Miskolczi Ildikó
miskolczi.ildiko@gmail.com

EDUCATION IN THE XXITH CENTURY: TEACH OR HELP TO LEARN?

THE ASSIMILATION OF THE PRESENCE EDUCATION AND MODERN DISTANCE LEARNING, WITH SPECIAL REFERENCE TO THE ELECTRONIC DISTANCE LEARNING

Absztrakt/ Abstract

A cikk bemutatja a köznyelvben hagyományosnak nevezett jelenléti oktatás, és a XXI. század technikai, illetve világháló adta lehetőségeit kihasználó legmodernebb oktatási forma, az elektronikus tanulás közti különbségeket. Az alapfogalmak meghatározása után az előadó beszél a modern IKT eszközök alkalmazásáról napjaink oktatásában. Kitér a jelenléti oktatás során történő alkalmazási lehetőségekre (blended learning) csakúgy, mint a távoktatásban történő felhasználás igényére. Bemutatja az elektronikus oktatás jelentőségét korunk digitális világában. Megfogalmazza az oktatásmódszertan változásának, változtatásának igényét az IKT eszközök adta lehetőségek tükrében.
Az internet, a digitális technológiák használata, a hálózatos tanulás lehetősége az oktatásban tegnap lehetőség volt, ma szükségszerű, holnap kötelező lesz. Az oktatásban Gutenberg kora lejárt. Az oktató szerepe átalakul(t). Nem a tudás átadása, hanem a tudás megszerzésének lehetővé tétele, segítése (lesz) a feladata.

The paper presents the differences between the traditional education and the modern forms of eLearning, which use the most modern forms of education for example World Wide Web. After defining the basic concepts, the artist talks about the application of modern ICT tools in education today. Refers about using these tools in the presence education, the employment opportunities during the training (blended learning) the possibilities of use in distance learning. It illustrates the importance of today's digital world in electronic education. It refers about the methodology of education. The Internet, digital technologies and online learning opportunity in education was possible yesterday today necessary and tomorrow will be mandatory. Gutenberg in education is over. The instructor's role is transformed. Task of teacher is not to transfer the knowledge, but to help the students to learn, to earn the knowledge.

Kulcsszavak/Keywords: *távoktatás, távtanulás, elektronikus tanulás, IKT eszközök, felhő-technológia, felhőtanulás, felhőpedagógia ~ distance education, distance learning, eLearning, ICT tools, cloud technology, cloud learning*

INTRODUCTION

The methodology of education in the 21st century goes through a significant transformation when the tools of modern ICT appear into the education independently we are talking about presence or distance education. Currently grown up the „digital generation" or as Tapscott [1] says „n-generation" (net generation). The net generation grew up with internet. The most prominent feature of this generation is to learn with incredible efficiency and speed. For management of relations and getting informations they use hyperspace unwavering certainty. Regardless of what ICT tools available for information and/or (knowledge) acquisition, a fraction of a moment they share the connections through the virtual space, while reinterpreting their own thoughts and emotions of adding. This is born of knowledge, and such way we create the meaning. This generation expects the usage of these applications from the trainer, because usages of these applications are natural to them.

However, the needs of the lifelong learning (LLL), in the 21st century is basic both for economy and society too. To become a good technician and potential worker is not enough to learn a job when we are young. All life we have to learn that can be professionally recognized. The economic and financial crises in the world, the changes in societies are demand not to know only one thing, but we are able to stand other areas of life. This is the concept of the whole life learning, covering the all territory of life (life wide learning, LWL). The interpretation of Bertalan Komenczi the LLL is at the same time, and the contents of the LWL (width) are determined by the content of the thinking (life-wide learning) in the 21st century. [2] We can see the contents of throughout the life-wide learning (LLL and LWL) context on the Figure 1.
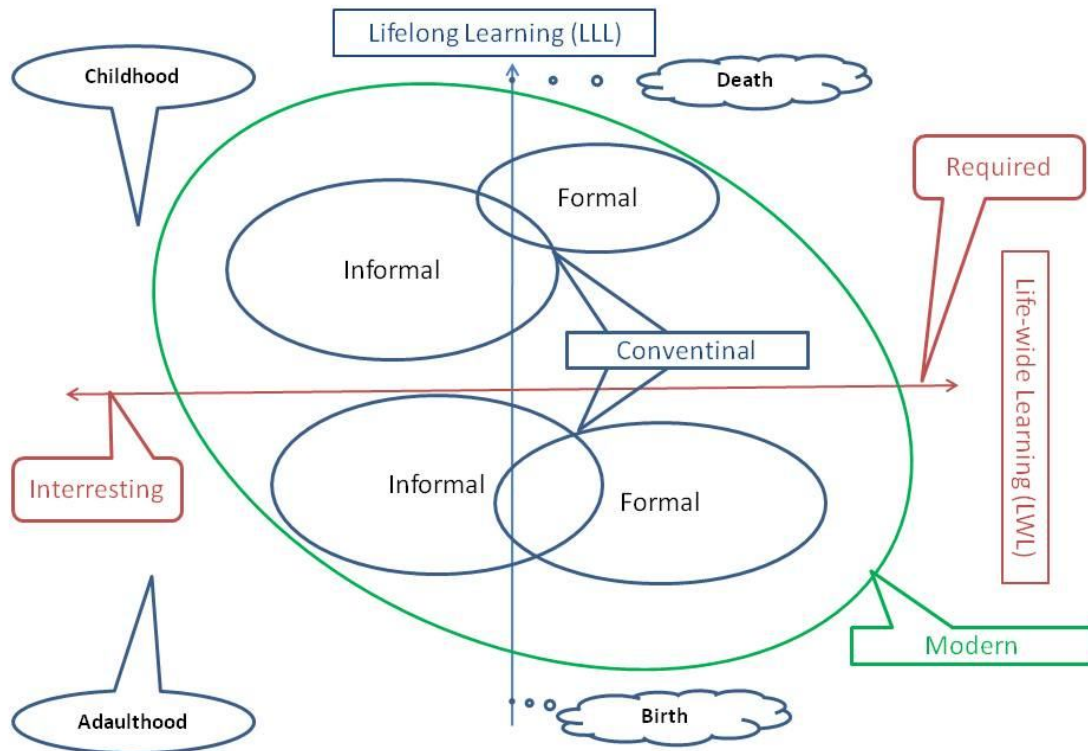
Figure 1. The whole life-wide learning model
(By: Ildikó Miskolczi)

306

In the 21st century there is more and more knowledge. This is increasingly more difficult to make the process of reception and processing for the users. However, the knowledge becomes the very quickly obsolete, so the renewal time of the knowledge is less and less. We want to know more and more in less time. In a specific field of knowledge „up-to-date", complex way, however, many-to-know knowledge applied, which means the significantly increased the length of time in learning.

