EXAMINING FRESHMEN BELIEVE CONCERNING ICT USAGE IN K-12 AND UNIVERSITY SETTINGS

Mübin KIYICI[a,*], Fatime BALKAN KIYICI[a], Teresa FRANKLIN[b]
a Sakarya Üniversitesi, SAÜ Eğitim Fakültesi, 54300, Hendek, Sakarya, Turkey
b Ohio University, College of Education, 45701, Athens, OH, USA

ABSTRACT
Information and communication technology usage in school settings has increased significantly. Most of the teacher education colleges realized this situation and change their education programs and give technology and educational technology classes to their students. In this research it is aimed to reveal pre-service teacher believe concerning ICT usage in K-12 and university settings. Results show that gender, internet connection and compute usage do not affect ICT usage believe.
Keywords: ICT usage, freshmen, believe,K-12;

1. INTRODUCTION

New millennium learners communicate, collaborate and learn in different ways. Dede (2005) state contemporary learning style contain studying with multimedia, appreciating different communication styles, working, analyzing and synthesizing data from multiple resources, active participation to learning process. As can be understood from the definition of new learners learning style, new learner learn in different ways and they are different from elder person. Thereby teachers, who educate new millennium learners, should educate as teachers that know how to use new technologies and that use these technologies in productive ways. Today's educational system was intended to teach in the era, which was not appearing, and generation has changed but educational system did not (Prensky, 2001). Goverments realized this need and they have changed the quantities and amount of educational investment. Prensky (2001) state new learner characteristics as they can work multitasking, they prefer multimedia than text, they can process information rapidly and they name technology as friend not evil. If teachers, who educate digital natives, know the digital native abilities, educational process becomes productive. To educate sufficiently pre-service teachers, who are also digital native, regarding technology, pre-service teachers opinion and idea should be comprehended and interpreted, in addition to digital native's characteristics.

Information and Communication Technologies (ICT) is the main part of the new society (Meng & Li, 2002). Humans lives have affected from ICT transform and humans started to use ICT in almost every action. People have brought ICT and computer technology in the center of their life (Mills, 2006). Electronic devices, internet and computer has become pervasive and transformed humans daily actions and habits (Littlejohn, Margaryan & Vojt, 2010). While people's social environment changes, it transforms school environments and computer and other technological tools has integrated to school environments.

Schools either private or public provide technological tools, computer and various software and students can interact with computer and use different software and so they can learn how to use these technologies (King, 2002). Similar other schools, education colleges offer some courses related computer and software and offer some other courses how to use technology in classroom. By this way pre-service teachers can learn skills, which are required in their professional life. ICTs are believed as tools which shape teaching and learning activities and can enhance their teaching activities (Keser & Özcan, 2011). To use technological devices in effective way require educating teachers trained how to use technological tools and how to use them in educational settings. Increasing in the use of ICT and other technological tools in learning environments has caused to change in in-service teacher education, colleges and universities offer more courses related ICT, technology and educational technology (Sang, Valcke, Braak & Tondeur, 2010). The easiest way to form upcoming generations is educating pre-service teachers (Huanga, Lubinb & Gec, 2011).

Gender difference in technology usage has become an attractive issue recently. Li & Kirkup (2007) investigate both culture and gender difference on using technology and they found male Chinese students use more internet than female Chinese students and men reported more confidence in using internet. Vekiri & Chronaki (2008) state that computer and other technologies are dominant activities for most boys' acitivites and male students have more self-efficacy concerning computers. Meelissen & Drent (2008) state that boys reported more positive judge regarding self-efficacy in ICT usage. Imhof, Vollmeyer & Beierlein (2007) reported male students chat more than female students, they play more online games, the shop online more often, they share more files and they do more internet research.

