

Distance Education Developing Knowledge Society

Ramune Ciarniene¹; Vilmante Kumpikaite²

¹*Assoc. Professor, Kaunas University of Technology (Management), ramune.ciarniene@ktu.lt*

²*Dr., Kaunas University of Technology (Management), vilmante.kumpikaite@ktu.lt*

Abstract

Information society is a new way to live and work together. The first priority in education is to prepare people to integrate into information society by giving them the right to continuous learning. The most important elements of information society are communication systems connected with the most advanced information and communication technologies, the latter eliminating time and distance limitations and providing citizens with the possibilities of open and distance learning. Distance learning is the most rapidly developing field in specialists' training and education. This system allows people to learn at the most appropriate time and rate without moving from their living or working place. This study analyses the advantages and problems related to distance learning and presents research results disclosing students' intentions and readiness to study using distance learning in Lithuania. Although computerized and distance learning networks have been established, and the process of creating special distance learning courses is gaining ground, people – both the trainers and the trainees – still lack information about the possibilities and distinctions of distance learning.

Keywords

information society, knowledge society, information literacy, open and distance education, e-learning, fundamentals of management

Introduction

European integration and the need to create knowledge society raise new requirements for the preparation of students as a continuum of learning throughout life. The development rates of the contemporary society are so rapid that, once acquired, education does not ensure career for the whole life. Knowledge and skills are to be constantly developed in order to be in line with changes, information flow, and new technologies. In order not to lag behind, maintain economic competitiveness, employability and to combat social exclusion, a person should constantly study in order to acquire new knowledge and skills required for active participation in the knowledge society and economy (Koddertzsch, 2003).

Open and distance education provides wide possibilities for a learner to study at a convenient time and place as well as to choose programs confirming to his/ her demands and possibilities. Distance education has eliminated geographical, personal, work barriers, which have prevented people from further development.

Distance and traditional studies are not absolutely different ways of acquiring knowledge (Kolb, 1984; Holmberg, 1985; Graham, 1989; Targamadze and Tamosiuniene, 2003). Even the application of computers and information technologies is not the prerogative of distance

studies. The same technologies are successfully used in traditional education. However, the distinction of distance studies is that a consumer should be ready for this way of learning (Targamadze, Tamosiuniene, 2003). What is the difference between a consumer of traditional studies and that of distance studies? In order to answer this question, it is expedient to define distance studies.

Distance education is the relationship based on a dialogue, structure, and independent decisions and mediating technologies (Moore, 1990). These studies are characterised by the following distinctions (Keegan, 1986):

- separation of the teacher and student;
- influence of an education institution on planning and preparing learning materials;
- use of technical and information technologies; double-way communication; the possibility of unplanned seminars;
- participation in applying the most technically developed education.

Most authors agree that distance education is learning through distance, an independent form of learning when a learner is given as much support, as he/she needs (Leonaviciene, Simonaitiene, 2001; Martisiene, 2002; Rimkuvieni, 2002).

Distance studies are inevitably linked with modern learning surroundings. Information technologies and virtual learning environment play the most important role in distance learning (Willis, 1993; Vivet, 1996; Sumner, Teilor, 1998; Jonassen, 2000). This form of studies is a mobile learning in technologies, consumers and services aspects (Pandya, 1995; Sirkemaa, 2004).

Technologies are also shifting students' learning experience from simple knowledge acquisition to knowledge construction through working together, problem solving and getting solutions they did not know in advance. Technologies should be adapted to contemporary learning environments in order to be properly used in learning processes. Adaptation is useful in two aspects: consumer's abilities, needs and means (Brusilovsky, 2001; Raskin, 2000).

Presenting any course for distance learning, it is very important to evaluate one's learning needs, capabilities and skills to use information technologies and virtual environments. In summary, the subject of this study is distance education and e-learning while developing knowledge society. The objective is to disclose students' attitude and readiness to distance learning; to highlight the problems and perspectives of lifelong education while developing knowledge society. The key research methods: comprise of the following The analysis of scientific literature, empirical research, logical analysis, conclusion formulating.

