



## Does the use of ICT enable easier, faster and better acquiring of knowledge?

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### **Abstract**

The aim of this paper is to examine whether the use of information communication technologies (ICTs) enables easier, faster and better acquiring of knowledge. The study included 218 students from the College of Professional Studies Educators, Aleksinac, Serbia. A 5-point Likert scale for students has been designed. The scale was made up of 45 items, and its purpose was to determine whether the use of ICT enhances students' skills. The results of the research show that the use of ICT enables easier, faster and better acquiring of knowledge. Both qualitatively and quantitatively, students' opinions were given and hypotheses were confirmed.

Keywords: ICT in education, high education, students' abilities, attitudes of students.

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## 1. Introduction

Information communication technologies (ICTs) empower teachers and learners, transform teaching and learning processes as well as create opportunities for learners to develop their creativity and skills. There are a lot of studies about students' achievements related with the use of ICT in education but the impact of ICT use in education has not been confirmed in general. When ICTs are used appropriately to complement pedagogical skills of the teacher, it can have positive effects on student's achievement. But, what is with real student's achievement? If the goals of ICTs use are not clear, it becomes less effective. Aladejana (2007) noted that, *'ICT can promote students' intellectual abilities through higher order thinking, problem solving, improved communication skills and deep understanding of the learning tool and the concepts to be taught. ICT can promote a supportive, interactive teaching and learning environment, create broader learning communities and provide learning tools for students'*. Burden and Shea (2013) noted that isolating ICT as a subject yields limited impacts on student learning outcomes. Mukuna (2013) argued that without a shift in practices of teaching and learning with ICT in schools, many young people are not likely to learn how to exploit the opportunities that ICT provides. In effect, without clear policy direction, ICTs could exacerbate inequalities for particular populations.

Bhattacharya and Sharma (2007); Sharma (2003); Sanyal (2001) notice that the various kinds of ICT products are available and have relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, interactive voice response system, audio cassettes and CD ROMs have been used in education for different purposes. The use of ICT has far more potential benefits for students with disabilities, but the question is how much these technologies are available and usable for this group of students (Hersh & Leporini, 2012).

The paper is structured as follows: after the introductory part (Section 1), Section 2 presents the materials and methods used in the preparation of the paper, setting the main and auxiliary hypotheses, the nature and type of the sample and statistical test and the parameters used. Section 3 reveals the preliminary results of our research. Section 4 reveals discussions of our research. Conclusions are drawn in Section 5.

## 2. Materials and Methods

The survey was conducted with the aim of examining whether the use of ICT enables easier, faster and better acquiring of knowledge. The method applied in this study was selected in accordance with the goals, objectives and tasks of research, as well as in accordance with the set hypotheses. For the purpose of this research, a 5-level Likert scale with 45 questions was constructed. The subject of this research was to determine does the use of ICT enable easier, faster and better acquiring of knowledge.

Hypothesis 1: it is assumed that studies are easier with the use of ICT.

Hypothesis 2: it is assumed that use of ICT enables easier, faster and better acquiring of knowledge.

Hypothesis 3: it is assumed that learning through ICT gains the knowledge that it may be applied.

The survey included 218 students from the College of Preschool Studies, Aleksinac, Serbia. The scale consists of 45 claims and is intended to determine does the use of ICT improve students' abilities. Students have the opportunity to express the degree of disagreement with the above statements. The scale is based on the possibility of choosing among the complete agreement 'Strongly agree', through partial 'I agree', 'Tend to agree', to complete negation 'Do not agree' and 'Strongly disagree'.

The survey was conducted in the College of Preschool Studies, Aleksinac, Serbia. The sample included 218 students, 94 students from the first grade (43.1%), 56 students from the second grade (25.7%) and 68 students from the third grade (31.2%).

Table 1. Ratio and number of students examined by years

		Years of study			
		Frequency	Percent	Valid percent	Cumulative percent
Valid	First grade	94	43.1	43.1	43.1
	Second grade	56	25.7	25.7	68.8
	Third grade	68	31.2	31.2	100.0
	Total	218	100.0	100.0	

### 2.1. Statistical tests and parameters

The obtained data were analysed within the set hypothesis of the research. Quantitative data processing in the SPSS program, calculation of frequencies and percentages, chi-square test for determining the statistical significance of the differences with respect to the observed variables and years of study were performed. Cronbach’s alpha was used to demonstrate the reliability and the internal approval of the scale for this sample. The statistical analysis was conducted at 95% confidence level. A P value less than 0.05 was considered statistically significant.

### 3. Results

The value of Cronbach alpha is 0.948, indicating that the measuring scale used is reliable.

