

**Final Thesis Title:**

**CYBERPSYCHOLOGY IN EDUCATION**

**Based Upon Secondary School Students in Bulgaria**

**Eugenia Kovatcheva**

MSc International programme - TAET

**Mentor: Dr. P. A. M. Kommers**

**Chairman: Prof. Dr. J. C. M. M. Moonen**



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## ***SUMMARY***

In the century of new communications via computers and Internet many changes of human behavior are discovered. The identification of motives and their analyses for using the Internet from a uses-and-gratification perspective improves the way of using the Internet. Creating of successful Learning Webs or on-line learning communities is a crucial in the dynamic Net.

The main questions of this study are oriented to the motives, attitude and changes in students' behavior working in Cyberspace, using the Internet, i.e. the influence of the Net on the students' psychology as individuals and as groups. It means that study questions relate to the research area of cyberpsychology. It is the study of user's behavior in cyberspace.

The idea for this study arose almost 2 years ago and first observation was my own experience as the assistant professor in IT, then discussions with system administrators in Internet clubs, maintainers of the Learning Webs, and parents. Their points of view helped me to understand the some of the problems with students in secondary school.

The purpose of this study was to identify how the Cyberspace influences the way of Bulgarian students' behavior:

- What are students' motives for using the Internet?
- How do antecedents and media perceptions relate to Internet motives?
- How do Internet antecedents, perceptions, and motives predict behavioral and attitudinal outcomes of Internet use?

The study is based on the literature and empirical study. The instrument in used here is web-based questionnaire published on <http://www-it.fmi.uni-sofia.bg/anketi/cyberspace/>. The design of the study is of a retrospective survey-type. The obtained results gave us overview of Internet users in secondary school ages in Bulgarian. After survey is possible to identify main motives to using the Internet and to use them for improvement of educational sites. There are made recommendations for developing of often-visited Learning Webs taking into account and specific needs of Bulgarian students. Utilize the important for students' motives and needs are possible to create on-line community supportive the educational process. It is first study in cyberpsychology for Bulgaria and it is a geographically concentrate study.

## **ACKNOWLEDGEMENTS**

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## ***INTRODUCTION***

We live in the century of ICT / telematics applications - the century of Internet! A flood of new ways to communicate, and subsequently provide and deliver psychological assessment and treatments, has emerged. The new communication century offers new possibilities for analyzing and researching *how the Internet influences on the people*.

Internet constitutes the new social morphology of our societies and the diffusion of networking logic substantially modifies the operation and outcomes in the processes of production, experience, power and culture. While the networking form of social organization has existed in other times and spaces, the new information technology paradigm provides the basis for its pervasive expansion throughout the entire social structure. This network logic or form of organization induces a social determination at a higher level, one that was unknown before. The causal power of network flows gets more important than the specific interests they represent, the flows of power. It becomes vital to be present in a network and not to be excluded from it.

The Internet is the new adventure in last 10 years. The Web covers the World globe. The people from all over the world use the Cyberspace. The Net users become participants in one big Virtual World. The people all over the Real world connected to the Internet. Our daily surround turns so close to our computer and from them to the Cyberspace. The Virtual World follow the real and people divided it in different virtual on-line communities of interests that become bigger and bigger. The Virtual and Real World are as two sides of a coin. The deal between them is big. The Cyberspace copies the Real World and extends it in way of more freedom in communication among the people. The people feel freer to express themselves in new manner and change their behavior:

- The Internet is the fast and effective way for communication in our present – i.e. the distance is slightly small – the communication is (almost) in real time – no limitation and people depends more and more on it.
- Individuals communicate with people from all over the Real world via Internet but become lonelier in them own Real world sitting in front of the computers.

- The Internet communication offers anonymous – i.e. the frames and borders are down. Everyone may perform him-/ her-self in different manner.

Castells (1996) describes the main features and processes of the society influencing of Internet:

- *sources* of productivity and competitiveness for firms, regions, countries depend, more than ever, on knowledge, information and the technology of their processing, including the technology of management and the management of technology;
- *transformation* of work and employment - flexible-workers;
- *social* polarization and social exclusion - processes of globalization;
- *culture* of virtual reality - the emergence of a similar pattern of networking, flexibility and ephemeral symbolic communication in a culture organized around the electronic media;
- *timeless* time - time and space are related in society as is nature and their meanings and manifestations in social practice evolve throughout histories and across cultures.

The dynamics of cyberspace push society towards an endless escape from its own constraints and controls.

Cyberspace life is full of advantages and disadvantages!!!

*How the cyberspace can influence the way people behave?* - It is the main question of this study. On-line behavior becomes part of the Cyberspace psychological environment, creating opportunities for shaping the way this new territory for human interaction is unfolding. The Cyberspace has no physical dimensions – it is all over the World but people live in different countries with different backgrounds and antecedents. The observed users are from Bulgaria – Eastern Europe. The borders are open but people economical independence is not fact. The target group of this study is the students 9-18 years old growing up in transitional period after the communism.

The final thesis is divided in four chapters, conclusion, appendix, and glossary (it is necessary because there is full of new terms in use).

First chapter - GOALS presents grounded the research interest, determinate the main goals, target group and instrument of the study, and the expected results.

The second chapter BACKGROUND presents the prerequisites of the study. The Cyberspace is a new mode of life. The Internet users are people all over the world. The country in focus is Bulgaria. In this chapter there is described the political and economical situation, educational system and Internet implementation in Bulgarian's life. From other there is presented the theoretical background of the study- the basic psychological terms and dimensions, as an effect of human-computer-human interaction and the framework of the study.

The third chapter – DESIGN - presents the researching model and instrument for the study. The model contains basic features for developing of one learning web site following the main features from technical point of view and going after questions of this study motives, and behavioral and attitudinal outcomes for using the Internet. The instrument of this study - web-based questionnaire refers to the framework psychology of the individuals, relations and groups in Cyberspace.

The fourth chapter RESULTS presents the analyses of data collected by the web-based questionnaire. The Bulgarian students were investigated. There are established five hypotheses related to the three research questions.

The CONCLUSION summarize the received results and there are made recommendations for developing of useful often-visited Learning Webs taking into account the specific results for Bulgarian students.

In APPENDIX of this paper there is the full questionnaire of the study – in English and paper version. The used questionnaire is in Bulgarian and published on <http://www-it.fmi.uni-sofia.bg/anketi/cyberspace>.

## ***Chapter 1. GOALS***

The Internet – new way of communication – new space for performance – new dimensions, new influence to the people, new psychology – cyberpsychology! 10 years ago when the Internet became popular started and changes in thinking, in users' behavior. The Cyberspace begun to be build following human dreams. It is a Virtual world where the human imagination is the creator. There is possible to create the atmosphere, settings, and visualizations of what we want and wish to view. For everyone, Cyberspace is different because like dreams. The virtual reality is fruit of our mind but the mind is not a physical object in time and space (Kommers, & Zhiming, 2001). The limit is our mind. The Internet users become participants and builders of the Cyberspace and it extends everyday. It is not just one environment, but several, and proposes taxonomy to take into account the fundamental ambiguity of any definition, but deeper investigation is warranted. In the virtual reality the individual may becomes “invisible” or “alien” – it change a lot the human thinking and behavior. Some people live in Cyberspace under assumed identities. They do that to keep themselves anonymously from other people. Some take on assumed identities to hide their true selves or because they want to experience what it's like to be an opposite gender on the Internet.

You can't not do it! but Don't forget the road map!

Collis & Moonen, 2002

'Dominant functions and processes in the information age are increasingly organized around networks' Castells' (1996) long journey through so many spheres', regions and countries describing their current affairs leads to this overarching conclusion. The Internet is necessary in our daily life. It is and way of living. As a proof of this - in Bulgaria was organized one experiment “Possibilities to live just in/with Internet?”. The project was called “Intern@uts, 2002” - girl and boy (unknown before experiment) had to spend 100 day together closed in one apartment – them connection to the Real world was just Internet. The project started on 20.02.2002. The participants spent all 100 days with Internet access only – no other communication tools to the world (<http://www.netbg.net/cat.php?cid=29&p=1>, in Bulgarian only). The success of experiment was reported.

The people surfing on the Internet close themselves in their world and open themselves for the other people in the Cyberspace. The same situation is and for new generation – they follow the same way. Maybe the colors I describe the Cyberspace are a little dark, but after 10 years there I feel the new communication world in this way of development. There are too many challenges, adventures, secrets and problems. The Net is *usable* - to intended the users, and *sociable* - supporting social interaction online. The children start to play on the computer and then to surf on the Web as another toy. In this study we would like to “catch this toy” – its attractive sides and children/ teenagers motives to play with. Next step will be to use this taking element (elements) to motivate students to visit often one site and recommend them to the developers of Learning Webs to support students in their educational needs and tasks. It is challenge for creators – to make attractive and useful sites.

The country in focus of this study is Bulgaria, my native land, Eastern European country in transition – post-communist period. The soon open borders don't offer many possibilities to feel free because there is deep financial dependence and Internet becomes cheapest window to the World and to Knowledge. 6-7 year ago started the building of the Internet network in Bulgaria. Now, a lot of people are connected to the Cyberspace - people from different ages and with different backgrounds. This study is the first in cyberpsychology for Bulgaria.

### **1.1. Main goals**

The purpose of this study is to identify how Cyberspace influences the way students behave, to describe what kinds of changes are happened in students' behavior (dependence, anonymous, aliens, and so on), to examine motives for using the Internet, to consider how certain antecedents and perceptions of media attribute affect motives, and to examine how motives and antecedents affect attitudinal and behavioral outcomes.

This study describes what kinds of changes are happened in students' behavior – dependence, identity changes and so on. At least the children develop new skill adequate of their interests – to surf on the Net. The target group of the study is students between 9 and 18 years old. The main research questions are:

- *What are students' motives for using the Internet?*

- *How do antecedents and media perceptions relate to Internet motives?*
- *How do Internet antecedents, perceptions, and motives predict behavioral and attitudinal outcomes of Internet use?*

The identification of the motives for using the Internet from a uses-and-gratifications perspective and determination needs of Bulgarian students in Cyberspace are in focus. The research is based on the literature and empirical study. The instrument in used here is web-based questionnaire, published on <http://www-it.fmi.uni-sofia.bg/anketi/cyberspace>.

## **1.2. Expected results**

The design of the study is of a retrospective survey-type. Two sets of questions were asked: Demographics, which were used as independent variables stratifying the population into subgroups, and Related to Internet use, which were used as outcome characteristics.

The expected results relate to the main questions are:

- Boys and girls begin using the Internet most for entertainment and less for educational purposes,
- Boys and girls begin using the Internet at a similar age, and there are difference in regard to their residence (a city or rural area),
- The Internet induces changes in students' behavior:
  - dependence on the Internet,
  - escape from the real world in Cyberspace,
  - alienation effect – students alienate from social real world,
  - premise for changing the identity as imaginary or real persons.

The obtained results will give us overview of Bulgarian Internet users in school ages. The recommendations for developing of often-visited learning webs will be made. The improvement of educational sites will be supportive for the students and will help to educational process in Bulgarian schools.

## ***Chapter 2. BACKGROUND***

This chapter describes the background of the study. From one side it is the situation in Bulgaria - the country in focus. The picture for Bulgaria includes the economical situation, educational system and how the innovations are implemented in Bulgarian's life. From the other side in this chapter is made a literature review related to the main questions of the study from psychological point of view and the application of telematics in education.

The main question of this study is: How does the Cyberspace take place into the real world? And what kind of behavior changes appears in Bulgarian students in Secondary School as Internet users and how the antecedents and media perceptions relate to the motives to use Internet?

### **2.1. BULGARIA – COUNTRY IN FOCUS**

The face of one country has a look at different points of view but they will be just facts – its real understanding takes a lot of time. Here the facts for geographical location, demographic data, economical situation, educational system and the place of ICT (Information and Communication Technology) in life are presented.

The interest of this study is focused to Bulgaria because it my native country and I know well the situation there and have observation to the students – Internet users. In Bulgaria there are specific antecedents as a country in transition period that will be explain down.

#### **2.1.1. Location**

Bulgaria is an Eastern-European country of more than 13 centuries old. The country is situated in Southeast Europe and occupies the eastern part of the Balkan Peninsula. On the North border is Romania, on the South - Greece & Turkey, on the West - the Republic of Macedonia & the Federal Republic of Yugoslavia, the Black Sea on the East. Figure 2.1 shows the map of Bulgaria and its location in Europe. The country's relief is extremely varied - large plains and lowlands, low and high mountains, valleys and lovely gorges (the average altitude of Bulgaria is 470m). Area: 111.000 km<sup>2</sup>.



Figure 2.1.1. Map of Bulgaria

### 2.1.2. Demography

The population is almost 8 million and decreased with 1 million in the last 10 years. The number of newborns decreases each year, too. Its ethnic composition: Bulgarian 85.3%, Turkish 8.5%, Gypsy 2.5%, and others 3.7%. Its religions composition is: Bulgarian Orthodox 85%, Muslim 13%, and other 2% (Bulgarian National Statistical Institute, <http://www.nsi.bg/>). Its official language is Bulgarian.

### 2.1.3. Economics

*Bulgaria is a parliamentary republic in transition period after the communism - 1989.* Although the economic transition process started early with the adoption of a reform program and the assistance of the International Monetary Fund (IMF) and the World Bank, it has witnessed a high degree of political and economic instability and lack of decisiveness in economic policy. Bulgaria is still a long way from realizing the potential for productivity improvements from the move to an open and market-based economy; it also means that the potential for further, higher growth is important. Bulgaria's experience is relatively typical of the early years of reform, and the experience of the other transition countries shows that rapid growth can be achieved as transition progresses (National Bank of Greece S.A., 2000).

The progress in Bulgaria is needed especially in the following areas:

1. Enterprise reform,

2. Energy sector restructuring,
3. Increasing export orientation,
4. Enterprise financing and corporate governance,
5. Business environment,
6. Improvement of the quality of institutions.

*The priorities for Bulgaria:* Maintenance of its macroeconomic stability is its prudent and flexible fiscal policy, appropriate labor market policies, prudent debt policy, and supporting social policies.

*Continued Structural Reforms in the areas of:*

1. Privatization;
2. Enterprise restructuring;
3. Improve business environment;
4. Energy sector reform; Further trade liberalization (Bulgarian tariffs are still well above the EU averages);
5. Increase transparency and accountability in public policy.

The maintenance of macroeconomic stability and continued structural reform are a key to faster EU accession. Bulgaria is well on its way to higher, sustainable growth provided the good policies are pursued (main risk external environment). Foreign investors have an important role to play in the growth process as: impact on productivity, transfer of technology, competition.

The Bulgarian real Global Development Product (GDP) lost one third of its 1990 value. In 1989, the Bulgarians enjoyed the highest GDP per capita in the Soviet bloc. By 1999, they were the poorest nation in Europe outside the ex-Soviet Union (World Bank Group, 2002). The inflation rate fluctuated in the 30% - 57.9% range from 1990 to 1997 and was replaced with a single-digit figure in 1998-99. It averaged 113% in the last decade.

#### **2.1.4. Educational System**

In Bulgaria, according to the National Educational Act (1991) the educational system was divided into two levels of schooling: Basic education and Secondary education. Basic education has two levels: Elementary level (1-4 degrees) and Lower secondary level (5-8 degrees). Article 53 of the Bulgarian Constitution gives every

person the right to education. Public education is free and compulsory up to age 16; higher schools are autonomous. Citizens and organizations may create schools, which must comply with state requirements. Ninety private schools enroll about 0.5% of the total school population. Education is highly regulated. Regulations determine obligatory class size and number of teachers and staff, and teacher salary levels.

Ministry of Education and Science (MES) governs approximately 3200 schools including general educational schools, elementary schools (grades 1-4), basic school (grades 1-8), and comprehensive schools (grades 1-12) and gymnasiums (grades 8-12). In addition there are vocational schools and schools for children with special educational needs. Both, vocational schools and schools for children with special educational are called “state schools” and other schools are called “municipality schools”, because municipalities are responsible for them - financing, maintenance, and infrastructure but not for educational quality control, staff policy, direct school management or the curriculum.

As the majority of the Eastern European countries, in the field of the school education Bulgaria has had a strictly centralized system for about 50 years before the changes in 1990. The centralization has been focused mainly on the monitoring and control of the inputs and the processes within the educational system, rather than on the precise and reliable measurement of the educational outcomes. And on the other hand, school management has been under umbrella of MES. All school operations were controlled by the Ministry even the Minister has been an employer of school principals and other school staff. No explicitly defined standards of attainment existed at national level; neither there were structures for external assessment and verifications of the student achievements and the matriculation exams, and the teacher’s/ principal’s performance. The latter student achievements have been and still are developed and organized centrally student’s assessment, but assessed and marked in school by peer teachers groups with the participation of the teachers who instructed the respective students.