Information literacy: foundation of e-learning

Although a range of interpretations of the term "information literacy" has been developed by educational institutions and professional organisations, alike most of these are likely to have derived from the definition originally produced by the American Library Association (ALA) in 1989: To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. Producing such a citizenry will require that schools and colleges appreciate and integrate the

concept of information literacy into their learning programs and that they play a leadership role in equipping individuals and institutions to take advantage of the opportunities inherent within the information society. Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand (American Library Association, 1989).

Information literacy is as a sub-category of independent learning, which, in turn, is a sub-set of lifelong learning (Bundi 2004, 5) (see Figure 1).

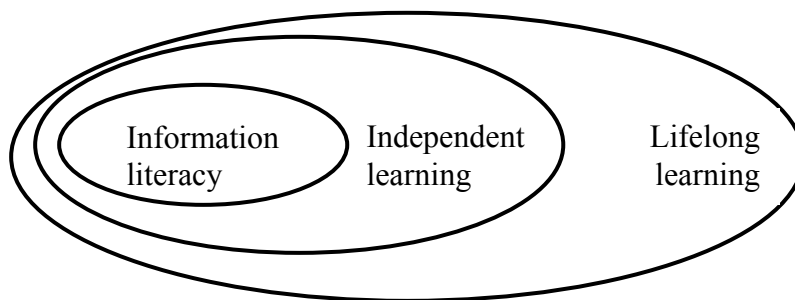


Figure 1. Relationship between information literacy and lifelong learning

This model makes information literacy education consonant with reform agendas in government, in communications technology and in education, and with employers' demands for an adaptable and responsive workforce (Bundi, 2001). In other words, it is seen as a response to the challenges posed by lifelong learning. The link between information literacy and lifelong learning is also perceived as an economic enabler and therefore highly valued. For example, the OECD's (1996) report on *The Knowledge-Based Economy* stresses the importance of a ability to learn in order to fulfil increasing demands for highly skilled workers.

The knowledge-based economy is characterised by the need for continuous learning of both codified information and the competencies to use this information. As access to information becomes easier and less expensive, the skills and competencies relating to the selection and efficient use of information become more crucial. Capabilities for selecting relevant information, recognising patterns in information, interpreting and decoding information as well as learning new and forgetting old skills are in increasing demand (O'Sullivan, 2002).

The transformation of the learning and teaching environments generated by e-learning strategies requires substantial changes in the methods of provision. Education needs a new model of learning that is based on the information resources of the real world and learning that is active and integrated, not passive and fragmented. The creation of a learning culture, which produces graduates with a capacity and desire for lifelong learning in rapidly changing, complex, and information abundant environment, requires a major shift in the educational paradigm (Bundi, 2001).

Open and distance education /learning conception

Often the concepts of open and distance education/ learning are used like synonyms. However, these two notions are not identical. **Open learning** is objective, education policy ensuring learning flexibility in terms of geographical, social and time restrictions; **distance learning** (a form of open learning) is a way to learn at a suitable time, place, without a direct contact with the teacher (Rutkauskiene, 2003).

Distance learning as a form of open learning is oriented to disseminating knowledge and presenting freedom to what and how to study, i.e. this form of education develops personality and ability to think critically.

Both open and distance studies present a very good possibility to acquire education for those who have no opportunity or wish to take traditional studies. The main reasons why open and distance education /learning is necessary are the following ones:

- **Lifelong learning and economic development.** Distance education and e-learning make it possible to learn for those who work and are family people. This is a way to promote computability, economic productivity, and employability, social and cultural competence.
- **Social equality and availability.** Many adults do not have possibilities to study or graduate because of academic, personal or social reasons. Open and distance learning is their “second chance” to overcome the barrier of higher education.
- **Expenses reduction.** There are usually less possibilities than applicants to study at universities. Distance education and e-learning is the system that can satisfy the needs of those who could not and cannot enjoy traditional studies. However, this education is rendered at lower costs.
- **Geography.** Remote, less urbanized regions have no economic opportunities to suggest traditional education; therefore distance learning is a good way out to effectively realize the principles of lifelong learning.

