

High school students' attitudes towards ICT and media tools in learning English and academic self-efficacy beliefs

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Abstract

The present study aims to examine the relationship between high school students' academic self-efficacy perceptions and their attitudes towards the use of media and information technology tools in learning English as well as the effects of gender and grade level on these variables. To this end, 249 Anatolian High School students in Istanbul from different grade levels took the Attitude Scale for the Use of Media and Information Technology Tools in Learning English (Güven, 2015) and the Academic Self Efficacy Scale (Kandemir, 2010). Descriptive and inferential statistical methods were carried out to analyze the quantitative data. The results showed that female students feel academically more self-efficient although no difference emerged between males and females in terms of their attitudes towards ICT and media tools in learning English. An incremental pattern was also observed in that students from the higher grade levels have more positive attitudes and feel more self-efficacious than students in the lower grades. In addition, correlational analyses showed that the students with a positive attitude towards ICT and media tools in learning English have higher academic self-efficacy levels. Likewise, the students with negative attitudes towards ICT and media tools had lower academic self-efficacy ratings.

Keywords: Academic self-efficacy, information technology tools, media tools.

Lise öğrencilerinin İngilizce öğrenmede medya ve bilgi teknolojisi araçlarının kullanımına yönelik tutumları ve akademik öz-yeterlik algıları

Öz

Bu çalışma, lise öğrencilerinin akademik öz-yeterlik algıları ile İngilizce öğrenmede medya ve bilgi teknolojisi araçlarının kullanımına yönelik tutumları arasındaki ilişki ile cinsiyet ve sınıf düzeyinin bu değişkenler üzerindeki etkilerini incelemeyi amaçlamaktadır. Bu amaçla, İstanbul'daki farklı sınıflar

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düzeylerinden 249 Anadolu Lisesi öğrencisine İngilizce Öğrenmede Medya ve Bilgi Teknolojisi Araçlarının Kullanımı Tutum Ölçeği (Güven, 2016) ve Akademik Öz Yeterlilik Ölçeği (Kandemir, 2010) uygulandı. Nicel verileri analiz etmek için betimsel ve çıkarımsal istatistiksel metotlar kullanılmıştır. Sonuçlar, İngilizce öğrenmede BIT ve medya araçlarına karşı tutumları bakımından kız ve erkek öğrenciler arasında hiçbir fark bulunmadığı halde, kız öğrencilerin akademik olarak kendilerini daha yeterli hissettiklerini göstermiştir. Ayrıca, üst sınıf seviyelerindeki öğrencilerin daha olumlu tutumlara sahip oldukları ve alt sınıflardaki öğrencilerden daha fazla öz-yeterlilik hissettikleri konusunda artan bir eğilim gözlemlenmiştir. Ek olarak, korrelasyon analizleri, bilgi ve iletişim teknolojileri ve İngilizce öğrenmede medya araçlarına karşı olumlu bir tutum sergileyen öğrencilerin akademik öz-yeterlilik düzeylerinin daha yüksek olduğunu göstermiştir. Aynı şekilde, bilgi ve iletişim teknolojileri ve medya araçlarına karşı olumsuz tutumları olan öğrenciler daha az akademik öz-yeterlilik derecelerine sahiptir.

Anahtar kelimeler: Akademik öz-yeterlilik, bilgi teknolojileri araçları, medya araçları.

1. Introduction

Rapid developments in ICT have paved its way into the field of education, and particularly English language teaching and considerably transformed the approaches, methods, and materials used for language teaching (Dudeny & Hockly, 2012). The ubiquitous nature of the ICT systems and services has created technology-enhanced learning environments, which is considered as a facilitator of language learning. Following this trend, major financial investments have been made to implement ICT into teaching and learning environments nation-wide across Turkey. However, the payoffs of these investments did not meet the expectations since in most cases contextual elements such as student motivation, needs, attitudes, and self-efficacy were ignored.

