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Globalizitation, Internet and informal learning

Abstract

This paper examines issues related to the learning process in new learning environments, created by the modern digital reality and the Internet. The paper aims at the presentation of the effect that the technological evolution and the social transformations-especially the transition to the Information Society-have on human activity and especially on education.

Key-words: Globalizitation, internet, informal learning**,** ICT, university students.

Introduction

Our global, post-modern society is characterized by rapid developments, as information technology has penetrated all aspects of social structure and influences, transforms and causes new social phenomena. Social relations are constructed under the effect of a huge amount of information, creating a new social setting, the main features of which are the symbols, the images and the wide use of new technologies (Flouris & Passias, 2000: 498). The new social structures inevitably affect institutions, as well, and especially education, which is called to respond to the social demands, providing, studies of high quality and the required specialization.

The rising labour costs, the transition to more flexible and specialized working environments, the modernization of the primary sector of the economy and the development of the third sector services of our post-modern era, require lifelong education and a flexible educational system. Formal education by itself is not sufficient to meet the needs that arise with the rapid development of science and technology, and constant training is necessary, in order to avoid the exclusion from social, economic and political action (OECD, 1996).

The traditional, teacher-centred school, which lucks flexibility and imagination and focuses only on the curriculum and the teaching material, instead of

the student, is unable to handle the new challenges and satisfy students' needs. The teacher is now called to redefine his/her role and develop an effective model, in order to approach teaching with success, using appropriate methods and strategies. The reorientation of the educational process and the adoption of alternative forms of education, are, therefore, necessary.

Educational reform can be accomplished by incorporating the appropriate cognitive tools. The Information and Communication Technologies (ICT) are a powerful cognitive tool that can combine the teaching of the subject matter with technological and cultural changes and build the framework of the necessary educational reforms (Pelgrum, 2001). ICT can contribute to the presentation, comprehension and consolidation of information and facilitate, thus, the learning process. According to Muffoletto (1994), educational technology should not be assessed with the hardware quality as the main criterion; the assessment, instead, should be based on its comprehensive, multifaceted contribution to the teaching and learning process, which is beyond the mere hardware use. Roblyer (2004), on the other hand, argued that educational technology is a combination of both procedures and means, i.e. software and hardware. Thus, when referring to ICT, all those means that are used as teaching or communicative tools are included (Kanakis, 1989).

The educational technology promotes discovery learning and experiential and communicative teaching, contributes to students' active participation and autonomous behaviour in the classroom, facilitates group-work, supports each student's learning pace and needs, provides motivation and enhances the consolidation and systematization of knowledge. Furthermore, it facilitates the exchange of ideas among teachers and the introduction of innovations.

It is well-known that the understanding of concepts, events and phenomena is accomplished through individuals' interaction with images, sounds and texts. The models created by ICTs contribute to interactive learning, as they permit the exchange of ideas and thoughts, through images and texts (Slavin, 1988: 344-345).

Thus, the teacher, as one main factor of educational change and reform, is called to integrate and exploit new technologies in school, in order to facilitate the learning process and structure effectively new knowledge (Selinger, 2001). He/she is required to acquire communicative and pedagogical skills, as well as technological knowledge, since communication, in general, and interpersonal communication, in specific, are the key components of the new learning environment (Raptis & Rapti, 2006).

Internet and Informal Learning

Learning is a social phenomenon that has not been adequately explained and understood (Kassotakis & Flouris, 2005). Several theoretical models have been created to interpret it and to answer basic questions concerning its nature, function, principles and strategies of organization and construction (Trilianos, 2003). Thus, learning is interpreted as a process of stimulus substitution, as a test and error process (the student has the right to make errors), as the repetition of a response after reward and positive reinforcement (sound, image), as an insight, as a process of observation, imitation, and modelling or as information processing (Bigge, 1990. Kapsalis, 2006. Koliadis, 1995. Trilianos, 2003).

The prevailing theories during the last years are the cognitive and the socio-cultural. According to them, learning is accomplished through simulations, which allow collaborative learning and foster critical thinking and the representation of concepts. The socio-cultural theories emphasize learners' interaction and the symbolic construction of knowledge.

