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INVESTIGATING OPINIONS ON ICT
USE IN HIGHER EDUCATION

Abstract: This article presents research results on attitudes of students' towards the use of ICT in the education process. The analyses were conducted against the backdrop of the students' subjective assessment of their general computer aptitude as well as their access to and use of ICT. The results prove that students' opinions on the wider use of ICT in the learning process was influenced by a subjective assessment of their general computer skills which was determined e.g. by their specialization as well as demographic characteristics. Access to a computer/Internet influenced their familiarity with some applications and online activities. The results confirm that students with a higher appraisal of their competence were more positively inclined towards a wider use of ICT than those with lower levels of competence.

Keywords: computer aptitude, e-learning, students' attitude.

1. Introduction

The traditional context of learning is experiencing a radical change. Teaching and learning are no longer restricted to traditional classrooms [Wang, Wang, Shee 2007]. Teaching with the use of computers and computer applications is becoming ever more popular. Electronic learning (e-learning), referring to the use of electronic devices for learning, including the delivery of content via electronic media such as Internet, audio or video, satellite broadcast, interactive TV, CD-ROM, and so on, has become one of the most significant developments in the information systems industry [Liaw, Huang, Chen 2007]. The rapid expansion of the Internet as a delivery platform, combined with the trends towards location-independent education and individualization, has motivated universities to invest their resources on developing online programs [Ozkan, Koseler 2009].

Blended learning, on the other hand, refers to an integrated environment which combines the advantages of e-learning and traditional classroom teaching [*Handbook of Blended...* 2005]. Generally, blended learning means any combination of learning delivery methods, including most often face-to-face instruction with asynchronous and/or synchronous computer technologies [So, Brush 2008]. Blended learning – in its simplest form, the thoughtful integration of online and face-to-face-instruction

[Garrison, Kanuka 2004] is being used with increased frequency around the world [Drysdale et al. 2013]. Thousands of corporate training programs and institutions of higher education schools participate in blended learning [Picciano et al. 2012].

Although *e-learning* environments are popular, there is minimal research on instructors' and learners' attitudes toward these kinds of learning environments [Liaw, Huang, Chen 2007]. Usefulness and ease of use have proved to be the key determinants of the acceptance and usage of *e-learning*. On the contrary, little is known about students' perceptions in a blended learning setting [Tselios, Daskalakis, Papadopoulou 2001]. In recent years, a significant volume of research on the effective use and integration of Information and Communication Technologies (ICT) in education practices has been observed. The main feature that differentiates the *e-learning* systems from the traditional learning environments is the degree of technology usage and the gradual shift of control and responsibility of the learning process to the learners, giving them the opportunity to learn anytime, anywhere. This shift of control seems to positively influence the learning effectiveness of learners [Chou, Liu 2005]. Other findings [Wu, Tennyson, Hsia 2010] suggest that computer self-efficacy, among others, significantly affect performance expectations. Interaction has a significant effect on the learning climate. The findings provide an insight into those factors that are likely significant antecedents for planning and implementing a blended or e-learning system to enhance student learning satisfaction. It can therefore be assumed that a key success factor for an e-learning or *blended learning* approach to be at least in part successful will be the attitudes of participants to the whole aspect of having to use information and communication technology tools as a fundamental feature of the learning process.

Many researchers have tried to evaluate the role of technology in the learning process with significant emphasis being placed on the components of the learning systems [Ishizuka 2011]. Davis and Wong [Davis, Wong 2007] pointed out that important factors having a paramount influence on participation and engagement with a learning structure could be associated with their acceptance and affective responses towards the system. Others have used a reasoning quite similar to the technology acceptance model approach while investigating this phenomenon. Shu-Sheng Liaw et al. states that behavioral intention to use e-learning is influenced by perceived usefulness and self-efficacy [Liaw, Huang, Chen 2007] and further found that trainers were more positively inclined to use *e-learning* systems.

There is a great need for institutions to keep abreast, both of current trends in the education arena as well as the general social environment in which their students function. This environment today can be characterized as being "replete" with modern information and communication tools which further drive academic institutions towards incorporating additional information technology (ICT) based activities in support of the learning/teaching process.

2. Data and methods

The main objective of the study was an investigation into the attitudes of students towards the wider use of Information and Communication Technologies (ICT) in the process of delivering education (e-learning and blended learning) at a higher education institution. In accordance with the belief that the attitude of a student towards ICT enabled learning in some way is influenced by their general aptitude in the area of using computer tools, the results were presented on the backdrop of their subjective judgment of their general computer aptitude. In addition, observations were made into the possible influence/role that the Internet access that students have (and to computers as such) on the students' approach towards the integration of ICT's in their education process.