Attitude can be defined as an indicator of either positive or negative feelings towards a particular issue, person, or one's self (Ajzen, 1991). It can include cognitive, affective and behavioral dimensions. Cognitive component refers to beliefs about an object or phenomenon while affective component is described as a positive or negative reaction towards the object. Lastly, behavioral component of attitude guides the actions towards the object or phenomenon (Ajzen, 2005). Like learner attitudes, academic self-efficacy has been a central concept in theories of motivation and human learning. It has attracted the attention of educational researchers in predicting and explaining the success or failures of learning processes. However, there is a dearth of studies on how academic self-efficacy and students' attitude towards the integration of technology are related in terms of foreign language teaching and learning. Moving from the assumption that ICT and media tools and academic self-efficacy may facilitate foreign language learning processes, in this study we aimed to explore the relationship between high school students' attitude towards ICT and media tools in learning English and their academic self-efficacy beliefs. We were also interested in identifying what (if any) the effects of gender and grade level are on the attitudes of high school students towards using ICT and media tools in learning English and their academic self-efficacy beliefs.

2. Literature review

Anderson (2010) defines ICT as an "all-encompassing term that includes the full gamut of electronic tools to gather record and store information, exchange and distribute information to others" (p. 4). Through transforming classroom communication, teaching strategies and the way learners access

information sources, ICT plays a vital role in teaching and learning languages. The adoption of ICT in education has contributed to learner-centered teaching which puts learner needs, interests, and learning styles in the center. In such self-regulated learning environments, students are active participants and they learn at their own pace without any restrictions on time and space (Dickinson, 1995; Holec, 1981; O'Banion, 1997). As a medium that captures learner's attention, ICT helps learners to take more responsibility for their own learning, make choices and take informed decisions which contribute to the development of learner autonomy. The tools available in ICT environments are likely to distill fun, novelty, and familiarity into language learning contexts, which can in turn increase learner engagement and motivation. Because it changes learners' learning attitudes and helps them develop confidence, technology seems to improve language learners' academic ability as well (Dunkel, 1990; Galavis, 1998).

Self-efficacy refers to beliefs about one's own abilities to understand or perform action at the intended levels (Bandura, 1986, 1997). It is a priori that beliefs about self-efficacy towards task accomplishment are influential in determining the engagement with the task, the effort put in the task, and the perseverance shown in accomplishing the task. It has been repeatedly shown that self-efficacy affects achievement, learning, and motivation among the other things (Pajares, 1996; Schunk, 1995). According to the socio-cognitive theory, achievement depends on the interplay of actions, personal traits, and the environment (Bandura, 1986). Self-efficacious students are more active, work harder, continue longer, and succeed more as opposed to students who are not confident about their learning capacities (Bandura, 1997) since perceived self-efficacy determines whether learners believe they can manage to cope with situations that challenge them. This can also apply to the integration of ICT and media tools into education in the sense that self-efficacy beliefs can determine how effectively learners can use these tools to enhance their learning. In other words, learners' beliefs about how well they can benefit from technology and media tools may actually influence their ability to use them.

According to Bandura (1997), motivation remarkably influences learning and achievement. When students feel confident and take an active part in learning situations, they are not afraid of taking challenges and develop positive attitudes toward trying new things, like the use of ICT tools. They employ cognitive and metacognitive strategies effectively when they come across obstacles which in turn result in better achievement and learning. Both a positive attitude towards media and ICT and a positive belief about one's self-efficacy to use them determine how far the students can reap its benefits in learning a foreign language.

Although beliefs about self-efficacy influence behavior to a certain extent, they do not determine success on their own. Students who overestimate their abilities may fail if the required skills are missing. Similarly, students who underestimate their capacities may not try or initiate a task. That's why, studying self-efficacy beliefs is valuable next to the real performance of students to see the agreement or disagreement between them (Schunk & Pajares, 2009). In social cognitive framework of Bandura (1997), self-efficacy beliefs apply to context- or task-specific perceptions regarding one's abilities. Following this, task-specific ICT self-efficacy is regarded as beliefs about what one can do in terms of specific computer tasks. Studies have so far shown that self-efficacy beliefs affect learning in computerized learning and that they are related not only to learning outcomes but also to learning processes. A meta-analysis study concluded that computer self-efficacy is a determining factor for students during learning in computer-based learning environments (Moos & Azevedo, 2009). Hatlevik et al. (2018) found a positive correlation between ICT self-efficacy and computer and information literacy when personal characteristics and background variables were kept constant.