Student achievement is recognized as a basis for judging quality, but since there is no yet national monitoring system, the Ministry monitors student achievements at the end of different grades on a campaign and request base, targeting through national samplings different subjects and grade ranges. The results are used in determining and improving the educational policy in particular subject area. Highly

centralized quality control is made by inspectorate expert visits to schools during which different school documentation, as well as classroom practices in particular subjects are checked and verified. A school principal also monitors quality, but has no right to evaluate pedagogy. The curriculum and the national calendar, an annual list of mandatory educational activities prepared by the MES guide the school principals. The conducted each year through entry exams two national enrolment campaigns: one for the highly demanded schools after grade 7, and the other for the universities, play a role of tools for indirect and unofficial way of a judgment for school performance on the base of student achievements.

A series of recent legislative amendments and initiatives have created a *process of educational reform* designed to improve the quality of education. The reform is influenced by current trends towards internationalization and globalization, the need for greater freedom of choice, and the political, social, demographic, technological and economic changes that have occurred in Bulgaria over the last decade. It targets a more flexible school organization that reflects the market economy and principles of autonomy; central education requirements for assessing student achievement, and school accreditation; linking school financing to student numbers and to educational quality; and more local influence on educational matters.

In 1991-1992, the MES defines national educational policy and manages the overall system. After approximately 50 years of centralization, the Ministry continues to wield too much power in too many areas; legislation, curriculum designs, test development, and day-to-day management of various levels. For the last several years, however, it has consistently sought to decentralize and to deconcentrate power and to work towards a more highly autonomous educational system. The new normative regulations give the MES the power to establish and develop the main policy framework for public education while focusing on standardization and control of educational outcomes, which leaves management and control of educational inputs and processes to local levels.

In 1997, after elections the new MES defined National educational policy “ Education Modernization “ with focus to improving the quality of educational system and determined the main intentions of the Educational Reform:

- Learner-centered educational system
- Decentralization of educational system in terms of school management

- Curriculum development (standards of content & assessment; learning plan)
- Information and communication technology (ICT)
- Civic education

In 1999, the Curriculum law (National learning plan) was amended and the general curriculum was substantially decentralized. A core national curriculum is defined with the purpose to determine the required educational minimum to be covered by all students at particular grade-range. The rest of the curriculum is left to the discretion of the schools themselves.

In 2000, the Standards of study content for all school subjects is amended after wide public discussions and comments between schools, teachers, parents, Inspectorates, Universities, Unions, and other Educators. Standards determine the necessary knowledge, skills, and attitudes to be acquired by every student by the end of a particular educational degree or stage - that is, after 4, 8, and 12 grades.

The new standards are developed so that to be clear and understanding for educational people:

- Society needs to know what will be taught in schools and what students should be able to do at any stage of education.
- Students, and their parents, need to know how success will be assessed so that they can prepare themselves.
- Users of results (employers, universities, and other institutions of higher education) need to know what assessment results will mean.
- Teachers and students need to know about content, standards and assessment in very fine detail.

The new standards consist of eight subject areas:

- Bulgarian language and literacy
- Foreigner languages
- Mathematics and, Information and Communication Technology
- Sciences and ecology and Health education
- Social sciences and civic education
- Arts
- Sports
- Technology

### 2.1.5. ICT & Bulgaria

In situation, as was described above the innovation technologies are developed in Bulgaria. The data of the National Statistical Institute (2001) shows that for the last 4 year. From the economical crisis in Bulgaria 1997 till year 2000 the personal computers (per 1.000 people) are increased more than 2 times from 21.66 to 43.94 and the 4 times more are Internet users – from 100000 to 430000 (Figure 2.2). In Bulgaria the dial-up Internet access is used more than cable modem or leased line for the household.

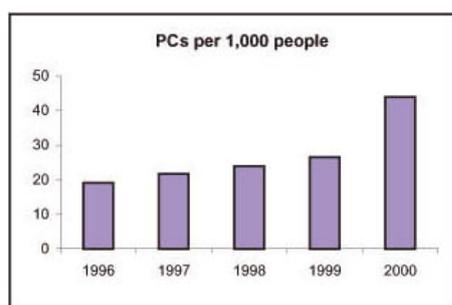


Figure 2.1.2. PCs per 1.000 people

The phenomenon in Bulgaria is that a big part of the computers are distributed in the Internet clubs. The Computerworld, IDG Bulgaria (2003) survey - shows that in Bulgaria there are about 5000 Internet clubs, their number increases in the last 3 years. In some school there are computers classes but for full school computerization is needed about \$200 millions – impossible right now. For this reason most of the time the students use computer in the Internet clubs or at home less at school.

In the transition period during last 14 year the country borders was opened – the challenge for people to travel abroad but financial possibility are less. The Internet is the cheapest entertainment, way to meet new people, to travel and to receive information.

Bulgaria the county in focus of this study is one post-communist East-European country. In the last 10 years it is in transition period and there are a lot of changes in political, economical, and social. They influence the educational system – the educational reform has started. One of the priorities is the ICT in education. For successful implementation in education there is necessary to be developed computer infrastructure in the school. It takes a time. In the same moment the network of the Internet clubs cover the country and students use them, and they offer the cheapest

entertainment. The Bulgarian economical situation determines as a prerequisite the following study. It influences the way Internet using and how the Net affects the students' behavior.

The next section presents the theoretical background from psychological point of view. The basic features of the development of the Internet applications will be discussed later.

## **2.2. LITERATURE REVIEW**

The New Virtual world creates new words or a new sense of some words. The new information technology paradigm provides the basis for its pervasive expansion throughout the entire social structure. The deals between virtual world and real started when Internet becomes public – more than 10 years ago. Ritterband, Gonder-Frederick, Cox, Borowitz, West, and Clifton (2002) discussed that the new means have been introduced and new terms described. The *cyberpsychology* is one of them. It is the study of the influence of computers, technology and virtual environments on the psychology of individuals and groups.

*The main questions of this study are oriented to the motives, attitude and changes in students' behavior working in Cyberspace, using the Internet, i.e. the influence of the Net on the psychology of students – as individuals and as groups. It means that study questions relate to the research area of cyberpsychology.* For this reason we will give some definitions, dimensions and features of Cyberpsychology. The common motives for using the Internet and distinguish behavior changes described in the literature.

### **2.2.1. Definitions**

Let consider several definitions about the Internet from psychological point of view. *Cyberpsychology is the study of the influence of computers, technology and virtual environments on the psychology of individuals and groups* (Suler, 1998).

As progress towards the future, the human being is beginning to have a different relationship with computers. As Sherry Turkle (1997) wrote in her book "Life on the Screen", "we are seeing computers not as a mere calculation machine, but a source of communications, networking, word processing, etc." With the emergence of the Internet, people have created a parallel universe - Cyberspace,

where they have created virtual reality. This is where the users, through their computers, access the Cyberspace. As James (2000) puts it, *Cyberpsychology is therefore the study of user's behavior in cyberspace.*

For better understanding of this term is necessary to determine Cyberspace. It is the place examined by cyberpsychology. The term *Cyberspace* is originated by William Gibson in his novel NEUROMANCER (1984) who states that it is: “A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphical representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity: Lines of light ranged in the non-space of the mind, clusters and constellations of data. Like city lights, receding...”

The *Cyberspace* according to Encarta® is:

1. *imagined place* where electronic data goes: the notional realm in which electronic information exists or is exchanged an e-mail message lost in cyberspace
2. *virtual reality*: the imagined world of virtual reality

Down we give one circumstantial definition of cyberpsychology, according Encarta®, as an combination of two words:

- *cybernetics*, from the Greek word *kubernētēs* (meaning steersman) [Coined by the U.S. mathematician Norbert Wiener (1894\endash 1964).], is defined as:
  - study of automatic control systems: the science or study of communication in organisms, organic processes, and mechanical or electronic systems
  - replication of natural systems: the replication or imitation of biological control systems with the use of technology
- and, *psychology* is defined as:
  - the science of the mind or of mental states & processes; the science of human nature.
  - the science of human and animal behavior.
  - the sum of the mental states and processes of a person or of a number of persons, esp. as determining action....

Composed these two definitions, the following definition is synthesized:

*Cyberpsychology is the study of the individual's psyche:*

- *while engaged in communication through a computerized medium,*
- *when incorporating the use of the computer medium into other aspects of his/her life,*
- *in regards to how the individual learns to use the computer and grows with experience,*
- *in how s/he develops socialization and identity through use of computerized communication,*
- *the ability and knowledge to create our own Virtual Reality in Cyberspace*
- *the ability to access something in Cyberspace (it deals with our motivation, thoughts, feelings, emotions, and visualization – our psychology)*
- *and, in regards to how changes in society, because of computerized communication, affect him/her.*

Cyberpsychology does not need to apply to those who are actively involved in Cyberspace only. Since the Internet has become more popular, as more people learn its benefits and how to use it, on-line activities and references to them are becoming much more widespread. Because of how the Internet is pervading the lives, Cyberpsychology has applications outside of pure Cyberspace realms. According James (2000) "It studies mind through virtual reality as it evolves on the net."

The cyberpsychology deals with a lot of what drives, motivates, and catches the attention to what people are looking, seeing, and feeling and goes deeper than that. Unbeknownst to the majority, there are so many psychological aspects to clicking on links, creating web sites, interacting in chat rooms, and other actions in Cyberspace. In this study we would like to identify just the drives, motives and so on for that we refer our attention to the cyberpsychology.

The importance of cyberpsychology on the Cyberspace is quite difficult to explain. It's very complex. However, the cyberpsychology on the Web is to understand what makes people addicted and attracted there. The people make a difference -how the sites are viewed and understood. Everyone, to a certain degree, is somewhat involved in building and creating cyberspace and everyone is involved in cyberpsychology. As Haraway (1991) puts it, "...if they are not already aware of this

field of study, ought to learn about Cyberpsychology are those involved in creating web sites, selling on-line, or anyone who wishes to be noticed in cyberspace. Since Cyberpsychology can offer many insights to how people respond to web page designs and the type of information contained." The interest doesn't lie in just the observer, but also in the ones that are being observed. Anyone who owns a computer and has access to the Internet is in their own way showing interest in understanding cyberspace and virtual reality (even if they don't consciously realizes it). The interest lies in the action and reaction of something.

Cyberpsychology is the study of human behavior thus the principles of cyberpsychology are in order to understand the psychological impact that Cyberspace has on people. According James (2000), there are three main factors – affective, cognitive and sensorimotor.

### **Affective factors**

The emotional and motivational factors of a person while he/ she is in Cyberspace. What types of emotions do people in cyberspace experience? Are there norms for the types of emotions experienced for specific situations? What motivates people to be involved in cyberspace? These are some of the questions that need to be answered as cyberspace expands and becomes a major component of society at large. The affective factors in cyberspace can also generalize into the person's emotional and motivational state in the "outside" world.

### **Cognitive factors**

How do people think in cyberspace? Are there organizational patterns in the patterns of thinking? Creating a virtual reality and virtual presence of themselves on the Internet is important in understanding where they are within the Cyberspace – as individuals or as a group. Some of the topics covered in Cyberpsychology are Identity Shifting/ Dissociation, Virtual Reality, On-line Community, and relationships on the Internet, status on the Internet, acts of clicking, on-line presence, and more.

Cyberpsychology has a great resource for studying the cognition of people, because *Cyberspace is equivalent to the human mind. People are interacting exclusively with their minds through the Internet.*

### **Sensorimotor factors**

The least important factor involved in the interaction in cyberspace. There are practically no sensorimotor factors involved when people interact over the Internet. Everyone is seated in front of a computer screen and is either using a mouse or a keyboard to input or receive information. However, the implications of *the absence of sensorimotor factors* in the interactions of people will become *very significant as more people use the Internet as a communicating device*. The cyberpsychology deal with the human mind inside and outside of cyberspace.

Very important is to understand what's involved on the Internet, the experiences and situations that occur on the Internet, and how they can experience and view their on-line personalities. The Identity on Cyberspace and the creating a virtual reality, virtual presence, and creating groups (on-line communities) lead to understanding of human behavior on the cyberspace (the cyberpsychological aspects).

### **Identity**

*The most important is identity on the Internet*. How people would like to be understood, look like? There are people who use the Internet under assumed identities. There are no sensorimotor factors then individuals do that to keep themselves anonymously from other people. Some take on assumed identities to hide their true selves or because they want to experience what it's like to be an opposite gender on the Internet. The identity changing (shifting/ dissociation) is the main “attraction” of the Net for most of the people especially in chat rooms and messengers or other one to one conversations. A life in another's shoe is enticing to express hidden sides of own imagination. The target group of this study is the teenagers from Bulgaria. It is important for them for their age and it is a part from the observation - the behavior on the Internet – students' performance, dependence, and motivations.

### **Virtual Reality**

Virtual Reality exists in the cyberspace and NOT in the real (material) world only. It is different because like dreams (Suler, 1998). There is possible to create the atmosphere, settings, and visualizations of what you want and wish to view. Virtual reality is a generic term in which reality itself does not exist. It is too small or too large to present, or it is too difficult or too expensive to betray. Real world event may

not be accessible because it is too far in space or it does not exist at present. To present all this information to the real classroom or a virtual classroom in which learning can take place without the need to be in class during the working hours of the day, we need a virtual reality system.

In the realm of education, technology offers educators the opportunity to move away from instructional strategies that focus on presentation of abstract information to the passive learner to an active process in which meaning is developed on the basis of experience (Kommers, & Zhiming, 2001). In the constructivist view, the learner is building an internal representation of knowledge and a personal interpretation of experience. Neither meaningful construction nor authentic activity is possible if all relevant information is pre specified. What is meaningful is the development of learning environments, which encourage construction of understanding? Multiple perspectives: This is in contrast to the typical school environment where the goal is to transfer knowledge to the learner in the most efficient, effective manner possible.

This study is oriented to identification of elements that gain students' attention in the Internet and provoke them motivation to visit and create on or other virtual reality in cyberspace.

The human being cannot create or visualize what virtual reality is – it is mind creativity, artistic ability, and imagination – the virtual place where people are happy and satisfied. The fact is that when people use computers they are having an exchange with other humans, through the machine, not with the machine. The computers are convenient and powerful extensions of the human mind and every characteristic of the mind can be expected to show up as a property of cyberspace. The relationship between Cyberspace and the mind is a dual process (James, 2000).

The computer provides people with the technology to visualize other people's thoughts, feelings, emotions, creativity, imagination, artistic ability, and spirituality in a way that they wouldn't ascertain from the others. Computers are giving the people a chance to view and visit people from all over the world. It takes people with the common interest to make cyberspace a comfortable and sociable place to relax, visit, socialize, and interact with people in it.

The virtual world is quite different than the real. Digitizing people, relationships, and groups has stretched the boundaries of how and when humans can

interact. Suler (1998) explores some of the *psychological features of Cyberspace* how people behave in this new social realm. In different on-line environments there are different combinations of these features, thus resulting in a distinct psychological quality to each environment that determines how people experience themselves and others. These features may be considered as the *fundamental elements of a conceptual model for a psychology of cyberspace* - reduced sensations, identity flexibility, altered perceptions, equalized status, transcended space, temporal flexibility, social multiplicity, and media disruption. The basic psychological features of Cyberspace shape how *people and groups behave* in those realms. On-line behavior will always be determined by how those features interact with the characteristics of the people in those environments. A variety of systems might be useful in classifying those characteristics. The focus is on specific features of the user, such as the *person's computer skills, goals for using the Internet, demographic characteristics* (age, social-economic status, occupation, etc).

### **2.2.2. Psychological dimensions**

When the human behavior on the Internet is considered, it has to take into account that Internet is not just one environment, but several. The Cyberspace can influence the way people behave, sometimes for the better, sometimes not. Suler (1998) explores the psychological dimensions of environments created by computers and on-line networks. It is intended as an evolving conceptual framework for understanding the various psychological components of cyberspace and how people react to and behaves within it. People's on-line behavior becomes part of the Internet's psychological environment for others, creating opportunities for shaping the way of new territory for human interaction.

There are four psychological dimensions according Suler (1998), James (2000) – *the basic psychological qualities of Cyberspace, Psychology of the Individual in Cyberspace, Psychology of Cyberspace Relationships, and Group Dynamics in Cyberspace*.

#### **The Basic Psychological Qualities of Cyberspace**

This dimension includes the Cyberspace as a psychological space and its basic psychological features discussed above as well as Cyberspace as a dream world, coping with spam, and Black Hole (no interactivity) of Virtual world.

The people have witness they are conscious and/ or subconscious mind into the world of Cyberspace (Turkle, 1997). The conscious mind is needed to motivate and drive people into doing what are wanted to do on the Internet. The subconscious mind is needed to create an atmosphere within the mind as to what people want to experience and visualize from the Internet. This describes - what people do and do not like in a particular place that they visit.

According to Leon James (1999), "Interests and intentions define and reveal mind." It acts of clicking creates an atmosphere of links and/or clicks that are visited. Meaning that the clicks/ links create person virtual reality on the Internet and gives the ability for visualizations and feelings. The significance of knowing the people on the Internet gives the ability to visualize and experience them intentions and motivations during the time that they spent searching on the Internet.