In general, learning is defined as a continuous process through which the individual combines experience, knowledge, skills, and attitudes, acquired in real life, with those formed by the learning process at school (Bigge 1990),

In other words, learning is the process of behaviour modification, as a result of an enhanced practice. This modification is accomplished after the completion of the learning process, when the individual is able to do things that could not previously. It is not only a human quality, since animals can learn, too (Kossyvaki, 2003).

Usually, we refer to formal learning, which is learning in a hierarchically-structured, chronologically-graded and established educational system (Jeffs & Smith 1999). However, two other types of learning are, also, discussed in the international literature; the informal and the non-formal learning (Bjornavold, 2002. Castillo, Alas-Pumarino & Santos, 2000. King, 1982. OECD, 2001).

Informal learning is a process characterized by interaction. The person learns through daily experiences in real life. Usually, no specific aims are set (Coffield, 2000).

Non-formal education is an organized process that takes place in a learning environment outside the formal educational system. Non-formal education has specific aims. Examples of non-formal learning are the environmental education and the training that takes place in private schools and institutions (Carron, & Carr-Hill, 1991).

In the industrial and the post-industrial era, the various cognitive tools, and particularly the application of ICT in education, enhance and promote all forms of learning. One of the applications of information and communication technologies is the Internet, a global net of interconnected computers using the protocol TCP/IP. The Internet offers an active and creative learning environment and is an important cognitive tool, which influences learners' interaction with knowledge and helps in the teaching process (Charp 1998).

Internet navigation is used for entertainment, as well as for the unsystematic or the systematic searching of information, which act complementarily to formal and non-formal learning. The Internet represents a form of informal learning, as the individual, through information searching and the use of multiple cognitive processes reconstructs and remodels the cognitive schemata and expands the range of skills (Ala-Mutka, 2009. Buerck et al., 2003).

Various communication tools, such as emails, websites, chat rooms, forums, search engines, databases, etc., support informal learning through internet use. The effectiveness of communication, the easy information access, the possibility for navigation and communication with no time limits, make the Internet a considerably effective learning environment. Internet navigation includes access to a variety of information sources, offers virtual experiences, satisfies professional needs, leisure time and social life and gives motives for creativity and flexibility.

Through virtual reality, learning processes are modified and knowledge is approached in an alternative, innovative way. Internet navigation by itself is

considered to be a learning experience, since it is a dynamic, constantly evolving informational environment (Raptis & Rapti, 2006).

Through Internet navigation, learning is accomplished as a result of a reflective and discovery process, as the product of information processing, or even as an unplanned event. Individuals are not passive receivers of information. Instead, they are actively involved in the whole process, making use of cognitive, social, mental and emotional abilities and skills.

Moreover, the Internet, through the simulated environments, the virtual worlds, the collaborative networking environments and the forums, makes possible the combination of a variety of learning methods, such as the systematic, the random, the independent, the collaborative, the lifelong, the in-distance education and the on line education. The complexity and the structure of the Internet significantly expand the learning boundaries. The visualization possibilities it provides, help in the representation of data and concepts, facilitating, thus, individuals' understanding and assimilation of the learning content.

With the increasing use of the Internet and the various communication tools, informal learning is promoted. More and more people are gaining access to knowledge and to information, search engines are being evolved and improved and the forms of interaction are becoming numerous and imaginative.

The research aims and objectives

It is a fact that the 21st century is characterized by an intense and widespread use of the Internet, both in everyday life and in education. The aim of this research is to record and study university students' beliefs about the impact of the Internet on education, as a form of informal learning. In particular, the present survey mainly aims at studying the effect of the Internet on Informal learning and at identifying those aspects of education, which are based on the Internet use.

2. Research Methodology

2.1. The sample

The sample of the research consists of 390 university students, from all over Greece - 160 (41%) of them are males and 230 (59%) are females. The majority of the respondents are in the fourth (28.2%) and in the third year (24.9%) of studies. The 18.4% of them is in the fifth, sixth and seventh year, the 17.7% in the second year, while only the 10.5% is in the first year of studies.

Most of the students come from families of medium and high educational level. The majority of their parents possess a secondary education degree (the rate is 43.1% for the fathers and 43.8% for the mothers), while high is, also, the percentage of university and technological institute graduates (32.6% for the fathers and 26.9% for the mothers). Few parents are of primary school educational level (8.7% for the fathers and 10.5% and for the mothers).

