

ACCORDING TO GENERATIONS, INDIVIDUALS THE RELATIONSHIP BETWEEN THE PURPOSE OF USING INFORMATION TECHNOLOGIES AND THEIR EPISTEMOLOGICAL BELIEFS

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Abstract

This study was carried out to determine the relationship between epistemological beliefs and utilization of information technologies in individuals of different generations. The study was conducted with 781 people who voluntarily accepted to participate in the study. The persons to be sampled from each generation were determined by random sampling method. Data were collected using an Information Form, the Utilization of Information Technologies Scale, and the Epistemological Belief Scale. The IBM SPSS Statistics 24.0 was used to analyze the data. The Utilization of Information Technologies Scale total mean score was significantly lower in silent generation than in all other generations; in baby boomers than in generations X, Y and Z; in generation X than in generations Y and Z; and in generation Z than in generation Y ($p<.05$). In addition, the Epistemological Beliefs Scale total mean score was significantly lower in generation Y than in all other generations ($p<.05$). There was no significant relationship between the utilization of information technologies and epistemological beliefs in individuals of all generations ($p<.05$). In line with the results obtained in this study, training on information technologies should be prepared, carried out and evaluated considering that each generation has a different tendency to learn.

Keywords: Generations, Information Technology, Epistemological Beliefs, Information, Epistemology

KUŞAKLARA GÖRE BİREYLERİN BİLİŞİM TEKNOLOJİLERİNİ KULLANIM AMAÇLARI ve EPİSTEMOLOJİK İNANÇLARI ARASINDAKİ İLİŞKİ

Özet

Bu çalışma, farklı kuşaklardan bireylerde epistemolojik inançlar ile bilgi teknolojilerini kullanım arasındaki ilişkiyi belirlemek amacıyla yapılmıştır. Araştırma, araştırmaya katılmayı gönüllü olarak kabul eden 781 kişi ile gerçekleştirilmiştir. Her kuşaktan örnekleme alınacak kişiler tesadüfi örnekleme yöntemiyle belirlenmiştir. Veriler Bilgi Formu, Bilgi Teknolojilerinden Yararlanma Ölçeği ve Epistemolojik İnanç Ölçeği kullanılarak toplanmıştır. Verilerin analizinde IBM SPSS Statistics 24.0 kullanılmıştır. Bilişim Teknolojilerini Kullanma Ölçeği toplam puan ortalaması, sessiz kuşaktaki bireylerde diğer tüm kuşaklara göre anlamlı derecede düşüktü; X, Y ve Z kuşaklarından daha çok baby boomer'larda; X kuşağında Y ve Z kuşaklarına göre; ve Z kuşağında Y kuşağına göre daha düşüktü ($p<.05$). Ayrıca Epistemolojik İnançlar Ölçeği toplam puan ortalaması Y kuşağında diğer tüm kuşaklara göre anlamlı olarak daha düşüktü ($p<.05$). Tüm kuşaklardaki bireylerde bilgi teknolojileri kullanımı ile epistemolojik inançlar arasında anlamlı bir ilişki bulunmadı ($p<.05$). Bu çalışmadan elde edilen sonuçlar doğrultusunda bilgi teknolojileri eğitimleri her kuşağın farklı öğrenme eğilimleri göz önünde bulundurularak hazırlanmalı, yürütülmeli ve değerlendirilmelidir.

Anahtar Kelimeler: Kuşaklar, Bilişim Teknolojisi, Epistemolojik İnançlar, Bilişim, Epistemoloji

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1. INTRODUCTION

Today, globalization causes rapid changes and developments in both scientific knowledge and technology and economic, social and cultural fields (Acat, Tüken and Karadağ, 2010; Şeref, Yılmaz and Varışoğlu, 2012; Kürşad, 2015). These changes and developments also change the characteristics expected from individuals (Çelebi Uzgur, 2014), and require individuals to have skills such as accessing, using and presenting information effectively, critical thinking, questioning, lifelong learning, and learning to learn. It is important to utilize information technologies in many fields such as individual, social and socio-cultural domains, industry, trade, education, and health, in order to inform individuals and societies with above-mentioned characteristics (Çelebi Uzgur, 2014; Özmusul, 2011; Önce and Marangoz, 2012; Sözbilir, 2013).

Information technologies, which play an important role in determining the level of development of societies and individuals today, is used in many areas including industry, education, health, and trade, provides individuals with equal opportunity, speed and flexibility in terms of access to information wherever and whenever they want, increases their educational opportunities, improves their self-learning skills by facilitating their access to various information and courses/trainings/programs, supports their lifelong professional development by preparing them for the future, and provides them with an opportunity to design, implement and evaluate learning-teaching processes (Akin, 1998; Papazoglou and Tsalgatidou, 2000; Gatto and Tak, 2008; Işık and Kaya, 2011; Seyrek, 2011). Increased utilization of information technologies also significantly affects facilities where and when individuals can use these technologies, as well as their independent learning and epistemological beliefs. (Imision and Taylor, 2001; Pelgrum and Law, 2003; Hepp, Hinostrroza, Laval and Rehbein, 2004; Midoro, Bocconi, Martin, Pozzi and Sarti, 2003; Passey, Rogers, Machelland Mchugh, 2004; Özmusul, 2010).