2. METHOD

This study seeks to define is there any difference freshmen's belief's concerning ICT usage in K-12 and university settings by gender, ownership of connection to internet at home and freshmen's computer usage status in their high school settings. Study population was all freshmen's who attend one of the Turkish college of education. In order to obtain research data a survey was developed by researchers. Survey contains two main sections. First section of survey consists of nine questions concerning demographic characteristics of the participants. The second section questions are concerning freshmen's beliefs usage ICT in K-12 and college settings. Paper survey administered voluntarily and after explaining the aim of the research freshmen were asked whether they would like to participate to study or not. Freshmen, who stated would like to participate, were given survey and one week was provided to complete survey. After one week, 425 freshmen returned to survey. To analyze freshmen's demographic data frequency analyze was done, and to analyze differences freshmen's belief's concerning ICT usage in K-12 and university settings by gender, ownership of connection to internet at home and freshmen's computer usage status in their high school settings independent samples t-test was run.

3. FINDINGS

In this section participants demographic data and t-test results regarding difference freshmen's belief's concerning ICT usage in K-12 and university settings by gender, ownership of connection to internet at home and freshmen's computer usage status in their high school settings. Participants demographic data can be seen in table 1. And gender differences freshmen's belief's concerning ICT usage in K-12 and university settings in can be seen in table 2, ownership of connection to internet difference can be seen in table 3 and freshmen's computer usage status differences can be seen in table 4.

Table 1 Participants demographic characteristics (N=425)

		Female	Male
Where do you come from?	Rural Area	14.5%	28.1%
	Urban Area	85.5%	71.9%
Personal Monthly Income	0 - 100 $	54.2%	54.7%
	101 - 200 $	29.5%	28.8%
	201 - 300 $	7.6%	10.8%
	301 - 400 $	4.0%	3.6%
	401$ and more	4.8%	2.2%
Do you own a laptop?	Yes	43.9%	39.4%
	No	56.1%	60.6%
Do you own a cell phone?	Yes	98.2%	99.3%
	No	1.8%	0.7%
Do you own data plan for your cell phone?	Yes	55.9%	53.5%
	No	44.1%	46.5%
Do you own Internet access at home?	Yes	72.8%	50.0%
	No	27.2%	50.0%
Did you use computer in your high school classroom?	Yes	63.7%	56.3%
	No	36.3%	43.7%

As can be seen in table 1, most of female participants (85.5%) and most of the male participants (71.9%) came from urban area, most of the female participants (83.7%) and most of the male participants (83.5%) have monthly income less than $200. When looked at the laptop ownership 43.9% of the female and 39.4% of male participants have their own laptop. Almost all of the male and female participants have their own cell phone, but just 55.9% of the female and 53.5% of the male participants have data plan for their cell phone. When we look at the internet access at home status almost one third of the female participants have internet access at home just half of the male participants have internet access at home. And 63.7% of the female participants used computer during their high school education and 56.3% of the male participants used computer during their high school education.

Table 2 T-test results related gender differences in freshmen's belief's concerning ICT usage in K-12 and university settings

	Female	Male	t	df	Sig. (2-tailed)
desktop computer in my classroom	4.19 (0.86)	4.20 (1.12)	-0.086	420	0.93
laptop computer in my classroom	4.15 (0.88)	4.15 (1.12)	0.052	421	0.96
tablet (computer) in my classroom	3.62 (1.05)	4.06 (1.08)	-4.064	417	0.00
cellular phone in my classroom	2.79 (1.31)	3.10 (1.49)	-2.152	416	0.03
mobile device in my classroom	3.34 (1.17)	3.66 (1.17)	-2.655	416	0.01
smart board in my classroom	4.22 (0.95)	4.28 (1.04)	-0.52	416	0.60
camera in my classroom	3.51 (1.18)	3.46 (1.30)	0.377	421	0.71
data projector in my classroom	4.37 (0.85)	4.28 (1.07)	0.874	422	0.38
slide projector in my classroom	4.33 (0.81)	4.25 (1.09)	0.799	423	0.42
overhead projector in my classroom	3.96 (1.05)	3.99 (1.13)	-0.258	420	0.80
desktop computer in University	4.09 (0.93)	3.94 (1.24)	1.389	420	0.17
laptop computer in University	3.99 (0.99)	3.80 (1.28)	1.68	420	0.09
tablet (computer) in University	3.44 (1.14)	3.26 (1.33)	1.502	417	0.13
cellular phone in University	3.91 (1.13)	3.68 (1.34)	1.816	417	0.07
mobile device in University	3.77 (1.01)	3.55 (1.25)	1.986	418	0.05
smart board in University	3.74 (1.12)	3.55 (1.38)	1.519	420	0.13
camera in University	3.56 (1.10)	3.18 (1.37)	2.994	420	0.00
data projector in University	4.05 (0.91)	3.91 (1.23)	1.367	420	0.17
slide projector in University	4.08 (0.89)	3.87 (1.24)	1.959	420	0.05
overhead projector in University	3.67 (1.13)	3.49 (1.41)	1.474	421	0.14