Table 1: *Gender*

Gender	Frequencies	Percentages
Males	160	41,0

Females	230	59,0
Total	390	100,0

Table 2: *Year of study*

Year of study	Frequencies	Percentages
1st	41	10,5
2nd	69	17,7
3rd	97	24,9
4th	110	28,2
5th	57	14,7
6th	13	3,3
7th	3	0,8
Total	390	100,0

Table 3: *Parents' educational level*

Educational level	Frequencies	Percentages	Frequencies	Percentages
	Fathers		Mothers	
Primary School	34	8,7	41	10,5
High School	61	15,6	73	18,7
Senior High School	168	43,1	171	43,8
University–Technological Institute	127	32,6	105	26,9
Total	390	100,0	390	100,0

2.2 Data collection

Data collection was based on an improvised questionnaire concerning the use of new technologies and the Internet, as well as their effects on the individual. Its construction was based on the international and the Greek literature on the effects of internet and on the theoretical models of learning, particularly informal learning.

The first part of the questionnaire elicits basic socio-demographic information, such as gender, year of study and educational level of parents. In the next part, there are questions concerning students' possibilities to access the Internet, the third part deals with Internet use and the fourth includes questions on the social/affective and the cognitive effects of the Internet. In the fifth part of the questionnaire, aspects of the Greek educational system are evaluated.

The questionnaire consists of closed-type questions and the responds follow the Likert scale: 1 = never, 2 = sometimes 3 = usually, 4 = Always / 1 = I strongly disagree, 2 = I probably disagree, 3 = I probably agree, 4 = I agree. Moreover, the h scale was used, where 1 = Yes, 2 = No, while to the remaining questions, multiple choice answers are provided.

3. Results

3.1. Frequency Analysis

Frequency analysis suggests that a high percentage of students (73.8%) can access the Internet at home. Furthermore, the 81.3% says that the access to University computers is easy, although the 18.7% claims the opposite. The 91.8% has Internet access at university. Moreover, the 72.6% of the sample can reach a computer at other places, apart from home and University, while a significant proportion (27.4%) cannot.

Table 4: *Access to a computer and Internet*

Access to a computer and Internet	**Frequencies**		**Percentages**	
	No	Yes	No	Yes
Internet access at home	102	288	26.2	73.8
Easy access to University computers	73	317	18.7	81.3
Internet access at University	32	357	8.2	91.5
Computer access in other places	107	280	27.4	72.6
Total	390	390	100.0	100.0

Furthermore, the 35.1% answers that learned to use a computer alone or with the help of a friend (16.2%) or the family (5.6%), in contrast to the 23.3%, who learned how to use a computer at school and to the 19.7%, who attended computer courses in a private school. According to the results, the 42.1% has been using a computer for more than 5 years, the 23.8% for 1-2 years, the 27.4% for 3-5 years, while the 6.7% for less than a year.

Table 5: *Ways of computer learning*

Ways of computer learning	**Frequencies**	**Percentages**
Family	22	5.6
Friends	63	16.2
Private school	77	19.7
At school	91	23.3
Alone	137	35.1
Total	390	100.0

Table 6: *Years of computer use*

Years of computer use	**Frequencies**	**Percentages**
More than 5 years	164	42.1
3-5 years	107	27.4
1-3 years	93	23.8
Less than a year	26	6.7
Total	390	100.0

As far as the frequency of Internet use is concerned, the majority of the students (64.9%) claim that they use it everyday, the 21.5% of them sometimes a week, while only the 13.6% sometimes a month or less (Table 7). 287 students (73.6%) know how to find information in a database, while 103 students (26.4%) do not.

Table 7: *Frequency of Internet use*

Frequency of Internet use	Frequencies	Percentages
Daily	253	64.9
Sometimes a week	84	21.5
Sometimes a month	33	8.5
Less than once a month	20	5.1
Total	390	100.0

Moreover, Internet use mostly concerns sending and receiving e-mails, looking for information relative to the university courses, looking for information about topics related to students' interests, as well as downloading music or films (Table 8).