### **The Psychology of the Individual in Cyberspace**

“We live in the digital age! Analog thinking is inappropriate in so many areas of life ... A digital device deals with ones and zeroes. There is no in-between, no range of adjustment, no third way.” (Fukyama, 1993)

The psychology of the Individual in Cyberspace has to be considered in two ways – first the psychology of human – computer interaction and second – how person identify him/ herself in the Cyberspace.

#### **Human-Computer Interaction**

Now, let describe a phenomena human-computer interaction. According Turkle (1997) there is a set of boundary negotiations, telling the story of the changing impact of the computer on human psychological lives and human evolving ideas about minds, bodies, and machines. The emerging is a new sense of identity--as de-centered and multiple. The trends in computer design, in artificial intelligence, and in people's experiences of virtual environments are a dramatic shift in people notions of self, other, machine, and world.

The computer emerges as an object - as role-playing games on the Internet can develop a way of thinking in which life is made up of many windows and real life is only one of them. The players discover also that the idea they are a unified self is also

another fiction. Turkle (1997) asserts *the personal computer is an "object-to-think-with"* for understanding the change computers are inducing in our minds.

The analyses of human behavior in a variety of contexts that range from the all-familiar email, to synchronous or asynchronous, graphical or textual communication environments and the specificity of on-line contexts, as well as the similarities between human behavior, on-line and offline. The web users' behavior and the ways in which it affects other participating *among the different electronic* environments available change, too.

In human-computer interaction the important role is *transfer to computers and cyberspace*, addiction to computers and cyberspace, regressive behavior in cyberspace and integrating on-line and offline living. There are several levels of Internet counseling non-interactive, information on mental health, self-help resource materials, helping and referral agencies, provider lists (referrals) and interactivities: synchronous and asynchronous chats, support chat groups, e-mail, testing and assessment, e-mail counseling, audio plus whiteboard, full audiovisual real –time.

More and more software becomes commercially available enabling people to build their own personal representatives. As bandwidth increases and compression becomes better as on-line virtual worlds grow to become more than real.

### Individual identification

Personality types in cyberspace and Identity management in cyberspace was discussed above as the most important features of cyberpsychology. It relates to the unique roles in cyberspace, and on-line gender-switching. The phenomenon anonymous on the Web leads to feeling of freedom on the cyberspace.

The people use the Internet then individuals do that to keep themselves anonymously from other people. Some take on changed identities to show new personality because they want to experience. The identity changing is as an “attraction” of the Net for most of the people.

### **The Psychology of Cyberspace Interpersonal Relationships**

The normal social constraints and conventions of face-to-face meetings are left behind. There are in-person versus cyberspace relationships, transient and long term on-line relationships - e-mail or chat communication and relationships. The

identification on the Internet mentioned for the second psychological dimension relates to this one – cyberspace interpersonal relations because in one relation is important human performance. People in a face-to-face meeting have a sensorimotor factor (it was described above) for the person in front. In the cyberspace this factor does not exist and individuals just react to the written text and pictures. In cyberspace, there is and transference among people on-line and ways to resolve conflict on-line. In the interpersonal and inter-group (this one relates to the fourth dimension group dynamics) behavior according Wallace (1999) there are the possibility of assumed anonymity and actual physical distance between web participants. These lead to positive or negative behavior as on-line friendships and romances discussing, or the psychology of aggression

### **Group Dynamics in Cyberspace**

The dynamics of group behavior on-line - the psychological phenomena of conformity, polarization, conflict and co-operation occurring in mailing lists, e-mail traffic, news and discussion groups and chat rooms. People increasingly make the sorts of explorations and the social impact of such explorations may turn out to be enormous. Turkle (1997) distinguishes two possibilities first - isolation, alienation of the users, and second - no longer live in isolated, people become more flexible, being able to interact successfully, in team efforts, with people who are very different from them.

In other words the group dynamics in cyberspace relate to On-line-communities. They are described according Preece's (2001) theory.

#### **On-line Communities**

Let consider the phenomenon on the Internet - creation of the people groups – On-line communities. Following the Preece's (2001) definition for an *On-line community* as a group of people who meet together on-line. It has four components:

- "*People*" - people and how they communicate;
- "*Purpose*" - people's needs and purpose for communicating;
- "*Policies*" - people behave and established policies to guide behavior;
- "*Software*" - support the interaction and influences people behavior.

There are different emphases, depending on who talk with, and they may be placed on each of these four components. The balance is needed with perspective that takes account of all components.

### Characteristics of On-line communities

Preece (2001) says “Most important remember that a community is more than just software, *a community is organic*, it evolves and changes over time. Your job as a developer or moderator is to support that evolution by working with the community to understand what it needs.” One on-line community is concerned to be:

- *Sociability* - it is supporting social interaction on-line – purpose – of community, the people involved in it and the policies of community - does their need to be scope for private communication, do people want to exchange personal information and how can that be made secure.
- *Usability* - it is how the software is designed to make it usable by the intended users, i.e. makes it controllable – user is in control, predictable to use, intuitive, and memorable. Usability relates to ease-of-use navigation, access, information design, and dialog support. *Usefulness* relates to relevance; do the functions, information, etc. match what the user actually needs.

### **2.2.3. Main Factors – motivations, needs**

The purpose of this study is to examine motives for using the Internet from pragmatic and entertainment point of view, to consider how certain antecedents and perceptions of media attributes affect motives, and to examine how motives and antecedents affect attitudinal and behavioral outcomes. To distinguish main factors have to consider human behavior from psychological point of view and what Cyberspace offers to the users in which manner and how this influence the behavior in the psychological dimensions: Human-Computer interaction, individuals, relationships, and Group Dynamics in Cyberspace. People use computers to gratify:

- *interpersonal needs* - Papacharissi, & Rubin (2000), and Eighmey, & McCord, (1998) distinguish three types of them inclusion, affection, and control and six motives for interpersonal communication - pleasure, affection, inclusion, escape, relaxation, and control
- *needs traditionally fulfilled by media* (social interaction, pass time, habit, information, and entertainment)
- *other needs* (time shifting and meeting people), which are fulfilled by new media.

Have to take into account that there is difference between face-to-face groups and computer-mediated groups as was describe above. Face-to-face groups did not

express greater intimacy than computer-mediated groups. The mediated interaction is rarely impersonal. The computer-media communication is interpersonal when users have the time and interest to interact on a relational level and the computer-media communication is hyper-personal when users can manage relationships and impressions in ways more effective than with face-to-face communication to other mediated channels.

Patterns of exposure or use and attitudes are also relevant to study of the Internet. Communication satisfaction is a communication outcome that is related to fulfilling our expectations through interaction. Motivation and skills predicted communication satisfaction. The attitude and exposure are important correlates of media use and uses-and-gratification are used in this study for identification of the motives for using the Internet; antecedents and media perceptions relate to the motives; and how to predict behavioral and attitudinal outcomes of Internet use.

In this chapter was presented the background of the study – from one side the country in focus – Bulgaria with its demographics, political, economical characteristics and educational system. From other side there were determined – Cyberpsychology – the study in relation with our work, and the psychological qualities of Cyberspace, psychology of the individuals, relationships, and group dynamics in Cyberspace - the framework.

In next chapter will be described the researching model and instrument of this study. They related to the correlation of media - attitude and exposure and uses-and-gratification for identification of the motives and behavioral and attitudinal outcomes but from design point of view – developing the often-visited Learning Webs using the cyberpsychological dimensions and technological “tricks”.

### **Chapter 3. DESIGN**

In this chapter the researching model and instrument for the study are described.

The model contains basic features for developing of one learning web site following the main questions of this study attitude, exposure, motives, and behavioral and attitudinal outcomes for using the Internet.

The instrument for this study – web-based questionnaire follows the research framework from previous chapter: Basic psychological features of Cyberspace, Psychology of the Individuals in Cyberspace, Psychology of Cyberspace Relationships, and Group Dynamics in Cyberspace.

#### **3.1. LEARNING WEBS**

The real space is retired at the expanse of virtual. The students as Internet-users follow the same trend they stay more and more time connected to the Net. They are motivated to visit one or other site from cyberspace. The sites are with different subjects some of them are used for study – Learning Webs. To learn via the Net is necessary first to have ‘ready’ educational web sites and second “ready” students to use them - students with needed skills and knowledge to use the computers and Internet.

In Bulgaria the improving quality of educational system has started. One of the main purposes of the Educational Reform is implementation of Information and communication technologies as it was said above Section 2.1.4. But, in schools, there were not developed computer infrastructures. Students have Internet access from home or Internet clubs. There are well maintain Internet clubs – it’s not solution but it is an issue for improving students’ computer and Internet skills.

To support students effort in them school tasks there are different web sites. The challenge is to be developed educational web sites that gain students’ attention and they visited them often and use them in proper way – as support or main source of information for education. As it was mentioned above, the goal of this study is to identify these motives from both sides (pragmatic and entertainment) and then to use them for creating the effective educational sites that will help and support students.

Driving forces are attitude and motivation - most for fun, less for pragmatic reasons (including educational). Motives are general dispositions that influence students' action taken to fulfill needs or wants. Motives are key components of this study. Perspective are searching the necessary useful information, and in the other the students attention is gained from the entertainment sites – chat, games, music, movies, and so on (Figure 3.1.1).

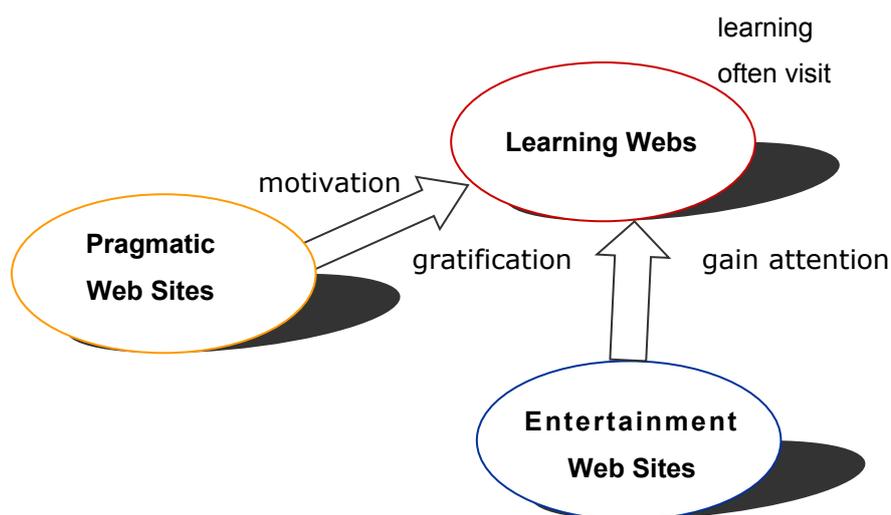


Figure 3.1.1. Pragmatic & Entertainment

How to be successful one educational site? Development of one Internet application as a learning web site has some aspects:

- to cover *educational needs* – content of the site has to relate to the Bulgarian curriculum – i.e. to be educational effectiveness and organizational-context – environment sub factor;
- to cover the *factors influencing an individual's use of a technology* innovation in learning-related practice According to Collis, & Moonen (2001) the site have to be easy of use, and oriented to personal engagement about technology use;
- to cover the *motivation and uses-and-gratification factors* for using the Internet – they relate to the four cyberpsychological dimensions: basic psychological features of Cyberspace, psychology of the individuals, relationships, and group dynamics in Cyberspace and main questions of the study – about the motives for using the Internet and the affect of certain antecedents and perceptions of media attribute to the motives, attitudinal, and behavioral outcomes.

First two aspects relate to the 4Es models of Collis, & Moonen (2001) – *Easy of use*, (personal) *Engagement*, (perceived) *Educational Effectiveness* and (institutional) *Environment*. 4Es model gives the four main features influencing students' use of Internet in learning-related practice. These main features have to be followed developing the learning web.

There are mentioned several remarks and recommendations about the aspects for well developed web site - web design features and cyberpsychological features - the process of understanding of students' needs and motivation.

The educational content of the sites is not purpose of this study and it will be not discussed here. Let just mention four approaches according to Illich (1973) that enable the student to gain access to not only for curricular but any educational resource, which may help him to define and achieve his own goals:

- *Reference services to educational objects* - which facilitate access to things or processes used for formal learning. Some of these things can be reserved for this purpose, stored in libraries, rental agencies, laboratories and showrooms like museums and theatres; others can be in daily use in factories, airports or on farms, but made available to students as apprentices or on off-hours.
- *Skill exchanges* - which permit persons to list their skills, the conditions under which they are willing to serve as models for others who want to learn these skills, and the addresses at which they can be reached.
- *Peer matching* - a communications network, which permits persons to describe the learning activity in which, they wish to engage, in the hope of finding a partner for the inquiry.
- *Reference services to educators-at-large* - which can be listed in a directory giving the addresses and self-descriptions of professionals, paraprofessionals and freelancers, along with conditions of access to their services.

### **3.1.1. Web design features**

The web sites obey to the visitors' rules. The Internet users have own request. They don't read whole article, because they feel not productive if they read whole. The articles have to start by telling the reader first conclusion, follow by the most important supporting information, and end by giving the background. This style is known as the *inverted pyramid* for the simple reason that it turns the traditional pyramid style around. According to Nielsen (1996) "the Inverted Pyramids in

cyberspace becomes even more important since we know from several user studies that *users don't scroll*, so they will very frequently be left to read only the top part of an article. Very interested readers *will* scroll, and these few motivated souls will reach the foundation of the pyramid and get the full story in all its detail.”

Discussing the web design features. There is important to take into account this phenomena for the Internet users that they *don't really read web pages, they scan the pages*. Users looking for their ‘nugget’ of information are more like hunters than like someone out for a leisurely stroll, picking out individual words and sentences. According Nielsen (1998) there are some plausible reasons for that:

- reading from computer screens is tiring for the eyes and about 25 percent slower than reading from paper.
- the Web is a user-driven medium where users feel that they have to move on and click on things.
- each page has to compete with hundreds of millions of other pages for the user's attention.
- modern life is hectic and people simply don't have time to work too hard for their information.

These four facts are so important when the goal is to be created often-visited site. *The user is on focus*. User Centered-Design is a philosophy and a process. It is a philosophy that places the person (as opposed to the 'thing') at the center; it is a process that focuses on cognitive factors (such as perception, memory, learning, problem-solving, etc.) as they come into play during peoples' interactions with things.

The user-centered-design can improve the usability and usefulness of everything with which people interact. Usefulness relates to relevance; do the functions, information, etc., match what the user actually needs and usability relates to ease-of-use. According Katz-Haas (1998) there are usability guidelines for establishing of one learning web (site) – to be effective, easy of use, and to engage the users:

- *Visibility* - helps users from correct mental models of the 'thing'—models that help users predict the effect(s) of their actions
- *Memory Load* - the site should reduce user memory load
- *Feedback* – users have to receive immediate feedback when they act
- *Accessibility* - users need to find information quickly and easily
- *Orientation/ Navigation* - web users do not feel lost

- *Errors* - important to minimize user errors and provide users with mechanisms that allow them to recover quickly from errors
- *Satisfaction* - the site should be pleasant to use and look at
- *Legibility* - text should be easy to read
- *Language* - short sentences, 'everyday' words, active voice, active verbs, verbs (instead of noun strings or nominalizations), simple sentence structure
- *Visual Design* - should be the user's ally.

The next step after creating of one learning web is to be disseminating among the students. The establishment of one web site is not the final step in the process of promotion on the Internet. Van Doren, Fechner, & Green-Adelsberger (2000) distinguish four possible scenarios:

- involves the establishment of one- or two- web sites on the Internet
- not only establish a presence on the Internet, but also gain user attention in a way that encourages repeat visits to the site
- more involved, it offers detailed students service tools such as on-line help, on-line customer feedback
- complex situation where web site become a distribution channel for an educational purposes.

### **3.1.2. Cyberpsychological features**

Understanding of students' needs and motivations is a process according Illich (1973). The students intuitively know what the schools do for them. The students are thereby "schooled" to confuse teaching with learning, grade advancement with education, a diploma with competence and fluency with the ability to say something new. Their imagination is "schooled" to accept service in place of value. Uses-and-gratification framework may be used to examine how social and psychological antecedents (contextual age and unwillingness to communicate), and perceptions of media attributes (social presence). The motives for access to Internet based on this theory assumes students communicate or use media to gratify needs or wants (Papacharissi, & Rubin, 2000). It focuses on motives for media uses are factors that influence motives, and outcomes from media related behavior. Besides the Internet's unique nature, a student's own social and psychological characteristics affect how he/she uses the Internet. In our case for Bulgaria – the post-communist country with soon

opened borders but without financial freedom – the Internet appears as a cheapest travel agency, library and entertainment. The Internet possess *interactive / social* and *informational / task* – oriented dimensions for users. In this respect, the needs the Internet fulfills may not be too different from the need met by more traditional and media channels, which also enhances the opportunity to reinvent one’s identity and to compensate for a sense of inadequate social interaction. Similar to finding about more traditional media, social and psychological characteristics should influence people’s expectations and uses of the Internet.

