%8Dnost-mozga-no6>, 01.05.2015.

Other theoreticians attempt to define what life-long learning includes⁷ (Sharma 2002):

- gathering, analyzing and organising information
- the exchange of ideas and information
- planning and organising knowledge resources
- understanding and designing knowledge systems
- solving problems
- using technology
- using mathematical models and technologies
- working with others

Lifelong learning involves continued learning and perfecting, its essence is reflected in upgrading formal methods of education, in the unification of all three ways of learning. Continued education possesses the most important role in educating adults, aimed directly at higher social productivity and faster and easier employment, although it is not only important from the employment point of view. Apart from the fact that we learn in order to work, in order to understand, in order to learn how to live together and in order to exist – life-long learning is aimed at the complete corporal, spiritual, intellectual, emotional and moral development of each individual.

Today, each individual is expected to speak foreign languages, know how to use a computer, possess team-working skills, communication skills etc. The majority of adults, possessing only the knowledge, skills and competencies gained during their schooling, would not be able to gain employment at all.

The life of modern young people is characterised by changes of work locations, job changes in order to achieve better financial conditions, changeable working times, a huge number of meetings and business trips and working in the field. Within our schooling system, there is almost no possibility for students, during their time of study, to attend their lectures and simultaneous-

7 Shaloo Sharma, *Modern Methods of Liflong Learning and Distance Education*, New Delhi 2002, 45.

ly perform other tasks, either after the lectures or during weekends, therefore forcing them to choose between two opposing things: studying or working. In the future, this dilemma, either to study or to work, should not exist. Young people should be given an opportunity to both work and learn at the same time.

Due to challenges imposed by a modern, dynamic society, lifelong learning shows a tendency to transform such a society into a knowledgeable society.

ARCHAEOLOGY AND LIFELONG LEARNING

Technology plays a key role in lifelong learning. Owing to the development of the internet over the past twenty years and the influence it has had on transferring knowledge and education to people, it can be said that it represents a key component of lifelong learning. The internet has completely transformed the field of learning in all fields, including archaeology. Search engines such as Google⁸ and Yahoo⁹, online encyclopaedias like Wikipedia¹⁰, content sharing sites like YouTube¹¹, the social networks of Facebook¹², Twitter¹³, LinkedIn, etc¹⁴ and a series of other technological achievements have had a huge influence on the methods of learning, communicating, co-operating and creating. The following table (Table 1) shows the most important knowledge sources.

Computer orientated education in the field of archaeology, with the help of multimedia, simulations, question bases, web sites, on-line courses, learning how to learn, educating educators, long-distance learning, learning at home, the re-

8 <https://www.google.rs>, 01.05.2015.

9 <https://www.yahoo.com>, 01.05.2015.

10 <https://www.wikipedia.org>, 01.05.2015.

11 <https://www.youtube.com>, 01.05.2015.

12 <https://www.facebook.com>, 01.05.2015.

13 <https://twitter.com>, 01.05.2015.

14 <https://www.linkedin.com>, 01.05.2015.

Information resources	
Books	e-books, traditional books, the Gutenberg1 project, Open Library2, Google books3
Traditional sources of information	radio, television, the press, magazines
People	teachers, professors, lecturers, experts in different fields, leaders in different fields, family, friends
Surrounding	environment
Accessibility of multimedia content	iTunes4, YouTube5, TED6, Learnoutloud7, Podcast directory8,
Social nets	Facebook9, Twitter10, LinkedIn11, MySpace12, Instagram13, Pinterest14, Google+15, Tumblr16...
Blogs	A huge number of different authors and themes, indexed blog content, comments and discussion groups
Mobile devices	lap-tops, tablets, mobile phones, smart watches
Schooling and courses	Primary, secondary and high education, traditional and online courses and certification
Search engines	Google, Yahoo, MSN, Lycos, Bing, Krstarica
Online encyclopedias	Wikipedia, Digitaluniverse17, Britannica18and others...
Open source initiatives	Open education consortium19, programs Xseries (EdX20, MitX21), Khanacademy22, Academicearth23, OpenYale24
Other sources of information	Internet forums, e-mail, mailing lists, RSS feeds, bulletin boards, newsgroups

Table 1: Knowledge sources

removal of barriers of physical distance and time-zones and the connection of education and work in the workplace, opens completely new dimensions of the understanding of lifelong learning and lifelong education. Gaining new knowledge in the field of archaeology must be studied separately with regard to children, students, working people, senior citizens and scientists - archaeologists.

