DOES *DYNED* AFFECT STUDENTS' ATTITUDES AND LANGUAGE SKILLS IN EFL? A CASE STUDY

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Abstract
Computer-assisted language learning (CALL) is one of the developing approaches that can assist to improve the language skills (reading, writing, listening) of students in English as a foreign language (EFL). CALL has been used to teach EFL learners through language drills or skills practice to stimulate discussion and interaction, or as a tool to improve writing and research. This study aims to point out the effects of *DynEd* on attitudes and language skills in EFL of middle school students in Turkey. The study contributes to the area of EFL learning and fosters students' perceptions of EFL. The sample of this study, which utilized an ex-post facto design, recruited 136 middle school students as participants. According to the results, it can be said that, in addition to the conventional teaching environment, the use of *DynEd* significantly improved both the language skills and attitudes of the students in EFL. However, *DynEd* did not make any difference in students' attitudes towards EFL according to grade level and gender. Moreover, students using *DynEd* have expressed positive views about *DynEd*.
Keywords: CALL; *DynEd;* EFL; computer-assisted instruction; language skills

1. Introduction

Computers have become an important part of life (Lan, Chen, & Sung, 2017). Therefore, most students use technology (PC games, applications, etc.) to enhance their learning (Vazquez-Calvo, Zhang, Pascual, & Cassany, 2019). A similar trend is seen in the academic world (Chinnery, 2006). Studies show that computer technologies support educational activities in a meaningful way (Blattner & Fiori, 2009). There have been significant improvements in the field of education and training and in the use of computer-aided instructional materials in

almost every discipline. Also, language education requires productive training materials for various courses because it includes reading, writing, listening and speaking elements to communicate (Kohnke, 2019; Nushi, Shafeie, & Shafiei, 2017). The trend towards computer technologies has enabled the use of computers in learning environments and English as a foreign language (EFL) learning (Baş & Kuzucu, 2009). Many studies have suggested that computers are useful resources in learning new vocabulary and supporting teaching in classroom settings (Kung & Chuo, 2002). Most of these approaches and methods have focused on using technology to develop more effective language teaching to enhance learners' motivation and autonomy in digital environments. It is important to investigate the effects of these technologies on language skills. Therefore, the purpose of this study is to investigate the effectiveness of a computer-assisted language learning (CALL) software, *DynEd*, on English language skills (reading, writing, listening). Also, this study aims to determine the effect of *DynEd* on middle school students' attitudes towards EFL and whether they change according to gender and grade level.

2. Literature review

Studies that have compared the effectiveness of conventional and contemporary methods on language learning suggest that the contemporary methods which include the implementation of computer-assisted language learning are more productive than the conventional ones (Godwin-Jones, 2011; L. Lee, 2019; Sauro & Zourou, 2019). Therefore, the teachers who would like to engage learners' attention have been trying to move from conventional to contemporary methods by using CALL to provide supplementary practice on EFL skills such as writing, reading, speaking and listening, as well as grammar and problem-solving. Besides, CALL is a way for teachers to help learners become more autonomous. Most students have stated that the use of technology has enhanced their learning. It has improved the learner autonomy, helped teachers to teach more effectively, and increased the participation of students (Sung & Yeh, 2012). Therefore, teachers can control how effective computers will be for learners. On the other hand, they do not need to feel anxious about being replaced by computers (Brierley & Kemble, 1991). Moreover, in order to instruct language learners to use the computer effectively and efficiently, teachers must have sufficient experience (Chapelle, 1990). The developments of CALL have paved the way for more detailed work on language (Hubbard, 2009).

Early attempts were made to teach certain foreign languages on mainframe computers in the 1950s and 1960s (Beatty, 2013). With the expansion of the personal computer in the early 1980s, CALL became a prominent area. Although the programs had not been developed

specifically for the English language, the globalization of English has made the programmers focus on it more. Since technology has been improved, many approaches and methods have been implemented in foreign languages, especially English language teaching because of the increasing interest (J. S. Lee, 2019; Liu, Moore, Graham, & Lee, 2002). A large number of studies have also pointed out the role of CALL in the learning process (Burston, 2014). Learners have realized the importance of using various techniques, especially CALL, to engage themselves in learning.

