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## The Effect of Digital Stories on Primary School Students' Listening Comprehension Skills

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The purpose of this research is to determine the effect of digital stories on the listening comprehension skills of primary school 4th grade students. For this purpose, the research has carried out with a quasi-experimental design with pre-test post-test control group. The sample of the research consisted of 52 students studying in two different 4th grade branches of a public primary school in the second semester of the 2018-2019 academic year. The stories transferred to digital in the research have selected from the texts in 3 different Turkish textbooks at the 4th grade level of primary school published by the Ministry of National Education and taught to students in previous years. 8 narrative texts from the themes of "My Beautiful Country Turkey" and "Production, Consumption and Efficiency" in the textbooks have converted into digital through digital design programs. During the implementation process, the animations of 8 stories transferred to digital have watched by the students in the experimental group, and the students in the control group have read and listened to the same story texts by the teacher. The Listening Comprehension Test has used to determine the listening comprehension achievement scores of the students in the experimental and control groups at the beginning and end of the application process. As a result of the research, it has determined that there was a significant difference between the pre-test and post-test achievement scores of the students in the experimental group, where the stories have played digitally.

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### Introduction

The primary purpose of mother-tongue teaching is to provide individuals with "understanding and explaining" and develop this skill. Comprehension consists of "reading and listening" skills and telling is "speaking and writing" skills (Şahin, 2020). Listening comprehension is one of the most fundamental problems in education from past to present. To explain this problem, first of all, it is necessary to mention the definitions of listening.

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Listening; "the ability to understand and respond effectively in the oral communication process" (Johnson, 1951, p.58); It is expressed as "to pay attention to the spoken words, to understand them as well as the sounds" (Hampleman, 1958, p. 49). Weger, Castle, and Emmett (2010) define listening skills as an active, constructive process that includes activating previously acquired knowledge aimed at helping the listener understand the text he is listening to. In this process, two critical factors are that the active listener pays attention to the quality of the information and interacts with the information in the dimension of choosing and organizing the information (Akyol, 2018). Wolff, Marsnik, Tacey, and Nichols (1983) defined this skill as "an active process involving hearing, understanding, integrating understood information with prior knowledge, and responding if necessary." Listening includes a cognitive process (Goh & Taib, 2006), making the nature of listening invisible and complex (Meinardi, 2009). In conclusion, listening is a multi-faceted, active interpretation process, and acquisition requires matching what is heard with what is known.

The listening skills summarized by Hutchins, McDermott, Carolan, Gronowski, Fisher, & DeMay (2013) had some distinctive features. He states that listening is one of the language phonoreception skills, in which sounds, and language symbols are transmitted to the auditory center in the brain via the auditory nerve. Thus, a new process will be analyzed, and a process based on the explanation of the message will begin. It is a lively, active reception process that uses a range of higher thinking skills, such as understanding, analyzing, synthesizing, interpreting, judging, and applying constructive criticism. It can be said that active listening is essential in the communication process. It plays a vital role in the teaching-learning process. The more active the listener is characterized, the more likely he will be a positive listener who can interact with the auditory material, understand what he is listening to, and concentrate on it (Kawamichi, Yoshihara, Sasaki, Sugawara, Tanabe, Shinohara, Sugisawa, Tokutake, Mochizuki, Anme, & Sadato (2015). The most critical element in these definitions is the dimension of attention because the listening process starts with attention.

Listening skill differs not only from listener to listener but also from situation to situation of the listener. Listening can be done in many different ways and for different purposes. These changing listening types include Tidyman and Butterfield (1959, p. 59); He classified them as "simple listening, distinctive listening, listening for relaxation, listening for information, listening to organize ideas, critical listening, and creative listening." On the other hand, Tompkins (1998), types of listening are examined under five titles: distinctive, aesthetic, transformative, critical, and therapeutic listening. Among these genres, listening for information has the feature of listening purposefully, and for example, listening to stories/poems, etc., is shown. At this point, it can be said that digital stories are created in accordance with the purposeful listening type.

Digital stories are formed when images, sounds, music, and storytelling are combined with the help of multimedia tools (GoAnimate, Powtoon, Toondoo, Kahoot, Mentimeter, Emaze, Animoto, Storybird, etc.), providing deep quality and ease of recall to the characters and events in the text (Rule, 2005). Digital storytelling, on the other hand, is a holistic process that enables the student to be active in the process in an interactive digital environment, allows the student to explore and construct knowledge, and makes the lesson effective and efficient through multiple textures (image, sound, music, movement, etc.) (Chung, 2007; Dupain & Maguire, 2005; Inceelli, 2005). Based on these definitions, it can be said that digital stories are formed by bringing together multiple text elements. These include audio, video, etc. elements are considered as elements that emphasize listening skills.

Digital storytelling effectively attracts children's attention by listening to the topics, increasing their concentration on the activities, and making them feel engaged in a fun environment. Digital storytelling enables them to imagine through listening and watching and then identify the similarities between real characters and the characters in the story (Şimşek & Akyar, 2020). It also contributes to increased ability to analyze and criticize the story better than listening to it traditionally. Moreover, through digital storytelling, children learn how to chronologically order thoughts, form meaningful sentences, and tell stories after watching and hearing the story (Lisenbee & Ford, 2018). Digital stories provide students with more than just words or sounds in relation to listening; but also provide structure, intonation, and recall information to interpret them (Doyle, 2019). Therefore, strengthening the listening teaching approach using the digital storytelling method can positively contribute to the students' acquisition of listening competencies necessary in schools and their lives (Dehham, Hasan & Raheem, 2018; Thistle & McNaughtona, 2015).