Table 2 summarize the t-test results, which run to compare female and male freshmen's beliefs concerning whether technological tools can be used in their future classroom and their university courses. According to results male participants have more positive believe concerning tablet computer usage in their future classroom (M=4.06, SD=1.08) than female participants (M=3.62, SD=1.05); $t_{(417)}$=-4.064,p=0.00. Male participants have more positive believe concerning cellular phone usage in their future classroom (M=3.10, SD=1.49) than female participants (M=2.79, SD=1.31); $t_{(416)}$=-2.152,p=0.03. Male participants have more positive believe concerning mobile device usage in their future classroom (M=3.66, SD=1.17) than female participants (M=3.34, SD=1.17); $t_{(416)}$=-2.655,p=0.01. Concerning usage of other seven tools in their future classroom there was no difference between male and female believe.

According to results there was a significant difference between male and female participants believe concerning usage of camera in university classroom. Female participants have more positive believe concerning camera usage in university classroom (M=3.56, SD=1.10) than male participants (M=3.18, SD=1.37); $t_{(420)}$=2.294,p=0.00. Concerning usage of other nine tools in their university classroom there was no difference between male and female believe.

Table 3 T-test results related internet access ownership differences in freshmen's belief's concerning ICT usage in K-12 and university settings

	Yes	No	t	df	Sig. (2-tailed)
desktop computer in my classroom	4.19 (0.86)	4.21 (0.89)	-0.194	280	0.85
laptop computer in my classroom	4.15 (0.84)	4.16 (0.97)	-0.033	279	0.97
tablet (computer) in my classroom	3.61 (1.04)	3.63 (1.08)	-0.125	276	0.90
cellular phone in my classroom	2.86 (1.30)	2.62 (1.32)	1.325	274	0.19
mobile device in my classroom	3.37 (1.12)	3.27 (1.30)	0.597	274	0.55
smart board in my classroom	4.18 (0.98)	4.33 (0.87)	-1.131	275	0.26
camera in my classroom	3.50 (1.16)	3.53 (1.24)	-0.236	279	0.81
data projector in my classroom	4.32 (0.86)	4.48 (0.82)	-1.397	280	0.16
slide projector in my classroom	4.29 (0.84)	4.44 (0.73)	-1.431	281	0.15
overhead projector in my classroom	3.91 (1.06)	4.08 (1.00)	-1.19	279	0.24
desktop computer in University	4.10 (0.95)	4.07 (0.88)	0.281	279	0.78
laptop computer in University	4.07 (0.95)	3.78 (1.08)	2.248	278	0.03
tablet (computer) in University	3.51 (1.13)	3.25 (1.14)	1.69	276	0.09
cellular phone in University	3.88 (1.15)	4.00 (1.09)	-0.822	275	0.41
mobile device in University	3.75 (1.03)	3.82 (0.96)	-0.457	277	0.65
smart board in University	3.68 (1.14)	3.9 (1.071)	-1.442	278	0.15
camera in University	3.59 (1.08)	3.47 (1.19)	0.814	279	0.42

data projector in University	4.03 (0.89)	4.11 (0.97)	-0.578	278	0.56
slide projector in University	4.09 (0.90)	4.04 (0.88)	0.454	279	0.65
overhead projctor in University	3.65 (1.13)	3.72 (1.15)	-0.461	279	0.65