2.1. Digital tools used in CALL

Various software has been created to support other technological devices such as mobiles, tablets, laptops, etc. to help learners. In addition to computers, mobiles have also become important devices in learners' lives. Most programs have developed mobile-friendly applications to offer those learners who do not have access to computers a chance to improve language learning. Moreover, social media (e.g., *YouTube, Facebook, Twitter*) encourage learners to use technology to be more confident and active in speaking and writing in English (Peeters, 2018; Y.-C. Sun & Yang, 2015). Besides, EFL students have stated that they benefit from CALL via bloggers and web applications which provide inputs to enhance the language learning (H. Huang, 2015). *Duolingo*, *Busuu*, *Babbel, Voscreen*, *Voxy,* and *DynEd* are some examples of these applications.

In a case study, *Duolingo* was used in two Spanish university courses (Munday, 2016). The study suggested that *Duolingo* was useful and an easy-to-use app. Also, the students usually enjoyed it because of its gamified aspects, easy access and mobile friendly interface. In a recent study conducted by Ajisoko (2020), *Duolingo* was found user friendly, it made learning easier and eliminated boredom while learning English. In another study, the participants enjoyed using *Busuu* to learn English and had meaningful learning experiences (Citrayasa, 2019). While examining the effectiveness of *Babbel* in learning a foreign language, Loewen, Isbell, and Sporn (2020) found that students developed grammar, vocabulary and communication skills. Another language learning tool, *Rosetta Stone*, increased the motivation and supported students' EFL learning (Huang and Liu, 2020). The *Voscreen* app has improved students' attitudes towards learning English, enabled them to spend time learning languages outside the classes, and contributed to their listening and speaking skills (Karaduman, 2018). Finally, in a quasi-experimental study, although students used *Voxy* with less frequency than recommended, their English language proficiency improved (Faria, Bergey, Baird, & Lishinski, 2019).

It is suggested that such tools are generally reliable for language learning (Rosell-Aguilar, 2018), learners are ambitious and motivated to learn with these tools (Brown, Castellano, Hughes & Worth, 2012; Ajisoko, 2020), and these tools have the potential to improve their language skills (Rosell-Aguilar, 2017; Ajisoko, 2020; Loewen et al., 2019). Goksu, Ozkaya and Gunduz (2020), who conducted the content and bibliometric analysis of *CALL* journals, found that research on CALL and language learning tools is concentrated on higher education. Therefore, in this study, it is important to investigate *DynEd* with the middle school sample to understand how *DynEd* affects students' English language skills and their attitudes towards EFL learning

2.2. Description of *DynEd*

DynEd was founded in 1987 in San Francisco by Lance Knowles and Douglas Crane. The company produced and patented the world's first language training CD-ROM. Since then, it has been used by countries where English is not the official language. *DynEd* courses cover all proficiency levels and include courses for all ages and areas (e.g., k12, university, all occupations). *DynEd* courses have been approved by Ministries of Education in several countries, including France, China, Mongolia, Turkey and Malaysia. "The Country Management Partner" of *DynEd* International, Inc. since 2000, was founded in Turkey in 1993 ("*DynEd*," n.d.). In 2006, the Turkish Ministry of National Education (MEB) took an important step in the implementation of *DynEd* language learning software in public schools. *DynEd* has been used since the 2006-2007 academic year as a way of encouraging learners to move from teacher dependence towards autonomy, which is a very important aspect of language learning.

DynEd is a blended language learning tool that combines the features of traditional learning and contemporary multimedia technologies. *DynEd* places students at appropriate levels with artificial intelligence methods and adjusts the learning stages for each student according to their difficulty levels. It also calculates a study score by assessing students' progress and provides feedback following the behavioural learning model. *DynEd* specializes in English education and classifies learning for different age groups and levels.

2.3. DynEd related research

As a result of the integration of education with technology, a great deal of research has been conducted to prove whether the relationship between education and technology is functional or dysfunctional. Some of the research has been done on *DynEd*. In the recent years, the number of research carried out to analyze the effects of *DynEd* on EFL teaching and learning has

increased rapidly. However, the findings have been inconclusive. Some studies collected data from teachers who used the software in their classes regularly (Baş, 2010; Yigit, & Özgan, 2011). Yigit and Özgan (2011) pointed out that the teachers expressed positive feelings about the use of *DynEd* if the problems encountered in the software could be improved. They also suggested that the software helped the teachers to improve their ways of teaching. Moreover, it had positive outcomes if it was regularly used in the classroom. On the other hand, it triggered such problems as lack of equipment, crowded classes, administrative support, and etc. (Yiğit, 2012). Besides, students had a more positive perception of *DynEd* than teachers (Ellsworth, 2015; Şengel, Öncü, & Baltacı Göktalay, 2012; Yigit & Özgan, 2011). In addition to the teachers' perceptions of *DynEd*, some research has analyzed the effects of *DynEd* on students' language skills and motivation concerning English language skills.