It is seen that four basic language skills are included as language learning areas in all mother-tongue teaching programs published and put into practice in recent years. These are listening, speaking, reading, and writing. The first of these four language skills is listening, while the last learned one is writing (Kurudayıoğlu & Çetin, 2015; Şahin, 2020). In the listening education process, problems related to listening comprehension arise at every level of education. However, effective listening is a prerequisite for understanding and learning. When we look at the international exams held from the past to the present [International Student Assessment Program- Program for International Student Assessment (PISA)] PISA 2009, PISA 2012, and PISA 2015 results, it is seen that the comprehension scores of students in Turkey are lower than in other countries (MEB, 2010; 2013; 2016). Therefore, it is essential first to develop the skills of understanding what is being listened to. There are many studies on listening skills in the literature. These studies include listening motivation (Armstrong & Rentz, 2002; Vandergrift, 2005; Baleghizadeh & Rahimi, 2011; Lau, 2017), listening comprehension (Wise, Sevcik, Morris, Lovett, & Wolf, 2007; Reed & Vaughn, 2012; Kim & Phillips, 2014; Kim, 2016), telling what you're listening to (Morrow, 1985; Zimiles & Kuhns, 1976; Gambrell, Koskinen & Kapinus, 1991; John, Lui & Tannock, 2003; Cohen, Krustedt & May, 2009; Silva, Abchi, & Borzone, 2010; Dunst, Simkus, & Hamby, 2012), studies in which listening comprehension and expression work together (Ebaugh, 2013; Bernfeld, Morrison, Sudweeks & Wilcox, 2013). It has been determined that the studies carried out primarily in listening comprehension are generally associated with the reading skills of primary school students in narrative texts. In the literature review, it is seen that the studies on digital storytelling generally focus on academic achievement, motivation, and attitude variables (Tour, Gindidis, & Newton, 2019; Kasami, 2018; Price, Strodtman, Brough, Lonn, & Luo, 2015; Yüksel, Robin & McNeil, 2014; Smeda, Dakich & Sharda, 2013; Campbell, 2012; Heo, 2009). However, each of the four basic skills in language teaching, namely listening, speaking, reading, and writing is important in making the teaching and learning process meaningful. Digital storytelling should be approached with a holistic approach that encompasses these four skills. When the studies on digital storytelling in the literature are evaluated in general, it is seen that the field of listening skill is not included much (Liu, Huang, & Xu, 2018; Xu, Park, & Baek, 2011; Stewart & Ivala, 2017; Foelske, 2014). For this reason, it is thought that the study will fill the gap in the literature in terms of employing listening and writing skills in digital storytelling.

Among the factors that positively affect listening are qualities such as visual and sound. Hardiah (2019) refers to audio-visual media usage to improve students' listening skills. With the use of audio-visual media, students' concentration and focus have increased because video

media is the capacity to focus more on the listening level. Cahyaningrum (2010) reveals the effectiveness of the use of visual media in teaching oral text listening. It has been concluded that teaching the story text using visual media is more successful than the oral teaching of the story. Amalia (2017) demonstrates listening and listening skills reinforced using animation images and discussion methods. Animated videos encourage students to understand more, as they represent a visual sense that allows students to understand and develop their learning abilities. Rosdiana (2018) talks about the use of visual images as media to increase students' listening capacity. Learning environment refers to students' means of communication or information. It is predicted that the media in teaching and learning will help educators increase their learning achievement in learning. Considering that the components of digital storytelling are audio-visual, it is thought to affect primary school students' listening comprehension success. This study constitutes the reason for preferring digital storytelling. Considering that the components of digital storytelling are writing, sound, movement, and visual elements, the relationship between sound and music elements and listening reveals that this study has planned to serve to develop listening skills. It is thought that the study will contribute to the literature on the development of listening, which is one of the most important ways of understanding and learning.

The study aims to determine whether digital stories affect primary school students' listening comprehension skills. In this study, the research question is "Is there a significant difference between the students' listening comprehension skills in the experimental group to whom digital stories have applied and the control group students to whom paper-based reading-assisted instruction has applied?" formed in the form. Based on this research question, answers to the following sub-problems have been sought:

- (1) Is there a significant difference between the experimental group students' listening comprehension pretest and posttest achievement scores?
- (2) Is there a significant difference between the control group students' listening comprehension pretest and posttest achievement scores?
- (3) Is there a significant difference between the listening comprehension posttest achievement scores of the experimental and control group students?
- (4) Is there a significant difference between the listening comprehension achievement scores of the experimental and control group students?

## Method

### *Research Model*

The research has been designed with a quasi-experimental design with a pretest-posttest control group, one of the quantitative research designs. In this design, experimental and control groups are created without any random assignment; pretest and posttest are applied to both groups (Creswell, 2016). Quasi-experimental designs are research designs in which the experimental process is applied, but all external variables cannot be controlled (Christensen, Burke Jojanson, & Turner, 2015). The point to note in this design is that the independent variables and methods used in the experimental group are not used in the control group.

Table 1. Symbolic View of the Research Model\*

| Group | Pretest | Experimental Process              | Post-test |
|-------|---------|-----------------------------------|-----------|
| DG    | DAT1    | Teaching Based on Digital Stories | DAT2      |
| KG    | DAT1    | Reading-Aided Teaching            | DAT2      |

\*In the table above, DG refers to the experimental group, KG refers to the control group, and DAT refers to the listening comprehension test.