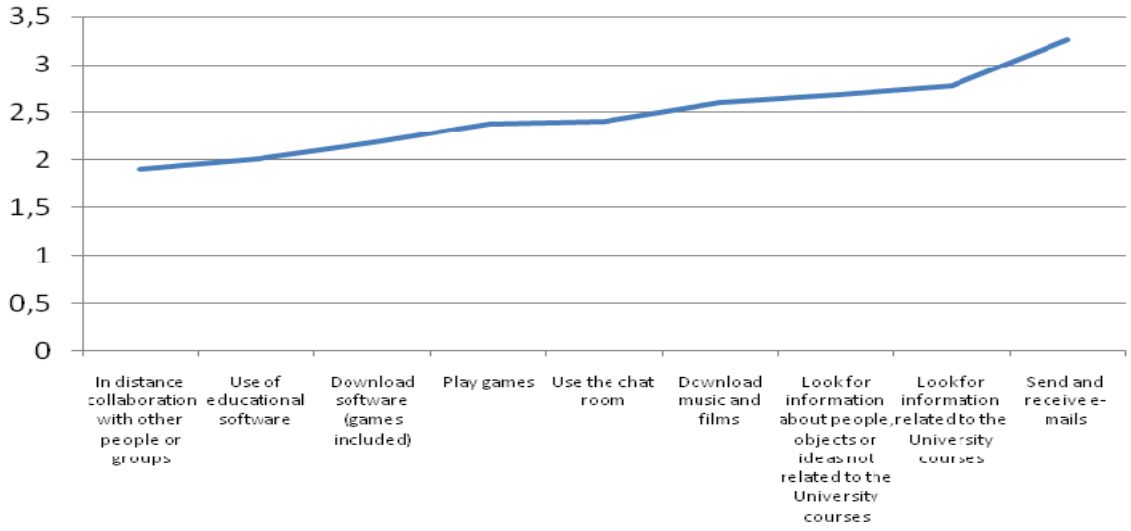
Students sometimes communicate in chat rooms, play games and download or use software. The 25% of the respondents, however, is not involved in chat rooms, in downloading music and movies or in using software. Furthermore, most students claim that have in-distance collaboration with other persons or groups, while the 25% appears unwilling to develop collaborative networks with other people (Table 8).

Table 8: *Uses of Internet*

Uses of Internet	Mean	Median	Std. Deviation	Percentiles		
				25	50	75
In distance collaboration with other people or groups	1.9	2	0.88	1	2	2
Use of educational software	2.01	2	0.8	1	2	3
Download software (games included)	2.18	2	0.95	1	2	3
Play games	2.38	2	0.91	2	2	3
Use the chat room	2.41	2	1.13	1	2	3
Download music and films	2.61	3	0.99	2	3	3
Look for information about people, objects or ideas not related to the University courses	2.69	3	0.79	2	3	3
Look for information related to the University courses	2.77	3	0.75	2	3	3
Send and receive e-mails	3.26	3	0.83	3	3	4