This article presents the results of surveys conducted among students of selected faculties of the University of Rzeszów. The studies were carried out in the 2011/12 academic year, among a random sample of 420 respondents. In an attempt to assess the level of acceptance towards ICT enabled learning, students were required to express their opinions towards statements expressing both positive and negative attitudes towards e-learning/blended learning through the use of a 5-point psychometric scale i.e. a Likert-like scale. They were specifically requested to express their opinions with regard to the question of completing part of their traditional studies through e-learning projects. The internal consistency reliability of the questionnaire was tested through the use of the alfa Cronbach analysis. The value of this coefficient was calculated for three groups of variables used to measure students' opinions. This includes frequency of use of computers, attitudes towards the use of computers in the education process and level of competence. The average value of this statistic was 0.7, which indicates that the test questionnaire was reliable.

The opinions of the respondents were presented against a background of socio-demographic variables, such as age, place of residence (size of population) and gender. Since, in the researchers' opinion, a study profile could also have an impact on the attitude of students to the matter under consideration, we decided to profile students according to the study specialization. These specializations were later grouped according to their common characteristics (by faculties). Empirical data was collected through direct surveys. The sample of students taken into consideration for this study was obtained through cluster sampling. The motivation for this method of sampling was the fact that students are "naturally" organized into subgroups (for classwork) within their respective faculties and such groups exhibit a common internal diversity of individuals – an internally heterogeneous composition. Since the average composition of groups does not really differ between groups – homogeneity among groups – it was viable to randomly choose 1-2 groups from each specialization depending on the desired number of individuals required for the sample.

The following research hypotheses were verified:

- The level of general computer competence as well as the familiarity and ability to use certain computer applications by the students was influenced by computer/Internet access.
- The attitude of students towards the wider use of ICT was dependent upon the level of competence in using a computer.
- The general level of computer skills was determined by factors such as study specialization as well as the socio-demographic characteristics of the respondents.

In order to verify these statements, the Spearman's rank correlation analysis and the chi-square test of independence were applied. The strength of the relationships demonstrated with the use of test of independence was measured using Cramer's V coefficient of association. The Student's t-test was employed to determine the incidence of statistical differences in the self-accessed competence levels of women and men.

3. Characteristics of the research sample

The sample population totalled 420 young people of whom 65.5% (275) were female and 34.5% (145) were male. 33.3% of the respondents were rural inhabitants while 66.7% resided in urban areas. A significant percentage of the respondents were third year (38.%) and second year (31.7%) students. Students of the first, fourth and fifth years constituted the remaining 30% of the study sample. The respondents were students in the fields of Administration, English Studies, Landscape Architecture, Polish Studies, Physiotherapy, Mathematics, Environmental Protection, Agriculture, Tourism and Recreation, Physical Education and Food Technology. The Administration and English Language Studies specializations each accounted for 14.3%, i.e. per 60 students, while the remaining fields of studies each represented 7.1% of the sample, i.e. per 30 students. More than half (55.2%) of the respondents were aged 21-22, while the over 23 and 19-20 age groups accounted for 29% and 15.7% respectively.

4. Evaluating ICT usage by the respondents

Assessing the use of ICT in learning and communication was undertaken through the identification of the major sources of information, the main tools of communications used by responding students as well as place of Internet (computer) access. The most commonly used source of information by the respondents were the Internet (76%), television (11.7%), and radio (7.9%). A mere 2.4% of respondents identified the print media as the most frequently used source of information. The results point to the dominant role of the Internet in sourcing for information by the respondents. This serves as a premise in favour of using this medium for knowledge acquisition by students.

Besides serving as a prominent source of information for the respondents, the Internet is also a means of personal communication. 6.7% of respondents use electronic mail as the most common medium of communication. It is the third most

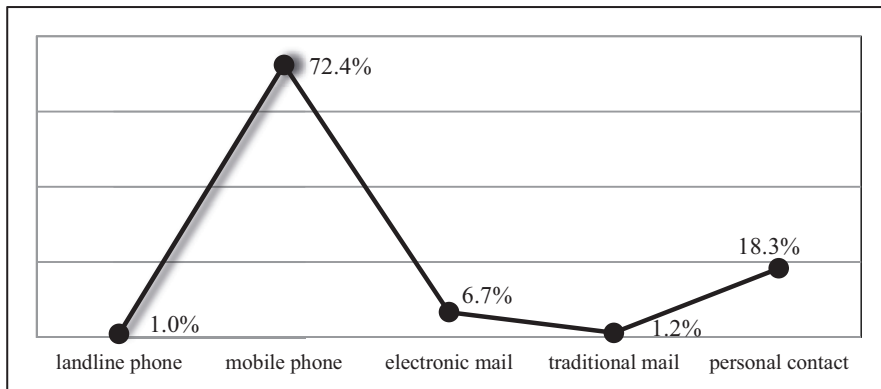frequently used communication tool after the mobile phone (72.4%) and personal contact (18.3%) (Figure 1).

