Learning in the e-environment: new media and learning for the future

Faculty of Teacher Education, University of Zagreb, Croatia

Milan Matijević, milan.matijevic@ufzg.hr

Milan Matijević, milan.matijevic@ufzg.hr
Faculty of Teacher Education, University of Zagreb, Croatia

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Abstract

We live in times of rapid change in all areas of science, technology, communication and social life. Every day we are asked to what extent school prepares us for these changes and for life in a new, multimedia environment. Children and adolescents spend less time at school or in other settings of learning than they do outdoors or within other social communities (family, clubs, societies, religious institutions and the like). Experts must constantly inquire about what exactly influences learning and development in our rich media environment. The list of the most important life competences has significantly changed and expanded since the last century. Educational experts are attempting to predict changes in the content and methodology of learning at the beginning of the 21st century. Answers are sought to key questions such as: what should one learn; how should one learn; where should one learn; why should one learn; and how do these answers relate to the new learning environment? In his examination of the way children and young people learn and grow up, the author places special attention on the relationship between personal and non-personal communication (e.g. the internet, mobile phones and different types of e-learning). He deals with today's questions by looking back to some of the more prominent authors and studies of the past fifty years that tackled identical or similar questions (Alvin Toffler, Ivan Illich, George Orwell, and the members of the Club of Rome). The conclusion reached is that in today's world of rapid and continuous change, it is much more crucial than in the last century, both, to be able to learn, and to adapt to learning with the help of new media.

KEYWORDS: e-learning, learning environment, multimedia, multimedia teaching, multimedia education, blended learning, hybrid learning.

Introduction

Today's secondary school graduates and students can hardly imagine life without satellite TV, the internet and mobile phones. In the period when they were growing up and going to school, there was always something in their

life or home known as the PC, the internet, television, SAT TV, mobile phones, video games, etc.

A significant part of young people's and adults' lifes has been spent frequently travelling within the country or abroad. In travelling, an abundance of information can be acquired about the ways of life, culture, production, economy, natural resources and attractions of particular countries.

By the time children in Croatia complete their eight years of compulsory education, they will have spent 7,000 hours in school, which makes up 5% of their life from birth to when they turn 15.

From birth to secondary school graduation, young people spend only 7% of their lives participating in various school activities. If we take into account only the years in their lives when they attend school, children and young people will have spent around one tenth of their life in school. By the time a person turns 19, he or she has lived for around 166,000 hours. If we consider that some of these 19-year-olds have slept for one third of the time (around 55,000 hours), and spent only 12,000 hours participating in school activities, we can ask ourselves what activities they might have been engaging in during the rest of their time. Where did they stay? Where did they travel? What activities did they do? With whom did they spend their time, etc?

As professionals, we could, and should, ask: Who or what affected the education of young people who completed secondary school and came of age? Where have they learned the information and where and how have they acquired the competences they possess at this stage of their life? Who or what has the most effect on the education and learning of children and young people today?

Many authors (for example, Alexander and Potter 2005; Liessmann 2006; Gatto 2010; Matijević 2011a and 2011b) warn us that today's school does not meet young people's development needs and that school does not prepare them for future life and work.

Young people and adults are witnesses to numerous and rapid daily changes in all areas of human life (the economy, communication, technology, science, politics, culture...; Meadows et al. 1972; Meadows, Randers and Meadows 2004; Talwar and Hancock 2010). Some cope well with these changes and successfully adjust to them, but a great majority have difficulties in adapting. Clearly, the previous schooling they received (12,000 lessons) was not focused on preparing them for the quantity and speed of change in the course of their lives (Thompson 1980; Alexander and Potter 2005; Education for change 2012). Education for change has long been emphasised as an important task of the school, but there are few teachers who are able to explain what and how things should be done in school to achieve this educational goal.

In spite of new didactic theories and results of research in learning and teaching psychology, schools are still dominated by methodological scenarios more suited

to the previous than to the current century and to the new media environment in which today's children are living and growing up.

School and education theories explain in detail the place of formal and informal learning in an individual's life. Today, non-formal and informal learning are fiercely competing with formal school learning.

These facts and dilemmas are raised and discussed in more detail below.