While some studies spoke in favour of *DynEd*, others concluded the opposite. The studies which had positive results stated that there had been significant differences concerning the implementation of *DynEd*. It is suggested that *DynEd* improved language skills, motivation and attitudes of the students towards English learning compared to conventional teaching (Baş & Kuzucu, 2009; Bulut-Özek & Pektaş, 2016). On the contrary, it did not contribute significantly to the students' attitudes towards English courses (Inal & Korkmaz, 2019). On the other hand, some studies stated that *DynEd*-related activities had no significant effects on language skills as the software did not correspond to the contexts taught in schools (Şengel, Öncü, & Baltacı Göktalay, 2014). However, J. Huang and Wu (2013) stated that *DynEd* enhanced students' language skills, especially listening and speaking skills but had no significant improvement effects on writing and reading skills. Moreover, some studies stated that it enhanced students' autonomy (Meri, 2012).

Since *DynEd* intends to meet the individual learning needs of students and enhance their learning experiences by supporting EFL instruction, it may be necessary to explicitly address the impact of *DynEd* on attitudes and language skills in EFL. Nowadays, EFL learning opportunities are constantly improving via technology use; thus, it is important that *DynEd* provides up-to-date data on the impact of *DynEd* on students' EFL attitudes and language skills at the middle school level. Also, the literature mostly focused on teachers' or students' views, perceptions, experiences on *DynEd*, indicating the need for this study. On the other hand, this study can make an important contribution to the literature in terms of examining the effect of *DynEd* with the natural use (non-interventional) by students.

3. Methodology

3.1. The aim of the study

This study examines the potential of *DynEd* in helping middle school students to improve language skills in EFL, specifically reading, writing, listening easily and using these skills independently. In addition to language skills, the study investigates the effect of *DynEd* on shaping the attitudes of students about EFL learning. This research aims to answer the following questions:

RQ 1. Does *DynEd* improve students' language skills in EFL?

RQ 2. Does *DynEd* affect attitudes of students concerning EFL learning?

RQ 3. Do the attitudes of students using *DynEd* differ according to gender and grade level?

RQ 4. What are the students' views about *DynEd*?

3.2. Participants and the research context

The research was conducted with a group of 136 students from 5th to 8th grade attending a middle school in a village of Mardin, the southeast Turkey. Data were collected during the second semester of the 2018-2019 academic year. In this research, the participants were academically high, middle and low-level students. Based on the research method, no action was taken to equalize the initial proficiency levels of the students. The number of students who used *DynEd* was 64 while the number of students who never used *DynEd* was 72. The number of students who used *DynEd* was collected via Record Manager which shows the test scores, study time and frequency, learning path, and detailed information about how the student studies features such as voice record, speech recognition, and repetition. However, the data that the Record Manager provides was not sufficient as most students who used *DynEd* out of school ran the software offline for more than 14 days, which prevented the data transferring process to the software. Therefore, the rest of the data were collected with daily collections from the students. The sample characteristics are shown in Table 1.

Table 1. Sample characteristics

		Students who used *DynEd*		Students who did not use *DynEd*	
		f	%	*f*	%
Gender	Female	36	56.25	39	54.17
	Male	28	43.75	33	45.83
Grade	5th Grade	14	21.88	17	23.61
	6th Grade	8	12.50	17	23.61
	7th Grade	26	40.63	23	31.94
	8th Grade	16	25.00	15	20.83
Total		64	100.00	72	100.00

3.3. Design and procedure

This study utilized an ex-post facto research design which investigated the effect of *DynEd* on language skills in EFL. The ex-post facto research design identifies the causes and consequences of the differences in a non-experimental setting. Ex-post facto research design is a type of research design in which the investigation emerges without interference of the researcher (Salkind, 2010). Ex-post facto research can also be used instead of experimental research design, to test hypotheses about cause and effect in situations where it is not feasible or difficult to control or manipulate the independent variable. Moreover, this design is used as an alternative to experimental design because sometimes the latter is either too expensive (Cohen, Manion & Morison, 2011) or impossible to set up. In this study, the students who used and did not use the *DynEd* Software which was offered by the Ministry of Education as a supportive software for students to learn English formed two natural groups. The reason for choosing the ex-post facto research design was to investigate the effect of using *DynEd* on language skills in EFL and attitudes of students in their natural learning processes.