Teachers have started using ICT to boost the quality and efficiency of their teaching performance. ICT is claimed to increase learner motivation, turn classes into more interactive environments through authentic materials from real-life contexts and as such benefit language learning and teaching (Warschauer & Kern, 2000). However, as much as the efforts of teachers, learner attitudes toward the adoption of ICT tools are integral to the success of this integration. For Anderson (1988), “an attitude is a moderately intense emotion that prepares an individual to respond consistently in a favorable and unfavorable manner when confronted with a particular object” (as cited in Trinch, 2018, p.6). When a person develops positive attitudes for an object, a person, or a topic, s/he would perceive it either as favorable or unfavorable based on the image in his/her mind. Subsequent emotional responses, behaviors, or beliefs regarding the matter of interest can be favorable or unfavorable moving from this conceptualization.

Gender is also an important factor influencing the attitudes toward an object or subject. In terms of gender differences regarding attitudes to technology, in a meta-analysis Whitley (1997) showed that generally males tend to have more favorable attitudes toward technology use than females although there are some conflicting results across the individual studies. Subsequent research has also shown that girls are more likely to report lower levels of computer competence than boys (Hargittai & Shafer, 2006; Litt, 2013; Meelissen & Drent, 2008). However, Hakkarainen et al.’s (2000) study revealed that female students, especially younger ones, had a positive attitude towards ICT. Differences between girls and boys in computer self-efficacy beliefs have also been investigated. In general, girls tend to report lower levels of computer self-efficacy perceptions than boys (Fraillon et al., 2014). The effect size of gender was weak to moderate in Whitley (1997). In a meta-analysis of gender difference on academic self-efficacy, Huang (2013) summarizes that gender differences exist in academic self-efficacy in statistically significant levels but these differences are small.

There are no studies conducted on the inter-relations between attitudes and self-efficacy beliefs towards the use of ICT in Turkish context to the best of our knowledge, but in an indirectly related study, Recber, Isıksal and Koc (2017) investigated the relationship between attitudes, self-efficacy and anxiety in learning math. Their results showed that gender has a significant effect on the attitudes, self-efficacy, anxiety, and on math achievement. Similarly, Sariçoban and Behjoo (2016) found that there is a significant positive correlation between self-efficacy beliefs and foreign language achievement for both males and females with males attaining higher levels of achievement than females while Kahraman and Yılmaz (2018) found no differences between female and male in-service teachers in terms of their internet self-efficacy perceptions. In terms of the relationship between gender, proficiency, language learning strategies, and self-efficacy beliefs, Yılmaz (2010) demonstrated that learners who rate their self-efficacy perceptions as good in English use significantly more cognitive strategies than learners who view themselves poor in English. Although there have been several studies on the influences of gender on self-efficacy beliefs (Busch, 1995; Meelissen & Drent, 2008; Nelson & Cooper, 1997; Tsai et al., 2010; Tømte & Hatlevik, 2011) or on attitudes toward technology (Ardies, Maeyer, & Gijbels, 2013; Potvin & Hasni, 2014; Teo, Milutinovic, & Zhou, 2016) separately, there have not been any studies on the combined effects of gender and grade-level on both academic self-efficacy beliefs and attitudes toward the integration of ICT in language learning.

Studying academic self-efficacy perceptions is important because perceptions of self-efficacy towards performing a task can be influential in the engagement with the task, the effort put in the task, and the persistence shown in accomplishing the task (Bandura, 1997). Likewise, attitudes determine the actions to be taken on a particular subject. Hence, it is important to see what the perceptions of boys and girls

and learners from different grade-levels on academic self-efficacy are and what their attitudes are as well as to identify if there exists any relationship between these two concepts. To this end, the following research questions were formulated.

What are the effects of gender and grade-level on students' academic self-efficacy perceptions and attitudes towards the use of ICT in language learning?

Is there any relationship between students' academic self-efficacy perceptions and attitudes towards the use of ICT in language learning?

3. Methodology

A total of 249 Anatolian high school students across four grade levels participated in this study (see Table 1). 120 of these students were females whereas 129 of them were males.