Living and learning in the new e-environment

Part of the essential equipment in most households today are TVs, where possible connected to a satellite network, and PCs, connected to the internet, of course. Besides these, there is a higher number of registered mobile phones in Croatia than the number of citizens. This means that many people in Croatia use more than one mobile phone. And mobile phones are no longer just a means of communication. Mobile phones can significantly enhance communication in the classroom, making learning in all fields more effective, interesting and attractive... (Prensky 2004).
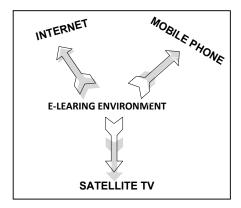

Figure 1: New e-learning environment

Are the owners of these homes and media aware of the educational opportunities these media offer, and of their effect on all those who live in these homes? In some earlier research dealing with the free time of employed adults in Croatia, we were told stories about how employed persons do not have enough free time since, in addition to their regular job, they also have to do housework (cooking, washing, cleaning), or work at the second job (in the grey economy) to improve their standard of living. However, when asked how much TV they watch each day, we got answers that their TV watching time ranges from 2 to 4 hours a day

(of course, including non-working days, of which there are 130 a year on average for employed adults: Saturdays and Sundays, public holidays, annual leave ...).

The well-known Croatian psychologist Ivan Furlan also wrote a chapter in a study entitled "The Car and its Man" ("*Automobil i njegov* čovjek") (Furlan 1974), hinting at the relationship between man and car. Of course, the time when this was written (nearly 40 years ago) must be taken into account. Today, there are even more reasons for such a thesis (see title), so we could also discuss the topic of "The TV and its Man", "The Internet and its Man". It would be easier for many adults to endure life without a car than without the TV, internet or mobile phone.

Are people (and elementary and secondary school students) aware of how much and what kind of influence these media have on their lives and what can be learned by watching TV shows (of all genres and types)?

If we assume that children start watching TV or begin looking at a PC screen when they are three (for 365 days a year), it is easy to calculate that a boy or girl, by the time they have to take their final exam at the end of secondary school, will have spent between 12,000 and 13,000 hours in viewing different contents on these screens in the fifteen or sixteen years of their life! We have already said that they have spent 11,000 to 12,000 hours attending lessons. School experts have to ask themselves to what extent viewing these screens has affected people›s views and beliefs, or how much interesting information have they learned. Of course, this is the case of informal (natural) learning which plays a significant role in a person›s life, and which, in this day and age, competes strongly with school (formal) learning.
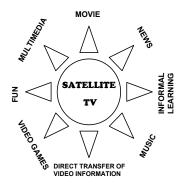

Figure 2: Satellite TV in the new e-learning environment

If school (or school experts) know that most students come to lessons from this environment, which is suitable for new ways of learning, why do schools still offer scenarios that were didactically developed at a time when none of

this existed? (For example, the first TV programme was broadcast in Croatia almost 60 years ago!) Most of today's teachers grew up and went to school at a time when there were no computers, internet or mobile phones. All they know about these media, including how to use them, they learned only after completing their formal education. Perhaps this fact explains why it is taking so long, and why it is so difficult, to change the methodological scenarios in schools today. Current video equipment for receiving programmes through a satellite dish and connection enables the users of this impersonal medium to engage in various other aspects of information transmission and interactive communication (for instance, video games, listening to music, and learning by using different programmes and videos on CDs or DVDs).

What twenty years ago we called a PC, laptop, SAT TV or mobile phone is naturally far from what we think of today when using these terms. These days young people find it difficult to understand that we used to have mobile phones that could only be used to make and receive phone calls, or that we could receive only a few good-quality TV signals with our satellite dish, or that we rejoiced if instead of a PC 286 we were able to purchase a PC 386. Therefore, we have witnessed speedy and extensive changes in the area of media IT. Every year the market offers new possibilities in terms of these media and the e-environment, and this requires users to continuously learn, increasing and enhancing their opportunities for daily lifelong (informal and non-formal) learning to meet their personal interests, to do their work more successfully, and to improve their quality of life.
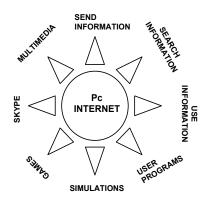

Figure 3: The PC in the new e-learning environment

These media and the e-environment for living and learning described above require experts in education to introduce a number of changes when creating school curricula that will be more suitable to new generations of children and young people. March (2006) takes the ubiquitous e-communication abbreviation (www) and points out that the new e-environment allows for the learning of all

kinds of contents (Whatever), at any time of day (Whenever), and in any place (Wherever), thus not only at school or in class. This author emphasises that learning and teaching happen not only in the classroom, where teachers and students stand face to face, but that learning can also take place in any place where people stay, dwell, live and work. Therefore, much more flexible forms of learning are required than the traditional lesson and the traditional class-subject-lesson system that J. A. Komensky established three and a half centuries ago.

Living and learning in the new e-environment

It is impossible not to learn. An individual learns even when he or she is apparently doing nothing. We always acquire some experiences, which will help us react in an appropriate manner in different situations, or explain some connections between the phenomena around us and understand some relationships.