THE CHANGE OF FACTORS OF LEARNING

Technical development

However strange it may seem, but if we research on the development and the appearance of distance learning, we have to search for its roots in the correspondence course. To do this, we must put the clock back. According to some researchers, the founder of the correspondent education was St. Paul, [3] who has made his clerks write his doctrines and made his messengers spread his teachings. The papyrus was massive product so it could take the long-distance transport well. St. Paul has also used a certain degree of "interactive" items in his written messages to ensure that his words get into the thought of the followers. He put rhetorical questions in his texts (and even he replied to them). So he has broken the monotonous tune of the written text. These questions-answers had claimed to continue the thinking of the raised thoughts.

With a big jump forward, most of the researchers profess that the first true e-mail type of education is related to Isaac Pitman. Pitman was the person, who taught shorthand in 1840 in Great Britain this way. He was in communication with his students through postcards and he sent the exercises them through postcards too. Thus, the claim to communicate with the pupils has already appeared in the early monuments. In 1856, the first correspondent school has been founded in Berlin, where Toussaint taught languages in the form of correspondence. At the end of the 19th century - with the exception of Africa - maybe in almost each continents correspondence school appeared. The schools were excellent which worked in Australia, America (since 1891) and England (1856), and France (since 1877). At the beginning of the 20th century, in 1905, was the first correspondence school established in Baltimore, and in 1914 in Australia, and in 1919 in Canada were also founded this kind of schools. [4]

György Seres and his colleagues have presented in their article [5], how the electronics, the appearance and application of information and communication tools became the instrument of the education from the subject of it. „*In the 1920s and 1930s, popular public radio and public television broadcasts have started, and they have made the electronics the major and new parts of the education. The school-radios (1940s) and school-televisions (1950-60s) have already made the electronic the part of tools in the community education. In the 1970s the magnetic recording and in the 1980s video recorders and personal computers have been produced, and because of these the new device has already been in school education initiated. The great breakthrough was brought in the 1990s by the widespread use of the Internet, and in the first decade of the new millennium, by the spreading of the broadband data transmission, the quick Internet access. With the help of the digital data-, audio- and video record, as well as the transmission of data by using a broadband data transmission, via the Internet, any kind of syllabuses may be made available for **anybody**, **anywhere**, and may at **any time** within a **realistic time**. This is the point where the electronics has been become from the subject and tool of the education to the scene of the learning.*
Increasingly complex user programs to run, the increasingly larger data files to store and move, the more data processing and data transfer speed to achieve a stronger and more expensive hardware and software requirements for the users of the site.

Recognizing this, in the second decade of the 21ˢᵗ century, a service was born, that is called Cloud Computing. With this service, the data storage and data movement, as well as the large computing tasks cannot be carried out by the users on their own computers, but also by a means of a simple Internet browser free of charge, or, when creating your own resources and the operation is substantially less in return for a rent service, these tasks are provided by service that are worked in cloud computing.

The thought, of course, is not new. To find a data source via the Internet jungle, we haven't searched through our own computer on the World Wide Web for a long time. This task has been making by searching services that maintain enormous resources (Yahoo, Google, etc.).

The modern, cost-effective, interactive knowledge transfer cannot be resolved using only their own resources. In this area, you can also use the services of Cloud Computing." [5]

Changes in the needs of society

„In the second half of the 20ᵗʰ century, however not only science, technology, but society, and the economy have also begun a fast development and because of this, the knowledge that we obtain in the schools become obsolete in our active life many times, so that we have to start to learn again and again if we want to save our competitiveness on the labour market. At the end of the 20ᵗʰ century, it has been born the concept of „lifelong learning" (LLL).

Traditional school education system, of course is not capable of giving satisfaction this claim. Therefore large companies, by following the millennial traditions of armies, the regular training of the employees are organized themselves, and for the smaller ones professional training enterprises ensure the regular trainings." [6], [7]

The development of ICT technology and in the third part of the last century significantly changing social needs have effected together on the attitude of the people to the knowledge and learning.

Today there is no doubt that the lifelong learning more specifically, the extending of it to each part of our life is the necessary coefficient of our life. Essential in the sense that in the globalised world, we have to always renew our knowledge to adapt to the evolving and changing economic conditions, social expectations. Beyond the individual personal demands, the constraint is often the reason for a continuous learning process, as it is, in the 21ˢᵗ century's accumulated knowledge that are produced by hyper society, information has increased almost exponentially from hour to hour. However, a factual knowledge can very quickly become obsolete on any territory/special field of life.

In our time the need for continuous learning is required, however it not only means that the knowledge acquired at an early age, constantly updated to keep it fresh and save it's marketable. Today the economic and social crises and changes require that the people learn other disciplines and get new knowledge in other professions they gain modern, applicable, new knowledge, with which they will be able to occupy other jobs/posts. But if someone deal with a particular profession, lifelong on a high level, in other fields of application, the emphasis will also be required, on a certain level. Thus, a change in the methodology of education is required by increasingly emerging approach that use instead of the whole concept of lifelong learning, a more modern concept and it has a better reflects the reality of the whole life (in all areas), covering concept of learning. The concept of life-wide learning was used in the Hungarian pedagogy by Bertalan Komenczi. [8]

Changes in the methodology of education

The eLearning

In the second half of the 21st century, at the end of the 1960s, the beginnings of eLearning were appeared. In the 1970s were already operating networks specifically for higher education (PLATO, TICCIT). From the end of the 1980s, has been developed a modern ICT tools supported education, that means of a form of eLearning, what can change fundamentally the learning process and the methodology of teaching.