Epistemological belief, which covers issues such as what knowledge is, belief in knowledge, and how this belief affects the process of acquiring and structuring knowledge, is a multidimensional concept (Hofer 2001, cited: Kürşad, 2015). Epistemological beliefs are subjective beliefs of individuals about what knowledge is, and how knowing and learning happen (Yılmaz, 2007). Epistemological beliefs include individuals' perspectives concerning the definition, structure, evaluation, position, and formation of knowledge (Aypay, 2011). Studies emphasize that individuals' utilization goals for information technologies affect their epistemological beliefs, where those with developed epistemological beliefs are more successful in learning (Deryakulu, 2004a; Deryakulu and Büyüköztürk, 2005; Yılmaz, 2007). However, both utilization of information technologies and epistemological beliefs of individuals change over time. One of the reasons for this change are generations and intergenerational differences. In general, a generation refers to a group of individuals who were born at about the same time, share common age and life periods, and have specific characteristics, behaviors, value judgments, strengths and weaknesses shaped by the events and trends of a particular period they lived/live in. The differences between these communities/generations in terms of utilization of information technologies and epistemological beliefs

are caused by scientific and technological changes and developments, society, period-specific events, value judgments, and changes in beliefs (Bayhan, 2014; Keles, 2011).

There are studies that have separately examined the utilization of information technologies (Hacısalıhoğlu Karadeniz, 2014; Şanlı, Bakır Arabacı and Sünkür, 2012; Özmusul, 2011) and epistemological beliefs (Özkan and Tekkaya, 2011; Dursun-Sürmeli and Ünver, 2017; Aypay, 2011; Arslantaş, 2016) of different sample groups. However, there is no study on the relationship between utilization of information technologies and epistemological beliefs and whether this relationship changes by generation. In this context, this study aims to determine the relationship between utilization of information technologies and epistemological beliefs of individuals in different generations.

2. MATERIALS AND METHODS

2.1. Study Type

This is a descriptive correlational study.

2.2. Study Population and Sample

The population of the study was composed of 15.029.231 people living in Istanbul, Turkey (http://www.tuik.gov.tr/PreTablo.do?alt_id=1059, 05.04.2018). The sample was determined as 781 people by using sample calculation method with known population with reference to the data of Turkey Statistical Institute (TSI). The number of people to be included in the study group by generation is calculated using stratified sampling method by considering the distribution of study population according to generations. The persons to be recruited from each generation was determined using random sampling method among individuals who were living, working or studying in different regions of Istanbul. The study was carried out with 781 people who voluntarily accepted to participate in the study and met the study inclusion criteria (Table 1).

Table 1. Distribution of Individuals by Generation (N: 781)

GENERATIONS	n	%	AGE	
			Min.- Max.	Mean ± SD
SILENT GENERATION	17	2,2	73-92	76,88±5,90
BABY BOOMERS	94	12,0	54-72	58,07±4,83
GENERATION X	159	20,4	39-53	44,64±4,29
GENERATION Y	285	36,5	19-38	23,54±4,53
GENERATION Z	226	28,9	13-18	14,03±1,60
TOTAL	781	100,0	13-92	30,40±17,06

Study inclusion criteria are as follows: being literate, using information technologies (telephone, internet, computer, etc.), being in the calculated age range of generations, and having a physical (age) and cognitive development level to understand the questions.

2.3. Data Collection Tools

Data were collected using an Information Form, the Utilization of Information Technologies Scale, and the Epistemological Beliefs Scale.

2.3.1. Information Form: The form was prepared by the researchers in line with the literature (Deryakulu and Büyüköztürk, 2005; Özmusul, 2008; Çetin, Çalışkan & Menzi, 2012). It consists of 14 questions to determine individuals' socio-demographic characteristics (age, gender, marital status, education level, occupation, living place, and cohabitants) and their status, purpose and duration for utilization of information technologies.

2.3.2. Utilization of Information Technologies Scale: The scale, developed by Özmusul (2011) to measure individuals' utilization levels/usage goals of information technologies, consists of 18 items and five subscales (acquiring information, research-examination, communication, entertainment-game, and self-expression). This is a 4-point Likert type scale, scoring as Never (1), Sometimes (2), Usually (3) and Always (4), where the lowest and highest scores are 18 and 72, respectively. The scale has no reverse scored item. The total Cronbach's alpha reliability coefficient of the scale was found as 0.857 (Özmusul, 2011). In this study, the total Cronbach's alpha reliability coefficient of the scale was determined as 0.91.