According to Haraway (1991), the advent and diffusion of cyberspace can eradicate or blur distinction between human-machine, and cyberspace presents an inviting environment for communication and identity exploration. It is anonymous and textual nature of cyberspace that allows one to overcome “identity fixes”, such as gender, looks, and disabilities. People choose to explore certain sides of their personalities (e.g. assertiveness) more extensively, or even invent virtual life personae different from their real life personality. The role of the computer is as a prosthetic device that catapults one into “cyberspace interaction”.

Media perceptions. Due to the lack of nonverbal cues, computer-mediated communication is said to be low in social presence in comparison to face-to-face communication. Social presence related positively to personal identity satisfaction. The ability of computer-media communication media to transmit interpersonally oriented content effectively, social presence should help differentiate between informational and interpersonal uses of the Internet.

Affinity, or the perceived importance of communication behavior or channels has been a significant component of media-use patterns (Papacharissi, & Rubin, 2000) Communication satisfaction is a communication outcome that is related to fulfilling our expectations through interaction, and should be related to interpersonal disclosure and relationship development. The motivations and skills predicted communication satisfaction.

### **3.1.3 On-line community development**

The common interests of the students define them as a group. The group behavior on the Internet is fourth cyberpsychological dimension, Chapter 2, section 2.2.2. The purpose of the educational sites – often-visited and useful for students with

possibility for communication among them - are base to consider the learning web as an on-line communities. The community is organic and the developers of the sites think about how to support social interaction and community evolution – the norms of this community, what policies are needed to guide behavior in the community. Preece (2001) has made several recommendations for creating the successful on-line community. They may be in use and for Learning Webs, because their goals are the same – to create place in Cyberspace visited from students for social communication and useful information. The next is the design of the site that supports the community. It has to have good usability:

- to know what community wants - what the purpose and define it clearly
- to understand the limitations of community – are the people experienced users or not, what kind of technology are they using, etc.
- to think about how to support social interaction and community evolution – what policies are needed to guide behavior in the community
- to pay attention to the design of the software that supports the community - make sure that it has good usability.

Developers' perspective as is described above and is shown on the Figure 3.1.2 design usability, support sociability.

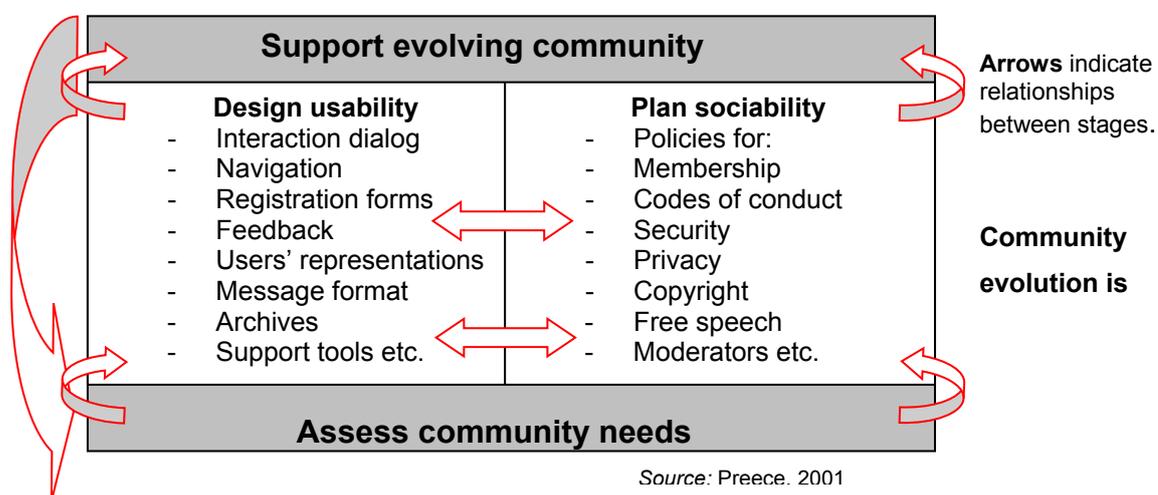


Figure 3.1.2. Community evolution

The important message is that end users must be involved throughout the development - particularly right at the beginning and all through.

When a new educational community is created the user-centered design has to increase users' satisfaction and productivity. To develop user-centered site – site for on-line community is necessary to:

- Involve users from the beginning
- Know the users
- Analyze user tasks and goals
- Test for usability—repeatedly

Again we get back to what is the purpose of the community and who is using it, lack of policies so anything goes, over-crowding so that discussion moves to fast, not being able to follow discussions etc.

### **3.1.4 Recommendations for developing of learning web**

According to 4Es model of Collis, & Moonen (2001), to the guidelines about the web site design, cyberpsychological features and creating of one on-line community we may to note down the most important features for one learning web:

- *Clear purpose* – the subject of the learning web,
- *Know the users* - Reference services to educational objects and to educators-at-large - limitations of community – user experience and expectation
- *Involve users* from the beginning and analyze their tasks and goals,
- *Visual Design & Visibility* - should be the user's ally and predict the effect(s) of their actions,
- *Accessibility, Orientation/ Navigation* - users need to find information quickly, easily, and do not feel lost, *Errors* - minimize user errors
- *Skill exchanges, Peer matching, Archives;*
- *Memory Load* - the site should reduce user memory load,
- *Satisfaction* - the site should be pleasant to use and look at,
- *Legibility & Language* - text should be easy to read, short sentences, 'everyday' words,
- *Communication tools Interaction dialog, Chat, Message format;*
- *Feedback* - users have to receive immediate feedback when they act
- *Policies for: Security, Privacy, Copyright.*

Internet motives influence behavioral (patterns of Internet exposure) and attitudinal (Internet affinity and satisfaction) outcomes of Internet use.

In next chapter will be identified the typical motives for Bulgarian students.

But let first consider how to identify the motives and certain antecedents & perceptions of media attribute affecting to the motives. Next section presents developing of the instrument for identification – the web-based questionnaire.

## **3.2. PRELIMINARY STUDIES**

Here is described the survey of questionnaire development – the instrument applied in this study for identifying the motives for using the Internet. There is followed the study framework – examine from four point of view basic psychological qualities of Cyberspace, psychology of the individuals, relationships, and group dynamics in Cyberspace. And these questions are oriented to the three main questions of the study.

### **3.2.1. History**

The history of this study started 2 years ago. November 2001 it was organized the European Autumn University - "*Learning and teaching in the communication society*", Council for Cultural Co-operation, Council of Europe and Center for European Studies, Strasbourg, France. There were discussed a lot for the advantages and disadvantages for students, using the Internet.

After this meeting I started to observe the students first from my own experience, then to discuss with system administrators in Internet clubs, Learning webs maintainers, and parents.

#### **Own Experience**

As an assistant professor in Computer Systems and Technologies, at the Faculty of Mathematics & Informatics, University of Sofia, Bulgaria, each year I meet the students in first level at the University, immediately after the school and I see these young people with school thinking (in the first month) still, what they looking for, them interests and motivation to use the Internet. The entertainment on the Net are the main motives – where chatting is on the first place. There is one interesting phenomenon that the students that are deeper involve in computers and Internet become leaders in their groups. Of course they are students with interests in mathematics and computer science, but show and them motives as teenagers (most of them are still teenagers in first degree of University).

#### **System Administrators**

First discussions about the students' behavior on the Net were with the Internet club's administrators, parents and educational web sites developers.

As the situation in Bulgaria was described in chapter 2.1 – there are a lot of Internet clubs. The several clubs' administrators have been asked for their opinion what students do on the Internet, how, and how long. The results were that the students used to be in one real community – they know each other – all day they are together and play in the net – where they become in new virtual community. In most of the cases the real group expands with new students when an existing club's members join the new one. The students chatting or play most of the time the networks games – especially boys.

### **Parents**

The parents' attitude is the second group of prerequisite for this research. The parents are divided in two parts. First of them speaks how their children have interests in computer games and programs, download programs, music and movies and want to be hackers. The second group of parents explains that their children use to participate in different discuss groups. In both cases most of the students are boys. The girls' parents thought that those children prefer chatting on the Internet or searching for information about the artists and singers. In both cases the parent support children interests. The parents attitude is positive because their children use the Internet and their entertainment are in the Net instead to spend more time on the streets.

### **Learning Webs maintainers**

The third group of preliminary discussion was with the educational web sites' developer. They receive feedback from the students. The opinions are in two extremes. One is that they like sites and students find that is so prestigious to learn from the web sites online – it is as a students' fashion. The second is that the web sites are as competition for the teachers and publisher.

After these first discussions I recognized the problem “students on the web” the changes in their behavior. There are the differences between boys and girls patterns in motives for using the Net. In most cases girls are more motivated to learn via the Internet and boys to master their computer skills – “to be hackers”. These patterns determination and Internet motives identification are important to development of better Learning Webs, which support the educational process in Bulgarian schools, and to help the Learning Webs developers in their work.

First investigation shows that students use the Internet more for entertainment and less for pragmatically or educational reasons but in both cases they have and improve their skills and knowledge for using the computers and Internet. Before starting to develop the main instrument for this study it was used a screening version of the questionnaire. Below are described first results.

### **Screening questionnaire**

In the beginning of this research there was developed the screening questionnaire just to show the tendency for Bulgarian students and as a basis for the main questionnaire. The target group is students between 9 and 17 years old. The results are obtained from the 10 students – 8 boys and 2 girls from Bulgarian towns Sofia-4, Ruse-2, Bourgas-3, Pleven-1. They are respectively 10 years old – 1, 14 years old – 5, 16 year old – 2, unfilled data for 2 of students.

The *motives* that students give are: to play with friends – games in the net; to chat and there is one more unfamiliar answer to escape from home.

They usually spend *almost every day* – at least 2 hours in the Internet. Most of the time they *chatting*, playing games or download music. Time-to-time they surf on the Net for new information. One of the boys would like to be a hacker and he studies on the Internet.

The students *looking for*: new games, music / singers, movies / actors, weapons, cars, sports.

The final questionnaire was developed on the base of the screening questionnaire and interviews of parents, clubs' administrators, and educational web sites' owners. First version of the questionnaire contained 7 parts and each one had about 7 questions with several sub questions. It was too long and demotivated the students. Then the questionnaire was revised. The collected results are from the public last version of the questionnaire that is described below.

### **3.2.2. Main questions & Hypotheses**

As it was mentioned purposes of this study are to understand how the Cyberspace influences way students behave on the Internet and which way they change their behavior. These depend from their antecedents. In one hand students have similar background (their school knowledge, the country economical and political situation, similar age) but in the other hand they are with different

background – family, attitude, perceptions. Then the main question as they were posted in Chapter 1 might to be formulate and in the following way:

- to examine motives for using the Internet from a uses-and-gratifications perspective: *What are students' motives for using the Internet?*
- to consider how certain antecedents & perceptions of media attribute affect motives, based on the differences in one's social and psychological characteristics and perceptions of the social presence of the communication medium: *How do antecedents and media perceptions relate to Internet motives?*
- to examine how motives & antecedents affect attitudinal and behavioral outcomes: *How do Internet antecedents, perceptions, and motives predict behavioral and attitudinal outcomes of Internet use?*

All these questions are oriented to the one other - How does the virtual world take place into the real? – First, the “alien problem” arises in the new generation. According the Kraut, Patterson, Lundmark, Kiesler, Mukophadhyay, & Scherlis, (1998), they found that greater Internet use related to reduces communication – smaller social circles and greater senses of depression and loneliness later (Kraut., Kiesler., Boneva., Cummings., Helgeson, & Crawford, 2002) they revised this paradox and found that this negative effect dissipated. This study is focused to the determination of influence of Cyberspace to Bulgarian students. In Bulgaria most of the students use the Internet in clubs and usually they are or become friends – i.e. the real community exists and it develops the virtual – in most of the cases it consists from the same group member and extended with student outside this community – really online members. The motives of Internet users in an instructional setting follow a uses-and-gratifications approach described by Papacharissi, & Rubin (2000). As a psychological communication perspective, uses-and-gratifications theory assumes students communicate or use media to gratify needs or wants. It focus on motives for media use, factors that influence motives, and outcomes from media related behavior. Psychological characteristics, social context, and attitudes and perceptions influence people's motives and behavior.

This study is oriented to the Internet users, only. This is the reason for creating of web-based questionnaire. The investigated students are on the Internet, they use the

Net in their way. The published questionnaire is one provocation in their routine work and interests on the Internet.

Several hypotheses were educated guess. They are established on the questionnaire and related to the main questions of this study. First have to be describing a picture of the Secondary students – Internet users. We assume that boys and girls begin using the Internet at a similar age, but with difference in regard to their residence (a city or a rural area), i.e. to estimate the prerequisites (age, gender and residence) to affect on the students' behavior and motives to use the Internet. The other antecedents are longer Internet experience that is associated with greater self-esteem of Internet and computer skills. The knowledge and skills difference determine motives for using the Internet. The parents' attitude is important base to formation of students' behavior and motivation. We suppose that parent's support their children as Internet users. To predict behavioral and attitudinal outcomes of Internet use relates to educational assumption that students beginning to use the Internet changes their behavior in two ways - dependence from the cyberspace, escape from real world, and changing their identity. A premise for it is Anonymity on the Internet. The assumed motives for Bulgarian students, based on the literature are: Boys and girls use the Internet mostly for entertainment less for educational purposes. And there my distinguish gender effect pattern.

In next section presents the main parts of the questionnaire and how they relate to the cyberpsychological framework of the study – from students attitude of Human-Computer interaction through Interpersonal relationships and Group behavior – with similar interests on the Internet.

### **3.2.3. Questionnaire**

Besides the Internet's unique nature, a person's own social and psychological characteristics affect how he/she uses the Internet. In this manner are described the framework of this study.

The instrument for identification of the basic psychological qualities of Cyberspace, Psychology of the Individual in Cyberspace, Psychology of Cyberspace Relationships, and Group Dynamics in Cyberspace is based on the questionnaire follows the framework. As Walther (1994, 1995, 1996) concluded that mediated interaction is rarely impersonal, the Net is interpersonal when users have the time and

interest to interact on a relational level, and the Internet is hyper personal when users can manage relationships and impressions in ways more effective than with face-to-face communication or other mediated channels. In this manner the questionnaire is divided on 7 parts:

1. Personal Data
2. Internet in General
3. You On the Net Since - You Started Using The Internet...
4. Internet Services
5. Your Performance On the Internet
6. Games
7. Using the Internet – Skills & Problems

### **Personal Data**

This questionnaire section contents the general questions – age, sex, village and using languages. Chance to use foreign language is an advantage. This part describes the target group of the research.

### **Internet in General**

First questions about the Internet give the general view for students' dependence from the Net. The questions are about how many years students use the Internet, where from – Internet clubs, home, school and so on, how many hours they spent in the Internet.

### **You On the Net Since**

The next section contains questions about the students' dependence from the net in details –students' attitude to the real world: friends, parents, school and so on.

These criteria included considering Internet use students' most important activity; feeling good; needing to use the Net more and more to achieve the same satisfaction that they had before, with less use; feeling symptoms of withdrawal, such as uneasiness, when they don't use it; and allowing Internet use to interfere with them normal life.

### **Internet Services**

The questions here are oriented to the Internet services and what kind of them students use - to distinguish the attractive for students' services and skills, and

knowledge necessary for students to use the Net. Here students describe their interests on the Internet, their favorite sites, and if students replace some activities from real life with the Internet. These questions are the instrument for identification of the basic psychological qualities of Cyberspace.

Most of the questions are oriented to the interests and why of using the Internet. In this section, there are some questions related to the educational sites. First one is for estimation of several educational sites in way of if students like them, find there the useful information and if they will visit again these sites. All presented sites are in Bulgarian language; respond to the Bulgarian school curriculum. The idea here is to turn the students on these sites and to identify their point of view for creating of the educational sites.

### **Your Performance On the Internet**

The questions in this section identify the psychology of Cyberspace relationships, and group dynamics. In one way how students perform themselves on the Internet and from other how they behave on the Net – relationships with other and as a group in chats, news groups or other online communities. Social presence is a sense that others are psychologically present and that communication exchanges are warm, personal, sensitive, and active.

Papacharissi, & Rubin (2000) compare the lacking nonverbal cues to other media, computers have been found to be less social presence or media richness than other media such as the telephone or voice mail. In the last 2-3 years the Internet enriches with new possibility for communication as the audio and video conversation and then the Internet becomes the competition for the other media.

### **Games**

For the students the games are still more important part of the entertainment – they gain students attention in most of the cases. These questions identify the main tricks attract the student attention and usability of these tricks for the learning process, i.e. how the games become function of the learning process.

### **Using the Internet for information**

The questions here are how students search on the Internet and how they find the information. Self-estimation is a part of this section – the students determine themselves as a computer and Internet users, i.e. their skills and knowledge - in one

hand and in the other how is the real situation how they using the computers and Internet (as Internet Explorer or Search engines). These questions are the instrument for identification of human-computer interaction as well as the basic psychological qualities of Cyberspace as in the fourth section.