Note: 1=Never, 2=Sometimes, 3=Usually, 4=Always

Diagram 1: *Uses of Internet*

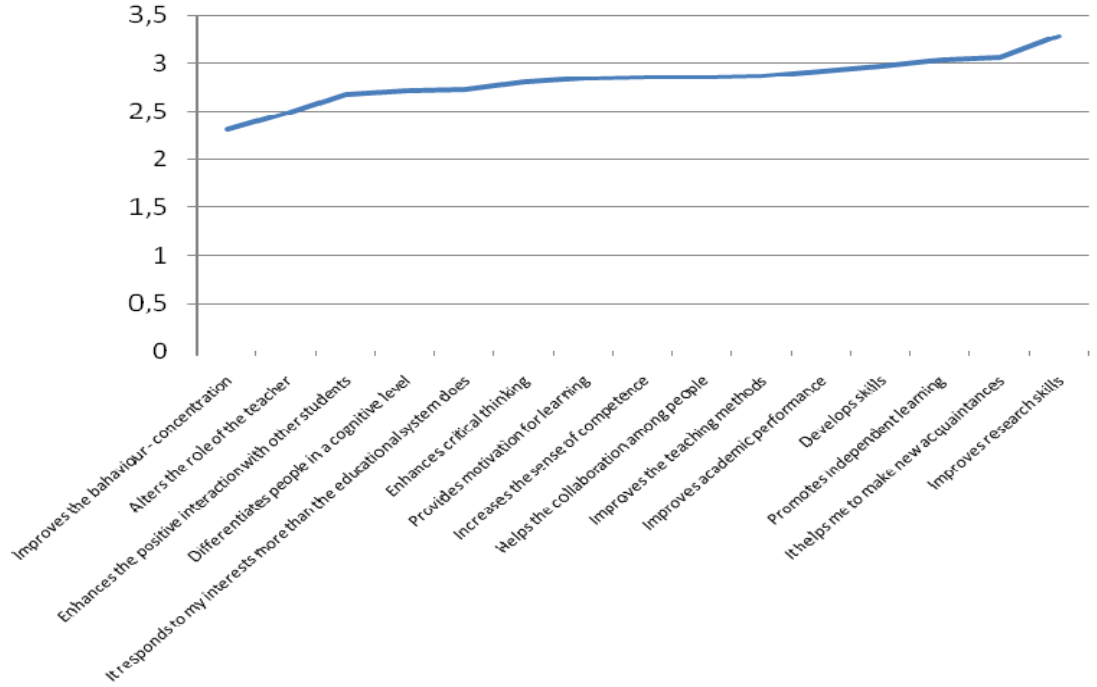


Most people probably agree that the Internet enhances the cognitive and the communicative skills of individuals (e.g. the skills related to research and academic performance or to interpersonal communication). Moreover, most of the respondents probably agree that the Internet promotes independent learning, provides motivation, improves the teaching methods and alters the role of the teacher. The respondents who probably disagree with the above statements constitute the 25% of the sample. The majority does not seem to accept that the Internet contributes to the improvement of behaviour and concentration.

Table 9: *Means, Median, Std. Deviation and Percentiles of questions about cognitive and the communicative skills*

Cognitive and the communicative skills	Mean	Median	Std. Deviation	Percentiles		
				25	50	75
Improves the bahaviour - concentration	2.31	2	0.99	2	2	3
Alters the role of the teacher	2.48	3	1.04	2	3	3
Enhances the positive interaction with other students	2.68	3	1.02	2	3	4
Differentiates people in a cognitive level	2.71	3	0.94	2	3	3
It responds to my interests more than the educational system does	2.73	3	1.01	2	3	4
Enhances critical thinking	2.81	3	0.88	2	3	3
Provides motivation for learning	2.84	3	0.97	2	3	4
Increases the sense of competence	2.85	3	0.95	2	3	4
Helps the collaboration among people	2.86	3	1.09	2	3	4
Improves the teaching methods	2.87	3	0.99	2	3	4
Improves academic performance	2.92	3	0.96	2	3	4
Develops skills	2.97	3	0.85	3	3	4
Promotes independent learning	3.04	3	0.98	2	3	4
It helps me to make new acquaintances	3.06	3	1.1	2	3	4
Improves research skills	3.28	3	0.8	3	3	4

Diagram 2. *Cognitive and communicative skills*



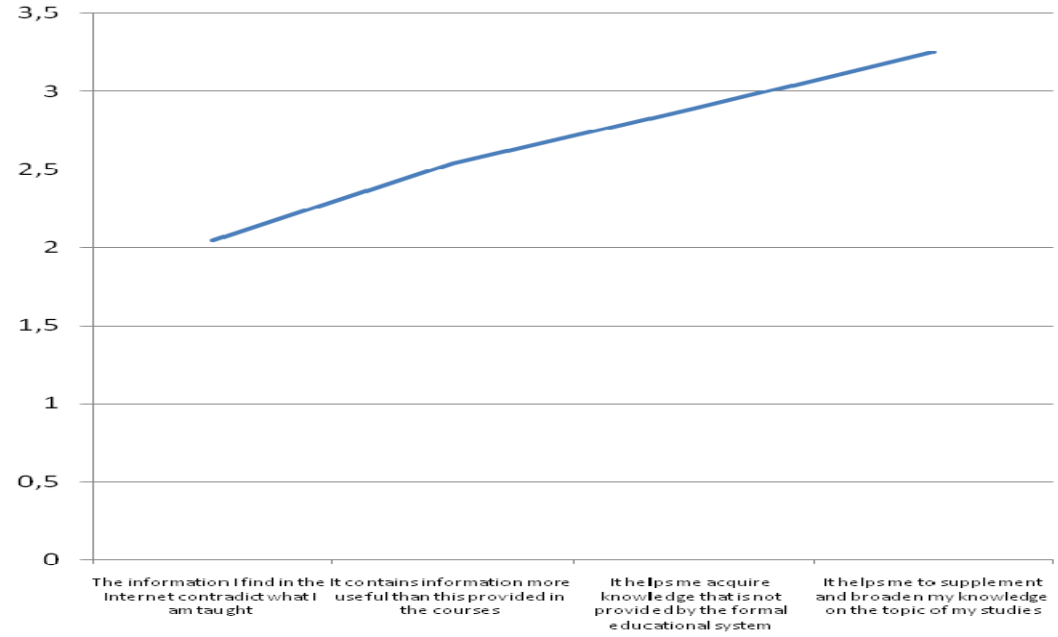
As far as the effects of the Internet on individuals' cognitive abilities and skills are concerned, the majority of the students state that they "probably agree" that the Internet offers useful information that the educational system fails to provide, and, thus, supplements and broadens knowledge on an area of interest. The 25% of the respondents, though, does not accept that Internet provides really useful knowledge.