2.3.3. Epistemological Beliefs Scale: The scale was developed by Schommer (1990) and adapted to Turkish language by Deryakulu and Büyüköztürk (2002). The scale consists of 34 items and three subfactors (belief that learning depends on effort, belief that learning depends on skills, and belief that there is only one correct knowledge). This is a 5-point Likert-type scale, scoring as "Strongly Disagree (1), Disagree (2), Neither Agree nor Disagree (3), Agree (4) and Strongly Agree (5)", where the lowest and highest scores are 34 and 170, respectively. Only the items of the subfactor of belief that learning depends on effort are scored reversely. Higher scores indicate underdeveloped/unimproved epistemological belief for that specific subfactor, and lower scores indicate developed/improved epistemological beliefs for that specific subfactor. The total Cronbach's alpha reliability coefficient of the scale was found as 0.81 (Deryakulu and Büyüköztürk, 2005). In this study, the total Cronbach's alpha reliability coefficient of the scale was determined as 0.84.

2.4. Data Collection

Data were collected between August and December 2018 using face-to-face interviews or linking through the online data collection application called Google documents (<https://goo.gl/tDuwz1>). There was no time limit for the data collection, and filling the forms lasted around 8-9 minutes.

2.5. Ethical Considerations

An ethics committee approval was obtained from the Istanbul Sabahattin Zaim University Ethics Committee (date: 12.04.2018 & number: 2168). Necessary permissions were obtained for using the scales in the study. Verbal and written consents were obtained from individuals who wanted to participate in the study.

2.6. Data Analysis

Data were analyzed using the SPSS 20.0 program, where $p < 0.05$ was considered statistically significant. Data were evaluated using descriptive statistics including number, percentage, arithmetic mean and standard deviation. The Skewness and Kurtosis tests were used to examine the relationship between individuals' total and subscale mean scores on the Utilization of Information Technologies and Epistemological Beliefs Scales. The Kruskal Wallis test was used to compare their mean scores by generation, where the Bonferroni-corrected Mann-Whitney U test and the Tukey HSD test were used as

post hoc advanced analysis. The Spearman's and Pearson's correlation analyzes were used to assess the relationship between individuals' mean scores on these two scales.

2.7. Study Limitations

The study is limited to individuals living in Istanbul who were reached by random sampling method, and to their self-reports. Therefore, its results cannot be generalized to all individuals.

3. RESULTS

3.1. Sociodemographic Characteristics of Individuals by generation

In this study, 64.7% of silent generation, 55.3% of baby boomers, 63.5% of generation X, 73% of generation Y and 46% of generation Z were female (Table 2).

64.7% of silent generation, 74.5% of baby boomers, 86.8% of generation X, 13.3% of generation Y were married, and 100% of generation Z were single (Table 2).

11.8% of silent generation, 36.2% of baby boomers, 30.2% of generation X, 55.1% of generation Y and 0.9% of generation Z had bachelor's or master's degree (Table 2).

52.9% of silent generation were housewives, 43.6% of baby boomers were civil servants, 42.8% of generation X were employees, 56.8% of generation Y and 99% of generation Z were students (Table 2).

Table 2. Sociodemographic Characteristics of Individuals by Generation (N: 781)

CHARACTERISTICS		SILENT GENERATION		BABY BOOMERS		GENERATION X		GENERATION Y		GENERATION Z		TOTAL	
		n	%	n	%	N	%	n	%	n	%	n	%
GENDER	Female	11	64,7	52	55,3	101	63,5	208	73,0	104	46,0	476	60,9
	Male	6	35,3	42	44,7	58	36,5	77	27,0	122	54,0	305	39,1
MARITAL STATUS	Married	11	64,7	70	74,5	138	86,8	38	13,3	-	-	257	32,9
	Single	6	35,3	24	25,5	21	13,2	247	86,7	226	100,0	524	67,1
EDUCATION LEVEL	Literate	6	35,3	4	4,3	7	4,4	2	,7	20	8,8	39	5,0
	Primary education	9	52,9	39	41,5	74	46,5	10	3,5	180	79,6	312	40,0
	High school	-	-	17	18,1	30	18,9	116	40,7	24	10,6	187	23,9
	≥ University	2	11,8	34	36,2	48	30,2	157	55,1	2	,9	243	31,1
OCCUPATION	Student	-	-	-	-	-	-	162	56,8	225	99,6	387	49,6
	Public servant	3	17,6	41	43,6	32	20,1	65	22,8	-	-	141	18,1
	Worker	3	17,6	14	14,9	68	42,8	39	13,7	-	-	124	15,9
	Housewife	9	52,9	27	28,7	42	26,4	6	2,1	-	-	84	10,8
	Public A.	2	11,8	12	12,8	17	10,7	13	4,6	1	,4	45	5,8

3.2. Utilization of Information Technologies by Generation

The mean scores of individuals on the Utilization of Information Technologies Scale was 54.53 ± 10.24 , where their lowest and highest scores were 19 and 87, respectively.

There was a significant difference between the mean scores of individuals on the Utilization of Information Technologies Scale with respect to generations ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the Utilization of Information Technologies Scale total mean score was significantly lower in silent generation than in all other generations; in baby boomers than in generations X, Y and Z; in generation X than in generations Y and Z; and in generation Z than in generation Y ($p < .05$) (Table 3).

There was a significant difference between the acquiring information subscale mean scores of individuals by generation ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the acquiring information subscale mean score was significantly lower in silent generation than in all other generations; but was significantly higher in generation Y than in baby boomers and generations X and Z ($p < .05$) (Table 3).