### Sample of the Research

A total of 52 students studying in two classrooms of the fourth grade of a public school in Bozova district of Şanlıurfa province in Turkey constitute the study sample. The convenient sampling method, one of the non-random sampling methods, has been used in school selection. Convenience sampling is a reasonably common sampling technique, especially used in human aid research. It is preferred because it is practical and economical (Creswell, 2012; Fraenkel, Wallen, & Hyun, 2012; Monette, Sullivan, & Dejong, 1990). The study has carried out in the district where the researcher works in this context. The homogeneous sampling method, one of the purposive sampling methods, has been used to determine the control and experimental groups used in the research. Inhomogeneous sampling, the researcher purposefully samples individuals or areas based on membership in a subgroup with descriptive characteristics (Creswell, 2012). In this direction, the listening comprehension achievement test to be used in the study has been applied as pretests to a total of 182 students studying in six classrooms at the 4th grade level of A Primary School in Bozova district in Turkey. The two most equivalent groups were assigned as the control and experimental groups when the results were analyzed. Which of these groups would be the experimental group and which would be the control group has determined by drawing lots.

Table 2. Study Groups of the Research

| Group        | Process                           | School           | Grade | Number of students |
|--------------|-----------------------------------|------------------|-------|--------------------|
| Experimental | Teaching Based on Digital Stories | A Primary School | 4-B   | 26                 |
| Contol       | Reading-Aided Teaching            | A Primary School | 4-C   | 26                 |

### Data Collection Tools

Different tools have been used to collect data in the study. These tools were the "Listening Comprehension Test" and "Personal Information Form" related to digital storytelling. The Listening Comprehension Test has been applied to the experimental and control groups before and after the experimental procedure. And, The Personal Information Form has been applied to the experimental and control groups before the experimental procedure. "Listening Comprehension Test" (Bulut, 2013) has been used to determine listening to the success scores of listening comprehension. Considering the findings regarding the reliability of the test, it is seen that the KR-20 value is .92. In this study examining the effect of digital stories on the listening comprehension skills of primary school students, the reliability test has been renewed, and the KR-20 value has been calculated as .85. Accordingly, the reliability of the test scores has been interpreted as the achievement test is at a level that could be used in this study. Listening Comprehension Test; It has been prepared in two separate forms as student and teacher forms. In the teacher form, informative, narrative texts and poems are included. Below these texts are questions to be directed to the students. The student form consists of only questions. The students listened to the text to be read by the



teachers and answered the questions in the student form. The listening comprehension test is a total of 22 questions. The content of the test examines various skills such as making inferences, filling in the blanks, matching true-false questions, and guessing the meaning of words to measure their listening comprehension levels.

The Personal Information Form prepared by the researcher has been used to determine the students' personal information in the experimental and control groups. Through this form, information such as the gender of the students, the educational status of the parents, and the professions of the parents have been obtained.

The digital stories to be used in the applications of the study have been prepared with the help of experts. Before starting the listening studies, the Listening Comprehension Test has administered to all students in the sample group as a pretest. After listening to digital stories in the experimental group and listening to the stories read from the paper in the control group in 24 lesson hours for eight weeks, the same test has presented to the students as a posttest.

### ***Implementation of Research***

In the 2018-2019 academic year, the researcher applied listening comprehension practices related to digital stories to 4th-grade students studying in a public school in the Bozova district of Şanlıurfa province in Turkey. The implementation process consists of the following four stages:

#### *Stage 1: Story Selection*

The primary school 4th-grade Turkish course book prepared by the Ministry of National Education consists of eight themes. Each theme contains four texts within itself. The annual plan used by the teachers in their lessons has been prepared so that four units will be covered in the 1st term and four units in the 2nd term. In this context, a total of 8 narrative texts from the themes of "Production, Consumption and Efficiency" and "My Beautiful Country Turkey," which correspond to the 2nd period, have been included in the research's scope. The texts have been selected from the primary school 4<sup>th</sup>-grade Turkish textbooks prepared by the Ministry of National Education in 2014, 2016, and 2017 to convert them into digital. Care has been taken not to select the students from their textbooks in selecting the texts. The reason for this is that students can read these texts beforehand. In this case, the validity and reliability of the study may be adversely affected. After the story selection phase, the digitization of the stories has started.

#### *Stage 2: Digitizing Stories*

Several programs have been used for digitizing the stories. While the name "Adobe Illustrator" has been preferred for the design of the stories, the "Adobe After Effects" program has been used for digitization. Creating stories involves three steps. These steps can be expressed as design, movement, and vocalization, respectively. While designing the stories digitally, firstly, the dialogues in the text have been taken into consideration. Scene designs have been created for the dialogue descriptions in the stories. In stage designs, drafts have been prepared from the whole to the parts. The people, places, and objects in the stories have been designed to be independent. In the design process, the skeletal structure of the people in the text has been considered first. The story scenes have been fictionalized through the "Adobe After Effects" program based on the designs prepared. Finally, motion actions and sound syncs have been added to the stories. The digitized stories have been voiced with the

help of a Turkish Language Literature teacher and theater actor. While preparing a digital story, "Adobe" programs have been preferred because they provide advantages in terms of ease of use, having interrelated interfaces, rapid character creation, and the opportunity to work in vector format. A professional team has prepared the digital stories, and three field experts have checked their suitability. After the stories have been digitized, the pilot phase has started.

### *Stage 3: Pilot Implementation*

Before the actual application, a 6-week pilot application has made to the 4-D branch of the school selected for the sample. The pilot application is carried out in order to determine the deficiencies that may occur during the research process and to complete these deficiencies. The Listening Comprehension Test has been administered to the students to be piloted. All digital stories to be used in the application have been played to the pilot group for six weeks, and the Listening Comprehension Test has been administered to this group. At the end of 6 weeks, the digital story application process, scale, activities, etc. Inadequate places in the application have been determined, and the process has tried to be improved before proceeding to the actual application process. It has been determined that the instructions are unclear and understandable in practice. In this regard, it has been stated in the meeting with the teachers that the statements of instructions should be corrected, and teachers should pay attention to them. After the necessary arrangements had been made in light of the data obtained from the pilot application, the actual applications started. Before the application, the Listening Comprehension Test was administered to the experimental and control groups as a pretest.

