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The investigation of the usage of ICT in university lecturers' courses

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Abstract

The aim of this study is to determine the usage level of ICT in university lecturers' courses. For this purpose, the ICT usage frequency of lecturers related to various sub-dimensions. In this study, Survey method was used. The data were collected using Koca's (2006) scale that was composed of two sections. In the first section of the survey, 12 questions were asked to lecturers about their demographic features. In the second section, 19 questions were asked regarding the ICT usage frequency of lecturers. 157 lecturers from 9 different faculties participated in this study.

In consequence of the study, significant difference was found in the usage frequency of ICT according to the lecturers' gender and their faculties. On the other hand, no significant difference was found regarding their academic titles.

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Keywords: ICT; the usage of ICT; lecturers;

1. Introduction

ICTs (Information and Communication Technologies) are technological tools and resources that used to communicate, and to create, disseminate, store, and manage information. These technologies include computers, the Internet, radio, television, telephony etc.

ICTs have potentially powerful enabling tools and resource for educational change and reform. In other words, ICTs help expanding access to education, strengthen the relevance of education and promote educational quality. Increasing the quality of education is a very important point for policymakers concerned with education. Usage of ICT can improve the quality and effectiveness of education in several ways: by increasing learner motivation, by simplifying the acquisition of basic skills and by enhancing teacher training (Haddad, 2002). However, many studies on usage of ICT in education show that the potential educational benefits of ICT may not denote expected effects.

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To increase educational benefit and effectiveness of ICT depends on aim of usage and the way it is used. Furthermore, usage of ICT in education does not indicate same effects for all.

The integration of ICTs in education is a multifaceted process that includes various important issues: educational policy and planning, curriculum and pedagogy, infrastructure, institutional readiness, teacher competencies, capacity building, financing, etc. These issues are needed to be considered by policymakers, educators, education administrators, etc. There is not one solution for defining best level of ICT integration in the educational system.

ICT is the important point for all steps of education process especially in universities. Via ICT, lecturer started to use technology in their courses' by graphical presentation materials. There is no doubt that, as researchers emphasize, using ICT in courses is a new approach for applications of interaction. It aids student not only in recognition but also in making knowledge permanent. Thus, it increases the quality of instruction.

The aim of this study is to determine the usage level of ICT in university lecturers' courses. For this purpose, the ICT usage frequency of lecturers related to various sub-dimensions: gender, their titles, and their faculty are investigated.

2. Methods

In this research, survey method is used. The target population for this research consists of lecturers in Ege University during 2007-2008 periods. 157 lecturers were selected randomly from nine faculties in Ege University, as shown in Table 1. After data collection phase, data were analyzed by using frequency, percent, T-test and F-test.

Table 1: Faculties and Participants

Faculties	Number of Total Lecturers	Number of Participants
Faculty of Education	62	18
Faculty of Letters	200	18
Faculty of Communication	92	11
Faculty of Dentistry	210	17
Faculty of Engineering	248	26
Faculty of Science	231	19
Faculty of Fisheries	136	13
Faculty of Agriculture	277	24
Faculty of Economic and Administrative Sciences	87	11
Total	1543	157

Participants from each faculty were shown with properties as Academic Title and Gender below.

Table 2. Sample Properties

		Number of Participant	Percent (%)
Academic Title	Professors	27	17,2
	Assoc. Prof	14	8,9
	Assist. Prof.	31	19,7
	Lecturer	11	7,0
	Instructor	3	1,9
	Specialist	7	4,5
	Research Assistant	64	40,8
Gender	Female	58	36,9
	Male	99	63,1

The four items likert-type instrument (Fu-ICT) was developed by Meltem KOCA in 2006. This instrument consists of two part. First part, that has 11 items, focuses on demographic information. The second part of instrument consist of 19 items that measures frequency of ICT Usage.

Results of the factor analyze shows that this scale consists of four subscales which are Course preparation, During the course, Managing course and Communicational. These subscales explain %65 of variants. In order to determine reliability of the scale, Cronbach α co-efficiency was calculated. The reliability of the scale is found to be 0,92 for the whole, 0,893 for Course preparation subscale; 0,865 for During the course subscale; 0,821 for Managing course subscale and 0,811 Communicational subscale.

3. Findings

3.1. Scores of ICT usage

The maximum scores of ICT Usage are 76 from 19 items. In this research it is scored 51 from 19 items as well. These results show that lecturers are using ICT frequently (Table 3). According to Table3, lecturers highly use ICT on Course preparation ($X=8,5796$), during the course ($X=12,1847$) and managing course ($X=9,2548$), but they use ICT on Communication less than the average score ($X=12,2484$).

Tablo 3. Results of ICT Scores

	N	Min	Max	X	SS
Course preparation	157	3	12	8,5796	2,28183
During the course	157	5	20	12,1847	4,1383
Managing course	157	4	16	9,2548	3,24611
Communicational	157	7	35	12,2484	3,31016
Fu-ICT	157	19	76	51,0064	11,30095

3.2. Gender differences

An independent samples t-test was conducted to compare the mean scores of subscales and Fu-ICT by gender (male vs. female teachers). As seen in Table 4.