Figure 1. Primary communication tools for students
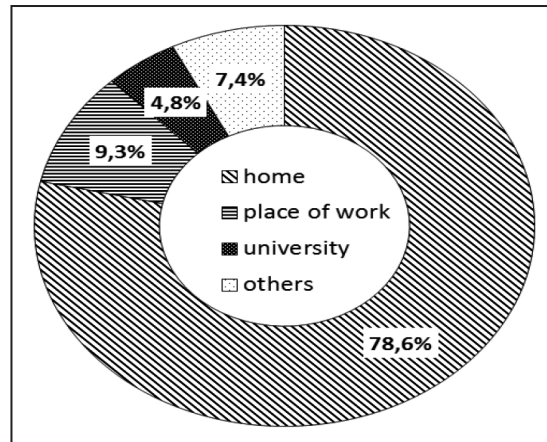
Source: own elaboration.

Figure 2. Place of Internet access by students

Source: own elaboration.

Other types of communication tools, such as landline phones, traditional mail and others constituted a negligible proportion (2.6%) of responses. Over three-quarters of respondents accessed the Internet from their homes, while 9.3% at place of work and only 4.8% at university. About 7.4% of respondents accessed the Internet from other places (Figure 2). It is worth noting the low number of students citing the university environment as a place where they can/do access the Internet. This might partly be due to the fact that at the time of the study the wireless access system was

under development and computer labs were not easily accessible to students for out of class activities.

5. Computer skills assessment

The application of modern information and communications technologies in the learning process requires adequate levels of computer skills from both students and teachers. In order to establish the students' potential in the event of implementing online learning, an evaluation of their subjectively perceived levels of computer skills was carried out using a measurement ranking scale of 1-10, where 1 indicates very weak competence level and 10 indicates very strong level. Figure 3 shows the distribution of responses regarding students' self-evaluation of their computer skills.
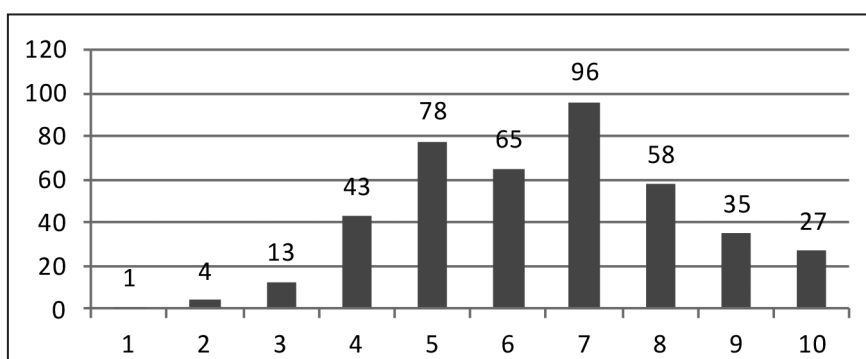

Figure 3. Overall rating of students computer skills

Source: own elaboration.

The most often recorded value of self-assessment was at the level of 7 which was declared by almost 23% of the respondents. More than 50% of the sample judged their competence at a level of 7 and above, which gives a clear indication that the average level of competence among the students surveyed was quite satisfactory. The general computer level of the students was examined with respect to the students' gender (Table 1).

Table 1. Differences in the level of computer competence according to gender – Student's t-test results

Var.	N (M)	N (W)	Avg. (M)	Avg. (W)	t	df	P
Level of skills	145	275	6.99	6.207	4.199	418	0.000

Source: own elaboration.

Through the use of Student's t-test it was proven that the average general competence level between men and women differed (0,00 < 0,05). The average

competence level among males was higher than that for females. Many researchers have tried to examine the relationship between gender and attitudes towards computers, and their research have yielded varied results. Abouserie and Moss [Abouserie, Moss 1992] and Kesici et al. [Kesici, Sahin, Akturk 2009] could not find a significant relationship between college students' attitudes towards computer-assisted learning and their gender, while Whitley did record gender differences in computer-related attitudes and behaviour [Whitley 1997]. The research results herein determine that there is a significant difference between college students' computer attitudes based on gender, which is in line with the findings from other studies which found a relationship between gender and computer use [Varank 2007; Solvberg 2002]. A comprehensive review of the literature of gender differences in computer-related behaviour reveals a myriad of conflicting results [Kay 1992].

As well as a subjective assessment of the respondents' overall level of computer competence, an analysis was made of the level of competence with respect to each of the following applications, Word, Excel, Power Point, E-mail software and the use of search engines. The respondents' level of competence in the use of the mentioned programs and/or tasks is illustrated in Figure 4.