There was a significant difference between the research-examination subscale mean scores of individuals by generation ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the research-examination subscale mean score was significantly lower in silent generation than in all other generations; but was significantly higher in generation Y than in baby boomers and generations X and Z ($p < .05$) (Table 3).

There was a significant difference between the communication subscale mean scores of individuals by generation ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the communication subscale mean score was significantly lower in silent generation than in all other generations; but was significantly higher in generation Y than in baby boomers and generation X ($p < .05$) (Table 3).

There was a significant difference between the self-expression subscale mean scores of individuals by generation ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the self-expression subscale mean score was significantly lower in generation X than in generation Y; and in generation Z than in baby boomers and generation Y ($p < .05$) (Table 3).

There was a significant difference between the entertainment-game subscale mean scores of individuals by generation ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the entertainment-game subscale mean score was significantly lower in silent generation, baby boomers, and generation X than in generations Y and Z; but was significantly higher in generation Z than in generation Y ($p < .05$) (Table 3).

Table 3. Comparison of the Utilization of Information and Communication Technologies Scale Total and Subscale Mean Scores of Individuals by Generation (N:781)

GENERATIONS	ACQUIRING INFORMATION	RESEARCH/EXAMINATION	COMMUNICATION	SELF-EXPRESSION	ENTERTAINMENT-GAME	TOTAL
n		$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$

		$\bar{X} \pm SD$					
SILENT GENERATION a	17	8,88±4,31	7,00±2,92	12,71±5,4 9	4,59±2,32	5,65±2,71	38,82±14, 77
BABY BOOMERS GENERATION b	94	11,87±4,42	9,31±2,44	15,88±3,7 5	5,28±1,95	6,20±2,36	48,54±11, 43
GENERATION X c	15 9	13,13±4,11	9,69±2,26	16,63±2,9 9	4,96±1,84	6,69±2,66	51,10±10, 34
GENERATION Y d	28 5	17,27±2,61	10,86±1,42	17,54±2,7 3	5,55±1,66	7,90±2,35	59,12±7,7 9
GENERATION Z e	22 6	14,79±2,93	9,68±1,91	16,89±3,0 2	4,48±1,73	8,86±2,52	54,70±8,2 9
<i>KW</i>		206,666	83,493	29,928	50,283	107,691	130,885
<i>P</i>		,000	,000	,000	,000	,000	,000
<i>DIFFEREN CE</i>		<i>a < b < c < e < d</i>	<i>a < b, c, e < d</i>	<i>(a < b, c, d, e) (b, c < d)</i>	<i>(c < d / e < b, d</i>	<i>a, b, c < d < e</i>	<i>a < b, c < e < d</i>

KW: Kruskal Wallis test, sd: 4,

3.3. Epistemological Beliefs of Individuals by Generation

The mean scores of individuals on the Epistemological Beliefs Scale was 116.19±16.93, where their lowest and highest scores were 44 and 170, respectively.

There was a significant difference between the mean scores of individuals on the Epistemological Beliefs Scale with respect to generations ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the Epistemological Beliefs Scale total mean score was significantly lower in generation Y than in all other generations ($p < .05$) (Table 4).

There was a significant difference between the belief that learning depends on effort subfactor mean scores of individuals by generation ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the belief that learning depends on effort subfactor mean score was significantly lower in generation Y than in baby boomers and generation Z ($p < .05$) (Table 4).

There was a significant difference between the belief that learning depends on skills subfactor mean scores of individuals by generation ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the belief that learning depends on skills subfactor mean score was significantly lower in generation Y than in all other generations ($p < .05$) (Table 4).

There was a significant difference between the belief that there is only one correct knowledge subfactor mean scores of individuals by generation ($p < .001$). A further advanced analysis was performed to determine the reason for the difference between their mean scores. Accordingly, the belief that there is only one correct knowledge subfactor mean score was significantly lower in generation Y than in all other generations ($p < .05$) (Table 4).

Table 4. Comparison of the Epistemological Beliefs Scale Total and Subscale Mean Scores of Individuals by Generation (N:781)

GENERATIONS	n	BELIEF THAT LEARNING DEPENDS ON EFFORT	BELIEF THAT LEARNING DEPENDS ON SKILLS	BELIEF THAT THERE IS ONLY ONE CORRECT KNOWLEDGE	TOTAL
		$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$
SILENT GENERATION ^a	17	34,76±8,66	22,29±3,84	28,88±4,33	85,94±12,88
BABY BOOMERS ^b	94	35,37±10,67	21,48±6,54	28,49±6,47	85,34±14,23
GENERATION X ^c	159	34,07±9,78	21,01±7,74	29,94±6,89	85,03±13,69
GENERATION Y ^d	285	32,06±7,78	17,65±7,11	25,77±6,30	75,48±13,90
GENERATION Z ^e	226	36,12±9,60	21,50±7,91	30,15±6,57	87,77±14,83
<i>KW</i>		<i>29,682</i>	<i>58,734</i>	<i>75,763</i>	<i>105,329</i>
<i>P</i>		<i>,000</i>	<i>,000</i>	<i>,000</i>	<i>,000</i>
<i>Difference</i>		<i>d < b, e</i>	<i>d < a, b, c, e</i>	<i>d < a, b, c, e</i>	<i>d < a, b, c, e</i>

KW: Kruskal Wallis test, sd: 4

3.4. The Relationship Between Individuals' Utilization of Information Technologies and Epistemological Beliefs According to Generations

There was no significant relationship between the individuals' Utilization of Information Technologies Scale and Epistemological Beliefs Scale total mean scores according to generations ($p > .05$) (Table 5).

