



The Effect of Multitasking to Faculty Members' Academic Works

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Abstract

Faculty members in higher education institutions which technology produced in and used actively try to overcome simultaneous one more works because of their intensive works and responsibilities. This study associated simultaneously doing one more academic works to multitasking. Multitasking may have a detrimental effect on academic works since it is not possible to handle one more works at one time. The purpose of this study was to examine the effect of multitasking on academic works. Four different multitasks are using the Internet, talking with phone, watching TV or listening music, which are not a part of an academic work while doing this academic work. This study used correlational research method. 1033 faculty members from 70 different universities located in various geographical regions of Turkey participated to the study. The data collection tool was a survey which includes question related to demographics, frequency of multitasking and frequency of academic delay. The data were analyzed with frequencies, two way contingency table analysis using crosstabs applying Pearson χ^2 and logistic regression. Finally, the study indicated that using the Internet, talking on the phone and watching TV while doing an academic work had a detrimental effect on academic works. However, listening music while doing a work did not result in academic delay. Title and age of faculty members were related with academic delay. These results were discussed in the framework of Mayer's theory of multimedia learning.

Key Words

Multitasking, Faculty Members, Higher Education, Academic Delay, Internet, TV, Phone.

Higher education institutions are the organizations that should use the technological developments. But while achieving this aim understructure is not the only parameter that should be upgraded (Akteke-Öztürk, Arı, Kubuş, Gürbüz, & Çağiltay, 2008). Academic, scientific, instructional and administrative factors have vital importance for technological improvement of organizations (Gumpert & Chun, 1998; Sporn, 1999). One of the main factors that affect the success of higher education institutes is the productivity of the faculty members. There is a positive correlation between the technology usage and productivity of faculty

members in their instructional, scientific and service duties (Baldwin, 1998; Georgina & Olson, 2008; Xu & Meyer, 2007). Also, faculty members' concerns and adoption levels affect the use of information and communication technologies (Alev & Yiğit, 2009).

It is commonly observed that faculty members try to handle multiple works simultaneously under the serious time pressure. As well, it has been routine for them to take their works to home or to their vacations. In the field of technology integration, the researchers focused on faculty members' use of technology and participation to workshops related with adaptation of technology in the

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classes (Georgina & Olson, 2008; Rogers, 2000). The observation is that if or not faculty members delayed academic works at the same time they use technology, independent from their works, is not studied in detail.

Multitasking is known as “the performance of multiple tasks at one time” (Multitasking, 2012) while Lee and Taatgen (2002) defined multitasking as the ability to handle the demands of multiple tasks simultaneously (p. 2). In our case, it can be explained as management of more than one academic work at the same time. During the multitasking, to be experienced on a skill, a person can be more successful at multitasking skills. Generally, multitasking can be achieved simultaneously. However, delays in the implementation of the tasks may be due to non-performance of certain tasks simultaneously (Bowman, Levine, Waite, & Gendron, 2010; Junco & Cotten, 2011; Salvucci & Taatgen, 2008). Furthermore, multiple tasks are not related with each other (Wild, Johnson, & Johnson, 2004; Benbunan-Fich, Adler, & Mavlanova, 2011).

In this study, the main task of faculty members was considered as the carrying out of only one academic work at one time. Simultaneously, working on the main task and using the Internet, talking on the phone, listening music or watching TV which are not parts of the main task called as multitasking. Since faculty members had to switch the tasks between the main task and other activities while using technology, there may be delays on the main task. As the research on technology and multitasking is examined, it was observed that researchers investigated computer, the Internet, television, mobile phone or instant messaging services one by one (Brasel & Gips, 2011; Hembrooke & Gay, 2003; Judd & Kennedy, 2011; Junco & Cotten, 2011, 2012). Therefore, in this study, we examined different technological activities in one study. These activities are using the Internet, talking on phone, listening music and watching TV. If task switching between the main task and technological activities is managed well, there will be positive reflections in faculty members’ instructional, research and service missions (Gumpert & Chun, 1998; Rosser & Tabata, 2010).