Learning openness could be characterized by the following indications: time, rate, place, accessibility, terrain and content (see Figure 2).

Open and distance learning is especially useful for adults who need to develop their skills or change their profession (Krivickiene, 1999), because it presents the following possibilities:

- allows to work and study at the same time;
- no need to move from a living place and work;
- promotes the choice of the field of studies;
- permits to choose learning time, pace and scale;
- does not make a learner dependable on the teacher;
- present an immediate feedback to the learner.

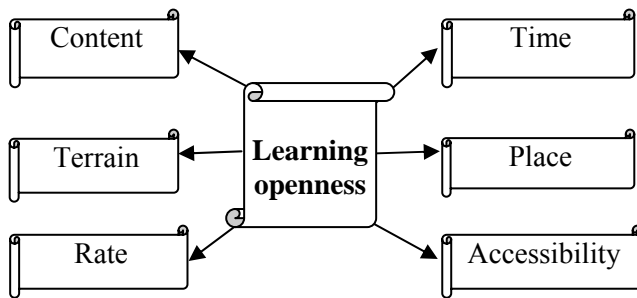


Figure 2. Characteristics of learning openness

Alternatives for distance studies development

Distance education as an independent practice has developed and consolidated itself in the education market. The consolidation of this educational form depends very much on its pertinence to constant changes and requirements. Distance education aspirations could be implemented in these three areas (Saddington, 1998; Valiuskeviciute, 1999):

1. **Advanced tradition** shifts its focus from educating intellect to developing an individual's responsibility to society. Education is viewed as an instrumentality of social and political reforms. This tradition emphasizes the importance of "learning to learn", because once having learned to learn, learning usually becomes lifelong and knowledge is acquired from both learner's and other people's experience. The teacher's role is that of a facilitator, consultant and partner. Keeping to this tradition, distance education might grow into cooperation and experience exchange in solving acute problems. The initiation of co-operative problematic activity for exchange could become the main objective of the whole system. Technical possibilities of distance education would allow widening collaborative efforts and to bring the most experienced researchers and practitioners together to solve current educational issues.
2. **Humanistic tradition** focuses on all-round personality development. Learning is treated as self-development and potentiality disclosure. The teacher acts as the facilitator of a personal growth. Distance education is like a "consulting service" facilitating learning according to specially designed programs. This is the way the learning system is created and adapted to a learner.
3. **Radical tradition** considers education as a part of social transformations. Education objective is to arise social changes, liberate individuals from erroneous thinking and help them to perceive the historical and social context of their activity. The teacher does not give answers, but formulates questions. Learning is a new understanding using critical self-analysis and its interpretation. Distance education oriented to this tradition could become a stimuli and catalyst of social changes. Its main task might be to render assistance to practitioners and self-researchers in change design, i.e. in change infrastructure creation.

The development of distance studies in education could be realized in different directions:

1. Professional direction is aimed at delivering courses helping to get consolidated in the work market.

2. Academic direction is to offer an opportunity to get involved into academic life: academic studies, research, academic career, and academic degrees. Information technologies used in distance education enable to carry out information search, storage dispersion and expand the number of participants in academic discussions. Moreover, distance studies could be engaged in the whole university practice or it may become a new institution and this form of studies is considered as the main activity and teaching principle.

3. Personal direction emphasizes the choice of learning content and form based on individuals' personal characteristics and self-education demands.

Rather problematic situation is for the persons who enjoy **social learning orientation** (Valiuskeviciute, 1999). Rather individualized learning limits the possibilities for some persons to be fully engaged in the institution's social activity. In order to overcome this disadvantage, special surroundings are being created, learning groups or teams are being formed.

Distance learning: advantages and disadvantages

Distance studies can be organized as different courses:

- 1. Courses of the most recent information.** Distance studies technologies enable not only to deliver the newest information but also to satisfy learner's qualitative and quantitative demands.
- 2. Knowledge consolidation courses** are designed so that it would be easy to memorize and acquire them.
- 3. Training courses** are aimed at specific means of managing information. These are skills development courses.
- 4. Courses** oriented to understanding laws, principles, and ideas.
- 5. Seminars of interpretation** are based on moderated discussion.
- 6. Courses** aimed at creating self-realization programs and satisfying personality development needs.