### *Stage 4: Actual Implementation*

The main application within the scope of the research has been carried out to the students in the school determined for the sample as the experimental and control groups. The application time includes the second semester of the 2018-2019 academic year. While digital storytelling has been applied to the experimental group, applications based on reading from the paper have been applied to the control group. The listening activities in the implementation process have been planned for eight weeks and three lesson hours (8x3) each week. Teachers teach the lesson in accordance with the plans in both the experimental and control groups. Visuals related to the texts used in the digital stories have been given to each control group student to be examined before the text was read. That is why, while listening to digital stories in the experimental group, visual elements are also involved in order to balance the conditions.

### *Analysis of Data*

To answer the sub-problems of the current study, descriptive statistics (mean, standard deviation, etc.) were made. The analyzes used in the study process are summarized in Figure 1.1.

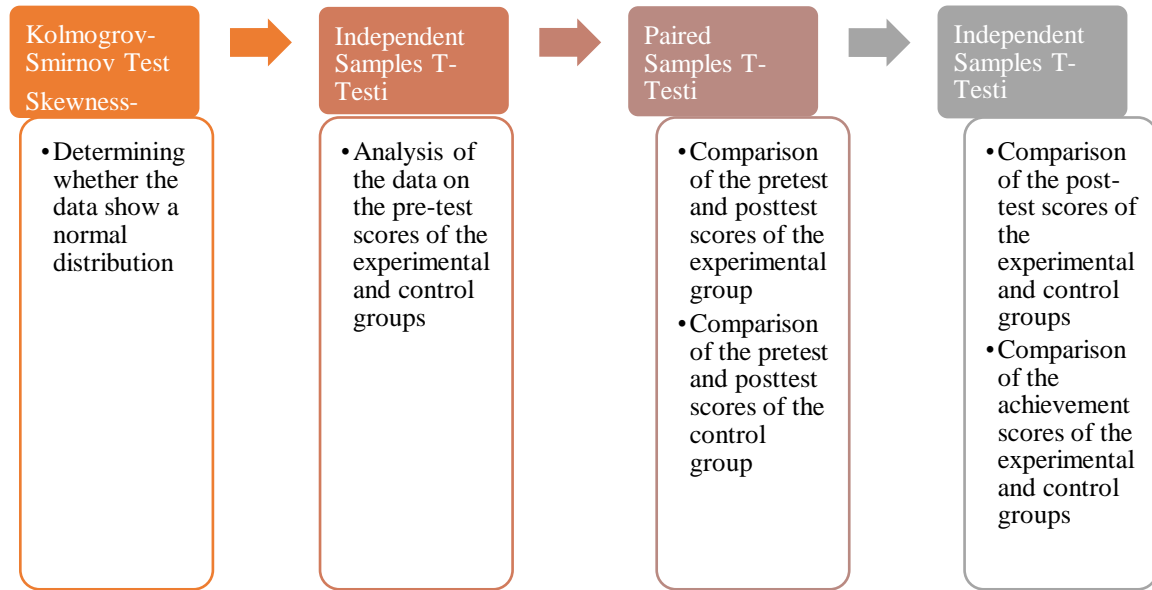


Figure 1.1. Statistics used in data analysis (Büyüköztürk, 2018; Can, 2016; Pallant, 2016).

*Normality analysis of the data on the pretest and posttest scores of the experimental and control group's listening comprehension*

Table 3. Normality Test Results for Experimental and Control Group Students' Listening Comprehension Pretest and Posttest Scores

| Variables               | Group      | Pretest Scores |          |              | Posttest Scores |          |              |
|-------------------------|------------|----------------|----------|--------------|-----------------|----------|--------------|
|                         |            | Skewness       | Kurtosis | Shapiro-Wilk | Skewness        | Kurtosis | Shapiro-Wilk |
| Listening Comprehension | Experiment | ,746           | ,224     | ,092         | -,787           | -,320    | ,027         |
|                         | Control    | ,677           | 1,527    | ,155         | -,757           | -,116    | ,084         |

Since the number of observations has less than 30, Shapiro Wilk values have been checked (Can, 2016). Experimental and control groups show a normal distribution since their listening comprehension pretest scores are  $p > .05$ . However, since the experimental group's listening comprehension posttest scores have  $p < .05$ , it did not show a normal distribution.

Table 4. The Kurtosis- Skewness Range of the Experimental Group Students' Listening Comprehension Post-Test Scores

| Groups - Posttest                          | Skewness | Std. Error of Skewness | of Kurtosis | Std. Error of Kurtosis |
|--|----------|------------------------|-------------|------------------------|
| Experimental Group Listening Comprehension | -,757    | ,456                   | -,116       | ,887                   |

The skewness and kurtosis indices calculated by dividing the skewness and kurtosis coefficients by their standard errors are within the limits of  $\pm 2$ , and close to 0 is considered



evidence that the data show a normal distribution (Tabachnick & Fidell, 2013). In this study, since the values obtained by dividing the skewness and kurtosis coefficients for the experimental group's listening comprehension posttest scores (-.757/.456 and -.116/.887) by their standard errors have within these ranges and the Shapiro-Wilk test has found to be insignificant, the data have It has concluded that it had a normal distribution.