Children and gaining knowledge in the field of archaeology

When it comes to educating the youngest, in “*Viminaciumu*” there is the “*Children’s scientific camp*”, aimed at children between the ages of 8 and 14 years, which has taken place every summer since 2013. A team of experts includes

a psychologist in charge of a variety of games, a biologist who introduces the micro-world to the children, a physicist to introduce them to the macro-world and an archaeologist who reveals the secrets of archaeology. This team, co-operating with the “Centre for the promotion of Science”, educates the children and teaches them how to become scientists.¹⁵

Students and gaining knowledge in the field of archaeology

We live in a world in which mobile communication devices have become dominant in the field of information exchange, while educational insti-

¹⁵ <http://viminacium.org.rs/arheoloski-park/programi-za-decu>, 01.05.2015.

tutions (schools and faculties) have slowly started to position themselves on mobile device platforms (tablets, smart phones). Gaining knowledge and learning with the help of mobile devices has become really simple. With the use of tablets or smart phones, teaching material is almost instantly accessible via the internet. This means that accessing educational material and other multimedia content necessary for learning is independent from the location of pupils and students.

This saves time and enables access to the necessary information at the same time.¹⁶ In our country, applications like *ITAcademy*¹⁷ contribute to this new way of learning and transfer of knowledge with the help of mobile communication devices. Consequently, an awareness has grown regarding the idea that, in the near future, schooling could be attended and even completed with the use of mobile communication devices.

Despite this, it is of importance to note that the transfer of knowledge in the form of the live words of a professor can not be excluded or completely replaced by anything. This remains an irreplaceable tool in a complex process of building and transferring knowledge since, only through direct interaction and discussion is it possible to critically gain knowledge, and which represents a bilateral process which includes both the professor and the student.

Working people and gaining knowledge in the field of archaeology

An example of the importance of continuous education for the employed is best illustrated with the fact that the state actively encourages the employed to engage in it. A good example can be found in the fields of public health and pharmacy, in which, though *Pravilnik o kontinuiranoj edukaciji zdravstvenih radnika (The rule book about the continued education of health workers)*, defines the renewing of their licences according to the number of collected points, either as lecturers

¹⁶http://www.b92.net/obrazovanje/vesti.php?yyyy=2014&nav_id=919756, 01.05.2015.

¹⁷ <http://www.it-akademija.com/ITApp>, 01.05.2015.

or attendees. The idea is to demand continuous practical work and the improvement of the knowledge of the employed. It is extremely important, since certain therapeutic indications change or modify over time and some new, unwanted therapeutic effects may also appear in practice. A similar situation exists in archaeology – one should continuously follow which new methods are applied and in which way, while employed archaeologists need to be trained in these areas, in order to secure ongoing continuity in the education of archaeologists and to raise the quality of their work.

Concerning the protection of computer systems on archaeological sites, gaining knowledge regarding new malicious attack types is very important, in order to apply the appropriate initial responses to forensically relevant events (Korać 2013). In such a way, the acquired knowledge can offer additional help in the detection of cybercriminals. This can help to prevent potential damage and can offer useful information for preventive protection from future attacks on the information systems of archaeological sites of extreme importance (Korać 2014). Also, by learning from practical examples, and based on data collected by digital forensics, one can analyse the advantages and disadvantages of the applied protection and check the vulnerability of the adjusted configuration (Davidovac and Korać 2011).

Senior citizens and gaining knowledge in the field of archaeology

At the end of a professional career, life with its specificities goes on, while the search for new knowledge is made easier with information – communicational technologies which broaden the accessibility to new educational possibilities. A person's desire to broaden their knowledge is voluntary and directly proportional to their previous educational level. When it comes to lifelong learning, the focus of retired people cannot easily be systematised, but some of the most important fields are: archaeology, creative writing, history, astronomy, sport and its development, the history of art, philosophy, politics, film, psychology, first

aid and health and safety at work.

When it comes to the education of senior citizens, one of the examples of good practice is the archaeological site “*Viminacium*”, which, with its science and research centre, is designed to offer and transfer multidisciplinary knowledge. People from both Serbia and abroad visit with the wish to become acquainted with the archaeology of this area and with modern research methods. Very often, Danube River cruises land in Kostolac, with visitors aged between 65 and 75, wishing to gain new knowledge. (Anđelković Grašar and Tapavički-Ilić 2013: 192, chart 3). In 2008, for the first time, in the science and research centre, the program “*Science for all*” (Ita. “*Scienza per tutti*”) was organised, in co-operation with the Universities of Ancona and Bologna.