Distance learning takes place in some other place than the learner is located. It uses special, individualized content-based, communicative methods entirely substantiated by modern technologies.

There exist several ways of organizing these studies (Keegan, 1986):

- 1. Autonomous distance studies model** (only distance studies).
- 2. Mixed distance studies model:**
 - independent (the same institution provides traditional and distance studies);
 - selective or alternative (the same program could be taught to the students who have chosen traditional studies and to those who have selected distance learning).
- 3. Integrated distance learning model:**
 - supplemented (traditional studies include distance learning programs);

- parallel (program includes traditional and distance studies modules).

Having analysed distance-learning distinction, it is possible to highlight its advantages and disadvantages (see table 1).

Table 1. Advantages and disadvantages of distance learning

Advantages	Disadvantages
<ul style="list-style-type: none"> • Possibility to get engaged into lifelong learning and develop irrespective of time and place. • Possibility to learn at a learner's pace and according to his/her abilities and demands. • Learning expenses are reduced. • Teaching material is easier understood using multiple terrains. • More rapid innovations and achievements dissemination. • Cooperation among different institutions in managing studies, common projects, research. 	<ul style="list-style-type: none"> • Studies based on contemporary technologies require considerable investments. • Creation of modern means is expenditure-consuming. • Not all students afford to use a computer and the Internet. • There can arise technological incompatibility. • Teachers' positive approach to distance education, adequate knowledge and qualification is a must. • New technologies require computer literacy, foreign languages. • Lack of social contacts.

Distance module "Fundamentals of Management": the research of demand and usage possibilities

A group of the teachers of Management Department (Kaunas University of Technology) and the specialists of Distance Teaching Centre (Kaunas University of Technology) have worked out the course "Fundamentals of Management" for distance studies. It is a general course for the students of engineering faculties (day-time, evening, extra-mural departments). Creating this course, most attention has been allotted to extra-mural department students; however, this course could also facilitate other students' learning (day-time, evening department as well as disabled students).

The course supplies students with all the necessary literature, enables to use modern technologies. The most popular virtual learning terrain WebCT was used.

Two researches were carried out to evaluate students' possibilities to use the course and students' satisfaction of this course.

The choice of a data collecting method

Data collecting is a very important procedure. Generalizations and conclusions depend on the precise data, therefore it is very important to choose the most appropriate data collecting method.

The research has been aimed at students' attitude to distance learning and their possibilities to use this way of studies. Inquiry appeared to be the most suitable to this end (Janilionis, 1999; Kardelis, 2002). The main disadvantage of the method is that an inquiry is often reactive, however, its easiness and cheapness as well as the possibility to easily collect a lot of data make this method very popular.

Respondents' selection

The students of Informatics faculty who had the course "Fundamentals of Management" took part in this research. The cause of choosing these students was the following one:

- It could be said that the students of Informatics faculty are the most "literate" in this field and they are rather well prepared for these studies.
- They study the module "Fundamentals of Management" in a traditional way of learning.

In order to check if the number of respondents is representative enough for obtaining valid results that could be interpreted for all third - year students of Informatics faculty, Paniott (1986) formula has been used for this purpose:

$$n = \frac{1}{\Delta^2 + \frac{1}{N}} \quad (1);$$

Where n – the necessary number of respondents;

Δ – possible error amount (in social sciences research standard error is 5%, obtained with 0.95 probability (P));

N – the number of the members the entirely researched.

Table 2. Indices characterizing the research sample

Indices	Qualitative expression	
	1 st stage, February, 2004	2 nd stage, October, 2005
The number of the members of the whole, N	274	305
Sample quantity, n	162	173,05
Probability of Reliability, P	0.95	0.95
Choice error, Δ	0.05	0.05
Respondent number, $n_{respondents}$	179	213

It has been estimated that the number of respondents who has taken part in the both researches is sufficient in order the data obtained to be applicable for the entirety whole. Table 2 presents the indices that characterize researches' sample.

The researches' results have been processed by means of statistics package SPSS 13 and Excel counting.