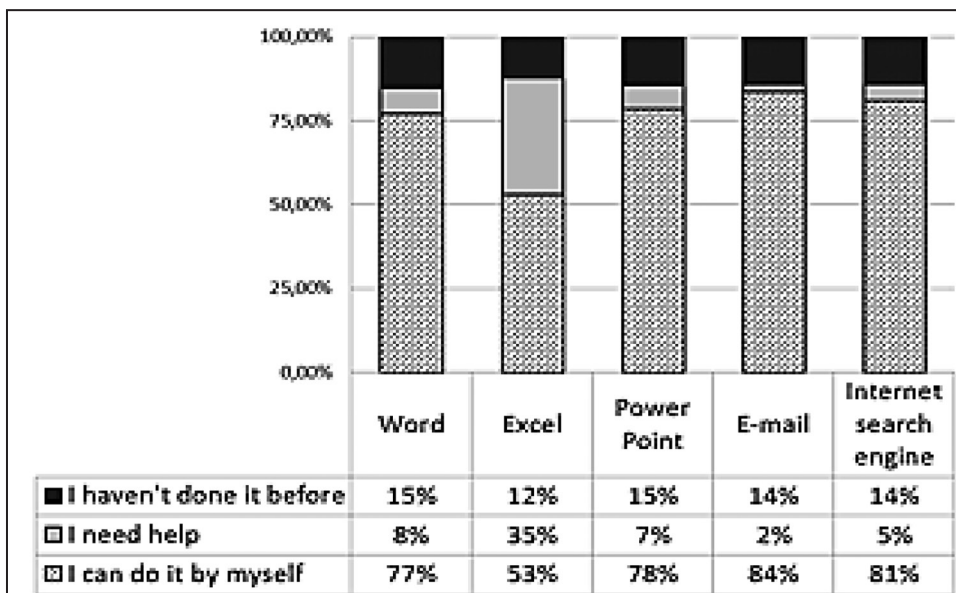|	Word	Excel	Power Point	E-mail	Internet search engine
■ I haven't done it before	15%	12%	15%	14%	14%
▢ I need help	8%	35%	7%	2%	5%
▨ I can do it by myself	77%	53%	78%	84%	81%

Figure 4. Students' competence in the use of selected programs

Source: own elaboration.

The highest level of competence was observed in their ability to send e-mails with attachments. More than 83% of the respondents confirmed their ability to use

electronic mail. A similar proportion of respondents (80.7%), confirmed they can independently use Internet search engines. This fact indicates that the responding students are competent in using the Internet to seek information and also to communicate. From amongst the programs that constitute the Microsoft Office package, the highest skills level was observed in respect of Power Point. The level of competence in the use of Word was a little less while the most difficult task was declared to be using Excel.

In order to ascertain the degree of use of modern technologies by students, the frequency of use of chosen tasks or programs was evaluated (Figure 5).
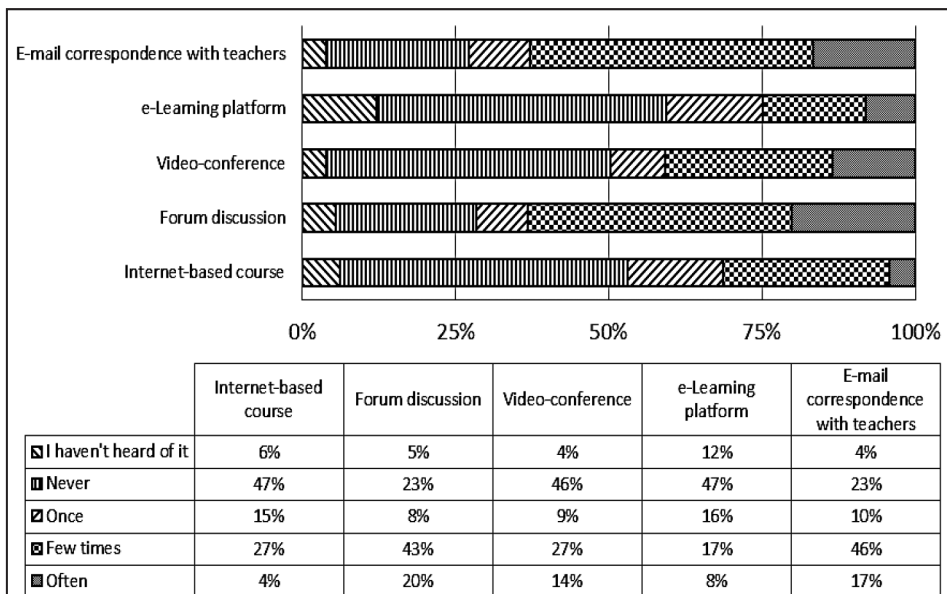

	Internet-based course	Forum discussion	Video-conference	e-Learning platform	E-mail correspondence with teachers
I haven't heard of it	6%	5%	4%	12%	4%
Never	47%	23%	46%	47%	23%
Once	15%	8%	9%	16%	10%
Few times	27%	43%	27%	17%	46%
Often	4%	20%	14%	8%	17%

Figure 5. Frequency of use of selected programs by students

Source: own elaboration.