Table 5. The Relationship Between the Utilization of Information and Communication Technologies and Epistemological Beliefs Scales Scores of Individuals by Generation

GENERATIONS	UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES SCALE TOTAL	EPISTEMOLOGICAL BELIEFS SCALE TOTAL
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SILENT	r_s	-,18
GENERATION	p	,490
BABY BOOMERS	r	-,17
	p	,100
GENERATION X	r	,08
	p	296
GENERATION Y	r	,001
	p	,993
GENERATION Z	r	,08
	p	,260

*p<.001 **p<.01 ***p<.05

r_s : Spearman's correlation analysis (n < 30)

r: Pearson's correlation analysis

4. DISCUSSION

4.1. Utilization of Information Technologies by Generation

In this study, the mean scores of individuals on the Utilization of Information Technologies Scale was 54.53 ± 10.24 , where their lowest and highest scores were 19 and 87, respectively. Çetin et al. (2018) have reported that students have high utilization of information technologies (Çetin, Yalçınkaya, Aktepe and Temur, 2018). This results is important because it shows that no matter which generation they belong to, it is inevitable for individuals to benefit from information technologies in order to be able to follow the rapid changes and developments in both scientific knowledge and technology and economic, social and cultural fields today, and to have skills of accessing, using and presenting information effectively, critical thinking, questioning, lifelong learning, and learning to learn.

A statistically significant difference was found between the total mean scores of individuals on the Utilization of Information Technologies Scale with respect to generations. Accordingly, the total mean score was significantly lower in silent generation than in all other generations; in baby boomers than in generations X, Y and Z; in generation X than in generations Y and Z; and in generation Z than in generation Y ($p < .05$). These results suggest that generation Y makes the best utilization of information technologies, followed by generation Z, generation X, baby boomers, and silent generation (Table 3). This study also found that generation Y makes the best utilization of all subscales of the Utilization of Information Technologies Scale, except entertainment-game, where generation Z had the highest utilization level (Table 3). Tatlı et al. (2018) have reported that young people (mean age: 26.8 ± 8.8 , min:17) benefit from information technologies more than middle-aged people (mean age: 26.8 ± 8.8 , max:52) (Tatlı et al., 2018). Chen and Persson (2002) have found that young and old individuals significantly differ in terms of utilization of information technologies, where those aged between 15 and 34 years spend 19 hours online per week, and only 18% of individuals in silent generation and baby boomers use the internet (Chen and Persson, 2002). Gatto and Tak (2008) have determined that 55.17% of individuals aged between 59 and 85 years use the internet, and 40% visit websites recommended by

their families and friends (Gatto and Tak, 2008). Wilson et al. (2008) have reported that utilization of internet increases in individuals aged 55 and over in Australia unlike America (Wilson et al., 2008). This result is an expected outcome, considering that individuals in generations Y and Z were born within the age of information technologies. However, this study also found that individuals in generation Z, who are more likely involve in technology, had lower utilization of information technologies than those in generation Y. This results can be because although individuals of generation Z were born and lives in a period with intensive information technologies, those of generation Y actively use information technologies both in their personel and business lives, therefore, their higher utilization of information technologies scores is an expected outcome.

The acquiring information subscale mean score was significantly lower in silent generation than in all other generations; but was significantly higher in generation Y than in baby boomers and generations X and Z ($p < .05$). This result suggests that silent generation has the lowest utilization of information technologies in terms of acquiring information, and baby boomers, generation X, and generation Y have similar levels of utilization of information technologies in terms of acquiring information, where generation Y has the highest utilization of information technologies in terms of acquiring information. This is an expected result, considering silent generation to have least use of information technologies. This is also considered an expected outcome because generation Y is eager to learn and develop, clearly define their individual and professional future goals, and utilize information technologies in order to achieve their goals.

The research-examination subscale mean score was significantly lower in silent generation than in all other generations; but was significantly higher in generation Y than in baby boomers and generations X and Z ($p < .05$). This result may be because individuals of generation Y are more willing to learn and develop than those in other generations, and have higher tendency to produce innovative ideas in business life, therefore, they give higher importance to research/examination.

The communication subscale mean score was significantly lower in silent generation than in all other generations; but was significantly higher in generation Y than in baby boomers and generation X ($p < .05$). This result suggests that generation Y has the highest utilization of information technologies in terms of communication. Individuals of generation Y have witnessed the transition of both the world and Turkey into information technologies. They have met with both voice and video communication tools such as MIRC, ICQ, MSN Messenger, smart phones, Whatsapp, Viber, Skype in early times when the internet technology has been used at home, and utilized these technologies in both their personel and business lives (Boyd & Ellison, 2007; Lampe, Ellison & Steinfield, 2007; Sümer, 2017). Therefore, this is an expected result, showing that individuals in generation Y has the highest utilization of information technologies for communication purposes.