Finally, most of the students say that they "probably disagree" with the statement that the information found on the Internet contradicts what they are taught by the formal educational system. The 25%, however, claims the opposite (Table 10).

Table 10: *Means, Median, Std. Deviation and Percentiles of questions about cognitive abilities and skills*

Cognitive abilities and skills	**Mean**	**Median**	**Std. Deviation**	**Percentiles**		
				25	50	75
The information I find in the Internet contradict what I am taught	2.05	2	0.91	1	2	3
It contains information more useful than this provided in the courses	2.54	3	0.96	2	3	3
It helps me acquire knowledge that is not provided by the formal educational system	2.89	3	0.93	2	3	4
It helps me to supplement and broaden my knowledge on the topic of my studies	3.25	3	0.81	3	3	4

Diagram 3. *Cognitive abilities and skills*



Conclusion

Nowadays, the use of the Internet is widespread and has developed a new socio-economic environment where information, innovation and knowledge have a primary role. Through the multiple provisions of the Internet there are plenty opportunities for entertainment, access to information and communication among people.

Many theorists believe that the Internet is an effective cognitive tool, as it enables the individual to search and exchange information and knowledge, to collaborate and discuss different aspects and dimensions of a cognitive area, acquiring, thus, a complete view of it.

The analysis of the present research is based on two interrelated dimensions. The first is related to the accessibility and use of personal computers and the Internet and the second to students' beliefs about the impact of the Internet on learning. According to the results, the majority of the students makes daily, intense use of the Internet and has been using a computer for more than five years.

It is remarkable, though, that a number of students, below 10%, have minimal or null contact with the Information and Communication Technologies (ICTs). The educational system fails to identify students' real needs and reproduces inequality and social exclusion. The educational policies that do not provide motivation, do not respond to youth's interests, do not facilitate the accessibility to innovative cognitive tools and do not promote the equal development of cultural capital result in the inadequate development of skills, which are necessary in our demanding post-modern society.

Students usually send or receive e-mails or search information related to the university courses or to their personal interests. A number of people, which constitute the 25% of the sample, use the Internet for communication and entertainment, while

another percentage of 25% never uses the Internet for the above reasons or to participate in collaborating networks. Apart from the frequent use of the e-mail, students use the Internet to obtain information related to the subjects taught at the University or to their general interests, while the Internet is not equally used for entertainment reasons. The Internet is a cognitive tool, which contributes to the enhancement of informal learning, defining individuals' interaction with the informative, the symbolic and the virtual content it provides.

The students, through their daily contact with the Internet, develop skills and satisfy the learning objectives they set each time. They become autonomous, direct the process of learning, and construct their own cognitive schemata.

The students themselves have stressed that the Internet enhances the development of skills, related to learning, research, academic performance and interpersonal communication, improves the teaching methods and alters the role of the teacher. There are, of course, a number of people (25%) who do not agree with the above statements, perhaps because of their own inappropriate use of the Internet or their unfamiliarity with it.

Informal learning, accomplished through Internet navigation, is supplementary to the formal and to individual's previous experience. The students claim that the Internet contributes to acquiring the knowledge that the educational system does not provide and that this knowledge is often more useful than the provided by the formal education. However, the majority of the students make clear that that the information found on the Internet does not contradict what they are taught.