The questionnaire is a qualitative. The items in it are general specific and content specifications following the goals of study – knowledge domain, target population, level of behavior. Characteristics of the items as the items for web-base questionnaires following Jager (1999) are:

- Asynchronous Interaction –using e-mail,
- Independent of computer, place, and time – i.e. “flexible testing”
- World-wide uniformity – using the standard script language HTML
- On-line resources – there are some sites for estimation.
- Easiness – no physical traveling
- User friendliness
- Realistic context – i.e. “authentic environments” for the observe students
- Cost-effectiveness – there is no traveling for example
- Feedback will be published on the same place – it’s for motivation reasons.

The type of items is multiple choices (in use is five degrees scale), multiple answers, yes/ no, and open questions. The Internet as a medium for this questionnaire is offer and new format of items for it. There are two new formats

- point-and-click – i.e. radio buttons in the multiple choice and yes/ no questions,
- fall menu in the multiple choice questions.

The full questionnaire in Bulgarian (because it is oriented to Bulgarian students) is published on <http://www-it.fmi.uni-sofia.bg/anketi/cyberspace>, and full English version of it is listed in Appendix of this work.

This chapter describes the process of questionnaire creating – the main hypotheses following the framework and how to obtain answers of the main questions of this study.

Here was presented the features of one web-based questionnaire because the observation is oriented exactly for the students using the Net and they answer on the questions via the Internet.

Next chapter is for analysis of data collected from this questionnaire. As for the screening questionnaire the students are from Bulgarian towns Sofia, Varna, Ruse, Bourgas, and Pleven, and small villages – Zlatograd, Madan, Kazanlak, Pravetz.

## ***Chapter 4. RESULTS***

This chapter presents the analyses of data collected by the web-based questionnaire described in the previous chapter. The instrument of this study is a web-based questionnaire identifying the basic psychological qualities of cyberspace, psychology of the individual in cyberspace, psychology of cyberspace relationships, and group dynamics in cyberspace. The Bulgarian students were investigated. Following these main elements of the study framework the questionnaire is divided on 7 parts as was described in the previous chapter, i.e. Personal Data; Internet in General; You On the Net Since - You Started Using The Internet...; Internet Services; Your Performance On the Internet; Games; Using the Internet – Skills & Problems.

After publishing the web-base questionnaire, its URL was distributed in schools and Internet clubs. The questionnaire was posted at one of the largest Internet providers in Bulgaria – Orbitel (<http://www.orbitel.bg>), with branches covering all Bulgaria and a well-developed network of Internet clubs, schools, and dial-up. In addition, the URL was sent to PC3 networks that cover rural areas in Bulgaria with local Internet clubs. As a result, we can consider the group of responders to be sufficiently representative of the target population in its significant characteristics: age, gender, and location.

The design of the study is of a retrospective survey-type. Two sets of questions were asked:

- (1) Demographics, which were used as independent variables stratifying the population into subgroups, and
- (2) Related to Internet use, which were used as outcome characteristics.

We performed the following analyses:

- *Factor analysis reducing sets of variables to several underlying independent factors,*
- *Correlation analysis - identifying relation between variables, and*
- *T-tests, comparing sub-groups of the studied group of Internet users.*

The analyses begin with stating the hypotheses and identifying the sets of independent and dependent variables

We present first demographic characteristics of the students in this survey, e.g. frequency distributions of gender, age, village, how long students are Internet users, where they use the Net, frequencies of using, self-estimation of computer and Internet skills, and main interest and services that they follow when use the Internet. Then the correlation, factor and t-test analyses demonstrate relations and dependences between the variables.

The following five hypotheses were formulated as a base of the questionnaire (Chapter 3, Section 3.2.4)

#### **4.1. HYPOTHESES**

Hypothesis 1: Boys and girls begin using the Internet at a similar age, but with difference in regard to their residence (a city or a rural area).

Hypothesis 2: Longer Internet experience is associated with greater self-esteem of Internet and computer skills.

Hypothesis 3: Students beginning to use the Internet changes their behavior – dependence from the cyberspace and escape from real world

Hypothesis 4: Anonymity on the Internet is a premise for changing one's identity.

Hypothesis 5: Boys and girls use the Internet mostly for entertainment less for educational purposes.

Hypothesis 6: Parents encourage students to use Internet.

#### **4.2. DESIGN OF EXPERIMENT AND METHODS**

A 46-item questionnaire was posted on the Internet at <http://www-it.fmi.uni-sofia.bg/anketi/cyberspace> with the goal of screening Internet users in terms of age, gender, etc., and identifying potential relationships between these parameters and users' mode of Internet presence.

SPSS was used for all statistical analyses.

For the purposes of this analysis the *independent variables* are: Gender, Age, Years on the Internet, Residence (city vs. small town), and languages.

Several *sets of variables* describing mode and intensity of Internet use were identified as follows:

**Internet use:** Identification on the Net, location of use (club, home, friend, school), used Internet services (www, e-mail, ...), primary purpose of using the Internet (games, skills, learn, etc.).

**Mode of Internet Search:** books, friends, following hyperlinks from other web pages, Internet search engines & directories, magazines/newspapers, TV advertisements (variables F\_BOOK, F\_FRIEND, F\_LINKS, F\_SEARCH, F\_PAPER, F\_TV).

**Self-esteem of Internet behavior:**

- (1) Self-evaluation of skills as a computer (variable – COMP\_USER) and Internet (variable – INT\_USER) user.
- (2) Self-evaluation of any changes in user behavior: spending more time on the Internet (variable – M\_TIME), frequency of meeting friends (variable – MEET\_FR) or interesting people on the Internet (variable – I\_PEOPLE).

**Evaluation** of the Internet using mode in daily life - for entertainment, practical or educational purposes.

**Sites estimates** – students have to evaluate several web sites in terms of appeal, availability of interesting information, and if students will visit these sites again (EST1\_1, EST1\_2, EST1\_3 to EST5\_1, EST5\_2, EST5\_3)

### 4.3. DESCRIPTIVE CHARACTERISTICS

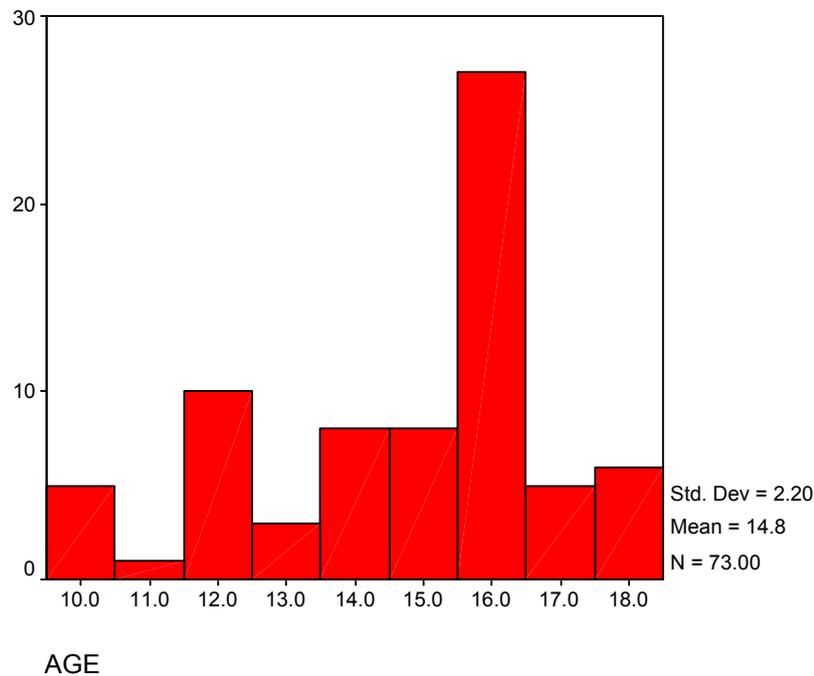
#### Independent variables

Seventy-five boys and girls completed the survey. There were 33.8% girls and 66.2% - boys, i.e. boys were twice more active responders than girls (Table 4.1).

Table 4.1. Boys & Girls

		GENDER			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	25	33.3	33.8	33.8
	male	49	65.3	66.2	100.0
	Total	74	98.7	100.0	
Missing	System	1	1.3		
Total		75	100.0		

In this study the expected age range was from 10 to 18 years. The observed average age was 14.8 years (SD=2.2). The largest group of users was 16 years olds (see Histogram 4.1).



Histogram 4.1. Students' Age

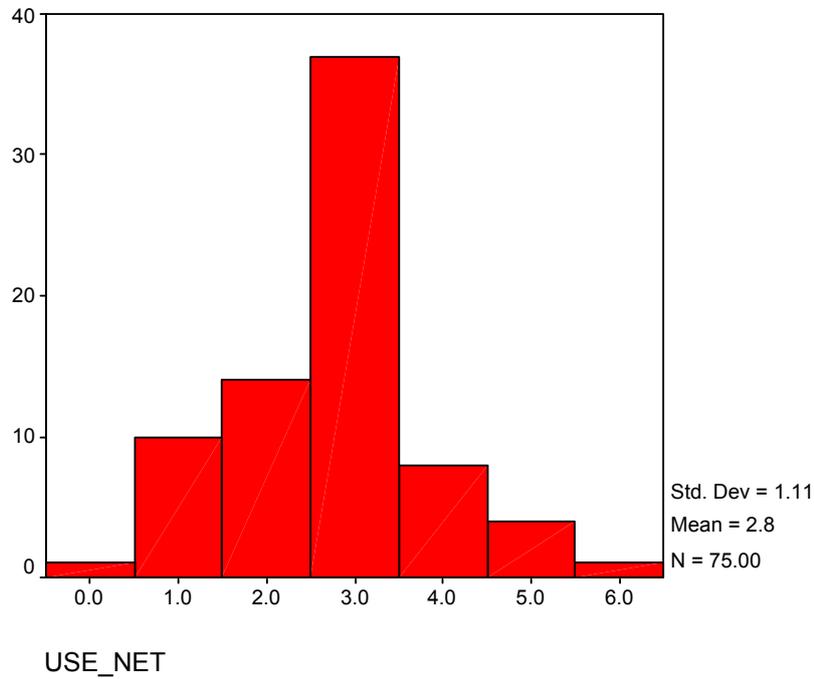
For students' residence (cities/large towns or rural regions) the data frequencies of variable VILLAGE shows that 68.1% of users came from towns, while 31.9% came from rural regions (be consistent – use either country or province throughout – or “rural,” which will be in English), Table 4.2.

Table 4.2. Student residence – towns / province

		VILLAGE			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	town	49	65.3	68.1	68.1
	province	23	30.7	31.9	100.0
	Total	72	96.0	100.0	
Missing	System	3	4.0		
Total		75	100.0		

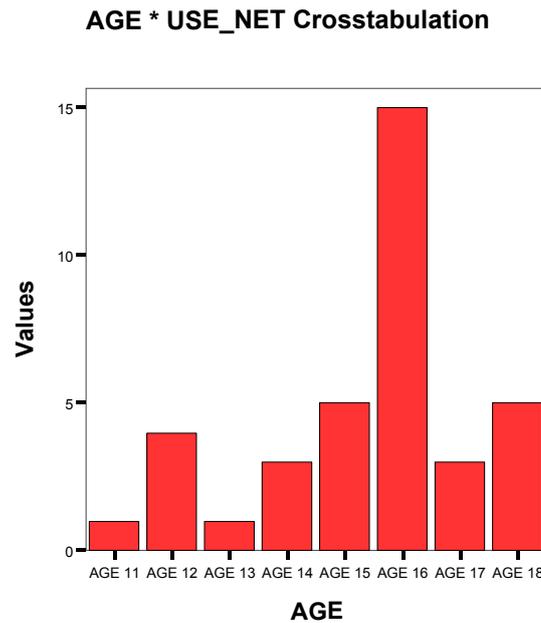
The responders to the survey began using the Net between 0 and 6 years ago, with an average duration of Internet use of 2.8 years (SD=1.1). In the previous chapter 2, section 2.1.5 it was shown that 3 years ago the Internet become more popular than before and students began having more possibilities for access to the Net, which

coincides with the peak of duration of Internet use observed at 3 years (Histogram 4.2). Three years are exactly the time when the number of Internet clubs in Bulgaria increased.



Histogram 4.2. Years on the Internet

Age distribution of the users with 3 years experience on the Internet shows that it is almost the same as the age distribution at all (average=15.41, SD=1.86) Histogram 4.3.



Histogram 4.3. Years on the Internet

The next descriptive characteristic is where students access the Internet – there are four possibilities: from Internet clubs, from home, from friends' home or from school. It appears that students spend most Internet time at Internet clubs 62.7%, as opposed to 34.7% at home and just 2.7% at friends' home. The frequency of the categorical variable MOST\_F. is shown on the Table 4.3. No one from the students reported accessing the Internet from school. This relates to the lack of computer infrastructure in Bulgarian schools that we described in Chapter 2, Section 2.1.5.

Table 4.3. The place where students use the Internet most of the time

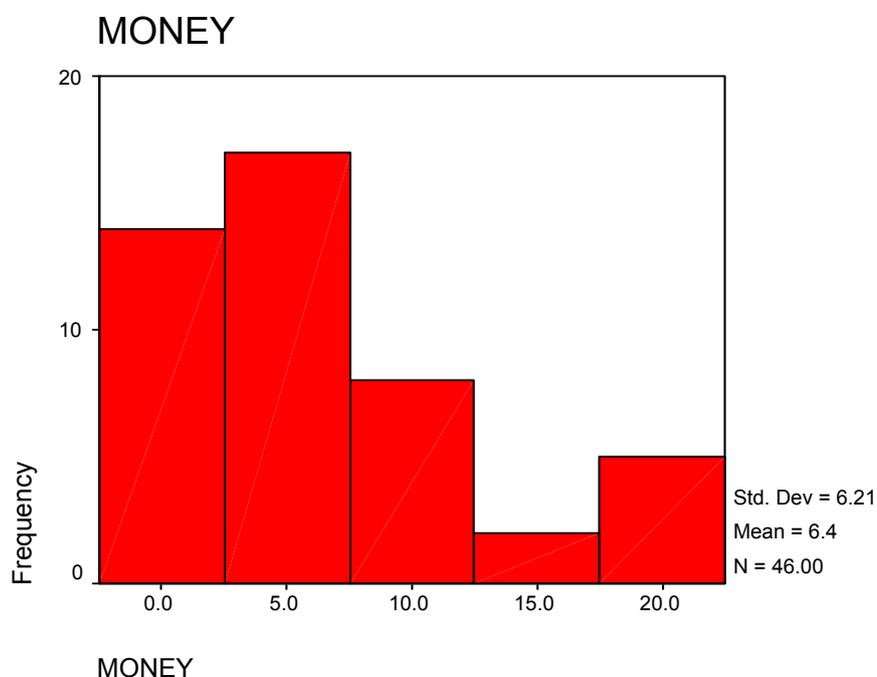
MOST_F					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	club	47	62.7	62.7	62.7
	home	26	34.7	34.7	97.3
	friend	2	2.7	2.7	100.0
	Total	75	100.0	100.0	

The next important parameter is how many hours students spend on the Net. This relates to students' dependence on the Internet – one aspect of their behavioral change. The possible answers to this question were: rare, weekly, several times per week, daily, or several times per day. The frequency distribution of the variable FREQ in presented in Table 4.4 and demonstrates that 60% of the observed students used the Internet *several times per day*, 29.3% reported using the Net *one time per day*, and all other results accounted for 5% or less. These data shows that when students become Internet users they feel the need to use the Net at least one time per day, e.g. *students may be becoming depend on Internet*.

Table 4.4. Frequency of using

FREQ					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	rare	4	5.3	5.3	5.3
	one time per week	1	1.3	1.3	6.7
	several times per week	3	4.0	4.0	10.7
	one time per day	22	29.3	29.3	40.0
	several times per day	45	60.0	60.0	100.0
	Total	75	100.0	100.0	

The other effect of everyday using the Internet is the “Money problem” – how much money (it means Bulgarian leva, 1 euro is about 2 leva) students spend per week, the Mean of the variable MONEY is 6.4 (SD=6.2). The Histogram of it is 4.4.



Histogram 4.4. Money per week for access to Internet

One important point of using the Internet is language. It is well known that most web sites use English. Of course, there are web sites in Bulgarian, too, but if students use one other language they would have more opportunities for surfing the Net and finding more information. As shown in Table 4.5, 85.3% of students reported that English is their first foreign language, and 21.3% reported Russian. Other mentioned second languages were Spanish (5.3%), French (5.3%), Turkish (2.7%), German, and again Russian as a third language (see Table 4.6).

These results illustrate the post-communist period in the country. Before 1989 the most students had to study Russian after 1989 the situation has changed and the first foreign language became English, with Russian still taught most of schools. Students from the Turkish minority in Bulgaria mention Turkish - Chapter 2, Section 2.1.2.