Firstly, pre-tests were applied to determine the students' initial language proficiency in reading, writing, listening and attitudes on EFL. Some students used *DynEd* outside of the school and as well as during the conventional teaching process at school for 8 weeks (N=64). At the end of the 8 week-period, the students who never used *DynEd* were identified (N=72). The proficiency and attitude tests which were applied to all students at the beginning of the study were reapplied. Moreover, the opinions of the students who used *DynEd* regarding the software were obtained. The research process is presented in Figure 1.

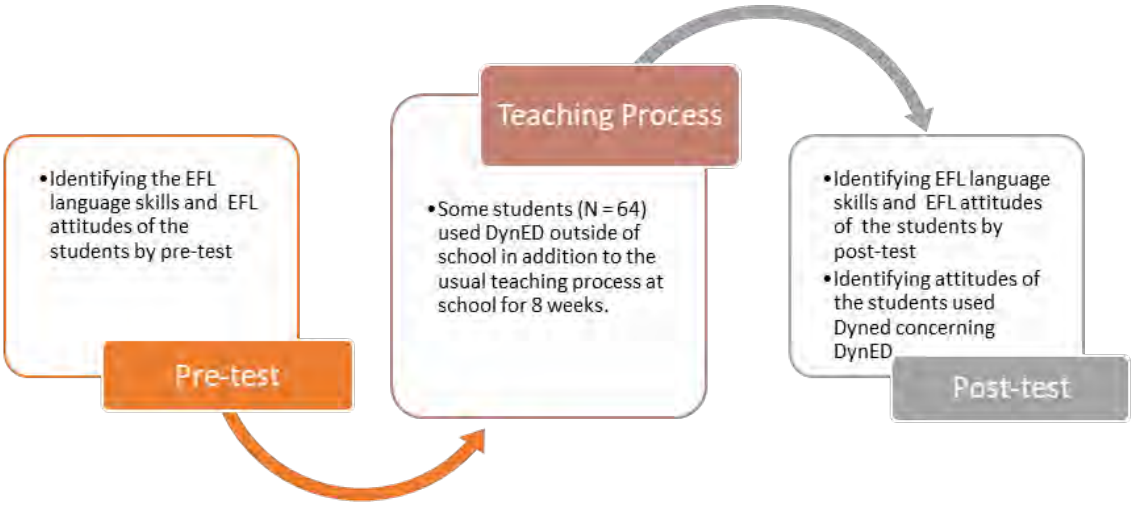

Figure 1. Research process

3.4. Data collection tools and procedures

Data were gathered by using pre- and post-tests, which is widely used by many researchers (Dugard & Todman, 1995). The tests consisted of questions aiming at measurement of students' proficiency levels in reading, writing and listening in English, whose reliability and validity were verified by the researchers. The tests were finalized by making necessary corrections according to the feedback received from English and Turkish teachers. In this study, the Kuder-Richardson (KR-20) value was determined as acceptable ($KR\text{-}20_{pre\text{-}test}$ = .921, $KR\text{-}20_{post\text{-}test}$ = .928). The English proficiency test consisted of 16 listening, 15 writing and 6 reading questions.

An attitude measurement scale was implemented to collect data about students' attitudes towards EFL. According to the findings of the exploratory factor analysis of the scale, it had a structure composed of one dimension. According to the Cronbach Alpha analysis, the reliability of the scale was 0.86 (Aydoğmuş & Kurnaz, 2017). In this study, the Cronbach Alpha value was 0.80 for the pre-test and 0.83 for the post-test. Also, a demographic scale prepared by the researchers was applied to analyze the result based on class and gender. The form developed by Baz and Tekdal (2014) was used to determine students' views on *DynEd*.

3.6. Data analysis

The data obtained in this study were analyzed through descriptive and inferential statistics in the IBM *SPSS* program. Information about the statistical techniques used in the analysis of the research questions is given in Table 2.