To understand the Internet and its impact on learning, a deeper analysis is required, as it constitutes a complex mechanism of knowledge production. The evaluation of its quality and effectiveness, especially when used in formal education and informal learning, is a difficult task. However, it is necessary to understand its role and function into the learning process, in order to accomplish its appropriate integration and effective exploitation.

References

Ala-Mutka, Kirsti (2009). *Learning in Online Spaces and Communities – how, what and when?* Presentation at the Learncom expert workshop, 31 March 2009. Retrieved form http://is.jrc.ec.europa.eu/pages/EAP/documents/Session4.pdf

Bigge, M. (1990). *Learning theories for teachers*. Athens: Patakis [in Modern Greek]

Bjornavold, J. (2002). *Assessment of non-formal learning: a link to strategies for lifelong learning?* In D. Colardyn (ed.), Lifelong learning: which ways forward? Utrecht: Lemma.

Buerck, J. P., Malmstrom, T. & Peppers, E., 2003. Learning environments and learning styles: non-traditional student enrollment and success in an internet-based versus a lecture-based computer science course. *Learning Environments Research*, 6(2), 137-155.

Calvani, A. & Rotta, M. (1999). *Comunicazione e Apprendimento in Internet*. Roma: Centro Studi Erickson.

Carron, G and Carr-Hill, R A (1991). *Non-formal education: information and planning issues*. Paris: International Institute for Educational Planning.

Castillo, J., Alas-Pumarino, A. & Santos, M. (2000) *Identification, Assessment and Recognition of Non-Formal Learning in Spain*, Thessalonika, Panorama: CEDEFOP.

Charp, S. (1998). Preparing the 21st century teacher. *Journal Technological Horizons in Education*, 26, 6 – 8.

Coffield, F. (2000). *The Necessity of Informal Learning*. Bristol: The Policy Press.

Flouris, G. & Pasias, G. (2000). In the road to the Society of Knowledge. In S. Mpouzakis (Ed.), *Historical-comparative approaches*. Athens: Gutenberg [in Modern Greek].

Jeffs, T. & Smith, M. (1990) (eds.). *Using Informal Education.* Buckingham: Open University Press.

Kanakis, I. (1989). *Teaching and learning with contemporary means of communication*. Athens: Grigoris [in Modern Greek].

Kapsalis, A (2006). *Educational psychology. .* Thessaloniki: Kyriakidis [in Modern Greek].

Kassotakis, M. & Flouris, G., 2005. Learning and teaching: Modern aspects over learning procedures and teaching methodology. Athens [in Modern Greek].

King, K. (1982) Formal, non-formal and informal learning – some North-South contrasts*, International Review of Education,* 28 (2) 177-187.

Koliadis, E. (1995). *Learning Theory and Educational Practice*. Athens, Greece [in Modern Greek].

Kossyvaki, F., (2003), *Alternative education: Proposals for a transition from the education of the object to the education of the active subject.* Thessaloniki: Gutenberg [in Modern Greek].

Muffoletto, R. (1994). Technology and restructuring education: constructing a context. *Educational Technology*, 34(2), 24-28.

OECD (1996), *The Knowledge-based Economy*. Paper no. OCDE/ GD(96) 102, Paris: OECD.

OECD (2001) Knowledge, Skills for life. First results from PISA 2000 (Paris, OECD).

Pelgrum, W.J. (2001). Obstacles to the Integration of ICT in Education: Results from a Worldwide Educational Assessment. *Computers & Education,* 37, 163–178.

Raptis, A. & Rapti, A. (2006). *Learning and teaching at the Information Age.* Athens (self-publishing) [in Modern Greek].

Roblyer, M. D. (2004). *Educational technology in action: Problem-based exercises for technology integration.* Columbus, Ohio: Prentice-Hall, Merrill.

Selinger, M. (2001) The role of the teacher: teacherless classrooms*?* In M. Leask (ed), *Issues in Teaching using ICT*. London: Routledge/Falmer.

Slavin, R.E. (1988). *Student team learning: An overview and practical guide* (2nd ed.). Washington, DC: National Education Association.

Trilianos, Ath. (2003). *Methodology of Modern Teaching.* Athens (self-publishing) [in Modern Greek].