„The nice new world of eLearning is just virtual, so it's only an opportunity, potential a reality. In order to become a reality, in each educational institutions and, usually in those institutions that organize teaching services, we claim another thinking, to learn new things, and a lot of resources and a very serious, thoughtful and disciplined work are needed. It is distributed virtuality, from which will be always formed the reality in the learning environment while we develop the specific programme, which may be either Didactica Magna. It is the virtual reality of pedagogy." [9], written by Bertalan Komenczi[1] in 2004. Today, probably he thinks otherwise these words or a part of them. Today eLearning is not only a possibility, not only virtuality. Here it is, it is an integral part of our everyday life. *„Virtual reality of the pedagogy"*-type Komenczi [9]. So I would say: the reality the virtual world of pedagogy.

The opportunities of eLearning make today's pedagogical practices wider and more colorful. More and more elements of it are displayed and continuously incorporated into the training attendance (blended learning), as well as in a large part of the distance learning. In the regular training and in non-formal education systems both, the application of it spread quickly. Today grown up the N-generation (net-generation), in other word the digital generation. In their life there was not a section, when they have no a computer or internet, take for granted and require the application of modern techniques, technologies in the field of education too.

The dominance and spread of electronic devices in the education means that we won't talk about *„learning"* and *„eLearning"*. The "*e*" prefix will disappear quickly from this form of education, because the electronic education, e-learning, as a form of learning will become usual, natural.

Of course, to this, we need not only equipments, tools and technology, but specially-written and specially-developed „eEnvironment" teachings. Today it has already been.

The networked learning

The development of networked learning practices in some ways is necessary to the eLearning. According to Ilma Kovács, [10] we can speak about the concept of e-learning more than one level. Thus, in the strict sense, only the network's training courses are organized in this way, but if the conceptual series are made wider, this includes any form of education, which builds on any kind of electronic technology, or a device in the education. In my opinion, this latter approach is being widespread in the eLearning system. Of course on the basics of this conceptual circle it means those eLearning processes, what are organized and carried through closed, internal, corporate, school intranets, more widely, those which are organized by the world wide web, or with modern ICT tools using learning processes.

---

[1] Translated by author.

The networked learning as a technique is significant because with the help of the specially technically developed electronic learning curriculum, the students don't need to go ahead in the curricula in a linear way. The construction of the digital curriculum allows that students explore the existing context independently.

However, the networked learning not only means the structure of the curriculum, but the possibility (and need) to advance knowledge can be reached, not only from the syllabus but with the using of additional resources (which are attached to it), and which are found somewhere in the virtual space. A closed virtual learning environment or the World Wide Web can be the stage of this network.

The cloud learning

The formation of a cloud learning practice is the past two years - a revolutionary new opportunity for education-methodological issues. It is a major station of the distance learning not only from the perspective of the technical development. From education-technical point of view, I see the importance of it that can allow eliminating the space and time limits and the lack of the presence of personal trainers in the educational system. Virtual consultations, virtual conferences, can be created by the Internet service providers. Thus, the learning support will be not only modern, but also interactive. The services of the cloud learning-system support not only the learning of individual student, but it also give help to the teacher and student connections. In addition to the individual learning, group learning can also be taking shape.

Learning in a connectivity way

The principle and practice of networked learning (connectivity), is the new way in distance education. This new paradigm in the distance learning can change the method of teaching in the eLearning in base. Some researchers [11], [12] call this revolutionary new method in learning the fourth teaching paradigm (over behaviorism, constructivism and cognitivism), and they profess, that it will change our whole pedagogical practices fundamentally.

The fundamental principle of connectivism means that we view the knowledge, as a network. The least elements are the nodes in our network. These could be the conceptual definitions, phrases, any elementary knowledge. The chords among them are the relationships, with which we connect the nodes. In this sense, learning may mean two things:
- new nodes to be connected to the fabric
- reordering the net connections.

The high-profile (connecting with many chords to other nodes) nodes determine our thinking. The connectivity-view determines the learning process and its relevance in the opportunity of the construction of the knowledge network and its restructure on demand. Thus, our knowledge increases changes constantly through the established network connections. The network research deals with the examination of this new paradigm, which are also a method and an approach. The network research examines the relationships between things on a micro level, and samples on a macro level, that drawn by the connections. [13]

THE ELEARNING, DEFINITIONS AND CHARACTERISTICS OF ELEARNING

We cannot find the definition of eLearning in the „Act of the Higher Education"[2] thus it has been defined by the research.

---

[2] 2005. CXXXIX. Act about Higher Education

The eLearning means a new learning environment what is completely different from the presence of the traditional training. It means the application of new techniques, and technologies. It means the usage of ICT technology in the learning process. It's the mode, method and tool of educational form at the same time. By the formulation of Bertalan Komenczi: *„eLearning is the general definition of the education-development efforts that are based on electronical information and communication technology."*[3] [14] However, in the opinion of Ilma Kovács [15] the conception of eLearning can be interpreted on multiple levels, depending on we keep decisive the technology and the learning tool in the learning or only the construction mode, form.

The eLearning concentrates not to the teaching, but to the process of learning, in focus the students, and (apparently) it gives new tasks to the educator. He will help the learners from the background. In this way, the traditional educational structure overturns, and the central idea of this technology will be not the teaching, but helping the students in learning. So this method is primarily characteristic of those educational institutions, which accept and use the constructivist learning model. Institutions where education is considered as a service activity by the school. Where the educational philosophy is not to give the systematized knowledge by the teacher, but to help to the students to learn to coordinate and direct them in the learning process. The teacher's role is primarily helping in this form of learning. Its task is transformed compared to the traditional educational tasks, and this role requires other types of activity.

The eLearning is an educational form what is able to apply in a very wide circle, in the formal, non-formal and informal education too. You can apply it in the distance education and in the presence education too. In the latter case, we speak about blended learning or mixed educational model.