Table 42. T-test analysis according to gender

	Gender	N	X	Sx	Df	t	Sig.
Course preparation	Female	58	9,017	2,228	155	,376	,066
	Male	99	8,323	2,284			
During the course	Female	58	12,982	3,845	155	,635	,062
	Male	99	11,697	4,301			
Managing course	Female	58	10,413	3,140	155	,135	,001**
	Male	99	8,575	3,126			
Communicational	Female	58	12,103	2,573	155	1,704	,676
	Male	99	12,333	3,683			
Fu-ICT	Female	58	53,655	10,369	155	,163	,024*
	Male	99	49,454	11,583			

*($p < .05$), **($p < .01$)

As seen in table4, While there is a meaningful difference in lecturers' ICT usages in managing course subscale ($p < .01$) and Fu-ICT ($p < .05$), there is no significant difference in course preparation, during the course and communicational subscales ($p < .05$). According to these results, on the basis of managing course subscale and Fu-ICT, female lecturers' ICT usage are more frequent when compared to male lecturers' ICT usage.

3.3. Academic title differences

A one-way between-groups analysis of variance was conducted to explore the impact of academic title on frequency of ICT usage and results are presented in table 5. Subjects were divided into seven groups according to their academic titles. Statistically, there is no significant difference in all subscale and Fu-ICT for the seven groups.

Table 5. Results of Anova analysis according to academic title

		Sum of squares	df	Mean Squares	F	Sig.
Course preparation	Between Groups	34,021	6	5,670	1,093	,369
	Within Groups	778,233	150	5,188		
	Total	812,255	156			
During the course	Between Groups	17,608	6	2,935	,166	,985
	Within Groups	2654,036	150	17,694		
	Total	2671,643	156			
Managing course	Between Groups	84,867	6	14,144	1,361	,234
	Within Groups	1558,942	150	10,393		
	Total	1643,809	156			
Communicational	Between Groups	75,022	6	12,504	1,148	,338
	Within Groups	1634,290	150	10,895		
	Total	1709,312	156			
Fu-ICT	Between Groups	621,584	6	103,597	,805	,567
	Within Groups	19301,410	150	128,676		
	Total	19922,994	156			

3.4. Faculty differences

ANOVA test were used to analyze the differences between lecturers' ICT Usage and their faculties. Their faculties were categorized into nine groups. Anova test results are presented in table 6.

Table 6. Results of Anova analysis according to faculties

		Sum of squares	df	Mean Squares	F	Sig.
Course preparation	Between Groups	72,657	8	9,082	1,817	,078
	Within Groups	739,598	148	4,997		
	Total	812,255	156			
During the course	Between Groups	282,990	8	35,374	2,192	,031*
	Within Groups	2388,653	148	16,140		
	Total	2671,643	156			
Managing course	Between Groups	133,085	8	16,636	1,630	,121
	Within Groups	1510,724	148	10,208		
	Total	1643,809	156			
Communicational	Between Groups	89,176	8	11,147	1,018	,425
	Within Groups	1620,136	148	10,947		
	Total	1709,312	156			
Fu-ICT	Between Groups	2455,230	8	306,904	2,600	,011*
	Within Groups	17467,763	148	118,025		
	Total	19922,994	156			

*p<.05

As it can be seen in Table 6, there is statistically significant difference at the p<.05 level during the course subscale and Fu-ICT scores for the nine faculties.

Post-hoc comparisons using the Benferroni test indicated that the mean score for “Faculty of Education” was significantly different from “Faculty of Agriculture” and “Faculty of Fisheners ” regarding during the courses and Fu-ICT (table 7).

Table 3. Benferroni test results according to faculties

*p<.05, **p<.01

	Faculty (i)	Faculty (j)	Mean Differences (i-j)	Sig.
During the course	Faculty of Education	Faculty of Agriculture	4,6111	,013*
Fu-ICT	Faculty of Education	Faculty of Fisheries	13,4402	,031*
		Faculty of Agriculture	12,8889	,007**

4. Conclusion

This research focuses on the Usage of ICT in Lecturers’ Courses. Findings show that there is no significant difference among the titles of academicians. These results may explain that starting to use ICT in universities is in the same time period for all universities and their academicians. Academicians started to use ICT in their courses approximately a decade ago. Therefore, experiences of the usage of ICT among the academicians are nearly the

same. Researches on this field provide that teachers have positive attitudes of ICT Usage (Zayim, İşleyen, Gülkesen ve Saka, 2002; Harmandar ve Samancı, 2000; Ray, Sormunen ve Haris, 1999; Francis,1994; Deniz, 1994). According to other findings of this study, women use ICT for managing courses more than men do. Some of the researches emphasized that on the contrary to the earlier studies on the women attitudes towards to computer technology, women reflected more positive attitudes than men on the researches. (Bhargava, Kirova-Petrova and Mcnair, 1999; Ray, Sormunen and Haris, 1999; Lee,2003). Moreover, this finding of the research may show that women are more careful about managing courses than men. The majority of women who participated in this study mentioned that they use ICT to prepare exam papers, curriculum and editing student scores.

Another finding proves that faculties which were founded earlier have some differences on ICT usage. This result may have several reasons. One of them is that new faculties have newer ICT equipments than old ones. Moreover, departments of faculties can be a reason for this finding. If a faculty has departments which study on ICT, IT or related to technology, it can change the atmosphere of faculty. They may tend to use ICT more than other faculties which have no technology based department such as Computer Education, Instructional Technology, Educational Technology and so on.

To sum up, ICT is trendy issue. It has been developing and it will continue to develop. Universities have a lot of significant duties for increasing the use of ICT. Graduated students should know what ICT is and how ICT can be effective. It will be important for their professional and daily lives. Universities are the most important step before their professional lives. Thus, ICT should encourage students not only to learn but also to use technology effectively.

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