Among the tasks and programs listed in Figure 6, students most often made use of theme forums, and e-mails in contacts with their teachers and lecturers. They also gained experience having been co-participants in video-conferencing. E-learning platforms and participation in online courses were, however, less popular. More than 47% of respondents never had work-related experience in e-learning environments, while over 12% had never heard of it. Almost 47% of respondents had never participated in Internet run courses and 6.2% had never heard of this. The data presented point to the relatively low popularity of e-learning tools in the learning-teaching process. For most students, these are solutions which they had neither been in contact with nor even heard of. This not only poses potential obstacles to

the introduction of aspects of e-learning, but also indicates tools that need to be popularized prior to the introduction of online teaching.

6. Level of computer skills and availability of Internet/computers

One of the set hypothesis for the study was the assumption that the overall level of computer competence is statistically significantly correlated with Internet (computer) availability. In order to verify this hypothesis, the Spearman's rank correlation analysis (with both variables presented as ranked scales) was applied. The results of this analysis are presented in Table 2.

Table 2. Spearman's rank correlation for variables: place of computer/internet access and the general level of skills

Variable	Spearman's rho	p
Place of computer/Internet access & level of computer skills	0.0793	0.1046

Source: own elaboration.

Based on these results, it was confirmed that within the research sample, increased Internet (computer) availability was associated with a higher level of overall computer competence. This conclusion was reached based on the positively ranked correlation coefficient (0.08). However, the lack of statistical significance of the indicated correlation ($0.10 > 0.05$) makes its generalization beyond the tested sample impossible. The fact that the overall level of competence of Rzeszow University students was associated with Internet (computer) accessibility could not be demonstrated. While there were no grounds to reject the hypothesis of equivalence of the correlation coefficient being zero, it is the same correlation analysis that enables the identification of a statistically significant relationship between the level of skills with selected programs/tasks and the availability of the Internet (computer) (Table 3).

Table 3. Spearman ranked correlation for variables: place of Internet access and level of computer skills with selected programs

Variables: place of Internet (comp.) access & skills level with programs	Spearman's rho	P
Word	0.2182*	0.000
Excel	0.0988*	0.043
Power Point	0.1996*	0.000
E-mail	0.2381*	0.000
Internet search engines	0.2721*	0.000

* At level of 0.05.

Source: own elaboration.

All the positive correlations listed in Table 2 were statistically significantly different from zero. This translates to mean that as Internet/computer availability increased, so did the level of skills in the use of the programs/tasks indicated. The strongest dependency was noted between Internet/computer availability and making use of Internet search engines (0.27). Internet/computer availability, on the other hand, translates into competence in the use of electronic mail, Word and Power Point programs, but with least impact on knowledge of the Excel program. These results may suggest that students continue to use Internet/computer more for entertainment than for learning.

The Spearman's ranked correlation analysis was also applied to test dependencies between frequency of use of selected programs/tasks and Internet/computer availability. The results are presented in Table 4.

Table 4. Spearman's ranked correlation for variables: place of Internet access and frequency of use of selected programs

Place of computer access & frequency of use of selected programs	Spearman's rho	p
Internet-based course	0.1720*	0.0004
Discussions on theme forum	0.2923*	0.0000
Video-conference	0.2047*	0.0000
e-Learning platform	0.1442*	0.0031
Contact with teachers via e-mail	0.1051*	0.0314

* At 0.05 level.

Source: own elaboration.

All the dependencies contained in Table 4 were positive and statistically significant. Internet/computer availability translated primarily into university students participating in discussions conducted on Internet forums, video-conferencing, Internet-based courses, working in an e-learning environment, as well as contact with tutors/lecturers via electronic mail.

7. Students' opinion on the use of ICT in the teaching process

One of the objectives of the study was to assess the attitude of students at the University towards teaching achieved through the use of modern technologies. The implementation of such teaching could therefore be justified by the fact that students perceive the benefits accruing from the use of modern technology. While almost 54% of students wholly agree with the statement that ICT offers good access to necessary study materials, 41% admit that the Internet facilitates sharing of information and observations with people of similar interests, another 34.8% respondents concluded that audio-visual materials can improve the teaching process. While a wider use

of ICT is supported by the fact that more than 20% of the respondents rejected the statement that e-learning is time-consuming, more than 18% claim that it is difficult to find specific information on websites and more than 17% of them claim that learning with the use of ICT has failed to meet expectations.

There were, amongst students, opinions which favoured traditional teaching to teaching with the use of ICT. Many students still prefer to read printed texts – an opinion which over 44% of respondents agreed with and another 30% more or less are in support of. Almost 49% of respondents prefer learning using traditional methods, while for almost 46% finding specific information on website constitutes to be a difficulty. Half of the respondents think that the implementation of such teaching forms requires the acquisition of upgraded computer skills. In addition, about 34% of respondents are of the opinion that teaching via the Internet is not as effective as teaching using traditional methods. More detailed opinions on the prospect of using ICT in the teaching process are presented in Table 5.

There were, among the positive correlations, statistically significant relationships between the level of computer skills and the willingness to ask teachers/lecturers questions via ICT, as well as between the first variable and the assessment of possible improvements to the learning process using ICT. It was, on this basis, concluded that the higher the level of the University students' computer skills, not only the greater their willingness to contact lecturers using modern tools but also the greater their conviction of the existence of the potential possibilities for improvements of the learning process using ICT.