The eLearning eliminates the border-lines in the learning process, because the education becomes independent in space and time too. Today, in the 21st century the learning content will become available *anywhere*, *anytime*, for *anyone* with the application of eLearning, and with it these contents will be acquirable *within a reasonable period*. György Seres analyzed full-size of the conditions in his researches [6], [7], when he created the first distance learning and e-course[4]. I tried it myself as a student, and I have collected my personal experiences about the learning with eLearning and the function of the virtual Intranet. [16]
A further characteristic of the eLearning, that it helps not only the individual learning, but learning of the small or large groups at the same time and it isn't demand on the students are close or far from each other in the space. It is able to learn big masses although, but it also supports the individual training.

In conclusion, we can declare, that the eLearning is a new educational environment, which requires different teaching-learning style from the traditional education modes, and it has new strategies in its method. In addition, the entire learning process that based on eLearning has to be organized in a new way, and a new pedagogical method has to be applied. It has new, growing, ever-changing toolbar. The application of information and communication technologies (ICT) in education is a challenge and an opportunity at the same time for both the teacher and the student.

---

[3] Translated by author
[4] http://drseres.com/elearning/
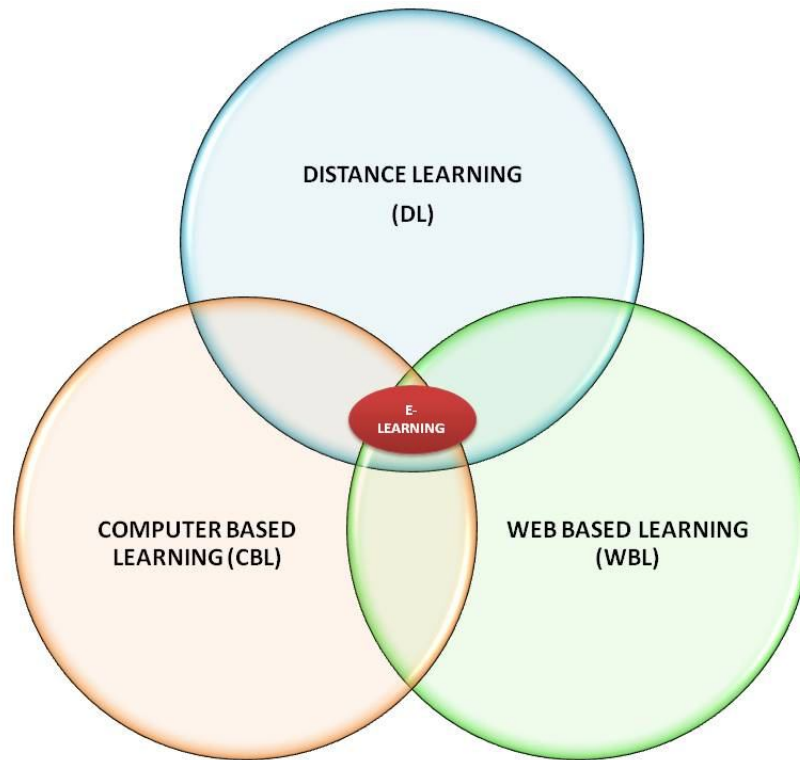
Figure 2. The eLearning model
(In the wake of Komenczi [17] by: Ildikó Miskolczi)

The role of man (instructor) won't decrease, but change. To adopt to the method of learning, virtual mentors will be established (Virtual Mentor-VM), who help students with interactive instructions in a well structured and synchronized multimedia-based eLearning environment. The main properties of the virtual mentors are the support of the multimedia, interactivity, real-time availability, management, flexibility, intelligence. [18]

Ilma Kovács [19] give great importance to the student and learning centralization, the system-view and process organization, to the point of contact and the presence of the framework, and external-internal marketing, the convergence of the old and the new elements. According to Ilma Kovács the eLearning [20]: „... *the term e-learning covers complex content, because it contains complex processes, which on the one hand learning, on the other hand teaching, and the third hand mean organization/organizational problems, and which can be realized only by informational and communicational technologies. On the one hand the e-learning is a new form of learning-teaching, which is able to included in the organized educational system, on the other hand, is a new mode and tool of teaching/learning, which can serve individual needs through the new e-learning environment – compared to traditional learning environment that is implemented by conventional means – because of its specificity. The latter, we also call non-formal, independent, personal discoverer learning.*"[5]

THE NEWEST E-LEARNING OPPORTUNITIES OF DISTANCE LEARNING IN THE 21ST CENTURY

At the beginning of the 21st century, the platform of e-learning is the web, the World Wide Web. The World Wide Web, as the biggest, the world surrounding network and application of services, is now natural and accepted in the process of learning. With this the personal

---

[5] Translated by author.

learning environment (PLE) expands significantly, because we can use modern web-tools and services in the learning, with the help of that the applicable knowledge (but often quickly become obsolete) can be reached in a short time.

Figure 3. Determining factors of learning environment in the 21st century [6]

Figure 4. The learning process of the factors affecting[7]

The cloud technology, as a revolutionary new opportunity in the education, uses these options and factors. But what is the cloud technology? According to The National Institute of Standards and Technology (NIST):

---

[6] Picture from http://www.articulate.com/rapid-elearning/3-things-to-consider-when-building-your-e-learning-courses/

[7] Picture from http://langwitches.org/blog/2009/04/21/connecting-colaboracion-kommunikation-across-languages-cultures/

„A comfortable model, which allows you to use network access through a shared computer store of source or energy, and the fast using of the applications with minimum costs." [21]
What is the cloud? The cloud helps to construct, synchronization, update the web connections, and it helps to extend the boundaries of our capabilities. It can operate as a virtual storey, automate the processing. In a technical sense it is not other than servers, links, software, and networks.

In the course of this, the various tools and applications on the web, you can use so, that you need not download to your own computers, so you don't burden your own resources. The required applications can be used in the virtual space (on the web) for a small rental fee or free, that is provided by service providers.