The self-expression subscale mean score was significantly lower in generation X than in generation Y; and in generation Z than in baby boomers and generation Y ($p < .05$). Individuals of generation X and baby boomers often prefer face-to-face communication to express themselves. However, those in generations Y

and Z mostly share their opinions and make activities with other individuals and spread their ideas and thoughts to large audiences easily through social media tools such as facebook, twitter, instagram and linkedin (Boyd & Ellison, 2007; Lampe , Ellison & Steinfield, 2007; Saritaş & Barutçu, 2016; Sümer, 2017). This is an expected result, which may be because individuals of generation Y, who were born in the age of technology/internet, are more inclined to use technology than those of other generations, therefore have higher utilization of information technologies to express themselves.

The entertainment-game subscale mean score was significantly lower in silent generation, baby boomers, and generation X than in generations Y and Z; but was significantly higher in generation Z than in generation Y ($p < .05$). Individuals of generation Y have frequently played atari, and gone to video game arcades and internet cafes during childhood and youth; however, gaming tools such as computers and playstations did not enter their houses. On the other hand, individuals of generation Z met gaming tools such as computer and playstation at a very early age. In addition, online games are usually played by individuals in generation Z. In other words, individuals of generation Y spend more time playing playstation, xbox and computer games, whereas those in generation Z play online games (Saritaş & Barutçu, 2016; Sümer, 2017; Özdemir, 2019). Therefore, this is an expected result, which supports that generation Z has the highest utilization of information technologies for game/entertainment purposes.

4.2. Epistemological Beliefs of Individuals by Generation

In this study, individuals had high levels of epistemological beliefs. This result suggests that individuals have beliefs concerning the definition, structure, evaluation, position, and formation of knowledge .

The individuals had the highest mean score on the subfactor of belief that learning depends on effort, followed by belief that there is only one correct knowledge, and belief that learning depends on skills. Aydemir et al. (2012), Aypay (2011), Oğuz (2008), Chai et al. (2006), and Paulsen and Wells (1998) have stated that individuals believe that the process of acquiring knowledge is important in learning, expert knowledge should be questioned, and the effort is vital to learning, but they have poor beliefs that that skills are inherent and stationary over life, and knowledge is constant and unchanging (Paulsen & Wells, 1998; Chai, Khine & Teo, 2006; Oğuz, 2008; Aypay, 2011; Aydemir, Aydemir & Boz, 2013). This result suggests that individuals believe that what is right today may be wrong tomorrow, that successful people have discovered how they can improve their learning skills, that questioning is always important, that knowledge is formed by accumulating in the mind gradually, that most words have one clear meaning, that the truth (reality) is immutable, and that it is a waste of time working on problems that are unambiguous and unlikely to have an exact answer. In other words, individuals consider knowledge not fixed and unchanging, and believe that effort and ability are important in learning. However, this result also suggests that individuals have no clear attitude regarding that being a good learner does not require memorizing information, that the most effective way to acquire information is to organize them according to your own mindset, that clever students do not need to work hard to be successful at school, and that students who are moderately successful at school also succeed moderately in their after-school life.

The belief that learning depends on effort subfactor mean score was significantly lower in generation Y than in baby boomers and generation Z ($p < .05$). In other words, unlike those in baby boomers and generation Z, individuals of generation Y do not consider that learning depends on effort. Baby boomers have lived under the influence of the period of revolution in the post-World War II era and in the process of development initiatives in Turkey. However, individuals of generation Z live in the period of technological development, easier access to information, and education evolving into an applied rather than rote-learning system. This result suggests that compared to those in generation Y, both baby boomers and individuals of generation Z more believe that learning depends on effort.

The belief that learning depends on skills subfactor mean score was significantly lower in generation Y than in all other generations ($p < .05$). This may be because compared to those in other generations, individuals of generation Y have lived in a period of Turkish education system in which many examinations assessed success by using knowledge, memorization and more problem solving rather than considering skills, talents and abilities.

4.3. According to Generations, Individuals the Relationship Between the Purpose of Using Information Technologies and Their Epistemological Beliefs

No significant relationship was found between the utilization of information technologies and epistemological beliefs in individuals of all generations ($p > .05$). This results suggests that utilization of information technologies does not affect epistemological beliefs in individuals in all generations.

5. CONCLUSION

The Utilization of Information Technologies Scale total mean score was significantly lower in silent generation than in all other generations; in baby boomers than in generations X, Y and Z; in generation X than in generations Y and Z; and in generation Z than in generation Y. In addition, the Epistemological Beliefs Scale total mean score was significantly lower in generation Y than in all other generations. There was no significant relationship between the utilization of information technologies and epistemological beliefs in individuals of all generations.

In line with the results obtained in this study, training on information technologies should be prepared, carried out and evaluated considering that each generation has a different tendency to learn. In addition, educational activities such as seminars, workshops and meetings can be organized in order to enable individuals to review their perspectives on epistemological beliefs in accordance with specific characteristics of each generation.