Some of faculty members were digital natives and while some others were digital immigrants. Digital natives’ problem solving skills are different from digital immigrants and they are inclined to multitask (Helsper & Eynon, 2010; Prensky, 2001a, 2001b) since digital natives are generally composed of younger population and they are familiar with

technology (Ata, 2011; Haznedar, 2012). Cognitive science discusses whether or not multitasking is beneficial, if it causes lack of concentration and cognitive load (Bennett, Maton, & Kervin, 2008; Junco & Cotten, 2012). Previous studies reported that people prefer to do different tasks at the same time. Even though people viewed themselves as highly skilled at multitasking, in reality, scientific results indicated that they are not as good as they believe (Jez, 2011, p. 158).

This study aimed to investigate the effect of multitasking on academic work. Three sub research questions were determined; *I*) How frequently do faculty members delay an academic work while they are using the Internet, talking on phone, or watching TV which are not a part of the work, *II*) What are the relationship between academic delay and multitasking, *III*) How do title, age, average Internet connection duration, multitasking, the number of technologies and study field predict academic delay?

Method

Research Design and Sample

This study used correlation research method. Convenience sampling method was preferred since random and systematic nonrandom sampling methods could not be used (Fraenkel & Wallen, 2000). 1033 faculty members from 70 different universities located in various geographical regions of Turkey were involved in our study. Mean age was 37.33 (SD = 8.9; Mod = 35; Median = 36). The youngest and the oldest participants were 21 and 69 years old, respectively. The frequencies of age range were <30 (n = 261; %25.3), 31-35 (n = 250; %24.3), 36-43 (n = 275; %26.7) and 44 > (n = 238; 23.1).

Data Collection

The data were collected by a short two part survey between April and June, 2012. The first part included questions about participants’ faculty, department, title, age, and daily Internet connection duration. In addition, the participants answered which technologies they use in their daily life (tablet, smart phone, desktop and laptop). The second part was related with multitasking frequencies and frequencies of its detrimental effect on academic work (academic delay). Detailed explanations of multitasking and academic delay are as below;

Multitasking (MT): Frequency of multitasking by faculty members was collected with the question

"How often do you do academic works at the same time that you are doing the following activities which are not part of your works? a) Using Internet, b) talking on the phone, c) listening music, d) watching TV". Then, faculty members rated 5 point Likert type scale to determine multitasking frequency for each activities; 1: never, 2: rarely, 3: sometimes, 4: frequently or 5: very frequently.

Academic Delay (AD): Frequency of detrimental effect of multitasking on academic work was collected by the question "How often do your works delay while you multitask? Faculty members rated 5 point Likert type scale to determine delay frequency because of multitasking; 1: never, 2: rarely, 3: sometimes, 4: frequently or 5: very frequently.

Data Analysis

Descriptive statistics were used to reveal whether or not faculty members believed in that their academic works delayed because of multitasking. Academic delay scores were re-coded as a dichotomous variable. Very frequently, frequently, sometimes, or rarely were re-coded as 1 (or Yes) while never was re-coded as 0 (or No).

Four different two-way contingency table analysis using crosstabs (Acton, Miller, Fullerton, & Maltby, 2009; Green & Salkind, 2005; Stern, 2010) were conducted to evaluate if faculty members believed in that their academic works delayed while using the Internet, talking on the phone, listening music or watching TV, multitask more frequently. Before conducting this analyze, frequency of multitasking were also re-coded into three levels. "Never" remained unchanged, "Rarely and sometimes" were re-coded as sometimes while "Frequently and very frequently" were re-coded as often. Two variables of the first analysis were academic delay (similar to descriptive analyze, 0: "No"; 1: "Yes") and multitasking frequency while using the Internet (never, sometimes, often). In the other three analysis, column variable (academic delay frequency) was the same but the row variable (multitasking while using the Internet) were changed with multitasking while talking on the phone, multitasking while watching TV, multitasking while listening music. The Holm's sequential Bonferroni method was used to control Type I error and Cramér V was reported to assess the strength of the relationship between row and column (Acton et al., 2009; Green & Salkind, 2005; Stern, 2010).