Using this opportunity, the new method was born in higher education with the name of *cloud pedagogy*. The main characteristic of it that we can use the performance of computers, (we call cloud) and a part of them can be reached in the virtual space, while we release our own resources. In this way, the cloud technology can help to increase the efficiency in the field of education too. (Just think that when in the 21st century, we set our own portfolio, it is nonsense to collect on a sheet and represent all our activities in today's digital world.) Specially this is true in the case of a teacher, because he can refer to the digital formed syllabuses only, if the link their availability via the Internet. In life, this means that we mark and collect every platform, where our manifestations are present.

According to Cohen, there are more types of the educational clouds: [22]
- Public cloud
  An open, publicly accessible cloud computing environment
  Free of charge or in return for rent can be used
  Individuals and organizations may use
- Your own cloud
  Custom-designed and crafted cloud environment
  Closed, the network is protected by an internal firewall
  Highly reliable
  Can be operated with high costs
- A hybrid cloud
  A combination of the positive technology of the previous two
  The basis of the formation of industry standards

The development of the cloud services can be isolated in three major sections, which make up models on the basis of their services. On the basis of these, the services of the cloud can be listed into three major models: [23]
- IaaS (Infrastructure as the service)
  The most basic model
  Users in the end work in a network
  The server, operating system will be the mover of the cloud (network)
- Paas (Platform as a service)
  The next level of development, when the application environment provides the cloud for the user
  It's advantage, that a functional environment can be construct with the help of it
- Saas (Software as a Service,)
  Currently the highest level of technology
  It means the using of task- and job applications
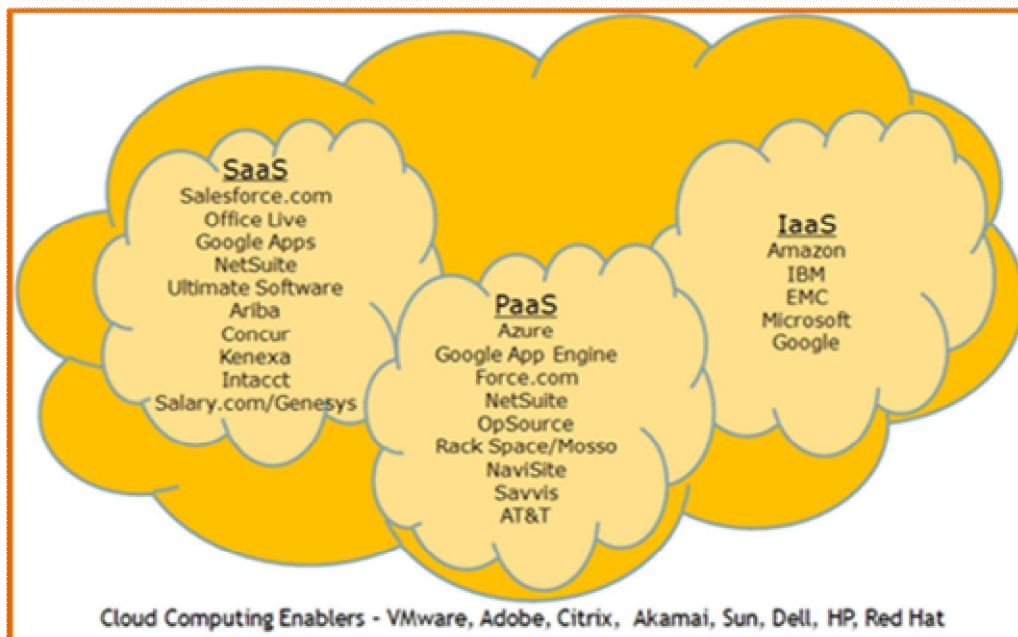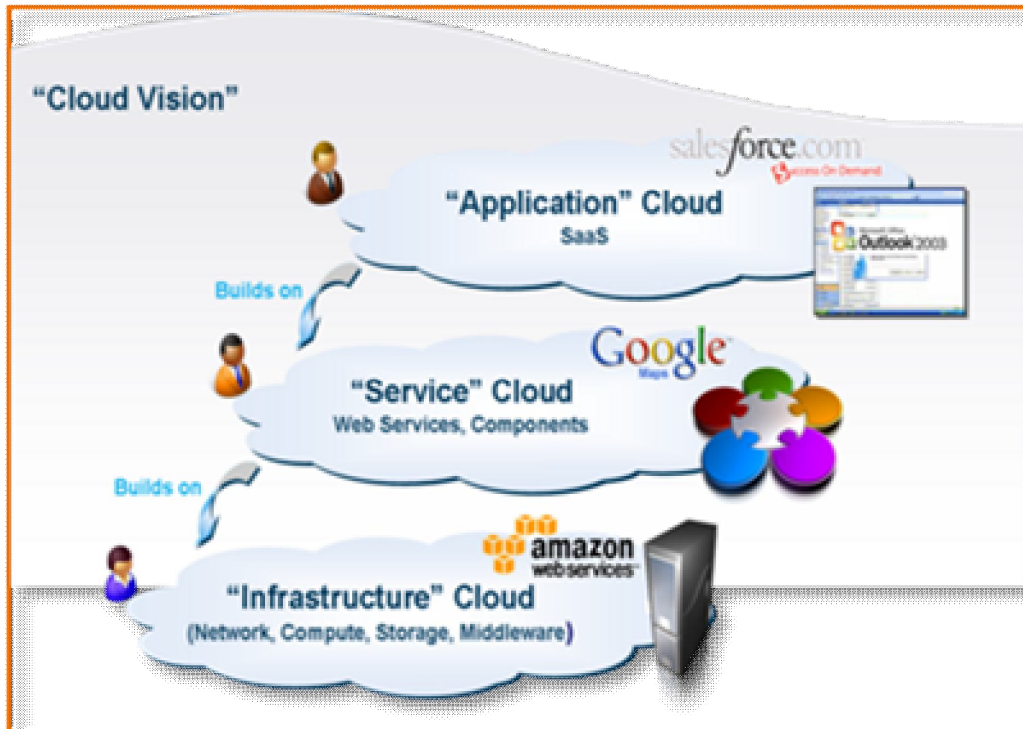
Figure 5. The cloud services[8]

The cloud computing technology, such as the complex entirety of web-based set of services, has only a couple of years old history. The appearance and the application in the education is only option today, but tomorrow will be mandatory. Not only the use of the technology extends rapidly on the different fields of life and in the education too, but it is also developing, changing, expanding with more and more services and applications. This makes it

---

[8] Pictures from: http://kasunpanorama.blogspot.com/2010/07/understanding-cloud-computing-feel-easy.html and http://www.trigent.com/technology/cloud.htm

315

necessary to examine, what kind of advantages and disadvantages this drawbacks of this technology is involved in education (too).