Table 2. The statistical analysis techniques of the research questions

Research Questions	Statistical Techniques
RQ 1 and RQ 2	General linear model
RQ 3	Independent samples *t*-test and One-way ANOVA
RQ 4	Descriptive statistic

The mean value of the data obtained with the attitude scale in the English course was interpreted respectively as "positive attitude" in the 1.00-1.66 range, "indecisive attitude" in the 1.67-2.33 range, and "negative attitude" in the 2.34-3.00 ranges. Student views on *DynEd* were analyzed descriptively. To conduct the statistical analysis, initially, the assumption of normality was checked. The variables of pre-test attitude [Skewness = 1.54, Kurtosis = 0.46], post-test attitude [Skewness = 1.82, Kurtosis = 0.03], pre-test language proficiency [Skewness = -1.28, Kurtosis = 0.05] and post-test language proficiency [Skewness = -1.23, Kurtosis = -0.11] in which Skewness and Kurtosis values were found within the range of +1.96 to -1.96, which is the acceptable value range by Field (2009). Therefore, the necessary assumptions were checked before applying the statistical analysis techniques stated in Table 2.

4. Findings

4.1. The effect of *DynEd* on students' EFL skills

To determine whether there was a meaningful difference between EFL language skills (listening, writing, reading) of students who used and did not use *DynEd*, the *Univariate General Linear* model method was used. The post-test language proficiency scores corrected according to the pre-test scores and obtained before the implementation are given in Table 3.

Table 3. Post-test language proficiency scores and corrected scores based on the pre-test

Group	*N*	*M*	*SD*	Corrected Mean	Standard Error
DynEd Users	64	24.65	6.89	21.75	.62
DynEd Non-Users	72	15.87	7.96	18.95	.58

Table 4 shows the results of the comparison of EFL skills levels at the end of the learning and teaching processes by controlling the initial EFL proficiency levels of the two groups used and did not use *DynEd*.

Table 4. Comparison of post-test language proficiency of groups who used and did not use *DynEd*

Source	Sum of Squares	*SD*	Mean Square	*F*	*p*	Partial Eta Squared
Corrected model	7484.20	3	2494.73	125.55	.00	.74
Intercept	779.13	1	779.13	39.21	.00	.22
Groups	**136.81**	**1**	**136.81**	**6.88**	**.01***	**.05**
Pre-test	4841.87	1	4841.87	243.68	.00	.64
Groups * Pre-test	37.54	1	37.54	1.89	.17	.01
Error	2622.79	132	19.87			
Total	64547.00	136				
Corrected total	10106.99	135				

* Significant at $p < .05$ level

When the initial EFL proficiency of the students who used and did not use *DynEd* were taken under scrutiny, it became evident that there was a significant difference between the groups' language proficiency levels in English language skills after the implementation process was completed in both groups ($F(1,136) = 6.88$, $p = .01 < .05$, $r = 0.05$). In other words, the students who used *DynEd* had higher scores than the students who did not use *DynEd*. Consequently, *DynEd* contributed significantly to the EFL skills of students who used *DynEd* compared to those students who did not use it.

4.2. The effect of *DynEd* on attitudes of students

The *Univariate General Linear Model* method was used to determine whether there was a significant difference in the attitude levels of the students who used *DynEd* compared to those students who did not use *DynEd*. Descriptive data on post-test corrected according to students' pre-test ELF attitude levels are given in Table 5.

Table 5. Post-test attitudes and post-test attitudes corrected according to pre-test

Groups	*N*	*M*	*df*	Corrected Mean	Standard Error
DynEd users	64	1.18	.17	1.19	.02
DynEd non-users	72	1.32	.31	1.30	.02

Table 6 shows the results of the comparison of attitude levels at the end of the period by controlling the initial attitude levels of the groups who used and did not use *DynEd*.

Table 6. Comparison of post-test attitude levels of groups who used and did not use *DynEd*

Source	Sum of Squares	*df*	Mean Square	*F*	*p*	Partial Eta Squared
Corrected model	3.99	3	1.33	31.46	.00	.41
Intercept	3.40	1	3.40	80.58	.00	.38
Groups	**.55**	**1**	**.55**	**13.18**	**.00***	**.09**
Pre-test	1.82	1	1.82	43.27	.00	.24
Groups * Pre-test	.81	1	.81	19.37	.00	.12
Error	5.58	132	.04			
Total	225.11	136				
Corrected total	9.57	135				

* Significant at $p < .05$ level

When the pre-attitudes of students who used and did not use *DynEd* were controlled, it became clear that there was a significant difference between the groups' attitudes towards English after the implementation process was completed in both groups ($F(1,136) = 13.18$, $p = .00 < .05$, $r = .09$). In other words, there was a significant difference in the attitude of the students used *DynEd* towards English compared to students who did not use *DynEd*. As a result, *DynEd* contributed to students' positive attitude towards learning English.