Table 1. Distribution of students across grade levels

Grade	N	Percentage (%)
9	80	32
10	61	24.4
11	50	20
11	59	23.6
Total	249	100

Academic Self-Efficacy scale (Kandemir, 2010) consisting of 19 items on a 5-point Likert scale was used as one of the instruments. In the original study, 468 students participated in the reliability and validity studies of the scale. Confirmatory factor analysis revealed the adaptive values for the scale as follows: $X^2 = 557.76$ ($df=149$, $p<.001$), $(X^2 /sd) = 3.74$, $GFI=.89$, $RMSEA=.077$, $RMR=.056$, standardized $RMR=.056$, $CFI=.97$ and $AGFI=.86$. Cronbach's alpha for the total scale was .92. The scale was loaded on three factors. The first factor, coping with academic problems, contained 11 items ($\alpha = .90$), the second factor, academic effort, contained 4 items ($\alpha = .78$), and the last factor, academic planning, also had 4 items ($\alpha = .77$).

In order to explore the students' attitudes, the Attitude Scale for the Use of Media and Information Technology Tools in Learning English (Güven, 2015) was used. Güven (2015) reports the reliability of the overall scale as .90. Exploratory factor analysis was conducted to ensure the construct validity of the scale and the KMO value (.88) confirmed the sufficiency of distribution for factor analysis. Accordingly, the scale was loaded on four factors: a) use for information search and free-time activity purposes, b) use for educational purposes c) use with Turkish subtitles, and d) use for gaming purposes. The first factor contained 8 items ($\alpha = .90$), the second factor contained 4 items ($\alpha = .73$), the third factor contained 2 items ($\alpha = .75$), and the last factor also contained 2 items ($\alpha = .69$).

4. Results

Before running the statistical tests, normal distribution was checked for both scales through Skewness and Kurtosis analyses. The skewness and kurtosis values were between -2 and +2 which are considered acceptable in order to ensure normal univariate distribution (George & Mallery, 2010). To answer the first research question regarding the effects of gender on academic self-efficacy perceptions, an independent samples t-test was conducted (see Table 2).

Table 2. Gender effects on self-efficacy perceptions

Factors		Female (N= 120)	Male (N= 129)	T	P
Coping with academic problems	M	3.44	3.16	2.88	.004*
	SD	(.71)	(.78)		
Academic effort	M	3.64	3.41	2.08	.038*
	SD	(.83)	(.91)		
Academic planning	M	3.44	3.19	2.16	.031*
	SD	(.86)	(.9)		
Total	M	3.48	3.22	2.77	.006*
	SD	(.71)	(.76)		

Table 2 shows that females have significantly higher academic self-efficacy perception levels than males in total and for all the sub-dimensions of academic self-efficacy. A one-way between groups ANOVA was conducted to see the effects of grade-level on academic self-efficacy perceptions. The results showed a significant effect of grade on the academic self-efficacy beliefs on the total scale [$F(3, 245) = 3.512, p = .016$], on the first factor of the scale [$F(3, 245) = 3.128, p = .026$], on the second factor of the scale [$F(3, 245) = 2.782, p = .042$], and on the last factor of the scale [$F(3, 245) = 4.395, p = .005$].

Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the 9th grade ($M=3.12, SD = .83$) was significantly different from the 12th grade ($M=3.55, SD=.66$) on the total scale. In terms of the first factor of the scale (coping with academic problems), the mean scores of the 9th graders ($M= 3.11, SD = .87$) were again significantly lower than the mean scores of the 12th graders ($M= 3.52, SD = .65$). Post-hoc comparisons did not reveal any significant differences across the grade levels for the second factor. For the third factor of the scale, the differences of the 9th graders ($M= 2.97, SD = .96$) from 11th graders ($M= 3.48, SD = .77$) and from the 12th graders ($M= 3.5, SD = .82$) were significant.

Another independent samples t-test was conducted to understand the effects of gender on the attitudes for the use of media and information technology tools in learning English (see Table 3).

Table 3. Gender effects on attitudes for the use of media and information technology tools

Factors		Female (N= 120)	Male (N= 129)	T	P
1. Use for information search and free-time activity	M	4.27	4.21	1.60	.111
	SD	(1.02)	(1.04)		
2. Use for educational purposes	M	4.25	4.08	1.24	.216
	SD	(1.14)	(1.04)		
3. Use with Turkish subtitles	M	4.73	4.40	1.75	.081
	SD	(1.68)	(1.27)		
4. Use for gaming purposes	M	4.52	4.56	-.27	.787
	SD	(1.23)	(1.14)		
5. Total	M	4.44	4.25	1.53	.127
	SD	(.96)	(.94)		

Although, stereotypically compared to males, the attitudes of females towards technology and its uses might be more negative (Whitley, 1997), and their internet use might be less frequent and active than

males, in the current study there did not emerge a significant difference between females and males in terms of their attitudes toward ICT tools.