The advantages of the cloud technology: [24]
- Reduce costs (the programs are running in the cloud and not on your computer)
- Better performance (less memory consumption, the programs operate more efficiently)
- Reduced software costs
- Update of SaaS software is now no problem (usually automated)
- Virtually unlimited storage capacity
- Secure data storage (the collapse of the "computer" doesn't compromise the availability of data)
- Document access (we don't have to carry on with us, only have to sit down by a machine at anytime, anywhere)
- Not computer addicted applications and services

Disadvantages of the cloud computing technology: [24]
- We need internet connection to access the cloud
- Some softwares and software applications don't run in cloud (compatibility issue)

Although the cloud technology itself is a very young methodology in the history of eLearning, but many providers provide opportunities through their applications to use. Such service providers are for example Yahoo, Amazon, Microsoft, Hotmail, or Google. On the following pictures can be shown the cloud of the Google, which can be used free of charge and the services, applications that are provided by the cloud.

Figure 6. The "older" Google services[9]

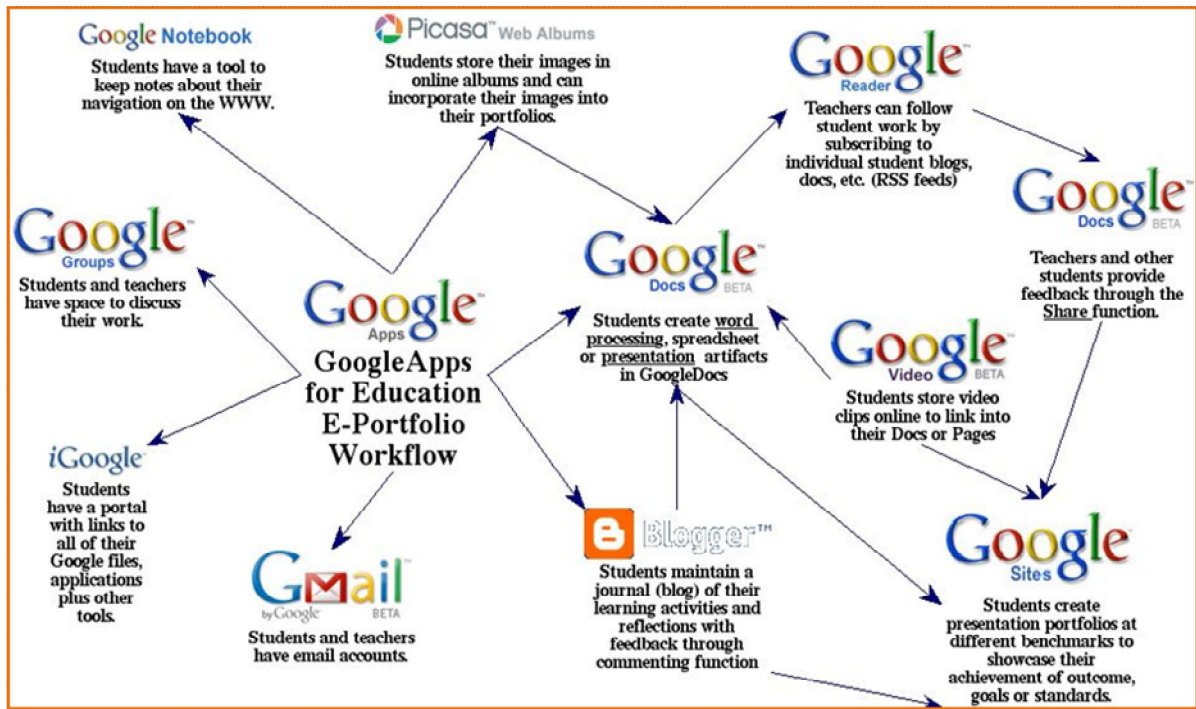[9] Picture from http://indolaw.alafghani.info/2010/05/6-free-collaboration-tools-for-lawyers.html
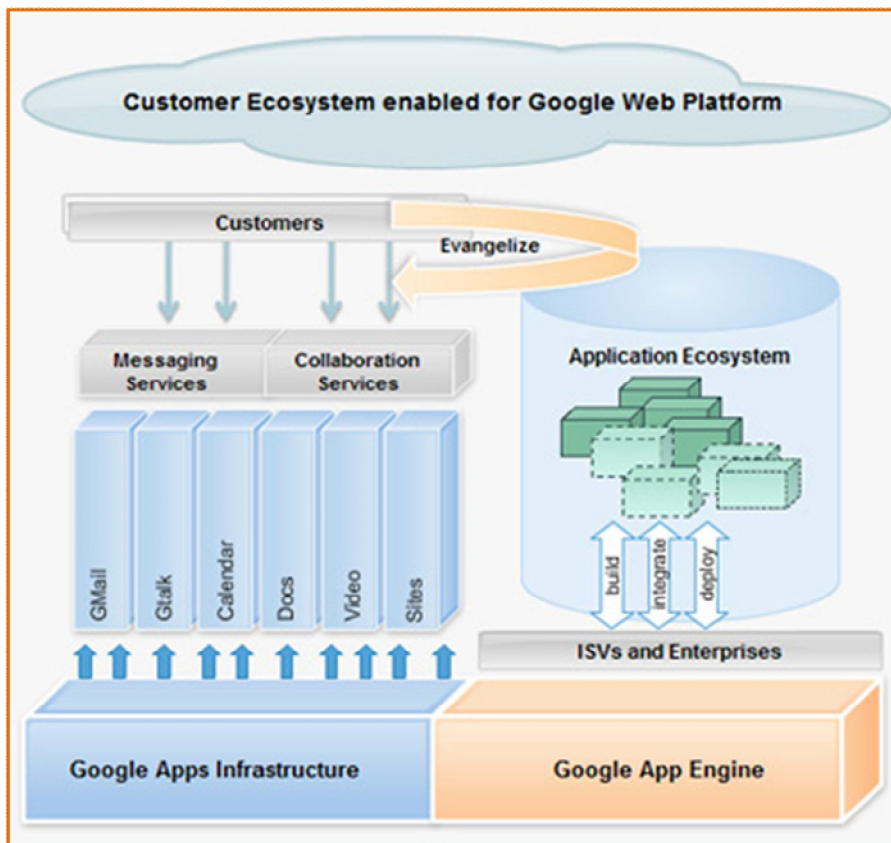
Figure 7. The great Google cloud[10]