8. Overall assessment of computer competence and characteristics of respondents

Based on the negative, statistically significant correlation between levels of computer competence and the variable relating to preferences in reading printed texts, as well as between the first opinion and the opinion about difficulties in finding specific information on websites, it was concluded that the said difficulties were observed more by the University students who rated their level of computer competence as weak.

Another hypothesis that was verified was of the existence of the relationship between the overall level of computer competence and the characteristic features of respondents. The characteristic features tested were gender, place of abode, field of study and age of the respondents. The level of competence, initially measured as a ten-point scale, was presented as a three-point scale distinguishing three levels of computer competence i.e. very weak/weak, average, and good/very good. The procedure made it possible to examine the existence of relationships between the variables by using the Pearson's chi-square test of independence. A summary of responses in each category of variables is presented in the tables of contingency (Table 7).

Table 5. Students' opinion on the use of ICT in learning/teaching process

Opinions on using ICT in teaching process	No opinion	Completely disagree	Mostly disagree	Mostly agree	Completely agree
"FOR"					
Would ask the teacher questions irrespective of where they are	15.5%	6.0%	8.6%	41.2%	28.8%
ITC provides good access to materials	11.2%	5.7%	2.9%	26.4%	53.8%
ITC may make the learning process more effective	10.7%	9.0%	5.7%	40.2%	34.3%
I would like to share information and ideas with people of similar interests easily	14.3%	6.2%	3.8%	34.8%	41.0%
I suppose audio and video material can improve my learning	9.5%	8.1%	7.1%	40.5%	34.8%
I would like to co-operate with people from other countries in the learning process	14.3%	12.1%	14.0%	34.5%	25.0%
ITC provides effective opportunities to gain experience	11.2%	11.0%	11.2%	44.5%	22.1%
"AGAINST"					
Educating via the Internet is very time-consuming	10.7%	19.8%	35.5%	24.0%	10.0%
I prefer reading printed texts	10.0%	6.7%	9.0%	30.0%	44.3%
Detailed information is difficult to find on websites	4.5%	18.3%	31.4%	32.9%	12.9%
I prefer learning the traditional way	10.5%	10.0%	30.7%	34.3%	14.5%
ITC supported learning requires well developed computer skills	7.4%	14.0%	28.6%	36.7%	13.3%
Learning via the Internet does not yield expected results	11.9%	17.4%	36.4%	24.0%	10.2%

Source: own elaboration.

Table 6. Spearman's rank correlation for the variables: overall level of skills and opinion on the use of ICT in the learning/teaching process

Variables: overall level of computer skills and opinion on using ICT in the teaching process	Spearman's rho	P
1	2	3
I would ask the teacher questions irrespective of where they are	0.1453*	0.0028
Educating via the Internet is very time-consuming	−0.0759	0.1203
ITC provides good access to materials	0.0793	0.1047
I prefer reading printed texts	−0.1666*	0.0006
ITC may make the learning process more effective	0.1071*	0.0282

1	2	3
Detailed information is difficult to find on websites	−0.1565*	0.0013
I would like to share information and ideas with people of similar interests easily	0.0711	0.1456
I suppose audio and video material can improve my learning	0.0376	0.4423
I prefer learning in the traditional way	−0.0263	0.5914
ITC supported learning requires well developed computer skills	−0.0797	0.1031
I would like to cooperate with people from other countries in the learning process	0.0729	0.1356
ITC provides effective opportunities to gain experience	0.0747	0.1266
Learning via the Internet does not yield expected results	−0.0265	0.5881

* At 0.05 level.

Source: own elaboration.

Table 7. Level of computer skills in respect of gender, place of abode, field of study and age of the respondents

Variable	Category of variable	Level of competence			Total
		very weak/ weak	Average	good/ very good	
Sex	Males	33	55	57	145
	Females	106	106	63	275
	TOTAL	139	161	120	420
Place of abode	Country side	56	52	32	140
	Town not exceeding 10,000	23	34	17	74
	Town 10,000-50,000	33	46	34	113
	Town over 50,000	27	29	37	93
	TOTAL	139	161	120	420
Field of study	Administration	10	29	21	60
	Landscape Architecture & Environmental Protection	27	23	10	60
	Polish Studies & English Studies	39	25	26	90
	Mathematics	5	8	17	30
	Agriculture & Food Technology	28	24	8	60
	Tourism & Recreation and Physical Education & Physiotherapy	18	45	27	90
	Sociology	12	7	11	30
	TOTAL	139	161	120	420
Age	19-20 years	31	21	14	66
	21-22 years	64	100	68	232
	23-24 years old	44	40	38	122
	TOTAL	139	161	120	420

Source: own elaboration.