Table 4.5. Foreign languages

Group \$LANG_S using language				
Category label	Code	Count	Responses	Cases
English	1	64	69.6	100.0
French	2	4	4.3	6.3
German	3	1	1.1	1.6
Spain	4	4	4.3	6.3
Turkish	5	2	2.2	3.1
Russian	6	17	18.5	26.6
Total responses		92	100.0	143.8
11 missing cases; 64 valid cases				

Table 4.6. First, Second and Third Foreign languages

First Foreign Language			
		Frequency	Valid Percent
Valid	English	64	100.0
Missing	System	11	
Total		75	
Second Foreign Language			
Valid	French	4	15.4
	Spain	4	15.4
	Turkish	2	7.7
	Russian	16	61.5
	Total	26	100.0
Missing	System	49	
Total		75	
Third Foreign Language			
Valid	German	1	50.0
	Russian	1	50.0
	Total	2	100.0
Missing	System	73	
Total		75	

T-tests comparing AGE and USE\_NET by gender showed that the *girls were marginally younger* ( $t=1.85$ , 2-tailed  $p=0.072$ ) and got sooner on the Internet ( $t=2.64$ , 2-tailed  $p=0.01$ ) Table 4.7.

Table 4.7. T-tests - AGE and USE\_NET by gender

	Group Statistics				Independent Samples Test			
	GENDER	N	Mean	SD	Levene's Test for Equality of Variances	Sig.	t-test for Equality of Means t	2-tailed p
AGE	female	25	14.04	2.590	Equal variances assumed	.049	-2.046	.044
	male	48	15.13	1.886	Equal variances not assumed		-1.854	.072
USE_NET	female	25	2.28	.936	Equal variances assumed	.758	-2.639	.010
	male	49	2.96	1.098	Equal variances not assumed		-2.780	.007

## **Dependent variables**

The primary dependent variables are COM\_USER and INT\_USER, which represent for the students' self-evaluation as computer and Internet users, respectively (Tables 4.8 and 4.9).

Table 4.8. Self-evaluation as a computer user

		<b>COM_USER</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	the best	14	18.7	19.4	19.4
	good	26	34.7	36.1	55.6
	so-so	22	29.3	30.6	86.1
	begginer	8	10.7	11.1	97.2
	nothing	2	2.7	2.8	100.0
	Total	72	96.0	100.0	
Missing	System	3	4.0		
Total		75	100.0		

Table 4.9. Self-evaluation as an Internet user

		<b>INT_USER</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	the best	12	16.0	16.2	16.2
	good	6	8.0	8.1	24.3
	so-so	22	29.3	29.7	54.1
	begginer	18	24.0	24.3	78.4
	nothing	16	21.3	21.6	100.0
	Total	74	98.7	100.0	
Missing	System	1	1.3		
Total		75	100.0		

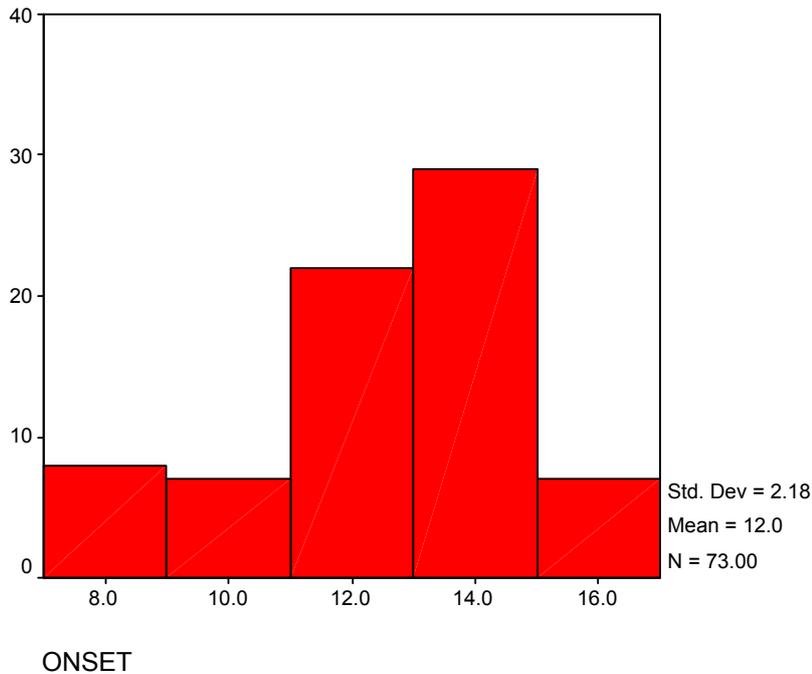
This frequency analysis demonstrates that students estimate themselves as better Internet than computer users. As we will see in the next section, these self-evaluations depend on the duration and frequency of Internet use.

## **4.4. RESULTS:**

### **4.4.1. Hypothesis 1**

**Boys and girls begin using the Internet at a similar age, but with difference in regard to their residence (a city or a rural area).**

We define a new variable ONSET=AGE-USE\_NET (difference between variables – students’ age and year on the Internet), which describes at what age students began using the Internet. Histogram 4.5 shows that most students began using the Internet between the ages of 12 and 14 (average=12.0, SD=2.2).



Histogram 4.5. At what age students began using the Internet

Boys and girls began using the Internet at approximately the same age of 12 years old. A t-test finds no gender differences,  $t=0.67$ , 2-tailed  $p=0.51$  (see the Table 4.10). The last two results correspond to the results above - t-test comparing independent variables AGE and USE\_NET by gender. Table 4.7 shows presents situation and Table 4.10 – past when boys and girls started to use the Internet 2-3 years ago.

Table 4.10. T-Test ONSET=AGE-USE\_NET & Gender

	Group Statistics				Independent Samples Test				
	<b>GENDER</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	Levene's Test for Equality of Variances		t-test for Equality of Means		
					<b>Sig.</b>	<b>t</b>	<b>2-tailed p</b>		
ONSET	female	25	<b>11.7600</b>	2.4712	Equal variances assumed	<b>.049</b>	-0.714	.477	
	male	48	<b>12.1458</b>	2.0316	Equal variances not assumed		<b>-.671</b>	<b>.506</b>	

There was no significant difference between those living in a city vs. rural areas,  $t=1.5$ , 2-tailed  $p=0.14$  (see Table 4.11). It disproves the hypothesis that there are differences in regard to the students' residence.

Table 4.11. T-Test ONSET=AGE-USE\_NET &amp; Residence

Group Statistics					Independent Samples Test			
	VILLAGE	N	Mean	SD	Levene's Test for Equality of Variances		t-test for Equality of Means	
					Sig.	t	2-tailed p	
ONSET	Town	49	<b>11.7959</b>	2.2728	Equal variances assumed	<b>.215</b>	<b>-1.496</b>	<b>.139</b>
	Province	23	<b>12.6087</b>	1.8523	Equal variances not assumed		-1.611	.113

#### 4.4.2. Hypothesis 2

**Longer Internet experience is associated with greater self-esteem of Internet and computer skills.**

Spearman's correlation revealed a significant positive association ( $\rho=0.42$ ,  $p<0.01$ ) between the duration of exposure to Internet and the self-esteem of Internet skills. However, contrary to our expectations, there was no apparent association between the duration of exposure to the Internet and the self-esteem of general computer skills ( $\rho= -0.15$ , non-significant 0.217), see Table 4.12.

Table 4.12. Correlation analysis Years on the Internet, self-estimation as a Computer &amp; Internet User

		USE_NET	COM_USER	INT_USER
Spearman's rho	<b>USE_NET</b>	Correlation Coefficient Sig. (2-tailed)	1.000 .	<b>.420</b> <b>.000</b>
	<b>COM_USER</b>	Correlation Coefficient Sig. (2-tailed)		1.000 <b>.265</b> <b>.026</b>
	<b>INT_USER</b>	Correlation Coefficient Sig. (2-tailed)		

The reason for this unexpected result might be that when students begin using the Internet they study the basic computer skills: to download files, to chat and write e-mail. Later they improve their computer skills. The frequency analysis of multiple response variables demonstrates that: Most frequently (71 from 75 students), downloaded music and movies – Secondly, the WWW was used for fun and Chatting – IRC and Chat rooms, and thirdly the Internet was used for e-mail (Table 4.13). The WWW was also used frequently for educational purposes – 55 out of 75 students

study via the Internet. Less frequent uses were one to one conversation (ICQ, messengers) and playing games via the Internet.

Table 4.13. Using Internet possibilities

<b>Group \$SERVICE Internet services</b>			
Name	Count	Responses	Cases
WWW for fun	61	15.6	81.3
WWW for educational purposes	55	14.0	73.3
Send / receive e-mails	58	14.8	77.3
IRC and chats	61	15.6	81.3
ICQ, MSN / Yahoo or other messengers	52	13.3	69.3
Computer games	33	8.4	44.0
Download music and movies	71	18.1	94.7
Others	1	.3	1.3
Total responses	392	100.0	522.7
0 missing cases; 75 valid cases			

The least frequent use for game players is an expected result, because in Bulgaria the speed of Internet access is generally insufficient for playing games online. The favorite games were Strategic - 30 out of 50 students reported that (Table 4.14). Most students spent 2-3 hours per day in games, 17% spent more than 3 hours, and only 12% students reported that they don't play games—(Table 4.15)

Table 4.14. Favorite games

<b>.Group \$GAME (Value tabulated = 1)</b>			
Name	Count	Responses	Cases
Adventure	27	32.1	54.0
Strategic	30	35.7	60.0
Simulation	27	32.1	54.0
Total responses	84	100.0	168.0
25 missing cases; 50 valid cases			

Table 4.15. Hours playing games

<b>HOURS_G</b>				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	9	12.0	12.0
	1	9	12.0	24.0
	2	17	22.7	46.7
	3	27	36.0	82.7
	4	7	9.3	92.0
	5	5	6.7	98.7
	6	1	1.3	100.0
Total	75	100.0	100.0	

### 4.4.3. Hypothesis 3

**Students begin using the Internet change their behavior - dependence from the cyberspace and escape from real world.**

Three groups of questions addressed students' interests on the Internet – how long they are in cyberspace, what they looking for and so on. These questions related to the behavioral changes in students caused by Internet use. Such changes were addressed by comparing students' behavior before and after beginning to use the Internet in terms of spending time with friends, involvement interesting issues, meeting interesting people on the Net; if the internet is totally different world, if they use its possibilities for information and fun. The frequencies analysis of the variable, related to the time spent on the Net (M\_TIME) demonstrates that students change their behavior - they spend *much more time*, surfing on the Internet 69.9%, see Table 4.16. Surfing the Net, students *more often meet interesting people* 50.7% and use *much more possibilities* of the Internet 55.6%. More of the halves of students think that they are in the *other world*, surfing on the net (33.4% - much more, 28.2% - more), but there are a quarter of the students that have an opposite opinion. In addition, students find more or much more entertainment in the Internet when they are together with friends and they *keep their interest* to their favorites. 58.9% say that there is no difference before and after. At the same time students meet more friends 48.5%, or there is no change 30.3. This shows that students seek social contact and for that use more access to the Internet in clubs, which will be shown later.

Table 4.16. Since you started using the Internet ...

You've increased the time you spend in the Internet?			
		Frequency	Valid Percent
Valid	the least	4	5.5
	Equal	1	1.4
	More	17	23.3
	<b>Much more</b>	<b>51</b>	<b>69.9</b>
	Total	73	100.0
Missing	System	2	
Total		75	
You've become less or more meet your friends?			
		Frequency	Valid Percent
Valid	the least	1	1.5
	Less	13	19.7
	Equal	20	30.3
	<b>More</b>	<b>32</b>	<b>48.5</b>
	Total	66	100.0

Missing	System	9	
Total		75	
<b>You've become less or more involved in the issues that interests you?</b>			
		Frequency	Valid Percent
Valid	Less	9	12.3
	<b>Equal</b>	<b>43</b>	<b>58.9</b>
	More	13	17.8
	Much more	8	11.0
	Total	73	100.0
Missing	System	2	
Total		75	
<b>You've met interesting people through surfing?</b>			
		Frequency	Valid Percent
Valid	Less	1	1.4
	Equal	16	21.9
	<b>More</b>	<b>37</b>	<b>50.7</b>
	Much more	19	26.0
	Total	73	100.0
Missing	System	2	
Total		75	
<b>You've been in totally different world, when you are in the net?</b>			
		Frequency	Valid Percent
Valid	the least	19	26.8
	Less	5	7.0
	Equal	4	5.6
	More	20	28.2
	<b>Much more</b>	<b>23</b>	<b>32.4</b>
	Total	71	100.0
Missing	System	4	
Total		75	
<b>The Internet offers you the possibility to get information from all over the world in an easy and fast way?</b>			
		Frequency	Valid Percent
Valid	Less	1	1.4
	Equal	3	4.2
	More	28	38.9
	<b>Much more</b>	<b>40</b>	<b>55.6</b>
	Total	72	100.0
Missing	System	3	
Total		75	
<b>Internet is a giant funfair with thousands of possibilities, which have to be used?</b>			
		Frequency	Valid Percent
Valid	the least	10	13.9
	Less	4	5.6
	<b>Equal</b>	<b>22</b>	<b>30.6</b>
	More	14	19.4
	<b>Much more</b>	<b>22</b>	<b>30.6</b>
	Total	72	100.0
Missing	System	3	
Total		75	

Factor analysis with Varimax rotation showed that our variables depend on two “hidden” factors (only two eigenvalues are more than 1, see Table 4.17), which can be interpreted as variables:

- (1) “ESCAPE FROM REAL WORLD”, which is composed of I\_PEOPLE, OTHER\_W, POSSIBLE, FUN (i.e. describe the attractive elements of Cyberspace and motives to escape there), and
- (2) “DEPENDENCE ON THE INTERNET”, which is composed of M\_TIME, MEET\_FR, IN\_THING (i.e. students spend more time on the Internet, meet often real friends and follow their interests).

Table 4.17. Factor Analysis - Since you started using the Internet ...

	Component		Initial Eigenvalues		
	ESCAPE FROM REAL WORLD	DEPENDENCE ON THE INTERNET	Total	% of Variance	Cumulative %
M_TIME	.381	.814	2.824	40.343	40.343
MEET_FR	-.474	.686	1.592	22.739	63.082
IN_THING	.134	-.650	.822	11.738	74.821
I_PEOPLE	.844	9.804E-02	.724	10.346	85.166
OTHER_W	.770	-.278	.561	8.009	93.175
POSSIBLE	.659	6.226E-02	.339	4.842	98.017
FUN	.691	-.404	.139	1.983	100.000

*These factors show that there are changes in students’ behavior – dependence from the Net and escape from the real world in a virtual world, but there is no real alienation - Bulgarian students still prefer social contacts with friends in their real community.*

We may identify an additional result. In chapter 3, section 3.2.2 was mentioned that Kraut, Patterson, Lundmark, Kiesler, Mukophadhyay, & Scherlis, (1998) reported paradox of reduces communication, depression and loneliness and disappearance of this paradox four years after (Kraut, Kiesler, Boneva, Cummings, Helgeson, & Crawford, 2002). We investigate if this paradox exist and for Bulgarian students. We called it “alienation effect”. It is as additional result from analysis. When look at the Table 4.18 see that most students have Internet access from home - 85%, but 62.7% still prefer going to Internet clubs (Table 4.3). *This is an important result demonstrating that the alienation effect observed elsewhere is not so strong in Bulgaria.*

Table 4.18. The sites where students use the Internet

<b>Group \$WHERE - where use Internet</b>			
Name	Count	Responses	Cases
Club	42	26.1	56.0
<b>Home</b>	<b>64</b>	<b>39.8</b>	<b>85.3</b>
Friend	40	24.8	53.3
School	15	9.3	20.0
Total responses	161	100.0	214.7
0 missing cases; 75 valid cases			

Of course, another reason for that may be that the Internet clubs offer cheaper and faster access than the access from home via a telephone line (the cable Internet access is still not widely available) Chapter 2, Section 2.1.5.

#### 4.4.4. Hypothesis 4

##### **Anonymity on the Internet is a premise for changing one's identity.**

The anonymity on the Net is one of its most attractive features. Most users alter their identity (98.7%, Table 4.19). More than half of the students (57.3%) use at least one nickname, but for a teenager is not so popular to have his/her own web-page, which may break the anonymity – only 43.2% report having their own web page. Boys and girls are romantically involved in cyberspace (52%) but this does not continue in real life (72%).