Figure 8. The web-platform of Google Apps Cloud[11]

---

[10] Picture from
http://www.hwsw.hu/hirek/37167/google_microsoft_office_apps_wahington_online_irodai_szoftver.html
[11] Picture from
http://www.persistentsys.com/Offerings/SaasCloudComputing/GooglePlatformServices/tabid/454/Default.aspx

SUMMARY

In the societies, the explosion of the informational revolution has brought with itself the development of the ICT tools at the end of the last century. In almost all segments of our lives have developed the e-technologies, so that the eLearning in the field of the education. This modern method of distance learning is now makes the education possible to be independent from space and time. At the dawn of the 21st century, the concept of distance learning has undergone and it is passing through important content changes, its conceptual class is continuously changing and expanding. The eLearning has been published and it's now an integral part of the distance learning. Virtually all of us use the eLearning every day, even if we aren't aware of this. Today, there is almost nobody, who does not use a computer daily, or iPod, or the I Phone to the working process or obtain information. Of course, the high-skilled computer use is an essential element of this process, and it is called digital literacy. For the young "digital" generation, this is not a problem, because a generation has been grown up to the higher education system, whose life there wasn't a period when they didn't have computer and Internet. The existence and application of these tools is natural for them. However, the older generations necessarily use ICT tools too, even through the daily working process or their everyday life.

Distance learning is an important part of the educational structure of our world and its importance and weight will grow in the near future. Modern distance education allows you to apply the totally new method of education (eLearning), with the using of the acquits of the age. We can speak about the eLearning, as one of the most modern type of learning, in more than one sense (mode, design, methodology, technique). Today, the distance learning is inspired by a new spirituality, the *constructivist and connectivist approach*. The *network-based learning* is emphasized, which main pillar is, that the content of the education and the participants are present (locally) in the various spaces, and they meet with each other and they carry out their views to each other, opinions about some of the topics in the virtual space. The students don't learn in an isolated way, but in close relationship with each other, and from each other. The tutor's role has been slightly changed, and he doesn't direct, but also coordinate the learning process. He doesn't provide the knowledge, but also he shows how to get the knowledge. He coordinates how we can build up applicable, on fresh results of research based knowledge from much information. The connectivist distance learning considers the elements cornerstones in the educational system, such as: [25]
- real-time broadcast; picture and sound
- online common document-editing;
- opportunity of common Web date talks with calendar function;
- using of Web document library;
- using of Web syllabus wall;
- operation of Web Whiteboard;
- construction and operation of student forums;
- chat "rooms";
- online exam;
- online presentations;
- online teaching, consultations;
- wiki;
- feedback;
- community tasks;
- blog;
- games…

Today is published and rapidly spreading – not only in the field of education – the *cloud computing technology* (cloud, cloud computing technology), which build on the largest network on the Web. Thus, the electronical education is also changing, and the web1.0 technology is replaced by the revolution of web2.0 technology. Now we don't read the digital contents only, but we are also involved in the creation of them. We create virtual communities, change opinion, make contents, share, reconstruct, reunderstand the knowledge. Thus we, students create the knowledge.

On the next step of the development, we will connect the various services of the cloud. A wide range of diverse data service providers will share informations with each other, creating a strong platform, which may be the basic of a totally cloud-based service, service executes. This is called *Rainbow Computing, Rainbow technology*. This requires a higher level of the communication, Internet culture and relations, which may called simply a NetIQ.

Age of Gutenberg is over in the education.

Bibliography

1. TAPSCOTT, Don. Grown Up Digital: How the Net Generation is Changing Your World. USA: McGraw-Hill Companies, 2008. ISBN: 9780071508636.

2. Bertalan, KOMENCZI. Az E-learning lehetséges szerepe a magyarországi felnőttképzésben (The possible role of E-learning in adult education in Hungary) (research). www. nive. com [Online], 2006. [Reference: 10 August 2010.] https://www.nive.hu/konyvtar/content/edoc/files/03_komenczi.pdf .

3. John TIFFIN, Lalita RAJASINGHAM. Education in an Information Society. London, New York, 1995, Search Of The Virtual Class, p. 88.

4. Ilma, KOVACS. Új út az oktatásban? (New way in education? The distance learning.) Budapest, Budapest University of Economics Academic Coordination Office, 1996. ISBN: 159 503 9 963.

5. George SERES, and less. Hipermédia az oktatásban – avagy felhőpedagógia. Hogyan vált az elektronika az oktatás tárgyából annak színterévé? (Hypermedia in education – cluod learning. How to become the subject of education electronics to provide?) www.hadmernok.hu [Online], June 2010. [Reference:18 September 2010.] http://hadmernok.hu/2010_2_seres_etal.pdf. ISSN 1788-1919

6. George SERES, George KENDE, Ildikó MISKOLCZI. Tanuljunk könnyen, gyorsan, élethosszig, bárhol, bármikor (Let's learn easily and quickly-anytime, anywhere, in the area). Jampaper. [Online], 2008. [Reference: 16 September 2010.] http://www.jampaper.eu/jampaper_h-arc/2008._iii._3.sz._files/jam080302e.pdf . 3./III./2008. ISSN 1789-6967.