Stage 1. The research of students needs and readiness

Before starting to apply this course, there has been carried out the research of students demands and possibilities to adopt this form of learning.

Research object - to find out students' attitude to distance learning and their possibilities to use this way of studies.

Research method - Inquiry.

The first stage of research was carried out in February 12-13, 2004. The students of Informatics faculty (third year day-time and evening department students) who had the course "Fundamentals of Management" took part in this research. The general number of students is 274 (240 day - time students and 34 - evening department students). 158 students of day - time studies and 21 of evening department participated in the research.

The questionnaire consists of close-type interrogative questions. It begins with passport data about sex, age department and then twelve questions followed. The questions concern students' readiness and possibilities to choose distance learning.

Research results

At the beginning the respondents have been asked about the problems they face while studying traditionally. Figure 3 presents the results.

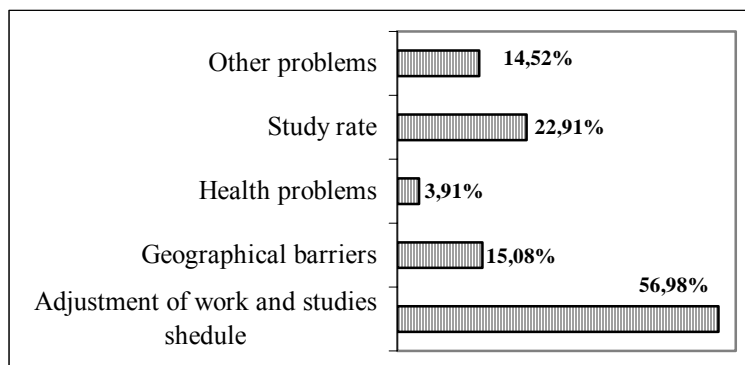


Figure 3. Problems faced by the students of Informatics faculty (traditional studies)

It is obvious that the most serious problem is the co-ordination of the schedule. Comparing these indices according to the parts of studies, it becomes clear that the problem of adjusting studies and work is rather acute for the day-time students (46.8%) and evening department students (14.3%). The students of the evening department are especially worried about the rate of studies. This is very important for 28.6% of the evening department students and 22.2% of the day-time students. Only 13.4% of respondents do not face any problems in traditional studies.

When asked about the purpose of using a computer the respondents answered that they do that for learning (98.9%). Only two students do not use a computer for that aim. A computer is

useful in work for the evening department students (85.7%) and day-time students (53.2%). Table 3 presents these results.

Table 3. The aims of using a computer

Aim	Number of respondents	Meaning, %
Learning	177	98.9
Work	102	57.0
Information search	173	96.6
Entertainment, communication	160	89.4
Others (music, films, bank transactions, etc.)	14	7.8

The aims and the number of students going in for traditional studies witness the fact that students need distance studies.

When asked about the importance of WebCT means in distances learning, 92.2% of the respondents think that the content of the course (program, notes, dictionaries, calendar, drafts) would facilitate learning very much; 74.4% favour other measures (obligations, tasks, tests, self-control questions, marks); 57.0% enjoy communication means (discussions, dialogues, e-mail, etc.).

Investigating students' possibilities to take distance studies, it has been found out that 93.9% of the respondents can go in for distance learning in WebCT surrounding. They have already acquired the basics of English language, using a computer and the Internet.

The respondents use computer not less than some times per week (8.4%), every day (91.6%, it is 164 of the respondents). 81.6% of the respondents can do this at home, 19.6% - at work, and 55.9% - at university. Some of them use a computer in several places.

The research allows maintaining that most students at Informatics Department have possibilities to take distance studies. 12 out of 179 respondents have already had distance studies. Only two of them were not satisfied with those studies. When asked about the form of studies, 65.9% of students would prefer mixed studies, 2.8% - distance studies, 31.3% - traditional studies. As to the course "Fundamentals of Management", the priority was given to mixed studies (63.1%).

Having generalized research results, it is possible to maintain that the students of Informatics faculty are ready and have the possibility to take the course "Fundamentals of Management" as well as other courses through distance learning.