REFERENCES

- Acat, M. B., Tüken, G., & Karadağ, E. (2010). Bilimsel epistemolojik inançlar ölçeği: Türk kültürüne uyarlama, dil geçerliği ve faktör yapısının incelenmesi. *Journal of Turkish Science Education*, 7(4), 67-89.
- Akın, H. B. (1998). Bilişim teknolojilerinin evrimi ve bilişim teknolojilerinin çağdaş işletmelerde stratejik yönetim üzerindeki etkileri. *Çukurova Üniversitesi İİBF Dergisi*, 8-1, 239-253.
- Arslantaş, H.A. (2016). Epistemological beliefs and academic achievement. *Journal of Education and Training Studies*, 4(1), 215-220.
- Aydemir, N., Aydemir, M. & Boz, Y. (2013). Lise öğrencilerinin epistemolojik inançları. *Kastamonu Eğitim Dergisi*, 21(4), 1305-1316.
- Aypay, A. (2011). Epistemolojik inançlar ölçeğinin Türkiye uyarlaması ve öğretmen adaylarının epistemolojik inançlarının incelenmesi. *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi*, 12(1), 1-15.
- Bayhan, V. (2014). Milenyum veya Y kuşağı gençliğinin sosyolojik bağlamı. *Gençlik Araştırmaları Dergisi*, 2(3), 10-17.
- Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210-230.
- Chai, C. S., Khine, M. S. & Teo, T. (2006). Epistemological beliefs on teaching and learning: A survey among pre-service teachers in Singapore. *Educational Media International*, 43(4), 285-298.
- Chen, Y. & Persson, A. (2002). Internet use among young and older adults: Relation to psychological well-being. *Educational Gerontology*, 28(9), 731-744.
- Çelebi Uzgur, B. (2014). Bilisim Teknolojileri ve Yazılım Dersi Öğretim Programının Öğretmen Görüşlerine Göre Değerlendirilmesi (Ege Bölgesi Örneği). Yüksek lisans tezi, Muğla Sıtkı Koçman Üniversitesi Eğitim Bilimleri Enstitüsü.
- Çetin, O., Çalışkan, E. & Menzi, N. (2012). Öğretmen adaylarının teknoloji yeterlilikleri ile teknolojiye yönelik tutumları arasındaki ilişki. *İlköğretim Online*, 11(2), 273-291.
- Çetin, O., Yalçınkaya, E., Aktepe, V. & Temur, M. (2018). Ortaokul öğrencilerinin bilişim teknolojilerinden yararlanmaya ilişkin görüşlerinin incelenmesi. *International Journal of Active Learning*, 3(2), 11-22.
- Deryakulu, D. (2004a). Üniversite öğrencilerinin öğrenme ve ders çalışma stratejileri ile epistemolojik inançları arasındaki ilişki. *Kuram ve Uygulamada Eğitim Yönetimi*, 38(38), 230-249.

- Deryakulu, D. ve Büyüköztürk, Ş. (2005). Epistemolojik inanç ölçeğinin faktör yapısının yeniden incelenmesi: Cinsiyet ve öğrenim görülen program türüne göre epistemolojik inançların karşılaştırılması. *Eğitim Araştırmaları Dergisi*, 1(18), 57-70.
- Dursun-Sürmeli, Z. & Ünver, G. (2017). Öz-düzenleyici öğrenme stratejileri, epistemolojik inançlar ve akademik benlik kavramı ile matematik başarısı arasındaki ilişki. *Türk Bilgisayar ve Matematik Eğitimi Dergisi*, 8(1), 83-102.
- Gatto, S. L. & Tak, S. H. (2008). Computer, internet, and e-mail use among older adults: Benefits and barriers. *Educational Gerontology*, 34(9), 800-811.
- Hacısalihoglu Karadeniz, M. (2014). Okul öncesi öğretmenlerinin matematik eğitiminde teknolojiden yararlanma durumlarının belirlenmesi. *Adıyaman Üniversitesi Eğitim Bilimleri Dergisi*, 4(2), 119-144.
- Hepp, P., Hinostroza, E., Laval, E. & Rehbein, L. (2004). Technology in schools: Education, ICT and the knowledge society. *Instituto de Informática Educativa, Temuco, Chile*, 2-4.
- Imision, T. & Taylor, P. (2001). Managing ICT in the secondary school, Heinemann Information.
- Işık, B. & Kaya, H. (2011). Bilgi ve iletişim teknolojilerinin öğretme-öğrenme sürecine entegrasyonunda hemşire eğitimcilerin rolü. *İÜ Florence Nightingale Hemşirelik Yüksekokulu Dergisi*, 19(3), 203-209.
- Keleş, H. N. (2011). Y kuşağı çalışanlarının motivasyon profillerinin belirlenmesine yönelik bir araştırma. *Bahçeşehir Üniversitesi Organizasyon ve Yönetim Bilimleri Dergisi*, 3(2), 129-139.
- Kürşad, M. Ş. (2015). Bilimsel araştırmaya yönelik tutum ve epistemolojik inanç arasındaki ilişkinin incelenmesi. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 15(2), 217-246.
- Lampe, C., Ellison, N. & Steinfield, C. (2006, November). A Face (book) in the crowd: Social searching vs. social browsing. In Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work (pp. 167-170). ACM.
- Midoro, V., Bocconi, S., Martin, A., Pozzi, F. & Sarti, L. (2003). Developing a European pioneer teacher community for school innovation: information and communication technology and the teacher of the future. USA: Kluwer Academic Publishers; 72.
- Oğuz, A. (2008). Investigation of Turkish trainee teachers'epistemological beliefs. *Social Behavior and Personality: An International Journal*, 36(5), 709-720.
- Önce, A. G. & Marangoz, M. (2012). Pazarlamının sürdürülebilir gelişmedeki rolü. In International Conference on Eurasian Economies (pp. 389-397).
- Özdemir, N. (2019). Kuşaklararasılık ve Kültürel Değişme. *Çocuk ve Medeniyet Dergisi*, 4(7).