7. György SERES, György KENDE, Ildikó MISKOLCZI. Let's learn easily and quickly-anytime, anywhere, in the area. Jampaper. [Online], 2008. III. class 3. number.

[Reference: 16 September 2010.] http://www.jampaper.eu/jampaper_e-arc/no.3_iii._2008_files/jam080302e.pdf . ISSN 1789-6967.

8. Bertalan, KOMENCZI. Az E-learning lehetséges szerepe a magyarországi felnőttképzésben (The possible role of E-learning in adult education in Hungary) (research). www. nive. com. [Online], 2006. [Reference: 10 August 2010.] pp. 15-16. https://www.nive.hu/konyvtar/content/edoc/files/03_komenczi.pdf .

9. Bertalan, KOMENCZI. Didaktika elektromagna? Az e-learning virtuális valóságai (Didaktica electromagna? The e-learning virtual realities). 2004. 11. a new Pedagogy, Inspection, pp. 31-49.

10. Ilma, KOVÁCS. "Mesterségek" és elvárások" – elektronikus tanulás (Crafts" and expectations (electronic learning)). www.epa.oszk.hu. [Online], 2009. november. [Reference: 7 September 2010.] http://epa.oszk.hu/01200/01251/00003/pdf/fef_szemle_200901_149-160.pdf . III. class 1. number.

11. Zsolt, KULCSÁR. Hálózati tanulás (Network learning). Inforrmatics-Education. [Online], 2009. 1. number, pp. 4-16. [Reference: 20 July 2010.] http://www.oktatas-informatika.hu/20091szam-online.html . ISSN 2061-1870.

12. Zsolt, KULCSÁR. A negyedik oktatáspardigma. (The fourth learning-paradigm). Slideshare. [Online], 2009. [Reference: 26 March 2010.] http://www.slideshare.net/kulcsi/a-negyedik-oktatasparadigma .

13. Viktor, BEDŐ. Magyar Virtuális enciklopedia (Hungarian Virtual Encyclopedia). [document] Budapest: MTA, 2009. on 17 March. http://www.enc.hu/1enciklopedia/fogalmi/inf/halozatkutatas.htm .

14. Bertalan, KOMENCZI. Elektronikus tanulási környezet. (Electronic learning environment. An attempt to analyse the phenomenon didactica). Habilitant treatise. Debrecen, 2007.

15. Ilma, KOVÁCS. "Mesterségek" és elvárások, - bővített változat ("Jobs" expectations and e-learning). in: Electronic Periodical archive on adult education (I) Survey, pp. 141-160. [Online], 2009. november. [On August 25, 2010.] http://epa.oszk.hu/01200/01251/00003/pdf/fef_szemle_200901_149-160.pdf .

16. Ildikó, MISKOLCZI. Egy interaktív e-learning portál első tapasztalatai egy e-diák szemszögéből (The experience of an eLearning course) presentation and performance of the MTA and the Committee of the School of management, knowledge management Sub-Committee on 2008. workshop per year. [Online], 2008. March. [Reference: szetember 10 2010...] http://vati.szie.hu/node/161

17. Bertalan, KOMENCZI. Az információs társadalom iskolájának jellemzői (The characteristics of the schools of the information society). Institute of educational research and development. [Online], [By: 20 June 2010.]

http://www.oki.hu/oldal.php?tipus=cikk&kod=informatika-komenczi-informacioshttp://www.oki.hu/oldal.php?tipus=cikk&kod=informatika-komenczi-informacios

18. DONGSONG Zhang Zhao, j. LEON Zhou, Lina, NUNAMAKER, Jay f., Jr. Can replace e-Learning classroom learning? Communication of the ACM. [Online], vol. 47, no. 5. pp. 75-79, 2004. in May. [Reference: 1 October 2010.] www.portal.acm.org. http://210.240.189.212/dctelearning/type_resources/01_papers/9612_digital_papers/2_english/bit095110/can%20e-learning%20replace%20classroom%20learning.pdf .

19. Ilma, KOVÁCS. Távoktatás és hozzáférés (Distance learning and access. Adult education inspection), pp. 9-120. [Online], 2008. March. II. class 1. number. [Reference: 10 September 2010.] http://epa.oszk.hu/01200/01251/00002/pdf/fef_szemle_200801_096-120.pdf .

20. Electronic learning, 274 p. 74 p.. Budapest: tomorrow's Publisher.

21. Agatha, GILMORE. Learning in The cloud site. : Chief Learning Officer, from EBSCO www.clomedia.com database. Feb2010, Vol. 9 Issue 2, p32-35, ISSN: 1935-8148

22. Erica, ORANGE. Mining information from the Data clouds. Bethesda, USA: World Society, 2009 Fututre. July-August. The futurist. from EBSCO database www.wfs.org. Jul/Aug2009, Vol. 43 Issue 4, p17-21, ISSN:00163317

23. Dave, BURKEE. Why cloud computing will never be free? site: queue.acm.org, communications of the acm, 2010. 05. Practice, 5. volume. from EBSCO database. May2010, Vol. 53 Issue 5, p62-69, ISSN:00010782

24. Doron, KAMINSKI. A walk in the clouds. Canada: CMA Management, from EBSCO database. Apr2010, Vol. 84 Issue 2, p41-42, ISSN:14904225

25. George, KENDE - George, SERES - Ildikó,MISKOLCZI - Christina, FÓRIKA - Gábor HANGYA. Virtuális campus - az e-tanulás lehetőségei a külszolgálatot teljesítő katonák képzésében (Virtual Campus - opportunities of e-learning for the training of soldiers). Szolnok: in the scientific magazine online, Communications of science of fly, 2008. ZMNE. http://www.szrfk.hu/rtk/kulonszamok/2009_cikkek/kende_gyorgy-miskolczi_ildiko_stb.pdf . ISSN 1417-0604