Table 4.19. Performance on the Internet

<b>Personal Web page</b>			
		Frequency	Valid Percent
Valid	<b>No</b>	<b>42</b>	<b>56.8</b>
	Yes	32	43.2
	Total	74	100.0
Missing	System	1	
Total		75	
<b>At least one nickname</b>			
		Frequency	Valid Percent
Valid	no	32	42.7
	<b>yes</b>	<b>43</b>	<b>57.3</b>
	Total	75	100.0
<b>Identity changes</b>			
		Frequency	Valid Percent
Valid	no	1	1.3
	<b>yes</b>	<b>74</b>	<b>98.7</b>
	Total	75	100.0
<b>Romantically involved while on-line</b>			
		Frequency	Valid Percent
Valid	no	36	48.0
	<b>yes</b>	<b>39</b>	<b>52.0</b>

		Total	75	100.0
<b>Romantically involved in real life from on-line</b>				
		Frequency		Valid Percent
Valid	<b>no</b>	<b>54</b>		<b>72.0</b>
	yes	21		28.0
	Total	75		100.0

Factor analysis with Varimax rotation shows that our variables depend on three factors (3 eigenvalues are more than 1) that are interpreted as follows new variables (Table 4.20):

- (1) “IMAGINATION”, which includes more than one Nickname, Romantically involved in Cyberspace only and out of it,
- (2) “I’M REAL“, which includes the owner of the web page and Romantically in Real life after the Cyberspace but in opposite direction.
- (3) “IDENTITY ALTERATION” on the Internet – *the most important – how was our expectation* – anonymous on the Internet leads to identity changes (I don’t understand – clarify please).

Table 4.20. Factor Analysis - Performance on the Internet

	Component			Initial Eigenvalues		
	IMAGINATION	I’M REAL	IDENTITY ALTERATION	Total	% of Variance	Cumulative %
<b>OWN_S</b>	2.504E-02	<b>.944</b>	-.118	1.880	37.591	37.591
<b>NICKNAME</b>	<b>.793</b>	-.211	.270	1.238	24.758	62.349
<b>IDENTITY</b>	1.753E-02	-7.111E-02	<b>.940</b>	1.012	20.230	82.579
<b>ROMANCE</b>	<b>.872</b>	.185	-.160	.500	10.000	92.579
<b>ROM_A</b>	<b>.583</b>	<b>-.523</b>	-.393	.371	7.421	100.000

These three new components present the real situation how students change their identity when they are in Cyberspace. First, students start with identification name - Nickname for e-mail or chat – with it they are involved in Cyber life where begin the romance it may continue in real life or not, but usually happens – but all here start with “IMAGINATION”.

The next component presents the real person in Cyberspace – who has his/ her own web page and who says “I’AM REAL”, and who does not involve in romance affaires in real life that began via the Internet.

The third component is for the students that change them personality “IDENTITY ALTERATION”. It was discussed above on Table 4.19 that all students try the anonymous in Cyberspace and change their identity (98.7%).

#### 4.4.5. Hypothesis 5

##### Students use the Internet mostly for entertainment less for educational purposes.

When students started surfing the Internet they changed their behavior. It was shown above that students use the Net instead of other activities. Daily they prefer to surf on the Internet instead of watching TV or phone conversations, going to the cinema, or relaxing (frequencies are respectively 77.5%, 66.2%, 41.3%, 41.1% - Table 4.21).

Table 4.21. Using the Internet instead of...?

<b>Instead of watching TV?</b>			
		Frequency	Valid Percent
Valid	0	16	22.5
	<b>Daily</b>	<b>55</b>	<b>77.5</b>
	Total	71	100.0
Missing	System	4	
Total		75	
<b>Instead of talking on the phone?</b>			
		Frequency	Valid Percent
Valid	<b>Daily</b>	<b>49</b>	<b>66.2</b>
	weekly	11	14.9
	monthly	3	4.1
	less a month	5	6.8
	Never	6	8.1
	Total	74	100.0
Missing	System	1	
Total		75	
<b>Instead of relaxing?</b>			
		Frequency	Valid Percent
Valid	<b>Daily</b>	<b>30</b>	<b>41.1</b>
	weekly	19	26.0
	monthly	11	15.1
	less a month	3	4.1
	Never	10	13.7
	Total	73	100.0
Missing	System	2	
Total		75	
<b>Instead of reading books/magazines/newspapers?</b>			
		Frequency	Valid Percent
Valid	Daily	11	15.1
	weekly	10	13.7
	monthly	2	2.7
	less a month	13	17.8
	<b>Never</b>	<b>37</b>	<b>50.7</b>
	Total	73	100.0
Missing	System	2	
Total		75	
<b>Instead of going to the cinema?</b>			
		Frequency	Valid Percent
Valid	<b>Daily</b>	<b>31</b>	<b>41.9</b>
	weekly	9	12.2
	monthly	7	9.5
	less a month	12	16.2
	Never	15	20.3

	Total	74	100.0
Missing	System	1	
Total		75	
<b>Instead of meet friends?</b>			
		Frequency	Valid Percent
Valid	Daily	14	18.9
	weekly	11	14.9
	<b>monthly</b>	<b>25</b>	<b>33.8</b>
	less a month	4	5.4
	Never	20	27.0
	Total	74	100.0
Missing	System	1	
Total		75	
<b>Instead of doing household work?</b>			
		Frequency	Valid Percent
Valid	Daily	6	8.1
	weekly	9	12.2
	monthly	21	28.4
	less a month	3	4.1
	<b>Never</b>	<b>35</b>	<b>47.3</b>
	Total	74	100.0
Missing	System	1	
Total		75	

T-test comparing Gender and Using the Internet instead of... - reveals that *girls are oriented less to using the Internet instead of going to cinema  $t=-4.37$ , 2-tailed  $p<0.01$ , and boys prefer using the Net instead of relaxing  $t=3.63$ , 2-tailed  $p=0.001$ , Table 4.22.*

Table 4.22. T-test Gender & Surfing on the Internet instead of ...

	Group Statistics				Independent Samples Test			
	GENDER	N	Mean	SD	Levene's Test for Equality of Variances	t-test for Equality of Means		
						Sig.	t	2-tailed p
<b>I_SLEEP</b>	female	24	<b>1.54</b>	1.02	Equal variances <b>assumed</b>	<b>.012</b>	-3.254	.002
	male	48	<b>2.60</b>	1.43	Equal variances <b>not assumed</b>		<b>-3.629</b>	<b>.001</b>
<b>I_SINEMA</b>	female	25	<b>3.60</b>	1.58	Equal variances <b>assumed</b>	<b>.210</b>	<b>4.377</b>	<b>.000</b>
	male	48	<b>2.04</b>	1.37	Equal variances <b>not assumed</b>		4.180	.000

Students use the Internet to improve their computer skills (46.6%) and learning on the Web (38.4% obtain educational materials and gain knowledge). More than half of the students 58.9% often use the Internet as a place where to spend time. Sometimes students use the Internet for discussion 25.3% and for chatting (rare 40%, or much often 36%), Table 4.23.

Table 4.23. What are the main things you do on-line?

<b>To play online games</b>
-----------------------------

		Frequency	Valid Percent
Valid	<b>Never</b>	<b>43</b>	<b>57.3</b>
	Rare	10	13.3
	Sometimes	5	6.7
	Frequently	1	1.3
	much often	14	18.7
	Total	75	100.0
<b>To improve your computer skills</b>			
		Frequency	Valid Percent
Valid	Never	2	2.7
	Rare	2	2.7
	Sometimes	9	12.3
	<b>Frequently</b>	<b>34</b>	<b>46.6</b>
	much often	26	35.6
	Total	73	100.0
<b>To obtain educational materials and gain knowledge</b>			
		Frequency	Valid Percent
Valid	never	9	12.3
	rare	16	21.9
	sometimes	17	23.3
	<b>frequently</b>	<b>28</b>	<b>38.4</b>
	much often	3	4.1
	Total	73	100.0
<b>To spend a time</b>			
		Frequency	Valid Percent
Valid	never	4	5.5
	sometimes	18	24.7
	<b>frequently</b>	<b>43</b>	<b>58.9</b>
	much often	8	11.0
	Total	73	100.0
<b>To discuss</b>			
		Frequency	Valid Percent
Valid	never	9	12.5
	rare	12	16.7
	<b>sometimes</b>	<b>19</b>	<b>26.4</b>
	<b>frequently</b>	<b>17</b>	<b>23.6</b>
	<b>much often</b>	<b>15</b>	<b>20.8</b>
	Total	72	100.0
<b>To access online chat groups?</b>			
		Frequency	Valid Percent
Valid	never	7	9.5
	<b>rare</b>	<b>30</b>	<b>40.5</b>
	frequently	10	13.5
	much often	27	36.5
	Total	74	100.0
Missing	System	1	
Total		75	

T-test comparing Gender and Motives for using the Internet demonstrates that there are significant difference for only two variables – *girls prefer to study using the*

Internet  $t=2.23$ , 2-tailed  $p=0.029$ , and boys - to improve their computer skills  $t=3.21$ , 2-tailed  $p=0.002$  Tables 4.24.

Table 4.24. T-test Gender & Motives for using the Internet ...

	Group Statistics				Independent Samples Test			
	GENDER	N	Mean	SD	Levene's Test for Equality of Variances	t-test for Equality of Means		
					Sig.	t	2-tailed p	
<b>C_SKILLS</b>	Female	23	<b>3.61</b>	1.03	Equal variances <b>assumed</b>	<b>.666</b>	<b>-3.205</b>	<b>.002</b>
	Male	49	<b>4.31</b>	.77	Equal variances <b>not assumed</b>		-2.884	.007
<b>LEARN</b>	Female	24	<b>3.38</b>	1.17	Equal variances <b>assumed</b>	<b>.354</b>	<b>2.231</b>	<b>.029</b>
	Male	48	<b>2.77</b>	1.04	Equal variances <b>not assumed</b>		2.141	.038

Spearman’s correlation revealed several *significant positive associations* between students’ motives to use the Internet (Table 4.25):

- Playing Games on the Internet (variable - GAMES) & Pass time on the net (variable – PASS\_T) ( $\rho=0.37$ ,  $\text{sig.}=0.001$ ),
- Playing Games & Chatting (variable – CHAT\_N) ( $\rho=0.25$ ,  $\text{sig.}=0.032$ ),
- Improving computer skills (variable – C\_SKILLS) & Pass time ( $\rho=0.312$ ,  $\text{sig.}=0.008$ )
- Improving computer skills (variable – c\_skills) & Discussion via the Internet (variable - DISCUSS) ( $\rho=0.37$ ,  $\text{sig.}=0.006$ )
- Using the Net for Educational purposes & Discussion via the Internet ( $\rho=0.522$ ,  $\text{sig.}<0.001$ )
- Using the Net for Educational purposes & Chatting ( $\rho=0.245$ ,  $\text{sig.}=0.036$ )

Also, Spearman’s correlation revealed *several significant negative associations* between students’ motives to use the Internet:

- Playing Games & Discussions on the Net ( $\rho=-0.511$ ,  $\text{sig} <0.001$ ),
- Using the Net for Educational purposes & Pass time ( $\rho=-0.288$ ,  $\text{sig}=0.014$ )

*These correlations demonstrate that students motivated to use the Internet for educational purposes use the Net for entertainment as well, while students who prefer enjoying the Net, don’t use it for learning.*

Table 4.25. Correlation - What are the main things you do on-line?

Spearman's	GAMES	Correlation Coefficient	GAMES	C_SKILLS	LEARN_	PASS_T	DISCUSS	CHAT_N
			1.000	.077	-.140	.370	-.511	.249

	Sig. (2-tailed)	.517	.238	<b>.001</b>	<b>.000</b>	<b>.032</b>
<b>C_SKILLS</b>	Correlation Coefficient	1.000	.142	<b>.312</b>	<b>.327</b>	-.080
	Sig. (2-tailed)		.237	<b>.008</b>	<b>.006</b>	.506
<b>LEARN_</b>	Correlation Coefficient		1.000	<b>-.288</b>	<b>.522</b>	.245
	Sig. (2-tailed)			<b>.014</b>	<b>.000</b>	.036
<b>PASS_T</b>	Correlation Coefficient			1.000	-.060	.189
	Sig. (2-tailed)				.618	.109
<b>DISCUSS</b>	Correlation Coefficient				1.000	.142
	Sig. (2-tailed)					.234
<b>CHAT_N</b>	Correlation Coefficient					1.000
	Sig. (2-tailed)					

Let us consider how girls and boys use the Net. We guess that there are different gender patterns. The boys prefer to master their computer skills (50%) much often and often to participate in discussions forums (32.7%), and pass the time (67.3%). The girls prefer often to learn via the Internet (58.3%) and much often to use it for chat (40%). See Table 4.26.

*There are boys and girls that behave similar on the Net. They use frequently as most girls Internet for improving their computer skills (32% from boys) and learning via the net (28.6% from boys), and much often for chatting (34.7% from boys). They often passed time in Cyberspace as most boys (41.7% from girls). This common pattern for boys and girls will be used in recommendations for developing of Learning Webs.*

Table 4.26. Boys - Girls What are the main things you do on-line?

<b>BOYS</b>			<b>GIRLS</b>		
	<i>Frequency</i>	<i>Valid Percent</i>		<i>Frequency</i>	<i>Valid Percent</i>
<b>B_COMPUTER SKILL</b>			<b>G_COMPUTER SKILLS</b>		
never			never	2	8.7
rare			rare	2	8.7
sometimes	9	18.0	sometimes		
<i>frequently</i>	16	32.0	<b>frequently</b>	<b>18</b>	<b>78.3</b>
<b>much often</b>	<b>25</b>	<b>50.0</b>	much often	1	4.3
<b>B_LEARNING</b>			<b>G_LEARNING</b>		
never	7	14.3	never	2	8.3
rare	11	22.4	rare	5	20.8
<b>sometimes</b>	<b>16</b>	<b>32.7</b>	sometimes	1	4.2
<i>frequently</i>	14	28.6	<b>frequently</b>	<b>14</b>	<b>58.3</b>
much often	1	2.0	much often	2	8.3
<b>B_PASS TIME</b>			<b>G_PASS TIME</b>		
never	4	8.2	never		
rare			rare		
sometimes	6	12.2	<b>sometimes</b>	<b>12</b>	<b>50.0</b>
<b>frequently</b>	<b>33</b>	<b>67.3</b>	<i>frequently</i>	10	41.7
much often	6	12.2	much often	2	8.3

B_DISCUSSIONS			G_DISCUSSIONS		
never	7	14.3	never	2	8.7
rare	11	22.4	rare	1	4.3
sometimes	6	12.2	<b>sometimes</b>	<b>13</b>	<b>56.5</b>
<b>frequently</b>	<b>16</b>	<b>32.7</b>	frequently	1	4.3
much often	9	18.4	much often	6	26.1
B_CHAT			G_CHAT		
never	6	12.2	never	1	4.0
<b>rare</b>	<b>22</b>	<b>44.9</b>	<i>rare</i>	8	32.0
sometimes			sometimes		
frequently	4	8.2	frequently	6	24.0
<i>much often</i>	17	34.7	<b>much often</b>	<b>10</b>	<b>40.0</b>

#### 4.4.6. Hypothesis 6

##### Parents encourage students to use Internet

Speaking of teenagers, we have to take a look at the parents' attitude too.

The parent attitude of using the Internet is positive - they are not angry (50%) that students surf the Internet and give them money (34.7%, Table 4.27). The fact that most students have Internet access from home additionally supports that (Table 4.18).

Table 4.27. Parents' Attitude

Your parents become angry about too much surfing?			
		Frequency	Valid Percent
Valid	the least	2	2.8
	<b>less</b>	<b>36</b>	<b>50.0</b>
	equal	15	20.8
	more	8	11.1
	much more	11	15.3
	Total	72	100.0
Missing	System	3	
Total		75	
Your parents don't give you money for Internet?			
		Frequency	Valid Percent
Valid	the least	12	16.7
	less	12	16.7
	equal	23	31.9
	<b>more</b>	<b>25</b>	<b>34.7</b>
	Total	72	100.0
Missing	System	3	
Total		75	

Students had to estimate 5 sites in Bulgarian oriented to curriculum in terms of appeal, availability of useful information, and whether they would visit this site again.

The purpose was to present an example of educational sites in Bulgarian and to see student's criteria for good and useful. The variables EST1\_1 till EST5\_1 return

the student evaluation to the sites in respect of how much students like the sites. The variables EST1\_2 till EST5\_2 correspond to the question how useful is information on these educational site. And third group EST1\_3 till EST5\_3 give the answer if students will visit again these sites.

The factor analysis of the first set of variables – “good site” - demonstrates that students’ preferences are reduced to one variable (1 eigenvalue is more than1) – “COOL” (Table 4.28).

Table 4.28. Estimation – do you like this site?

	Component	Initial Eigenvalues		
		COOL	Total	% of Variance
EST1_1	.853	2.702	54.048	54.048
EST2_1	.872	.945	18.897	72.945
EST3_1	.428	.837	16.732	89.677
EST4_1	.835	.271	5.413	95.090
EST5_1	.579	.246	4.910	100.000

The factor analysis with Varimax rotation for second set of variables - “useful site” – demonstrated that there were two underlying factors (2 eigenvalues are more than1):

- (1) sites oriented to the first national enrolment campaign after 7<sup>th</sup> grade – variable 7<sup>th</sup> grade (discussed in Chapter 2, Section 2.1.4), and
- (2) for the second national enrolment campaign for universities – variable UNI, Table 4.29.

Table 4.29. Estimation – do you find useful information on this site?