Lastly, logistic regression (Çokluk, Şekercioğlu, & Büyükoztürk, 2012; Tabachnick & Fidell, 2001) was

conducted to examine title, age, average Internet connection duration, multitasking, the number of technologies they use in daily life, and study field in the odds of academic delay.

Results

The Frequencies of Academic Delay

Descriptive statistics were used to demonstrate whether or not faculty members believe in that their academic works are delayed because of multitasking. 78.7% of the participants believed in that multitasking while using the Internet has a detrimental effect on their academic works. They also believed in that multitasking while talking on the phone (62.3% of the participants) and watching TV (56.1% of the participants) caused academic delay. However, 55.1% of the participants stated that multitasking while listening music did not cause to delay academic works.

The Relationship between Academic Delay and Multitasking

Multitasking while using the Internet and academic delay were found to be statistically related, Pearson $\chi^2(2, 997) = 119.87, p = 0.00, \text{Cramér}V = 0.35$. The proportions of faculty members experiencing an academic delay who multitask never, sometimes and often were 43.9%, 80.2% and 92.2%, respectively (Table 1). Follow-up pairwise comparisons indicated that all three comparisons were significantly meaningful.

Multitasking while talking on the phone and academic delay were found to be statistically related, Pearson $\chi^2(2, 967) = 141.38, p = 0.00, \text{Cramér}V = 0.38$. The proportions of faculty members experiencing academic delay who multitask never, sometimes and often were 31.5%, 70.8%, and 90.4%, respectively (Table 1). Follow-up pairwise comparisons indicated that all three comparisons were significantly meaningful.

Multitasking while listening music and academic delay were found to be statistically related, Pearson $\chi^2(2, 986) = 15.25, p = 0.00, \text{Cramér}V = 0.12$. The proportions of faculty members experiencing academic delay who multitask never, sometimes and often were 29.5%, 47.8%, and 41%, respectively (Table 1). Follow-up pairwise comparisons indicated that only never multitasking was statistically different from sometimes and often multitasking.

Multitasking while watching TV and academic delay were found to be statistically related, Pearson $\chi^2(2, 970) = 183.75, p = 0.00, CramérV = 0.44$. The proportions of faculty members experiencing academic delay who multitask never, sometimes and often were 34.1%, 76.6%, and 82%, respectively (Table 1). Follow-up pairwise comparisons indicated that only never multitasking was statistically different from sometimes and often multitasking.

Factors of Academic Delay

The model indicated seven independent variables. Our data revealed that Associate Professor and specialist – instructors’ academic delays are significantly different from professors’ academic delays (Table 2). Faculty members younger than 30 years old and from 36 to 43 years old delayed their academic works more than faculty members older than 44 years old (Table 2). Multitasking with using the Internet, watching TV and talking on the phone rather than listening music caused academic delay (Table 2).

Table 1.
Contingency Table Showing the Relationship between Academic Delay and Multitasking

				Academic delay		Total
				No	Yes	
Frequencies of multitasking while using the Internet	Never	n	60	47	107	
		%	56.1	43.9	100	
	Sometimes	n	110	445	555	
		%	19.8	80.2	100	
	Often	n	26	309	335	
		%	7.8	92.2	100	
Total	n	196	801	997		
%		19.7	80.3	100		
		No	Academic delay		Total	
		Yes				
Frequencies of multitasking while talking on the phone	Never	n	139	64	203	
		%	68.5	31.5	100	
	Sometimes	n	190	460	650	
		%	29.2	70.8	100	
	Often	n	11	103	114	
		%	9.6	90.4	100	
Total	n	340	627	967		
%		35.2	64.8	100		
		No	Academic delay		Total	
		Yes				
Frequencies of multitasking while listening music	Never	n	98	41	139	
		%	70.5	29.5	100	
	Sometimes	n	287	260	547	
		%	52.5	47.5	100	
	Often	n	176	124	300	
		%	58.7	41.3	100	
Total	n	561	425	986		
%		56.9	43.1	100		
		No	Academic delay		Total	
		Yes				
Frequencies of multitasking while watching TV	Never	n	286	148	434	
		%	65.9	34.1	100	
	Sometimes	n	111	364	475	
		%	23.4	76.6	100	
	Often	n	11	50	61	
		%	18.0	82.0	100	
Total	n	408	562	970		
%		42.1	57.9	100		