Scientists and gaining knowledge in the field of archaeology

Archaeologists performing research need to use new informational technologies more and more. Software platforms for performing active on-line presentations or seminars (*Yugma*¹⁸, *WebEx*¹⁹, *Skype*²⁰, *Adobe Connect*²¹ and others) have introduced many changes in the way in which scientific achievements are exchanged and transferred.²² Technology has contributed to the fact that lectures, or the so-called web-conferences such as webinars²³, taking place in scientific-research centres, can be followed live or even actively participated in. Thus, technology has made a double benefit possible. First of all, professors from different countries (thousands of kilometres apart) can hold their seminars and engage in ac-

tive discussions regarding scientific achievements without physical access which, additionally, affords large financial savings. In modern times, the presentation of archaeological results would be unimaginable without the use of the internet and web presentations. Introducing results of archaeological research to a domestic and foreign public represents an important part in the acquisition of new knowledge in this field. Expert publications, scientific and educational institutions and scientific conferences in the field of archaeology are all accessible to scientists from all over the world on a daily bases, allowing them to advance and broaden their knowledge.

CONCLUSION

Since we live in a world of technological innovations, learning has never been more accessible. Success comes to those who either fully accept and participate in lifelong learning or apply concepts of integration of knowledge and critical thinking in their lives. This is achieved through adjusting the way of thinking so that it becomes part of one's lifestyle. Archaeological knowledge represents an important segment of knowledge, helping people of all ages to become more complete, satisfied and happier individuals.

The famous Churchill sentence “*The empires of the future are the empires of the mind*” is dedicated to the ownership of ideas, whereby knowledge represents power. We can learn to be more educated. Many centuries ago, famous philosophers, such as Socrates and Confucius, considered the question of educational methods and their ideas continue to develop, given the ever growing role of informational technologies in education and learning and their accessibility. Lifelong learning is therefore of the utmost importance for career progression and professional and even personal improvement. By applying informational technologies, the possibilities for learning and applying knowledge have become limitlessly accessible.

18 <https://www.yugma.com>, 01.05.2015.

19 <http://www.webex.com>, 01.05.2015.

20 <http://www.skype.com/en>, 01.05.2015.

21 <http://www.adobe.com/products/adobeconnect.html>, 01.05.2015.

22 Spisak programskih platformi i njihova međusobna poređenja prikazana su tabelarno na sledećoj Internet adresi http://en.wikipedia.org/wiki/Comparison_of_web_conferencing_software, 02.05.2015.

23 <http://www.webinar.co.rs>, 01.05.2015.

This means that learning possibilities are accessible regardless of location, influencing all aspects of our lives – emotional, social, mental, physical and spiritual. Broadening and continuously gaining new knowledge in the field of archaeology is equally important at all ages and it is, therefore, necessary to offer adequate educational content to children, students, the employed, senior citizens and all those engaged in archaeological research.

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REZIME ARHEOLOGIJA I DOŽIVOTNO UČENJE

KLJUČNE REČI: ARHEOLOGIJA, DOŽIVOTNO UČENJE, DRUŠTVO ZNANJA, INFORMACIONE TEHNOLOGIJE, DOŽIVOTNO OBRAZOVANJE.

Živimo u svetu tehnoloških inovacija, a sticanje znanja nikada nije bilo dostupnije. Nove informacione tehnologije nam omogućavaju da stalno unapređujemo naša znanja i omogućava-

ju nam da to unapređivanje znanja postane način našeg života. Koncept doživotnog obrazovanje ima tendenciju da savremeno društvo pretvori u društvo znanja – društvo zasnovano na znanju, odnosno, društvo koje uči. Sve društvene oblasti zahvaćene su novim tendencijama svakodnevnog proširivanja znanja, pa tako ni arheologija nije izuzetak. Sticanje znanja iz oblasti arheologije uz pomoć novih informacionih tehnologija trebalo bi da bude posebno prilagođeno deci, studentima, zaposlenima, osobama u starijoj životnoj dobi i naučnicima koji se bave arheološkim istraživanjima.

23 <http://academicearth.org>, 01.05.2015.

24 <http://oyc.yale.edu>, 01.05.2015.

(Footnotes)

1 <https://www.gutenberg.org>, 01.05.2015.

2 <https://openlibrary.org>, 01.05.2015.

3 <http://books.google.com>, 01.05.2015.

4 <https://www.apple.com/itunes/podcasts>, 01.05.2015.

5 <https://www.youtube.com>, 01.05.2015.

6 <https://www.ted.com>, 01.05.2015.

7 <http://www.learnoutloud.com>, 01.05.2015.

8 <http://www.podcastdirectory.com>, 01.05.2015.

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22 <https://www.khanacademy.org>, 01.05.2015.