*Analysis of the data on the experimental and control group's listening comprehension pretest scores*

**Table 5.** Independent Samples t-Test Results of the Experimental and Control Group Students' Listening Comprehension Pretest Scores

|                         | Group      | N  | $\bar{X}$ | S      | sd | t      | p    |
|-------------------------|------------|----|-----------|--------|----|--------|------|
| Listening Comprehension | Experiment | 26 | 11,02     | 2,2922 | 50 | -1,700 | ,095 |
|                         | Control    | 26 | 12,20     | 2,7148 |    |        |      |

When the table of the listening comprehension pretest scores of the students in the experimental and control groups is examined; In the listening comprehension dimension, the average of the students in the experimental group has ( $\bar{X}_E = 11,02$ ), while the average of the students in the control group has ( $\bar{X}_C = 12,20$ ). According to the calculated t value and the significance level in the 95% confidence interval ( $t(50) = -1,700$ ,  $p > .05$ ), it has been determined that there has no significant difference between the students in the experimental and control groups. According to these results, it can be said that the groups before the experimental procedures have equivalent to each other.

**Results**

***Findings and Comments on the Experimental Group's Listening Comprehension Pretest and Posttest Scores***

**Table 6.** Paired Samples t-Test Results Regarding the Experimental Group Students' Listening Comprehension Pre-Test-Post-Test Scores

|            | Measurement | N  | $\bar{X}$ | S      | sd | t      | p    | Cohen's d |
|------------|-------------|----|-----------|--------|----|--------|------|-----------|
| Experiment | Pre-test    | 26 | 11,02     | 2,2922 | 25 | -4,768 | ,000 | 0,312     |
|            | Post-test   | 26 | 14,26     | 4,4933 |    |        |      |           |

While the average of the listening comprehension pretest scores of the students in the experimental group, to whom digital stories have applied, is ( $\bar{X} = 11.02$ ), the average of the posttest scores increased to ( $\bar{X} = 14.26$ ). According to the calculated t value and the significance level in the 95% confidence interval ( $t(25) = -4,768$ ;  $p < 0.05$ ), it has determined that there has a significant difference between the listening comprehension levels of the students in the experimental group to which digital stories have applied, before and after the experimental procedure.

The calculated effect size ( $ES = 0.31 < .40$ ) is reported on a moderate level (Cohen, 1992; Thalheimer and Cook, 2003). According to this approach, the listening comprehension scores of individuals educated with digital stories are more positive than those who did not receive an education. This positive effect is moderate.



According to this finding, it can be said that the digital stories applied in the experimental group effectively improve the students' listening comprehension skills.

### ***Findings and Comments on the Pretest and Posttest Scores of the Control Group's Listening Comprehension***

**Table 7.** Paired Samples t-Test Results Regarding the Control Group's Listening Comprehension Pre-Test-Post-Test Scores

|         | Measurement | N  | $\bar{X}$ | S      | sd | t      | p    | Cohen's d |
|---------|-------------|----|-----------|--------|----|--------|------|-----------|
| Control | Pre-test    | 26 | 12,20     | 2,7148 | 25 | -2,293 | ,031 | 0,09      |
|         | Post-test   | 26 | 13,80     | 3,2805 |    |        |      |           |

While the average of the listening comprehension pretest scores of the students in the control group, in which the teaching aided reading from paper has applied, is ( $\bar{X}$ =12.20), the average of the posttest scores increased to ( $\bar{X}$ =13.80). According to the calculated t value and the significance level in the 95% confidence interval ( $t(25) = -2.293$ ;  $p < 0.05$ ), it has determined that there is a significant difference between the listening comprehension levels of the control group students, to whom the paper-based reading assisted instruction has applied, before and after the experimental procedure.

The calculated effect size value ( $ES=0.09 < .20$ ) has a small effect (Cohen, 1992; Thalheimer & Cook, 2003). It has a small effect on the listening comprehension scores of the individuals to whom the paper reading assisted instruction is applied. According to this finding, it can be concluded that the paper-based reading-assisted instruction applied in the control group is effective in improving students' listening comprehension skills.

### ***Findings and Comments on the Experimental and Control Group's Listening Comprehension Post-Test Scores***

**Table 8.** Independent Samples t-Test Results of the Experimental and Control Groups' Listening Comprehension Post-Test Scores

|                         | Group      | N  | $\bar{X}$ | S      | sd | t    | p    |
|-------------------------|------------|----|-----------|--------|----|------|------|
| Listening Comprehension | Experiment | 26 | 14,26     | 4,4933 | 50 | ,421 | ,676 |
|                         | Control    | 26 | 13,80     | 3,2805 |    |      |      |

In the t-test for independent samples, which was conducted to reveal whether there is a significant difference between the listening comprehension posttest achievement scores of the experimental and control group students, the test score average of the students in the classroom using digital stories ( $\bar{X}_E=14.26$ ) and the scores of the students in the classroom using reading-from-paper method have determined. There is no significant difference between the test scores of the students ( $\bar{X}_C=13.80$ ) [ $t(50) = ,421$ ,  $p > 0.05$ ]. In this case, it can be said that digital stories do not significantly affect listening comprehension skills.