Table 3 summarize the t-test results, which run to compare freshmen who have internet access and who have not, beliefs concerning whether technological tools can be used in their future classroom and their university courses. According to results there was no significant difference in freshmen believe who have internet access at home and who have not, concerning ICT usage in future classroom.

According to results there was a significant difference between participants have internet access and participants do not have internet access believe concerning usage of laptop computer usage in university classroom. Participants who have internet access at home have more positive believe concerning laptop computer usage in university classroom (M=4.07, SD=0.95) than participants who do not have internet access at home (M=3.78, SD=1.08); $t_{(278)}$=2.248,p=0.03. Concerning usage of other nine tools in their university classroom there was no difference between participants who have Internet access at home and participants who do not have internet access at home.

Table 4 T-test results related computer usage in high school settings differences in freshmen's belief's concerning ICT usage in K-12 and university settings

	Yes	No	t	df	Sig. (2-tailed)
desktop computer in my classroom	4.33 (0.86)	3.94 (0.82)	3.693	278	0.00
laptop computer in my classroom	4.29 (0.87)	3.91 (0.84)	3.542	277	0.00
tablet (computer) in my classroom	3.68 (1.08)	3.49 (1.00)	1.461	274	0.15
cellular phone in my classroom	2.76 (1.31)	2.86 (1.32)	-0.634	272	0.53
mobile device in my classroom	3.33 (1.15)	3.35 (1.22)	-0.188	272	0.85
smart board in my classroom	4.27 (0.96)	4.14 (0.94)	1.102	273	0.27
camera in my classroom	3.48 (1.23)	3.54 (1.12)	-0.415	277	0.68
data projector in my classroom	4.45 (0.81)	4.24 (0.90)	2.041	278	0.04
slide projector in my classroom	4.38 (0.83)	4.25 (0.78)	1.242	279	0.22
overhead projector in my classroom	3.98 (1.09)	3.90 (0.96)	0.636	277	0.52
desktop computer in University	4.11 (0.98)	4.05 (0.85)	0.552	277	0.58
laptop computer in University	4.04 (1.01)	3.89 (0.96)	1.25	276	0.21
tablet (computer) in University	3.41 (1.19)	3.47 (1.04)	-0.436	274	0.66
cellular phone in University	3.91 (1.13)	3.90 (1.15)	0.1	273	0.92
mobile device in University	3.81 (1.02)	3.7 (1.00)	0.882	275	0.38
smart board in University	3.70 (1.22)	3.81 (0.92)	-0.797	276	0.43
camera in University	3.49 (1.18)	3.68 (0.97)	-1.346	277	0.18
data projector in University	4.10 (0.92)	3.98 (0.90)	1.061	276	0.29
slide projector in University	4.15 (0.89)	3.96 (0.90)	1.736	277	0.08
overhead projctor in University	3.65 (1.19)	3.71 (1.03)	-0.473	277	0.64

Table 4 summarizes the t-test results. T-test was run to identify differences between freshmen beliefs that used computer in high school settings and freshmen beliefs that did not use computer in high school settings. Freshmen who used computer in high school settings have more positive beliefs (M=4.33, SD=0.86) concerning desktop computer usage in their future classroom than freshmen who did not use computer in high school settings (M=3.94, SD=0.82); $t_{(278)}$=3.692,p=0.00. Freshmen who used computer in high school settings have more positive beliefs (M=4.29, SD=0.87) concerning laptop computer usage in their future classroom than freshmen who did not use computer in high school settings (M=3.91, SD=0.84) ; $t_{(277)}$=3.542,p=0.00. Freshmen who used computer in high school settings have more positive beliefs (M=4.45, SD=0.81) concerning data projector usage in their future classroom than freshmen who did not use computer in high school settings (M=4.24, SD=0.90) ; $t_{(278)}$=2.041,p=0.04. Concerning other seven tools usage in their future classroom freshmen believe did not show differences by computer usage status in their high school settings. Other t-test results concerning ICT tools usage in their university class can be seen in table 4. Freshmen believe concerning ICT usage in university class did not change by computer usage status in their high school settings.