If two or more people look at the same event and then go to different parts of the world, each of them will explain what they saw in a different way. Hence the case of the same event and different descriptions of it. This happens every day at school and in life. But today young people and adults are exposed to, and are being influenced by, different media, with different durations and intensity. Great help in explaining this phenomenon is afforded by the constructivist theory, which gives an appropriate explanation of the learning process (Reich 2006). At the heart of this theory, learning is explained as an understanding that knowledge is neither unambiguous nor strictly defined. Knowledge (an understanding resulting from the activity of a particular individual) is the result of the personal construction of a particular person, who is conditioned by prior experiences, understandings and the social context (environment) in which this person has existed (lived, worked, learned...). Different individuals will construct different understandings under the influence of the same media (the same media environment), and all this will cause them to react in different ways. Individuals exposed to the influence of information presented by different media (in a particular e-environment) will construct different personal understandings about the world that surrounds them.

We can assume how many different constructions of knowledge can appear under a particular effect of the media. Of course, there will be as many different constructions of knowledge as there are individuals who have been exposed to the effect of these media, and this will depend on their educational level, prior knowledge, views, mindsets, the social environment in which they spend most of their life, etc.

Today's students experience frequent misunderstandings with their teachers because school offers scenarios that are often less attractive than those they can follow and with which they can actively interact on the internet, or those interactive programmes related to television and the use of mobile phones that make their everyday life more interesting (listening to music, searching for and

transmitting information, taking photos or making video clips and recording audio information, etc.). More acceptable to these generations of students are methodological scenarios which require students to participate in authentic or simulated situations, in which they investigate, build and resolve problems, and not just watch what and how their teachers do so.

Experts refer to these students of elementary compulsory school as Generation Z, or the Net Generation. These are children born into a completely computerised environment. We monitor their development and learning process in an attempt to find answers to the following questions: How do we raise and teach these children in the present day? How do we prepare them for life and work in the coming decades? In many aspects, especially with regard to some competences, they are already ahead of school, since they have surpassed the contents and scenarios of events offered by the school. This gives rise to frequent misunderstandings between the members of this generation on the one hand, and teachers and other educational experts on the other. The new generation often finds school boring and uninteresting, which leads to their inappropriate reactions. They request and expect methodological scenarios which will enable them to be active and creative in researching and resolving problems, communicating, working and playing. Sitting, watching and listening are not activities that can satisfy the development needs of the Net Generation.

Many misunderstandings between the members of this generation and their teachers are caused by the inappropriate use of PowerPoint presentations. These presentations are frequently prepared in a manner that does not follow multi-media logic, and at the same time such use of this contemporary medium leaves students in the passive position of sitting, listening and watching. This does not satisfy the expectations they have from school.

The Net Generation needs and wants to learn every day (365 days a year, and not only during the 175 school days in a school year). Their time in school must be used to prepare them for lifelong learning with the aid of the new media "Whatever, Whenever, Wherever" (March 2006). In addition to private venues (apartments, houses, workshops...), libraries, open universities, cultural centres, centres for organised free time, technical and IT clubs, and schools that are open for students during the entire year, there must also be places where the members of the Net Generation learn with the help of the new media, and thus satisfy their development needs.

What is multimedia and multimediality?

Multimedia is a product (often on CD or DVD, or on a PC hard disk), and multimediality is a communication phenomenon, a process or an event. In order for a medium of communication to be able to become a part of "multimedia", it must be designed and constructed in compliance with certain communicological and didactical rules (if it is designed for the purpose of learning or teaching).

Multimedia products are often manufactured for purposes such as tourism, information, entertainment, etc. Such multimedia products do not have to comply with the educational rules of clarity and a gradual and systematic approach.

We often find two or more media interacting in the classroom, rather than a single medium (teacher and TV, teacher and book, teacher, image and music). When two or more media have a well-thought-out, complementary and enhancing mutual communication effect, we can speak of multimediality. This does not imply any old combination of two or more media, but a combination that is well-designed in didactical and media terms, where the advantages and specific features of each individual medium are used (for example, the possibility of showing natural phenomena in slow or fast motion: lightning, the flowering of a plant, a volcano eruption, a tsunami, etc.).

When we frequently rely on showing the learning contents through multimedia in the classroom, we can talk about multimedia teaching. When the teacher in his or her everyday work relies on PowerPoint presentations or various textual handouts, we can talk about multimediality. Thanks to mass communication media, many educational projects today take place following the distance learning educational model. When this type of education is implemented with the assistance of several different media, we can talk about multimedia distance learning.
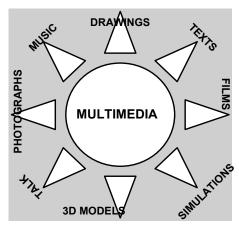

Figure 4: Multimedia and multimediality in the e-learning environment

In more current texts where experts in informatology write about multimedia and multimediality, and about multimedia communication in the classroom and in education, terms such as e-learning, blended learning and hybrid learning are used. These terms are frequently used as synonyms for the terms multimedia lessons, multimedia education or multimedia teaching, which have long been in use in didactics and learning psychology.