Table 2. Cronbach’s alpha

Cronbach’s alpha	Reliability statistics	
	Cronbach’s alpha based on standardised items	No of items
0.948	0.949	45

#### 3.1. Hypothesis 1: It is assumed that studies are easier with the use of ICT

From Table 3, it can be seen that from the total number of respondents, 32 (14.7%) students of the first year, 16 students of the second year (7.3%) and 25 students of the third year (11.5%) strongly agree with this claim. Then, 35 students of the first year (16.1%), 30 students of the second year (13.8%) and 27 students of the third year (12.4%) agree that studies are easier with the use of ICT. Furthermore, 27 (12.4%) students of the first year, 10 students of the second year (4.6%) and 16 students of the third year (7.3%) tend to agree that studies are easier with the use of ICT. According to the obtained chi-square that is  $\chi^2 = 4.726$ , there is no statistically significant difference in the boundary value ( $p = 0.317$ ).

Table 3. Results of the differences that studies are easier with the use of ICT considering to the year of study

		Years of study × studies are easier with the use of ICT cross tabulation			Total	
		Studies are easier with the use of ICT				
		Tend to agree	I agree	Strongly agree		
Years of study	First grade	Count	27	35	32	94
		% within years of study	28.7	37.2	34.0	100.0
		% within studies are easier with the use of ICT	50.9	38.0	43.8	43.1
	Second grade	% of total	12.4	16.1	14.7	43.1
		Count	10	30	16	56
		% within years of study	17.9	53.6	28.6	100.0
Third grade	% within studies are easier with the use of ICT	18.9	32.6	21.9	25.7	
	% of total	4.6	13.8	7.3	25.7	

	Count	16	27	25	68
Third grade	% within years of study	23.5	39.7	36.8	100.0
	% within studies are easier with the use of ICT	30.2	29.3	34.2	31.2
	% of total	7.3	12.4	11.5	31.2
Total	Count	53	92	73	218
	% within years of study	24.3	42.2	33.5	100.0
	% within studies are easier with the use of ICT	100.0	100.0	100.0	100.0
	% of total	24.3	42.2	33.5	100.0

$\chi^2 = 4.726$ ;  $df = 4$ ;  $p = 0.317$ .

### 3.2. Hypothesis 2: It is assumed that use of ICT enables easier, faster and better acquiring of knowledge

Table 4 shows that from the total number of respondents, 23 (10.6%) students from the first year, 15 students from the second year (6.9%) and 14 students from the third year (6.4%) strongly agree with this claim. Then, 47 students from the first year (21.6%), 32 students from the second year (14.7%) and 40 students from the third year (18.3%) agree that the use of ICT enables easier, faster and better acquiring of knowledge. Out of the total, they mostly agree, 19 (8.7%) students from the first year, 6 students from the second year (2.8%) and 13 students from the third year (6.0%). Only five students from the first year (2.3%), three students from the second year (1.4%) and one from third year student (0.5%) disagree that the use of ICT enables easier, faster and better acquiring of knowledge. From the total number of students, 119 or 54.6% agree that the use of ICT enables easier, faster and better acquiring of knowledge. According to the obtained chi-square, which is  $\chi^2 = 4.842$ , it can be seen that there is no statistically significant difference in the boundary value ( $p = 0.564$ ).

Table 4. Results of the use of ICT that enables easier, faster and better acquiring of knowledge considering to the year of study

Years of study × use of ICT enables easier, faster and better acquiring of knowledge cross tabulation		Use of ICT enables easier, faster and better acquiring of knowledge				Total
		I do not agree	Tend to agree	I agree	Strongly agree	
First grade	Count	5	19	47	23	94
	% within years of study	5.3	20.2	50.0	24.5	100.0
	% within use of ICT enables easier, faster and better acquiring of knowledge	55.6	50.0	39.5	44.2	43.1
	% of total	2.3	8.7	21.6	10.6	43.1
	Count	3	6	32	15	56
Second grade	% within years of study	5.4	10.7	57.1	26.8	100.0
	% within use of ICT enables easier, faster and better acquiring of knowledge	33.3	15.8	26.9	28.8	25.7
	% of total	1.4	2.8	14.7	6.9	25.7
	Count	1	13	40	14	68
	% within years of study	1.5	19.1	58.8	20.6	100.0
Third grade	% within use of ICT enables easier, faster and better acquiring of knowledge	11.1	34.2	33.6	26.9	31.2
	% of total	0.5	6.0	18.3	6.4	31.2

Total	Count	9	38	119	52	218
	% within years of study	4.1	17.4	54.6	23.9	100.0
	% within use of ICT enables easier, faster and better acquiring of knowledge	100.0	100.0	100.0	100.0	100.0
	% of total	4.1	17.4	54.6	23.9	100.0

$\chi^2 = 4.842a$ ;  $df = 6$ ;  $p = 0.564$ .