More than 60% of respondents would like to have "Fundamentals of Management", and they prefer mixed studies. They would be able to get lecture notes, course papers and tasks by means of distance studies as well as to directly consult with teachers.

It is quite probable that distance course "Fundamentals of Management" would justify the expectations of program creators and students, and would establish proper conditions for flexible learning at a convenient time and suitable place through adjusting traditional and distance studies.

Stage 2. The research of students assessment of distance module “Fundamentals of management”

Research object - to determine students satisfaction with the relevant parts of the course, to find out how they assess the course.

Research method – Questionnaire.

The research was carried out in October 2005. The students of Informatics faculty (fourth year day-time and evening department students) who had the course “Fundamentals of Management” took part in this research. The general number of these students is 305 (283 day - time students and 22 - evening department students). 195 students of day - time studies and 18 of evening department participated in the research.

By the questionnaire it is sought to determine students satisfaction with the relevant parts of the course, how they assess the course. Questionnaire consists of 23 questions. In structure of the questionnaire three parts – introduction, “passport data” and main – are distinguished. All questions are given in questioning form with given variants of answers.

At the beginning of questionnaire the goal of carried out survey is motivated and logically explained, the short instruction of questionnaire filling-in is given. Then main part of questionnaire (19 questions) is given, and at the end – “passport data” part (4 questions) is provided.

1-9, 11 and 14 questions are of evaluative nature, for which according to the assessment points from 1 to 5 (see table 4) are given. The 15th question is to know how often students use Discussion window. By 10, 12, 13, 16-19 questions it is tried to clarify are some means of course needed or not. 20-23 questions are questions of “passport data”, their goal is collect general information about the student-respondent.

Table 4. Explanation of the 2nd stage research questionnaire

Assessment	Number of question				
	1-6, 8, 11	7, 14	9	15	10, 12, 13, 16-19
5	Prefect	Very useful	More than needed	Once a day	----
4	Good	Useful	Sufficiently	Several times a week	----
3	Average	Sometimes useful	Rather sufficiently	Once a week	----
2	Badly	Useless	Insufficiently	Rare than once a week	----
1	Very badly	Totally useless	Not available	I do not use it totally	Yes
0	----	----	----	----	No

Maximal possible point from one questionnaire is 55 points, minimal – 11 (questions 1-9, 11 and 14). It will be treated that if assessment will be higher than 33 points it will be satisfactory, if lower – unsatisfactory. Total points will be calculated according to the collected questionnaires, having their total number. According to them the fields mostly requiring development will be defined.

Research results

When evaluating the satisfaction with current Distance learning course “Fundamentals of Management” students answered the questions of questionnaire.

Table 5. Results of respondents’ answers to the first type questions

Questions	N, Valid	N, Missing	Mean	Minimum	Maximum
1. Does course Design satisfy you?	213	0	4.20	2	5
2. How you estimate clearness of the Homepage?	213	0	4.35	2	5
3. How can you estimate sufficiency of information about the module?	213	0	4.08	3	5
4. How would you estimate convenience of use of tasks in block Accounts?	212	1	4.02	2	5
5. How would you estimate samples of colloquium?	212	1	3.83	1	5
6. How would you estimate structure of course learning material?	213	0	4.20	2	5
7. How would you estimate benefit of self-control questions?	213	0	4.13	2	5
8. How would you estimate clearness of self-control questions?	213	0	3.96	1	5
9. Is enough literature provided for additional readings?	212	1	3.71	1	5
11. How would you estimate form of Vocabulary presentation	212	1	4.01	1	5
14. Is the window Discussions useful?	213	0	3.26	1	5

Answers in table 5 are given according to the individual questions (questions 1-9, 11 and 14). We see than in all cases the satisfaction is better then average. The best satisfaction is with clearness of the Homepage (4.35), course Design and Structure of course learning material (both 4.20) and self control questions (4.13). The worst assessment is of usefulness of Discussion window (3.26). The assessments fluctuated least when the Sufficiency of information about the module (from 3 to 5) was assessed.