Due to the rapid changes in communication media, it is difficult to avoid various mistakes given the ardent desire to include these media in classroom practice, which are therefore introduced indiscriminately. Thus, some insist on applying these media in subject-based classes based on the 45-minute lesson, and all these media exceed by far this rigid system that was introduced at a time when the only props teachers could use were the textbook and the natural environment around the school or homes where the pupils lived.

Currently, we encounter situations where PowerPoint presentations are used more as a visual rendering of teacher talk (teachers reading the text from the slides!), and not to enhance the teacher's talk in order to make the teaching process more attractive and interesting (through pictures, video clips, drawings or a combination of these). Technical equipment is sometimes used as a means in itself (technicism), rather than for the purpose that lies at the heart of the teaching and learning process, and in the sense of the nature of multimediality as such.

Conclusion

Futurologists (for instance, Toffler 1970; Illich 1971; Botkin, Elmadjra and Malitza 1998) have for years been pointing at the need for more courageous and faster changes in the school system and lifelong learning, but even today schools are dominated by a system established over three hundred years ago. The understanding that new generations are increasingly acquiring important life competences through informal learning in the new e-environment will probably force educationalists to introduce more radical changes to the school curriculum, particularly in terms of didactic strategies and methods.

Teacher training programmes will have to find room to include such important goals as the study of criteria for the selection of media and didactic strategies for learning at and outside school in terms of time and space. Where students are concerned, in addition to digital competences, it is essential for them to acquire techniques of learning with the aid of new media. Over thirty years ago, *knowing how to learn* meant knowing how to learn from books and other textual media. Today, *knowing how to learn* means knowing how to learn with the aid of all, and especially of new digital, media. Training in this important competence must begin in the first days of compulsory schooling, and it will last a lifetime.

Besides the question of how to use new media for teaching and learning, an extremely complex and difficult question for pedagogical experts today is also *what* to learn. Many pieces of knowledge become obsolete even during the length of a school or university course, and today there are already professions that just a few years ago we were not aware would emerge. Futurologists (for example, Talwar and Hancock 2010) are currently systematically dealing with the challenge of foreseeing the emergence of new occupations, which primarily depend on the development of new communication media.

In order to learn in the new e-environment, the roles and internal organisation of all institutions that may facilitate lifelong learning need to be adapted: libraries, all mass media, cultural and community centres, etc.

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Sažetak

Učenje u e-okruženju: novi mediji i učenje za budućnost

Živimo u vremenima brze promjene u svim područjima znanosti, tehnologije, komunikacije i društvenog života. Svakim se danom pitamo do koje nas mjere škole pripremaju za te promjene i za život u novom multimedijalnom okruženju. Djeca i adolescenti provode manje vremena u školi nego s prijateljima ili unutar ostalih društvenih zajednica (obitelj, klubovi, društva, religijske institucije i tome slično). Stručnjaci moraju neprestano proučavati što točno utječe na učenje i razvoj u našem bogatom medijskom okruženju. Popis najvažnijih životnih kompetencija značajno se promijenio i proširio od prošlog stoljeća. Stručnjaci u području obrazovanja pokušavaju predvidjeti promjene u sadržaju i metodologiji učenja početkom 21. stoljeća. Traže se odgovori na ključna pitanja kao što su: što bi trebalo učiti; kako bi trebalo učiti; gdje bi trebalo učiti; zašto bi trebalo učiti; i kako su ti odgovori povezani s učenjem u novom okruženju? U ispitivanju načina na koje djeca i mladi ljudi uče i odrastaju, autor daje poseban naglasak na odnos između personalne i apersonalne komunikacije (npr. internet, mobilni uređaji i različite vrste e-učenja). Autor se bavi današnjim pitanjima osvrćući se na prominentnije autore i studije koji su se bavili identičnim ili sličnim pitanjima posljednjih pedeset godina (Alvin Toffler, Ivan Illich, George Orwell i pripadnici Kluba Roma). Zaključeno je da je u današnjem svijetu brzih i neprestanih promjena, znatno više nego u posljednjem stoljeću, presudno imati mogućnost učenja i prilagoditi se učenju pomoću novih medija.

KLJUČNE RIJEČI: e-učenje, okruženje za učenje, multimedija, multimedijalno učenje, multimedijalno obrazovanje, miješano učenje, hibridno učenje.