Table 2.
The Results of Logistic Regression

Independent variables	β	S.H	Wald	df	p	Exp(β)
Title			13.724	5	.017	
Assoc. Prof. Dr.	.865	.400	4.670	1	.031	2.375
Assist. Prof. Dr.	.539	.375	2.063	1	.151	1.714
Inst. Dr. or Res. Assist. Dr.	-.326	.452	.522	1	.470	.722
Specialist or Instructor	1.547	.806	3.684	1	.050	4.695
Research Assistant	.384	.551	.486	1	.486	1.468
Age			7.077	3	.069	
<30	1.299	.545	5.671	1	.017	3.665
31-35	.745	.392	3.609	1	.057	2.107
36-43	.645	.324	3.958	1	.047	1.905
Average Internet Connection Duration			4.801	2	.091	
10>	-.947	.489	3.757	1	.053	.388
6-10>	-.376	.279	1.818	1	.178	.687
Multitasking while using the Internet	.527	.119	19.760	1	.000	1.694
Multitasking while talking on the phone	.400	.138	8.451	1	.004	1.492
Multitasking while listening music	.012	.098	.015	1	.903	1.012
Multitasking while watching TV	.412	.145	8.049	1	.005	1.509
Field (social)	.335	.279	1.445	1	.229	1.399
The number of technology they use	.252	.143	3.106	1	.078	1.286
Constant	-1.553	.559	7.731	1	.005	.212

Discussion

The current study indicated that faculty members delayed academic works at the same time that they are using the Internet, talking on the phone, and watching TV which are not part of their works. Similarly, multitasking while doing schoolwork was negatively associated with schoolwork (Huang & Leung, 2009; Junco & Cotten, 2011). Different from these results, listening music while doing academic works is not related with academic delay. Cognitive Theory of Multimedia Learning enlightens the discussion of obtained results (Akkoyunlu & Soylu, 2005; Junco & Cotten, 2012). Research studies in the cognitive science presented

three main inferences for humans; 1) humans have two information processing channel (visual and auditory), 2) processing information in each channel at one time is limited, 3) active learning is achieved only when information in each channel is well organized (Mayer & Moreno, 2003; Pavio, 1986). In the light of these inferences, the Internet was found to be the main reason of academic delay among the others since the nature of information presented by the Internet (computer technology) is different from the others'. The Internet presents both visual and auditory information and requires interactivity. Talking on the phone and watching TV may also have delay effect on academic works since they may increase cognitive load in the channels. Learners have split attention when information is presented in the same modality and so, their cognitive load increased (Chandler & Sweller, 1991; Tarmizi & Sweller, 1998). That is, faculty members use intensively working memory to focus on information presented in the Internet, TV and Phone while doing an academic work. The reason of low effect of listening music to academic delay may be related with that verbal information in academic works and auditory information in listening music do not cause split attention and external cognitive load is low in this case.

Faculty members believed in that the more they multitask, the more they delay their academic works. However, they still continued to multitask. Similarly, although students realized that their attention was split during multitasking, they also continued to multitask (Junco & Cotten, 2011). This inference was not valid only for listening music. This result can be explained with modality effect. If auditory use in the correct way, split attention effect decreased (Leahy, Chandler, & Sweller, 2003) and it is easier to achieve the task. The studies related with listening music while studying indicated that the type of listening music (classical or verbal) or individual differences among participants (introvert, extrovert) may also effect learners' performances (Avila, Furnham, & McClelland, 2012; Furnham & Bradley, 1997).

Van derKaay and Young (2012) observed that there was a negative correlation between technology use and age. The current study revealed that while age decreases, technology use increases and thus academic delay resulting from multitasking increased for younger faculty members.

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