### Findings and Comments on the Listening Comprehension Scores of the Experimental and Control Groups

Table 9. Independent Samples t-Test Results Regarding the Listening Comprehension Scores of the Experimental and Control Groups

|                         | Group      | N  | $\bar{X}$ | S      | sd | t     | p    |
|-------------------------|------------|----|-----------|--------|----|-------|------|
| Listening Comprehension | Experiment | 26 | 3,23      | 3,4643 | 50 | 1,690 | ,097 |
|                         | Control    | 26 | 1,59      | 3,5478 |    |       |      |

When the table of listening comprehension achievement scores of the students in the experimental and control groups is examined; In the dimension of listening comprehension, while the average of the students in the experimental group is ( $\bar{X}$ =3.23), the average of the students in the control group is ( $\bar{X}$ =1.59). According to the calculated t value and the significance level in the 95% confidence interval ( $t(50)$ = 1.690,  $p>.05$ ), it has been determined that there is no significant difference between the listening comprehension scores of the students in the experimental and control groups. Considering the average, it can be said that the success in the listening comprehension process is in favor of the experimental group.

### Discussion, Conclusion, and Recommendations

It has been observed that there is a significant difference between the listening comprehension achievement scores of the students in the experimental group before and after the experimental procedure. When we look at the other studies in this field, it is seen that there are studies that support this finding and mention that digital storytelling is effective in the development of individuals' listening skills. Researchers have found that digital stories are a powerful tool in language education that supports learning in all-around skills such as reading, writing, speaking, and listening (Tsou et al., 2006; Gregori-Signs, 2008). Hamdy (2017) is inferred that digital storytelling had a significant effect on students' listening comprehension. Başdaş & Vural (2017) concluded that digital stories positively affect students' listening skills. Dinçer & Yılmaz (2019) determined that digital storytelling affects listening within the scope of verbal language skills. Loniza, Saad & Mustafa (2018) concluded that digital storytelling is one of the essential tools in teaching language listening comprehension. With suitable elements and appropriate storyboard it can help motivate the pupils and improve listening skill. Sümer & Çetin (2018) found that digital stories effectively understand what students with intellectual disabilities are listening to. The studies have determined that the application of digital storytelling has a significant contribution to students' listening comprehension skills (Ramirez & Alonso, 2007; Sandaran & Lim, 2013). Collen (2007) stated that digital stories are effective on preschool class students' listening comprehension characteristics. Cığerci (2015) found that listening practices related to digital storytelling in Turkish lessons improved students' comprehension skills. Also, Türe Köse (2019) concluded that digital storytelling improves students' selective listening, discriminative listening, creative listening, and critical listening skills. In research conducted by Tabieh, Al-Hileh, Abu Afifa & Abuzagha (2020), they concluded that digital storytelling improves active listening and creative thinking skills. When Demirbaş & Şahin (2020) made a systematic analysis of digital storytelling studies, they found the frequency of the suggestion that digital stories are an effective method to improve listening skills. These results can be interpreted as digital storytelling improves students' listening comprehension skills.

Karoğlu (2016) argued that digital storytelling increases students' visualization skills. In



addition, Kotluk & Kocakaya (2015) observed that students pay attention to the attractiveness of the visuals and their harmony with the subject in digital storytelling activities. Bedir Erişti (2017) concluded that digital story applications effectively reveal the visual communication language of young children. A study conducted by Palangngan, Atmowardoyo, & Weda (2016) has proven that digital media helps students learn more about the listening material in the classroom and engages them in learning to listen. Demirer & Baki (2018) determined the positive effect of digital storytelling on visual literacy. Sümer & Çetin (2018) stated that the visuals in digital storytelling increase the memorability of students in understanding what they are listening to. These results in the literature, which favor digital storytelling, support the result of the research.

Another finding of the current study was that there is a significant difference between the pretest and posttest listening comprehension achievement scores of the students in the control group. In addition to this, together with the stories read by the teacher, paper images describing the event flow have been given to the control group students during the application process. When we look at the other studies in this field, it is seen that there are studies that support this finding, mentioning the effect of traditional storytelling on individuals' listening skills and the use of visuals on listening skills. Both traditional storytelling and digital storytelling are essential in teaching and learning. However, studies show that digital stories are more effective in improving listening comprehension than traditional storytelling (Sandaran & Lim, 2013). Sümer & Çetin (2018) concluded that in the study of listening through traditional story reading, the fact that the texts are not supported visually reduces the retention time of the text in individuals with intellectual disabilities. Kodan & Bozdemir (2016) found that visuals improve listening comprehension. Girmen & Bayrak (2013) concluded that visual support positively affects comprehension during listening. These results can be interpreted as paper-based reading-assisted instruction positively affecting students' listening comprehension skills. It can be thought that the reason for the significant difference in the result is due to visual reading. In this respect, it may be possible to see the effect of visual reading on listening comprehension.

The current study findings also displayed that there is no significant difference in the listening comprehension achievement scores of the experimental and control groups before and after the experimental procedure. This result can be interpreted as the groups being affected by environmental factors when individual differences, previous experiences, and personal characteristics are taken into account. In addition, it is thought that there is no significant difference in the experimental group may be due to the negativities of digital storytelling. Özpınar (2017), Uslupehlivan, Kurtoglu Erden, & Cebesoy (2017) concluded that the visuals in digital storytelling cause distraction on students, that digital storytelling is time-consuming, and students can get bored in this process.

### ***Recommendations Regarding Research Results***

- It has been found that there is a significant difference between the listening comprehension achievement scores of the students in the experimental group before and after the experimental procedure. Based on this result, classroom teachers can be trained through a digital story workshop to design digital stories for comprehension activities in their Turkish lessons. The Ministry of National Education can create digital story pools and offer them to teachers in this context.
- It has been determined that there is a significant difference between the pretest and posttest listening comprehension achievement scores of the students in the control group. Based on this result, seminars and in-service training can be organized for

classroom teachers on traditional storytelling. In addition, students can be interested in the subject by going out of the traditional classroom and creating storytelling corners.