Table 8. Results of chi-square test of independence between these variables: gender, place of abode, field of study and age and level of computer skills of respondents

Variable	Value of chi-square statistics	df	p	Cramer's V
Gender	16.0975	2	0.0003	0.1142
Place of abode	12.2614	6	0.0564	0.1208
Field of study	49.2045	12	0.0000	0.2420
Age	10.9575	4	0.02705	0.1142

Source: own elaboration.

Since the level of probability test p turned out less than the assumed level of significance (0.05), the hypothesis of independence of variables was rejected. It was thus shown that the level was determined separately for each of the listed characteristic features of the respondents. The strongest relationship measured, using the Cramer's V coefficient of association, was noted between the level of competence and field of study of the respondents (0.24). The adequate number of observations in Table 7 made the use of the chi-square test of independence possible to apply. The results of the test between overall competence and the variables i.e. gender, place of abode, field of study and age are presented in Table 8. Other dependencies presented in Table 8 displayed similar strength.

9. Attitudes of students towards the introduction of e-learning and the use of computers in teaching

The last stage of the analysis was to test the attitudes of students towards the introduction of online teaching into the University's curriculum. The opinion of the students on this topic is presented in Table 9.

Over three-quarters of the respondents identified the opportunities offered by the implementation of e-learning. Students confirmed that this form of teaching makes education acquisition more available for all, including disabled persons and those from regions distant from the University. More than 60% of respondents saw the opportunity of taking courses within and outside the country through learning via the Internet and conceded that such a form of knowledge acquisition is attractive since it allows easier contact with teachers, thus making the learning process convenient due to the greater availability of varied sources of information. The respondents, on the other hand, doubted if this form of teaching offers real opportunities for fast response to teaching effects and if it actually ensures a more effective and systematic teaching curriculum.

The introduction of elements of e-learning inherently involves the use of computers in the teaching/learning process. The tendency of students to use the computer in the learning process is illustrated in Figure 6.
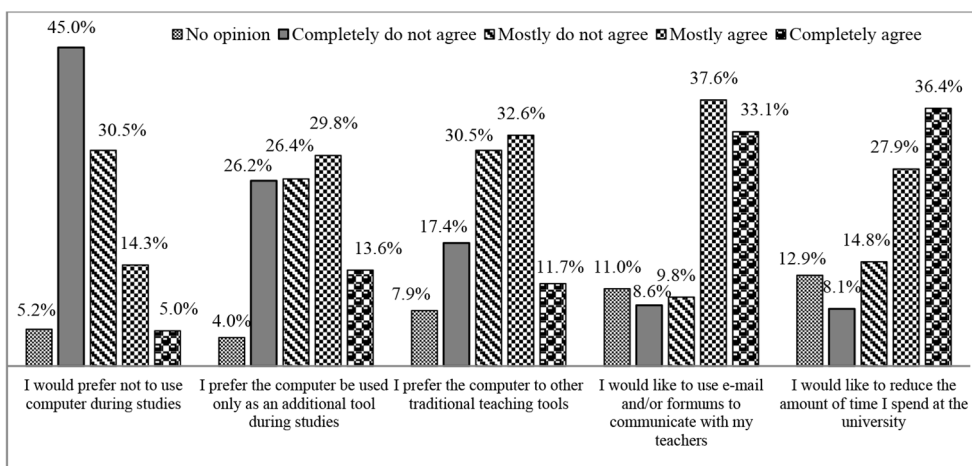
Figure 6. Attitude of students towards the use of computer in teaching-learning process

Source: own elaboration.

Table 9. Attitude of students towards the introduction of e-learning

Opinions on introduction of e-learning	No opinion	Completely disagree	Mostly disagree	Mostly agree	Completely agree
Attendance conducted both at home and abroad	8.8%	11.7%	14.3%	38.3%	26.9%
An attractive way of learning	10.5%	12.6%	10.2%	37.4%	29.3%
Easier contact with the teachers	12.6%	11.4%	8.8%	35.2%	31.9%
Better accessibility of higher education for disabled	5.5%	1.9%	13.6%	21.2%	57.9%
Better accessibility of higher education for students from peripheral regions	6.4%	3.6%	14.3%	29.3%	46.4%
Enable more effective teaching program	9.5%	22.6%	13.8%	32.4%	21.7%
Enable better access to the varied sources of information	8.3%	4.3%	11.0%	35.0%	41.4%
Create possibilities for systematic reaction to teaching results	10.5%	18.1%	18.3%	31.9%	21.2%

Source: own elaboration.

More than 44% of respondents expressed their willingness to replace traditional teaching tools with computer-aided solutions. Furthermore, over 26% of respondents disagreed with the statement that the computer is only an additional element in their course of study, thus to a certain extent emphasizing the importance of this tool for students in their studies. At the same time, as many as 45% of them would not like

to be deprived of the possibilities of carrying out part of their studies with the use of the computer. Students appear to acknowledge the time-saving opportunity and other benefits offered through the introduction of Internet-based teaching and also confirm that this approach would facilitate easier contact with their teacher.