4. RESULTS AND DISCUSSION
In this research; freshmen believe concerning ICT usage in K-12 and university settings was tried to reveal. According to findings; most of the participants came from urban area, most of the participants have monthly income less than $200, while almost half of the participants have their own laptop, more than the half of the

participants have Internet access at reside location. Another finding concerning demographic data, almost all of the participants have cell phone, just half of the participants have data plan for their cell phone.

Concerning t-test results by gender, internet access ownership and computer usage in high school settings, freshmen believe concerning ICT usage in K-12 and university settings did not show big differences. For each three independent variables, freshmen believe differ in few ICT tools. Depending on findings;

- Colleges and faculty can use indifferences among freshmen believe. Thus colleges can reduce awareness of pre-service teachers.
- Pre-service believes concerning ICT usage in both settings relatively high and if pre-service teachers are encouraged concerning ICT usage and educational usage of ICT. Pre-service teachers can acquire more knowledge and skills concerning ICT.

Recommendations for the future researcher;

- Research can be design to research differences between pre-service teachers technological literacy level and believe concerning ICT usage in K-12 and university settings
- Research can be design to research differences between pre-service teachers millennial learners characteristics and believe concerning ICT usage in K-12 and university settings
- Research can be design to research differences between pre-service teachers various (computer, media, etc.) literacies level and believe concerning ICT usage in K-12 and university settings

REFERENCES

Dede, C. (2005). Planning for neomillennial learning styles. *EDUCAUSE Quarterly*, 28(1), 7–12.

Huanga, K., Lubinb, I. A. & Gec, X. (2011). Situated learning in an educational technology course for pre-service teachers. *Teaching and Teacher Education*, 27, 1200 – 1212

Imhof, M., Vollmeyer, R. & Beierlein, C. (2007). Computer use and the gender gap: The issue of access, use, motivation, and performance. *Computers in Human Behavior*, 23, 2823–2837.

Keser, H. & Özcan, D. (2011). Current trends in educational technologies studies. *Procedia Social and Behavioral Sciences*, 15, 3989–3998

King, K. P. (2002). Educational technology professional development as transformative learning opportunities. *Computers & Education*, 39, 283–297.

Li, N. & Kirkup, G. (2007). Gender and cultural differences in Internet use: A study of China and the UK. *Computers & Education*, 48, 301–317.

Littlejohn, A, Margaryan, A & Vojt,G. (2010). Exploring Students' use of ICT and Expectations of Learning Methods. *Electronic Journal of e-Learning*, 8(1),13 – 20

Meelissen, M.R.M. & Drent, M. (2008). Gender differences in computer attitudes: Does the school matter?. *Computers in Human Behavior*, 24, 969–985.

Meng, Q. & Li, M. (2002). New Economy and ICT development in China. *Information Economics and Policy,* 14, 275–295

Mills, S. (2006).When humans need humans: The lack of use of computer-based ICT in distance pastoral care. *Interacting with Computers*, 18, 556–567

Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. *On the Horizon*, 9(5), 1 – 6.

Sang, G., Valcke, M., Braak, J. & Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers & Education*, 54, 103–112.

Vekiri, I. & Chronaki, A. (2008). Gender issues in technology use: Perceived social support, computer self-efficacy and value beliefs, and computer use beyond school. *Computers & Education*, 51, 1392–1404.