Assessing each questionnaire individually, analyzing each student satisfaction (higher than 33 points from questions 1-9, 11 and 14) result was 31 points from questionnaire. It shows the student dissatisfaction with the course. Other results were not lower than 33 points. The maximum results were 52 points; average point of one questionnaire is 43.66.

Questions 10, 12-13 and 16-19 were intended to know students need for some parts of the distance course. Results could fluctuate from minimum 0 to maximum 1. Received averages of the answers are given in Figure 4. The least students answered that they need the curator of the course and that they wish that the e-mail were activated. Other answers are more than average. Absolutely all respondents answered that they wish that the accounting schedules were announced in the calendar.

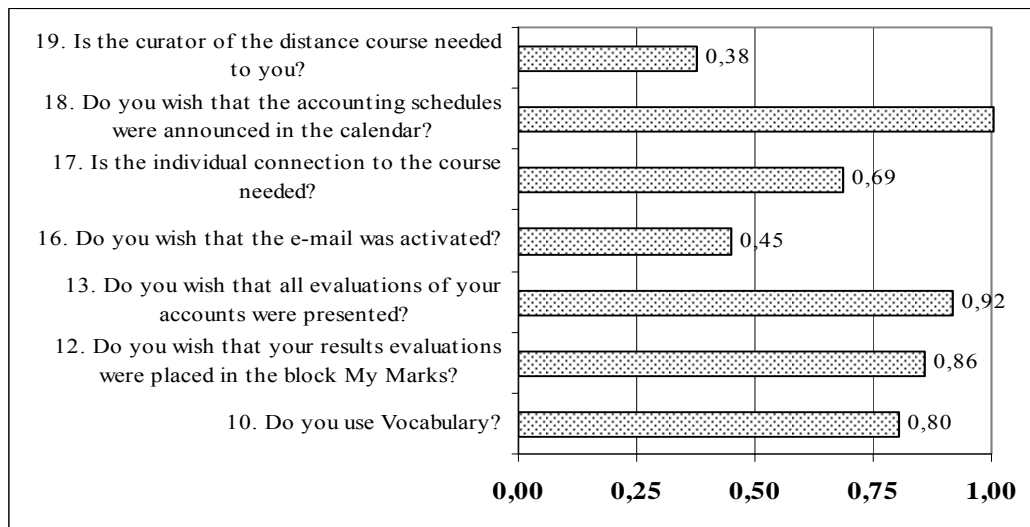


Figure 4. Average result of respondents answers to the second type questions

Generalizing the results of the second research we can state that Distance course “Fundamentals of Management” satisfy the students, although in any case it should be improved. Also it was noticed that the values of the assessments have fluctuated. This is the most likely due to the different approaches and wishes of some students.

Conclusions

Contemporary higher education aims at conforming to the present requirements to be mass and open and satisfying the needs of the knowledge society. Information literacy is as a sub-category of independent learning, which, in turn, is a sub-set of lifelong learning. E-learning can be innovative and rewarding as long as the learners are equipped with necessary independent learning skills needed to take advantage of it.

The research has shown students’ need to study by means of distance learning (even 86.6% of the respondents pointed out that they face different problems at traditional studies, 98.9% of the respondents use computers for their studies, and 96.6% - for the search of information). Questionnaire results revealed that 93.9% of respondents have all the possibilities to learn through a distance way in WebCT environment (they have acquired basic English and have the possibility to use a computer and the Internet), however, they know too little about distance learning itself and virtual WebCT environment.

As many as 63.10% of third-year students of Informatics faculty (KTU) would like to study “Fundamentals of Management” in a mixed way, and thus have an opportunity to use distance learning program and to be able to meet and consult with the teacher in a traditional way. The problem is to co-ordinate students’ needs, their individual assignments and the hours assigned for these activities, and to put these actions into practice.

Students positively assess the Distance course “Fundamentals of Management”. Only one assessment (total number 213) was lower than average.

Distance teaching development can take different directions: professional, academic, personal and social. Distance studies have their advantages and disadvantages. However, it is necessary not only to evaluate the ratio of advantages and disadvantages, but to co-ordinate traditional and distance studies striving for the best variant in the sense of both studies quality and social and economic effectiveness.

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