## References

- Akyol, H. (2018). Turkish teaching methods suitable for the new program (*Yeni programa uygun Türkçe öğretim yöntemleri (3. baskı)*). Ankara: Pegem Publishing.
- Amalia, R. (2017). Improving Listening And Speaking Skills By Using Animation Videos And Discussion Method. *Pedagogy: Journal of English Language Teaching*, 2(1), 30-36.
- Armstrong, S., & Rentz, T. (2002). Improving listening skills and motivation. Master of arts action research Project. Saint Xavier University and SkyLight Professional Field-Based Master's Program.
- Baleghizadeh, S., & Rahimi, A. H. (2011). The relationship among listening performance, metacognitive strategy use, and motivation from a self-determination theory perspective. *Theory and Practice in Language Studies*, 1(1), 61-67.
- Başdaş, F. & Akar Vural, R. (2017). The Effects Of Drama Based Digital Storytelling Program To 6 Age Childrens' Some Social Skills. *Adnan Menderes University Journal of Social Sciences Institute*, 5(1), 1-30.
- Bedir Erişti, S. D. (2017). Technology-focused visual communication and digital storytelling as a dynamic visual communication path for children. *Journal of Istanbul University Faculty of Communication*, 1, 25-38.
- Bernfeld, L. E. S., Morrison, T. G., Sudweeks, R. R., & Wilcox, B. (2013). Examining the reliability of reading comprehension ratings of fifth-grade students' oral retellings. *Literacy research and instruction*, 52(1), 65-86.
- Bulut, B. (2013). *The effect of active listening education on listening comprehension, reading comprehension and vocabulary*. Master Thesis. Adnan Menderes University, Institute of Social Sciences, Aydın.
- Büyüköztürk, S., Kılıç Çakmak, E., Akgün, O. E., Karadeniz, S. & Demirel, F. (2013). Scientific research methods (*Bilimsel araştırma yöntemleri*). Ankara: Pegem Publishing.
- Büyüköztürk, Ş. (2018). Manual of data analysis for social sciences (Sosyal bilimler için veri analizi el kitabı). Ankara: Pegem Publishing.
- Cahyaningrum, D. (2010). The Effectiveness of Using Video in Teaching Listening of Oral Narrative Text. Semanticscholar. Sebelas Maret University, Surakarta.
- Campbell, T. A. (2012). Digital storytelling in an elementary classroom: Going beyond entertainment. *Procedia-Social and Behavioral Sciences*, 69, 385-393.
- Can, A. (2016). Quantitative data analysis in the scientific research process with SPSS (*SPSS ile bilimsel araştırma sürecinde nicel veri analizi*). Ankara: Pegem Publishing.
- Christensen, L. B., Burke Johnson, R. & Turner, L. A. (2015). Research methods design and analysis (*Araştırma yöntemleri desen ve analiz*). A. Aypay (Trans.). Ankara: Anı Publishing.
- Chung, S. K. (2007). Art Education Technology: Digital Storytelling. *Art Education*, 60, 17-22.
- Ciğerci, F. M. (2015). *The use of digital stories in the development of listening skills in primary school fourth grade Turkish lesson*. Doctoral Thesis. Anadolu University Institute of Educational Sciences, Eskisehir.
- Cohen, J. (1992). Statistical power analysis. *Current Directions in Psychological Science*, 1(3), 98-101.

- Cohen, L., Krustedt, R. L., & May, M. (2009). Fluency, text structure, and retelling: A complex relationship. *Reading Horizons: A Journal of Literacy and Language Arts*, 49(2), 3.
- Collen, L. (2007). The digital and traditional storytimes research project: Using digitized books for preschool group storytimes.
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative* (pp. 146-166). Upper Saddle River, NJ: Prentice Hall.
- Creswell, J. W. (2016). Research design qualitative, quantitative and mixed method approaches (*Araştırma deseni nitel, nicel ve karma yöntem yaklaşımları*). S. B. Demir (Trans.). Ankara: Eğiten Kitap Publishing.
- Dehham, S. H., Hasan, A. A. N., & Raheem, M. D. (2018). The impact of reciprocal listening activities on fifth preparatory students' listening comprehension. *Academic Scientific Journal*, (38), 1339–1351.
- Demirbas, I., & Sahin, A. (2020). A Systemic Analysis of Research on Digital Storytelling in Turkey. *International Journal of Progressive Education*, 16(4), 45-65.
- Demirer, V. & Baki, Y. (2018). Opinions and Perceptions of Prospective Turkish Teachers Related to the Digital Storytelling Process. *Journal of Theoretical Educational Science*, 11(4), 718-747.
- Dinçer, B. & Yılmaz, S. (2019). An experimental study on the effect of digital storytelling on teaching openness concept in mathematics lesson. *International Journal of New Trends in Arts, Sports & Science Education*, 8(2), 49-57.
- Doyle, A. (2019). Important active listening skills and techniques. The Balance Careers. <https://www.thebalancecareers.com/active-listening-skills-with-examples-2059684>
- Dunst, C. J., Simkus, A., & Hamby, D. W. (2012). Children's story retelling as a literacy and language enhancement strategy. *Center for Early Literacy Learning*, 5(2), 1-14.
- Dupain, M., & Maguire, L. (2005). Digital storybook projects 101: How to create and implement digital storytelling into your curriculum. In 21st Annual Conference on Distance Teaching and Learning, 6, 1-4.
- Ebaugh, K. (2013). The Effect of Oral and Written Retell Strategies for Informational Text on Reading Comprehension Performance of Fifth Grade Students.
- Foelske, M. (2014). Digital storytelling: the impact on student engagement, motivation and academic learning. *Graduate Research Papers*. 167. <https://scholarworks.uni.edu/grp/167>
- Fraenkel, J. R., Wallen, N. E ve Hyun, H. H. (2012). *How to design and evaluate research in education*. New York: McGraw-Hill.
- Gambrell, L. B., Koskinen, P. S., & Kapinus, B. A. (1991). Retelling and the reading comprehension of proficient and less-proficient readers. *The Journal of Educational Research*, 84(6), 356-362.
- Girmen, P. & Bayrak, E. (2013). The mental skill levels used by primary school 5th grade students in the process of listening comprehension. *Journal of Abant Social Sciences*.
- Goh, C. & Taib, Y. (2006). Metacognitive instruction in listening for young learners, *ELT Journal*, 60 (3), pp. 222–232, <https://doi.org/10.1093/elt/ccl002>
- Gregori-Signes, C. (2008). Integrating the old and the new: Digital storytelling in the EFL language classroom. *GRETA Journal*, 16(1), 43–49.
- Hamdy, M. F. (2017). The effect of using digital storytelling on students' reading comprehension and listening comprehension. *Journal of English and Arabic Language Teaching*, 8(2), 112-123.
- Hampleman, R. (1958). Comparison of Listening and Reading Comprehension Ability of 4th and 6th Grade Pupils. *Elementary English*. XXXI,49.