4.3. Analyzing the attitudes of students used *DynEd* by gender and grade level

An independent samples *t*-test was used to determine whether the attitudes of students who used *DynEd* differed by gender and the results of the analysis are given in Table 7. When the homogeneity of the variances was examined ($p = .06$), it was found that the variances were not meaningful, in other words, they showed a homogeneous distribution. When the means of EFL attitudes were analyzed, it is seen that the attitudes of male students ($M = 1.15$, $SE = .02$) are almost equal to female students ($M = 1.21$, $SE = .03$). However, it is stated that the difference was not significant ($t(62) = -1.36$, $p > .05$, $r = .16$).

Table 7. Analysis of attitude results by gender

Gender	*N*	*M*	*SE*	*t*	*p*
Male	28	1.15	.02	-1.36	.17
Female	36	1.21	.03		

One-way ANOVA was used to analyze whether EFL attitudes of students who used *DynEd* differed according to grade level. The analysis results are given in Table 8. When the homogeneity of the variances was examined ($p = 0.21$), the variances were not meaningful, in other words, they showed a homogeneous distribution. As seen in Table 8, it is confirmed that the EFL attitudes are not different according to students' levels ($F(3, 63) = .47$, $p > .05$, $r = .14$). A post-hoc multiple comparison test was not used as there was no significant difference between the groups.

Table 8. Analysis results of EFL attitudes by grade levels

	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	.04	3	.01	.47	.70
Within Groups	1.96	60	.03		
Total	2.01	63			

4.4. The students' views on *DynEd*

The views of the students who used *DynEd* concerning the software were examined using descriptive statistics and the findings are presented in Table 7. When the average values of all items were examined, the values ranged from 1.02 to 1.36, meaning that the students had positive views favoring *DynEd*. The students stated that they liked to use *DynEd* (*M* = 1.02, *SD* = 0.12), that they learned something with this software (*M* = 1.02, *SD* = 0.12) and that it would be beneficial to use such software in other lessons (*M* = 1.02, *SD* = 0.12). The students stated that they generally did not have difficulty in using *DynEd* (*M* = 1.36, *SD* = 0.48); however, their response to this item ("*I did not have difficulty using this software*") appears to be closer to "No" than others.

Table 9. Students' views on *DynEd*

		Yes		No			
Items		*f*	%	*f*	%	*M*	*SD*
1.	I liked using this software.	63	98.4	1	1.6	1.02	.12
2.	I learned something about using this software.	63	98.4	1	1.6	1.02	.12
3.	I think that these kinds of software will be useful in other lessons.	63	98.4	1	1.6	1.02	.12
4.	I would like to use these kinds of software in my other courses.	59	92.2	5	7.8	1.08	.27
5.	I did not have difficulty using this software.	41	64.1	23	35.9	1.36	.48

5. Discussion

In this study, the effect of *DynEd* on middle school students' language skills and attitudes towards learning English was investigated. The research was conducted with an ex-post facto design, and the change in language skills and attitudes of student groups using *DynEd* (n = 64) and not (n = 72) were examined. According to the results, it was seen that *DynEd* contributed to the language learning skills of middle school students and improved their attitudes towards language learning. However, students' attitudes towards learning English did not change according to gender and grade.

The results of past studies have emphasized that the usage of technology in the teaching process is more useful than conventional methods (Alvarez-Marinelli et al., 2016; Daskalovska,

2015; Kılıçkaya, 2015). It has been argued that technological environments that provide individual learning opportunities will make students more enthusiastic (Lai, Shum & Tian, 2016). The students were more enthusiastic and expected to be more successful when they use relevant environments. *DynEd* offers individual learning opportunities, helps students to adopt a relevant learning environment and increases their English language skills. The feedback provided by computer-based learning environments in the learning process also helps students to reduce spelling and writing errors (Chen, 2016; Chukharev-Hudilainen & Saricaoglu, 2016; Lawley, 2016; Shintani, 2016; Yeh, 2015). Furthermore, it can be argued that the use of video in similar environments can accelerate language learning, reading, and comprehension, and help in the effective pronunciation (Y.-H. Huang & Chuang, 2016; Hung & Higgins, 2016).