### 3.3. Hypothesis 3: It is assumed that learning through ICT gains the knowledge that it may be applied

From Table 5, it can be seen that from the total number of respondents, 24 (25.5%) students from the first year, 18 students from the second year (8.3%) and 21 students from the third year (9.6%) strongly agree with this claim. We also see that 31 students from the first year (14.2%), 19 students from the second year (8.7%) and 25 students from the third year (11.5%) agree that learning through education technology plays a very important role in acquiring information literacy. From the total number, 33 students (15.1%) from the first year, 16 students from the second year (7.3%) and 20 students from the third year (9.2%) tend to agree with this claim. Only six students from the first year (2.8%), three students from the second year (1.4%) and two students from the third year (0.9%) agree with the claim that learning through education technology plays a very important role in acquiring computer literacy. According to the obtained chi-square that is  $\chi^2 = 2.405$ , there is no statistically significant difference in the boundary value ( $p = 0.879$ ).

Table 5. Results of the learning through ICT gains the knowledge that it may be applied considering to the year of study

Years of study × learning through ICT gains the knowledge that it may be applied cross tabulation		Learning through ICT gains the knowledge that it may be applied				Total	
		I do not agree	Tend to agree	I agree	Strongly agree		
Years of study	First grade	Count	6	33	31	24	94
		% within years of study	6.4	35.1	33.0	25.5	100.0
		% within learning through ICT gains the knowledge that it may be applied	54.5	47.8	41.3	38.1	43.1
		% of total	2.8	15.1	14.2	11.0	43.1
	Second grade	Count	3	16	19	18	56
		% within years of study	5.4	28.6	33.9	32.1	100.0
		% within learning through ICT gains the knowledge that it may be applied	27.3	23.2	25.3	28.6	25.7
		% of total	1.4	7.3	8.7	8.3	25.7
	Third grade	Count	2	20	25	21	68
		% within years of study	2.9	29.4	36.8	30.9	100.0
		% within learning through ICT gains the knowledge that it may be applied	18.2	29.0	33.3	33.3	31.2
		% of total	0.9	9.2	11.5	9.6	31.2
Total	Count	11	69	75	63	218	
	% within years of study	5.0	31.7	34.4	28.9	100.0	
	% within learning through ICT gains the knowledge that it may be applied	100.0	100.0	100.0	100.0	100.0	
	% of total	5.0	31.7	34.4	28.9	100.0	

$\chi^2 = 2.405$ ;  $df = 6$ ;  $p = 0.879$ .

#### 4. Discussion

The aim of this paper was to examine does the use of ICT facilitate easier, faster and better acquiring of knowledge. In our sample of 218 (100% valid sample) respondents, the value of the Cronbach alpha coefficient (Cronbach's alpha = 0.948) showed very good reliability and internal approval of the scale for this sample, which meets the criteria of reliability.

Table 3 shows that studies are easier with the use of ICT in relation to the year of study. From the obtained results, it can be seen that students generally agree with this claim. The resulting chi-square, that is  $\chi^2 = 4.726$ , indicates that there is no statistically significant difference in the boundary value ( $p = 0.37$ ). According to students' answers and the obtained chi-squares, the hypothesis that studies are easier with the use of ICT can be accepted.

The results of students' responses considering the year of the study that the use of ICT enables easier, faster and better acquiring of knowledge can be seen from Table 4. And with this assertion in the table, it is confirmed that students generally agree with the claim that the use of ICT enables easier, faster and better acquiring of knowledge. The resulting chi-square that is  $\chi^2 = 4.842$  shows that there is no statistically significant difference in the boundary value ( $p = 0.564$ ). According to students' answers and the obtained chi-squares, it can be concluded that the use of ICT enables easier, faster and better acquiring of knowledge; thus, confirming this hypothesis.

Does learning through ICT acquire the knowledge that it can be applied with regard to the year of study can be seen in Table 5. It is clear from the table that students do consider that learning through ICT acquires the knowledge. The resulting chi-square, that is  $\chi^2 = 2.405$ , shows that there is no statistically significant difference in the boundary value ( $p = 0.879$ ). According to students' answers and the obtained chi-squares, it is concluded that learning through ICT acquires the knowledge.

#### 5. Conclusions

The use of ICT has significantly contributed to the modernisation of forms, methods and teaching procedures. ICT in education provides opportunities for using new teaching methods and a new organisation of teaching. The classical form of teaching is not neglected, but only a new technology is introduced to implement the positive elements of traditional technology, which will allow students to facilitate easier, faster and better learning. The imperative of using ICT in education is to enable the student to take advantage of the use of ICT in the process of creating new knowledge, improving production as well as the quality of social life.

By researching a group of students, we have come to the realisation that students are very interested in the use of ICT because they consider that the use of ICT enables easier, faster and better knowledge acquisition. With the use of ICT, teacher will easily adapt the teaching to the students' previous knowledge, interests, abilities and will better implement the teaching content and ensure the active participation of students in the classroom. Students will, on the other hand, take advantage of the use of ICTs to easily adopt material which will enable better learning and conditions for lasting memory.

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