The obtained results concur with the literature [Yu, Jessy 2002] providing empirical evidence supporting the usefulness of e-mail as a promising aid to promote student cognitive growth pertaining to computer knowledge and skills. However, as Lee [Lee 1994] succinctly warned, "richness or leanness is not an inherent property of the electronic mail medium, but an emergent property of the interaction of the electronic mail with its organizational context". For e-mail to make a beneficial impact on education he states that to cultivate an online two-way communication, instant feedback provided by recipients would be an important task all participants need to attend to. However, Ruberg and Miller [Ruberg, Miller 1993] pointed out that access to essential hardware and software need to be in place to ensure online communication among participants.

Among the hypotheses which were tested was the belief that students with better computer competence levels would be more inclined to embrace e-learning as an important aspect of their curriculum activities. This hypothesis was tested using the rank correlation analysis between the level of competency and students' opinions on the use of ICT in the education process. These results are presented in Table 10.

On the basis of the probability of the test values and the sign (negative) of the coefficient of correlation, it can be stated that there was a significant relationship between the judgment of computer competence and
- the propensity to use a computer during studies (–0.098), as well as,
- the inclination to use a computer only as an additional tool in the learning process (–0.160).

Table 10. Spearman's rank correlation for variables: attitude towards the use of computer in the learning process and overall level of computer skills

Variables: overall level of computer skills and opinion on using computer in teaching/learning process	Spearman's rho	p
I would not like to use a computer during studies	–0.0976*	0.045
I prefer the computer be used only as an additional tool during studies	–0.1597*	0.001
I prefer the computer to other traditional teaching tools	0.1301*	0.007
I would like to use e-mail and/or forums to communicate with my teachers	0.0835**	0.087
I would like to reduce the amount of time I spend at the university	–0.0452	0.355

* At 0.05 level; ** at 0.1 level.

Source: own elaboration.

Significantly disparate positive correlations were discovered between the competency level and:
- the tendency to rank computer assisted tuition above traditional methods (0.130)
- the readiness to use e-mail to communicate with instructors (0.084).

The results herein presented allow for the legitimate assumption of the validity of the aforementioned hypotheses. Students declaring lower levels of competence were less inclined to use digital tools in the course of study, also they seemed to underrate the value of ICT in their study activities.

10. Conclusions

For the vast majority of students the most prominent source of information appears to be the Internet, while they predominantly use mobile phones for personal communication. The survey indicates that the majority of university students accessed the Internet from their homes. This gives the foundation to assume that a move towards the wider integration of information and communication technologies into the curriculum should be the most natural succession for such a body of students. Consequently, there is reason to assume that it is highly probable that the introduction of an e-learning/blended learning solution may yield favourable results since students are already well established in the area of ICT use in their off-campus activities.

Furthermore, most of the students declared satisfactory proficiency levels in their use of ICT, thus further supporting the belief that they would be well equipped to employ such technologies in the course of study.

This corresponds with opinions from the literature [Webster, Hackley 1997] which reports that learners' attitudes towards technology and blended learning may have significant effects on the success of the ICT application in higher education.

The research results did not allow for the assumption that access to a computer influenced the level of students' competency, but did show a positive effect on their familiarity and knowledge of certain computer software like Word, Excel and PowerPoint. Students in possession of computers also seemed to be more acquainted with tasks like using search-engines as well as e-mail programs. A positive relationship was also noted between those who had access to a computer and their knowledge and use of e-learning and blended learning tools i.e. online courses, forums and e-mail.

Students' general competency was influenced by their study specializations as well as gender, age and place of abode. Students were more willing to incorporate ICT into the repository of learning tools as the subjective assessment of their computer competence improved.

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BADANIE OPINII NA TEMAT WYKORZYSTANIA ICT W SZKOLNICTWIE WYŻSZYM

Streszczenie: Artykuł prezentuje wyniki badań dotyczących postaw studentów wobec wykorzystania ICT w procesie edukacji. Punktem wyjścia do analiz była subiektywna ocena studentów, dotycząca ich ogólnych kompetencji w zakresie wykorzystania komputera, a także dostępności i wykorzystania ICT. Wyniki badań wykazały, że opinia studentów na temat szerszego wykorzystania ICT w procesie nauczania była uzależniona od subiektywnej oceny kompetencji komputerowych zdeterminowanych przez kierunek studiów i cechy demograficzne respondentów. Dostęp do komputera/Internetu miał wpływ na znajomość wybranych programów oraz zadań wykonywanych za pośrednictwem Internetu. Uzyskane rezultaty potwierdziły, że studenci oceniający wyżej swój poziom kompetencji komputerowych byli pozytywniej nastawieni do szerszego wykorzystania technologii informacyjno-komunikacyjnych aniżeli studenci o niższej samoocenie swoich umiejętności komputerowych.

Słowa kluczowe: kompetencje komputerowe, e-learning, postawy studentów.