Research often focuses on language learning as a whole, whereas most studies focus on specific skills only. In a study on language learning, CALL was more effective than conventional teaching and it increased learners' pronunciation skills (Luo, 2016). Some studies have focused on listening and speaking skills, while listening and speaking skills in foreign languages may increase with the use of mobile technology (Hwang, Shih, Ma, Shadiev, & Chen, 2016; Z. Sun et al., 2017). Besides, the use of technology in language learning is supposed to accelerate writing skill acquisition and make language learning more enjoyable (Hwang, Chen, Shadiev, Huang & Chen, 2014). In the research related to the use of *DynEd* in language learning, conventional methods have been compared, and it has been concluded that *DynEd* increases students' levels of English learning and motivation (Baş & Kuzucu, 2009; Bulut-Özek & Pektaş, 2016). All these research results indicate that technology contributes to the development of language skills such as reading, writing, listening, speaking, pronunciation and spelling.

In our study, language skills were evaluated as a whole, and it was concluded that *DynEd* significantly affected EFL language skills (reading, writing and listening). Also, *DynEd* had a significant effect on EFL attitudes of middle school students and that the students had positive perception towards *DynEd*. It is seen that similar results are emphasized in the research conducted on *DynEd*. In this study, only the opinions of the students using *DynEd* are included. However, some studies have as well considered the opinions of teachers and pointed out that students' views on *DynEd* are generally more positive than the views of teachers (Ellsworth, 2015; Şengel et al., 2012; Yigit & Özgan, 2011). Similarly, in our study, most of the students also stated that they had no difficulty using *DynEd*. Baz and Tekdal (2014) argued that, unlike these results, qualifications of *DynEd* were partly sufficient for teachers, but students had ambivalent opinions about the software. In another study, the effect of *DynEd* on English

attitude was not significant but the software had a significant effect on language skills (Inal & Korkmaz, 2019). However, it is also noteworthy that the study was conducted with primary school students. On the other hand, it was emphasized that *DynEd* had no significant effect on the achievement of English courses because the software was not appropriate to the course content (Şengel et al., 2014). In contrast, J. Huang and Wu (2013) found that *DynEd* improved students' language skills, especially listening and speaking skills, but did not significantly affect writing and reading skills. Besides, Meri (2012) stated that *DynEd* had a positive impact on the autonomy of students. Furthermore, in a relatively recent study with university students, it was revealed that students adopted *DynEd* (Prastikawati, 2019). When these results are evaluated together with the results obtained in our study, it can be said that *DynEd* is generally welcomed by the students.

6. **Conclusion**

Increasing usage of technology in today's world, especially the use of computer technologies, has become widespread and has resulted in the incorporation of instructional technologies for educators to design more productive and effective teaching environments. Moreover, instructional technologies, which are also involved in language learning, have enabled the CALL method to be widely used in language learning. Many digital learning environments developed in this context continue to be used widely in language learning. In this study *DynEd*, one of such environments, has been investigated with the aim of determining its effect on language skills and attitudes of 136 middle school students. Besides, the opinions of the students using *DynEd* about this environment were also identified. As a result, it was found that *DynEd* had a significant positive effect on language skills of students. Another result obtained from the research was that *DynEd* significantly affects students' attitudes, making them positive towards EFL learning. However, *DynEd* did not cause a change in students' attitudes concerning the grade level and gender. In addition, the students using *DynEd* expressed positive views about *DynEd*. Moreover, the majority of the students stated that it was beneficial to use similar systems for other courses.

Based on the results obtained from this study, using *DynEd* as a learning tool in EFL teaching proves beneficial for middle school students. This study was designed with an ex-post facto research approach because intervention was not carried out. Therefore, the possibility that the students have experienced language learning (e.g., peer interaction, internet, video, social media, apps) outside of *DynEd* during the 8-week period can be considered as a limitation of our study. As a result, conducting experimental studies in the future with an intervention may

contribute to a clearer interpretation of the effect of *DynEd*. The fact that this study covers only one middle school is, obviously, another limitation. Therefore, conducting research covering more schools may contribute to the reliability of the findings and the quality of the existing literature. In addition, in new research, *DynEd* can be investigated with primary or high school samples.

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