	Component		Initial Eigenvalues		
	7 <sup>th</sup> grade	UNI	Total	% of Variance	Cumulative %
EST1_2	.776	-7.874E-02	2.018	40.355	40.355
EST2_2	-.100	.895	1.590	31.806	72.161
EST3_2	-.714	.379	.703	14.060	86.221
EST4_2	.826	.226	.479	9.572	95.793
EST5_2	2.321E-02	.896	.210	4.207	100.000

Most of the students will visit preferred sites again as evident from the frequency analysis in Table 4.30:

Table 4.30. Estimation – visit again?

Statistics

		EST1_3	EST2_3	EST3_3	EST4_3	EST5_3
N	Valid	56	61	67	67	73
	Missing	19	14	8	8	2
Mean		1.00	.66	.69	.63	.84
Std. Deviation		.00	.48	.47	.49	.37

Finally, the questionnaire presented a collection of literature in Bulgarian (some of the books are translated) <http://slovo.orbitel.bg>. Some of students said that they prefer to read the books online because it is prestigious to read from the Internet not from paper books.

Small portion of the students listed their favorite sites. Frequency analysis demonstrated that most students prefer visiting Portal sites, then educational sites, but not for school, and sites for development of web application and programs. Sites relate to the school tasks were on the fifth place, sites just for fun were mentioned infrequently, Table 4.31.

Table 4.31. Favorite sites

Group \$FAVORIT favorite sites				
Category label	Code	Count	Responses	Cases
Portal	1	24	50.0	77.4
for school	2	5	10.4	16.1
Learning	3	9	18.8	29.0
Programmes	4	8	16.7	25.8
Fun	5	2	4.2	6.5
Total responses		48	100.0	154.8
44 missing cases; 31 valid cases				

## 4.5. Conclusions

We studied 75 Bulgarian students, ages 10-18, prospectively testing several hypotheses of Internet use and behavioral changes caused by the Internet. Our results demonstrate that:

*Boys and girls begin using the Internet at a similar age, and regardless of their residence (a city or a small village). Longer Internet experience is associated with greater self-esteem of Internet skills, but is not associated with greater self-esteem of computer skills. Actually, most students start first to surf on the Internet and write e-mails, chatting then to improve their computer skills – on first place is motive*

*to communicate and for entertainment. Of course there are students with really mastered computer and Internet skills, which catch up the speed of innovation. These students are leaders in their group.*

*The Internet induces changes in students' behavior – dependence on the Net and escape from the real world in virtual world. The students preferred social contacts. Anonymity on the Internet is a premise for changing the identity as imaginary or real persons.*

*Boys and girls begin using the Internet most for entertainment and less for educational purposes. Students prefer to visit portal sites and learning sites for developing of web applications and programs, but not related to school activities. The girls prefer studying, and boys prefer improving their computer skills. Educational sites are divided in two categories oriented to the first national enrolment campaign after 7<sup>th</sup> grade and to the second national enrolment campaign for universities.*

## ***CONCLUSION & DISCUSSION***

In the century of new communications via computers and Internet many changes of human behavior are discovered. The new terms and meanings are introduced in our life to study the “new people” – influenced of human-computer-human interactions - all over the World in Cyberspace.

The identification of motives and their analyses for using the Internet from a uses-and-gratification perspective improves the way of using the Internet. Creating of successful online learning communities is a crucial in the dynamic Net.

The purpose of this study is to identify how the Cyberspace influences the way of Bulgarian students' behavior (dependence, anonymous, aliens), to examine motives for using the Internet. The main research questions are:

- What are students' motives for using the Internet?
- How do antecedents and media perceptions relate to Internet motives?
- How do Internet antecedents, perceptions, and motives predict behavioral and attitudinal outcomes of Internet use?

The study is based on the literature and empirical study. The instrument in used here is web-based questionnaire published on <http://www-it.fmi.uni-sofia.bg/anketi/cyberspace/>.

The design of the study is of a retrospective survey-type. Two sets of questions were asked: Demographics, which were used as independent variables stratifying the population into subgroups, and Related to Internet use, which were used as outcome characteristics. The obtained results gave us overview of Bulgarian Internet users in secondary school ages. After survey we may report that:

- Boys and girls begin using the Internet at approximately the same age of 12 years old, and regardless of their residence (a city or a small village).
- Students reported that English is their first foreign language as a second foreign languages they mentioned Russian (It is illustration of the post-communist period in the country). Some of the students said that use Turkish – they are from Turkish minority in Bulgaria.

- Students made self-estimation of their skills. The results show that longer Internet experience is associated with greater self-esteem of Internet skills, but is not associated with greater self-esteem of computer skills.
- Students spend much more time, surfing on the Internet, more often meet interesting people and use much more possibilities of the Internet, and they feel they are in the other world, surfing on the net.
- The factor analyses shows previous results lead to two main factors - the Cyberspace induces changes in students' behavior as "DEPENDENCE ON THE INTERNET" and "ESCAPE FROM THE REAL WORLD" in virtual world, but there is NO SIGNIFICANT ALIENATION IN BULGARIA – the students prefer social contacts. They have possibility to access Internet from home, but most of the time they spend in Internet clubs – to be with friends.
- Anonymity on the Internet is premise for changing the identity. There are determinate three independent components:
  - first that using of chat Nickname is associated with romance involvement in Cyber life and possibility to continue in Reality – it's "IMAGINATION".
  - second component presents the real person in Cyberspace – who has own web page and who says "I'AM REAL", and who does not involve in romance affaires in real life that began via the Internet,
  - third component is for the students that change them personality "IDENTITY ALTERATION"
- Boys and girls begin using the Internet most for entertainment and less for educational purposes. On first place students reported that they downloaded music and movies – Secondly, the WWW was used for fun and Chatting – IRC and Chat rooms, and thirdly the Internet was used for e-mail. The WWW was also used frequently for educational purposes. Less frequent uses were one to one conversation (ICQ, messengers) and playing games via the Internet.
- Educational sites are divided in two categories oriented to the first national enrolment campaign after 7<sup>th</sup> grade and to the second national enrolment campaign for universities.
- Students use to visit portal sites and learning sites for developing of web applications and programs, but not related to school activities.

- The students motivated to use the Internet for educational purposes use the Net for entertainment as well, while students who prefer enjoying the Net, don't use it for learning. It is the cheapest entertainment.
- There is difference in manner of behave – the gender effect - the girls use the Internet for studying, they are oriented less to using the Internet instead of going to cinema. The boys prefer improving their computer skills and using the Net instead of relaxing.
- There is one group boys and girls that behave similar on the Net. They use *frequently* Internet for *mastering the computer skills* and *learning* via the net. Students *often passed time* in Cyberspace, and *much often* they use the Net for *chatting*. These results are on the second place in students' answers, i.e. the difference between answers on the first place is less than 10% - the students of this group is almost the half of the observed students. This is common pattern for boys and girls and Learning Webs developers have to take into account this motives to developed successful sites.
- Parents encourage students to use Internet

The improvement of educational sites is supportive for the students and help to educational process in Bulgarian schools. There are some recommendations for developing of often-visited Learning Webs.

According to the 4Es model of Collis & Moonen - Easy of use, Engagement, Educational Effectiveness, and Environment, and guidelines about the web site design, cyberpsychological features and creating of one on-line community we may note down the most important features for Learning Webs oriented to Bulgarian secondary school students (taking into account and specific needs of Bulgarian students):

- *Clear purpose* – the subject of the learning web,
- *Know the users* – students have experience as Internet users
- *Satisfaction* - the site should be pleasant to use and look at,
- *Involve users* - from the beginning and analyze their tasks and goals – to use portal structure of the Learning Webs with many possibilities: links to other educational sites related to mastering skills as computer and Internet users, chat rooms, and e-mail,
- *Communication tools Interaction dialog, Chat, Message format,*
- *Feedback, Skill exchanges, Peer matching*

- *Visual Design & Visibility* - should be the user's ally and predict the effect(s)
- *Accessibility, Orientation/ Navigation* - to find information quickly,
- *Memory Load, Archives* - the site should reduce user memory load,
- *Legibility & Language* - text should be easy to read, short sentences, 'everyday' words,
- *Policies for: Security, Privacy, Copyright.*

Utilize all these important for students' elements is possible to develop on-line community supportive the educational process. To escape from real world and to live in virtual is a crucial moment but it is possible to develop new relations among the students all over the Earth. The Internet with developing Cyberspace is one adventure for the students in them daily life.

This is just first study for Bulgarian students in Cyberspace. This study could be continue in different ways as:

- How many students from Bulgaria use the Internet at all.
- How students transfer their knowledge in skills from Cyberspace and Virtual.
- More in detail to be considered motivation - the Internet offers too many possibilities.

**GLOSSARY**

<b>Cyber-</b> <sup>1</sup>	Prefix - computers and information systems
<b>Cyberpsychology</b>	The Cyberpsychology is the study of the influence of computers, technology and virtual environments on the psychology of individuals and groups. (Suler, 1998)
<b>Cyberspace</b> <sup>1</sup>	<i>cy-ber-space [ sbr spàys ] noun</i> <ol style="list-style-type: none"><li>1. imagined place where electronic data goes: the notional realm in which electronic information exists or is exchanged <i>an e-mail message lost in cyberspace</i></li><li>2. virtual reality: the imagined world of virtual reality</li></ol>
<b>Internet</b> =	<i>In-ter-net [ intr nèt ], noun</i> <i>global computer network: a network that links computer networks all over the world by satellite and telephone, connecting users with service networks such as e-mail and the World Wide Web</i>
<b>Net</b> =	<b>Net or net</b> , noun Internet: the Internet (informal) [Late 20th century. Shortening.]
<b>Web</b> <sup>1</sup>	<i>Web [ web ], noun</i> World Wide Web: the World Wide Web (informal)
<b>On-line</b> =	<i>Adjective</i>
<b>online</b> =	1. computing connected via a computer: attached to or available through a central computer or computer network. off-line
<b>on line</b> <sup>1</sup>	2. chemical engineering directly connected to a measurable process: used to describe an instrument or sensor that is connected directly to a process being measured, thus obviating the need to take samples for analysis in a laboratory or elsewhere
	3. ongoing: currently going on or being done
	<i>adverb</i> while connected to a computer: while under the control of a computer or connected to a computer network
<b>Surfing</b> <sup>1</sup>	<i>surf [ surf ] noun</i> foamy waves: the lines of foamy waves that break on a seashore or reef <i>play in the surf</i>
	<i>verb</i> <ol style="list-style-type: none"><li>1. intransitive verb use a surfboard: to ride waves on a surfboard</li><li>2. transitive verb ride waves in a particular area: to go surfing in a particular place Have you surfed Waikiki?</li></ol>

3. transitive and intransitive verb *computer search medium for entertainment*: to go on the Internet or watch television for recreation, frequently changing the site or channel

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**URL**<sup>1</sup>

Full from *Uniform Resource Locator*

*Internet address*: an address identifying the location of a file on the Internet, consisting of the protocol, the computer on which the file is located, and the file's location on that computer.

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**Virtual Reality**<sup>1</sup>

*noun*

1. computer simulation: a technique by which a computer simulates a three-dimensional physical environment using visual and auditory stimuli with and within which people can interact to affect what happens in the simulation
2. simulated reality: a computer-generated environment that simulates three-dimensional reality

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**Web-page**<sup>1</sup>

*Web page* (plural *Web pages*) or *web page*, noun

location on the World Wide Web: a computer file, encoded in hypertext markup language HTML and containing text, graphics files, and sound files, that is accessible through the World Wide Web. Every Web page has a unique Uniform Resource Locator URL, or address.

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**Web-site**<sup>1</sup>

*Web site* [ *wéb st* ] (plural *Web sites*), noun

a group of related Web pages. Approximately 85 percent of all Web sites are in English. Also called site

<sup>1</sup> The definitions are from *Encarta® World English Dictionary* [North American Edition] © & (P)2003 Microsoft Corporation. All rights reserved. Developed for Microsoft by Bloomsbury Publishing Plc.

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## Appendix - QUESTIONNAIRE

*We'd like to know your thoughts about the Internet and what you do with it. You don't have to answer all the questions if you don't want: we'd rather you spend time on the one's that interest you.*

*This looks rather long, but there's no need to answer everything. Just answer the sections that interest you and are relevant to you.*

***Many thanks for your help & your time***

*If you know of any friends or family who might want to answer these questions, do pass it on to them.*

Age \_\_\_\_\_ Sex \_\_\_\_\_ City \_\_\_\_\_  
 Do you use other language except English using the Internet, if yes, which? \_\_\_\_\_

1. INTERNET IN GENERAL	
For approximately how long have you been using the internet?	(Years and Months)
How long does the account exist, which you are using?	
In which of the following settings have you ever made use of a computer connected to the Internet?  (check all that apply)	Cybercafe Library At home At a friend's home At school
In which of the following settings do you most frequently use a computer to access the Internet?	Cybercafe Library At home At a friend's home At school
How often do you access the Internet?	Once a month or less Once a week Several times per week Every day Several times per day
How much money do you spend on-line per week, on average?	
2. YOU ON THE NET	
Since you started using the Internet...	
	1                      2                      3                      4                      5 Much more    More            Equally        Less            Much less
You've increased the time you spend in the Internet, since the time you started to now?	
You've met less or more your friends?	
You've become less or more involved in the issues that interests you?	
You've met interesting people through surfing?	
Your parents become angry about too much surfing.	
Your parents have not support you with money for visiting the Internet clubs.	
You've been in totally different world, when you are in the net, which leads you away from the daily round.	
The Internet offers you the possibility to get information from all over the world in an easy and fast way.	
Internet is a giant funfair with thousands of possibilities, which have to be used.	
3. INTERNET SERVICES	
When you access the	World Wide Web for your own entertainment

Internet, which of the following services do you usually use?  (check all that apply)	World Wide Web for your educational purposes send / receive emails use IRC or chat rooms use ICQ, MSN / Yahoo Messenger, or other one to one conversation play computer games write on a word processor download music or video other computer applications _____
A lot      Some      Occasionally      Rarely      Never 1            2            3            4            5	
What are the main things you do on-line? To play online games For developing computer skills To obtain educational materials, to learn, to gain knowledge To save time To discuss under different issues For chatting	
Do you have certain Web sites that you visit regularly?	
Yes/No	
If yes, please list some of your most popular Web sites (with addresses, if you know them).	
Estimate several web sites, please - if you like them, if there are useful information, if you'll visit again	
1      2      3      4      5      1      2      3      4      5 too bad   don't like   like   like a lot   wonderful   too bad   nothing useful   useful   a lot of information   very useful	
<a href="http://www-it.fmi.uni-sofia.bg/kids/links.htm">http://www-it.fmi.uni-sofia.bg/kids/links.htm</a> <a href="http://littemi.hit.bg">http://littemi.hit.bg</a> <a href="http://math.hit.bg">http://math.hit.bg</a> <a href="http://testove.tripod.com/index.html">http://testove.tripod.com/index.html</a> <a href="http://slovo.orbitel.bg">http://slovo.orbitel.bg</a>	
Do you use some web sites for your educational purposes – write them down, please _____	
Using the Web can take time away from other activities. How frequently have you used the Web instead of the following activities during the <i>past 6 months</i> ?	
Daily      Weekly      Monthly      Less than once a month      Never 1            2            3            4            5	
instead of watching TV? instead of talking on the phone instead of relaxing instead of reading books/magazines/newspapers instead of going to the movies instead of going outside with friends instead of doing household work	
<b>4. YOUR PERFORMANCE ON THE INTERNET</b>	
Do you have a personal Web page?	
Yes/No	
Do you have at least one nickname you use in chat, instant message, or email?	
Yes/No	
Do you ever pretend to be someone else (e.g., different age, sex, or appearance) in chat, instant message, or email?	
Yes/No	
Have you ever become romantically involved <i>while on-line</i> with someone you did not know in person but met through chat or instant messaging?	
Yes/No	
Have you ever become romantically involved <i>in real life</i> with someone you first met through chat or instant messaging?	
Yes/No	
<b>5. GAMES</b>	
Do you play interactive games with other people on the Internet?	

combat or adventure games (e.g., Quake, Tomb Raider)		Yes/No
strategy games (e.g., Age of Empires, Starcraft)		Yes/No
role-playing or simulation games (e.g., EverQuest, The Sims)		Yes/No
If you play any game on the Internet, what is your favorite game?		
How many hours per week do you spend playing this game?		
<b>6. USING THE INTERNET – SKILLS &amp; PROBLEMS</b>		
Very      Competent      Satisfactory      Little      None 1      2      3      4      5		
How experienced a computer user do you consider yourself		
How experienced an Internet user does you consider yourself?		
How do you find out about new WWW pages/sites?  (Please check all that apply.)	Books Friends Follow hyperlinks from other Web pages Internet search engines & directories (e.g., Google, Alta Vista, etc.) Usenet newsgroups Magazines/newspapers Signatures at end of email messages Television advertisements Other Sources _____	
Approximately how many items does your Favorites/ Bookmarks contain?  (Please check all that apply.)	I don't use Favorites/Bookmarks I don't know 1 to 50 pages 51 to 100 pages 101 pages or more	