- Özkan, Ş. & Tekkaya, C. (2011). Epistemolojik inançlar cinsiyete ve sosyoekonomik statüye göre nasıl değişmektedir? *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 41, 339-348.
- Özmuş, M. (2011). Bilişim teknolojilerinden yararlanma ölçeğinin geliştirilmesi. *Kuramsal Eğitim Bilim Dergisi*, 4(1), 1-17.
- Özmuş, M. (2010). İlköğretim ikinci kademe öğrencilerinin bilişim teknolojilerinden yararlanma düzeyleri. *Çukurova Üniversitesi Eğitim Fakültesi Dergisi*, 3(39), 75-89.
- Özmuş, M. (2008). İlköğretim ikinci kademe öğrencilerinin bilgi ve iletişim teknolojilerinden yararlanma düzeylerinin incelenmesi: Kilis ili örneği. Yüksek lisans tezi. Gaziantep Üniversitesi Sosyal Bilimler Enstitüsü.
- Papazoglou, M. P. & Tsalgatidou, A. (2000). Business to business electronic commerce issues and solutions. *Decision Support Systems*, 29(4), 301-304.
- Passey, D., Rogers, C., Machell J. & Mchugh G. (2004). The motivational effect of ICT on pupils. Department for Education Skills Research Report, 523.
- Paulsen, M.B. & Wells, C.T. (1998). Domain differences in the epistemological beliefs of college students. *Research in Higher Education*, 39(4), 365-384.
- Pelgrum, W.J. & Law, N. (2003). ICT in education around the world: trends, problems and prospect. Paris: UNESCO; 20-210.
- Sarıtaş, E., & Barutçu, S. (2016). Tüketici davranışlarının analizinde kuşaklar: Sosyal medya kullanımı üzerinde bir araştırma. *Pamukkale Journal of Eurasian Socioeconomic Studies*, 3(2), 1-15.
- Seyrek, İ. H. (2011). Bulut bilişim: İşletmeler için fırsatlar ve zorluklar. *Gaziantep University Journal of Social Sciences*, 10(2).
- Sözbilir, F. (2013). Bilişim teknolojileri, bilgi yönetimi ve inovasyon ilişkisi: Türkiye’de bir alan araştırması. Doktora tezi. Kahramanmaraş Sütçü İmam Üniversitesi Sosyal Bilimler Enstitüsü.
- Sümer, F. E. (2017). Sosyal medya kullanım pratikleri üzerine ampirik bir araştırma. *Global Media Journal TR Edition*, 8(15), 8-15.
- Şanlı, Ö., Bakır Arabacı, İ. & Sünkür, M. (2012). İlköğretim II. kademe öğrencilerinin bilişim teknolojilerinden yararlanma düzeyleri (Malatya ili örneği). *E- Journal of New World Sciences Academy*, 12(1), 184-191.
- Şeref, İ., Yılmaz, İ., & Varışoğlu, B. (2012). Türkçe öğretmeni adaylarının bilimsel epistemolojik inançları üzerine bir inceleme. *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 5(10), 399-418.

- Tatlı, Z., Aydın, A., Şimşek, P., Özdemir, M., Gölbaşı, S., Karacan, S. & Gündüz, A. (2018). Hemşirelerin ve hemşirelik öğrencilerinin bilişim teknolojilerini kullanma durumları. *Ordu Üniversitesi Hemşirelik Çalışmaları Dergisi*, 1(1), 18-27.
- Türkiye İstatistik Kurumu (TÜİK). 2000 Genel Nüfus Sayımı. İstanbul: Türkiye İstatistik Kurumu. Erişim 05.04.2018, http://www.tuik.gov.tr/PreTablo.do?alt_id=1059.
- Wilson, C., Flight, I., Hart, E., Turnbull, D., Cole, S. & Young, G. (2008). Internet access for delivery of health information to South Australians older than 50: Australian and New Zealand. *Journal of Public Health*, 32(2), 174-176.
- Yılmaz, A. (2007). Hemşirelik öğrencilerinin epistemolojik inançları ile denetim odağı arasındaki ilişki. Yüksek lisans tezi, İstanbul Üniversitesi Sağlık Bilimleri Enstitüsü.