One-way between groups ANOVA results revealed a significant effect of grade only on the second (Use for educational purposes) factor of the scale [$F(3, 245) = 4.29, p = .006$]. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the 9th grade ($M=3.84, SD = 1.06$) was significantly different from the 11th grade ($M=4.57, SD= 1.01$) on the second factor (i.e. use for educational purposes).

In order to answer the second research question on the relationship between students' academic self-efficacy perceptions and attitudes towards the use of ICT in language learning, Pearson-product moment correlations were run (see Table 4).

Table 4. Correlations between self-efficacy and the attitudes towards ICT

Variables	1	2	3	4	5	6	7	8
1. Attitude Total	-							
2. Use for information search and free-time activity	,947**	-						
3. Use for educational purposes	,853**	,730**	-					
4. Use with Turkish subtitles	,613**	,484**	,332**	-				
5. Use for gaming purposes	,756**	,624**	,651**	,371**	-			
6. Self- efficacy Total	,190**	,168**	,200**	,123	,104	-		
7. Coping with academic problems	,176**	,159*	,183**	,119	,080	,964**	-	
8. Academic effort	,167**	,156*	,173**	,063	,130*	,806**	,655**	-
9. Academic planning	,178**	,141*	,199**	,146*	,098	,915**	,837**	,679**

Correlational analyses indicated that in general academic self-efficacy perceptions and attitudes toward ICT use in learning English are related to each other. Specifically, academic planning sub-dimension of the self-efficacy scale correlated with all the dimensions of the self-efficacy perceptions and attitudes toward the use of media and ICT tools except for the “use for gaming” sub-dimension which did not correlate with the self-efficacy scale in total, either.

5. Discussion and conclusion

In an attempt to explore the effects of gender on the general academic self-efficacy perceptions, we used the general academic self-efficacy beliefs scale. Our results showed that girls have higher academic self-efficacy perceptions than boys. As gender differences in academic self-efficacy existed, it can be hypothesized that gender differences may exist in computer self-efficacy. Despite conflicting with Hatlevik et al. (2017) who did not show any significant differences between girls and boys in their ICT self-efficacy beliefs in four of the countries included in their sample, this result corroborates Sachitra and Bandara (2017) who also found that females have higher academic self-efficacy perceptions than males at the college level. Besides, in a number of studies conducted in Turkish context, females were found to have higher academic self-efficacy perceptions than males (Akdag & Walter, 2005; Kocer, 2014; Ozdemir, 2008).

In terms of the attitudes, there did not emerge any important variation between female and male students. This finding corroborates Cheng (2006) and Suri and Sharma (2013) who found no significant relationship between gender and attitudes toward computer technology. Similarly, Katz et al. (1995) discerned no significant differences for the attitude scores between males and females. While past research documents gender differences in the use of ICT (Cooper, 2006; Goode, 2010), this gap between males and females has been minimized and has even vanished due to the widespread use of the internet and media tools by the majority of the people. Thereby, this study makes a contribution to current research by presenting empirical support against gender effect on the attitudes towards the use of ICT and media tools.

For the effect of the grade-level, our results suggest a developmental pattern across the grade-levels in terms of both their perceptions of self-efficacy and attitudes toward ICT integration in language classes. The more advanced they get academically, the more positive attitudes they develop towards ICT and the more efficacious they feel they become.

Academic self-efficacy perceptions and attitudes toward ICT tools in learning English correlated with each other. This suggests that the more efficacious high school students feel about general academic competence, the more positive attitudes they seem to hold toward the use of ICT and media tools in learning English. This is also in line with the understanding that students are more likely to be engaged in academic activities that they have positive attitudes about (Ajzen, 1991) and within their zone of perceived competence (Bandura, 1997). This implies that it is important to help learners develop positive attitudes toward the use of ICT and media tools in learning English and help them boost their academic self-efficacy perceptions by providing them with the tools and tasks that are achievable.

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