- Hardiah, M., (2019). Improving Students Listening Skill by Using Audio Visual Media. *Al-Lughah Jurnal Bahasa*, 39-49
- Hutchins, S., McDermott, P., Carolan, T., Gronowski, M., Fisher, A., & DeMay, M. (2013). Interpersonal Skills Summary Report. In United States Army Research Institute for the Behavioral and Social Sciences. <https://doi.org/10.1037/e500952014-001>
- İnceelli, A. (2005). Components of digital storytelling. *The Turkish Online Journal of Educational Technology*, 4(3), 132-142.
- John, S. F., Lui, M., & Tannock, R. (2003). Children's story retelling and comprehension using a new narrative resource. *Canadian Journal of School Psychology*, 18(1-2), 91-113.
- Johnson, K. O. (1951). "The Effect of Classroom Training upon Listening Comprehension", *The Journal of Communication*. I, 58.
- Kasami, N. (2018). Advantages and disadvantages of digital storytelling assignments in EFL education in terms of learning motivation. *Future-proof CALL: language learning as exploration and encounters—short papers from EUROCALL 2018*, 130.
- Kawamichi, H., Yoshihara, K., Sasaki, A. T., Sugawara, S. K., Tanabe, H. C., Shinohara, R., Sugisawa, Y., Tokutake, K., Mochizuki, Y., Anme, T., & Sadato, N. (2015). Perceiving active listening activates the reward system and improves the impression of relevant experiences. *Social Neuroscience*, 10(1), 16–26. <https://doi.org/10.1080/17470919.2014.954732>
- Kim, Y. S. G. (2016). Direct and mediated effects of language and cognitive skills on comprehension of oral narrative texts (listening comprehension) for children. *Journal of experimental child psychology*, 141, 101-120.
- Kim, Y. S., & Phillips, B. (2014). Cognitive correlates of listening comprehension. *Reading Research Quarterly*, 49(3), 269-281.
- Kocaman Karoğlu, A. (2015). The changing nature of storytelling with technology in the teaching process: Digital storytelling. *Educational Technology Theory and Practice*, 5(2), 87-106.
- Kodan, H. & Bozdemir, H. (2016). Determining the level of listening comprehension of primary school 4th grade students. *Mehmet Akif Ersoy University Journal of Education Faculty*, 1(37), 15-27.
- Kotluk, N. & Kocakaya, S. (2015). Digital storytelling for developing 21st century skills: from high school students' point of view. *Journal of Research in Education and Teaching*, 4(2), 354-363.
- Kurudayıoğlu, M. & Çetin, Ö. (2015). Basic skills and Turkish teaching. *Journal of Mother Tongue Education*, 3(3), 1-19. DOI: 10.16916/aded.65619
- Lau, K. L. (2017). Strategy use, listening problems, and motivation of high- and low-proficiency Chinese listeners. *The Journal of Educational Research*, 110(5), 503–514. <https://doi.org/10.1080/00220671.2015.1134421>
- Lisenbee, P. S. ve Ford, C. M. (2018). Engaging students in traditional and digital storytelling to make connections between pedagogy and children's experiences. *Early Childhood Education Journal*, 46, 129–139.
- Liu, M. C., Huang, Y. M., & Xu, Y. H. (2018). Effects of individual versus group work on learner autonomy and emotion in digital storytelling. *Educational technology research and development*, 66(4), 1009-1028.
- Loniza, Amor F. and Saad, Aslina and Mustafa, Mazlina Che (2018). The Effectiveness of Digital Storytelling on Language Listening Comprehension of Kindergarten Pupils. *The International Journal of Multimedia & Its Applications (IJMA)*, 10(6), Available at SSRN: <https://ssrn.com/abstract=3933717>

- Ministry of Education (2010). National preliminary report of the PISA 2009 project. Ministry of Education Research and Development Department (PISA 2009 projesi ulusal ön raporu. MEB Eğitimi Araştırma ve Geliştirme Dairesi Başkanlığı).
- Ministry of Education (2013). PISA 2012 national preliminary report. MEB General Directorate of Innovation and Educational Technologies (PISA 2012 ulusal ön raporu. MEB Yenilik ve Eğitim Teknolojileri Genel Müdürlüğü).
- Ministry of Education (2016). PISA 2015 national report. Ankara: Minister of National Education (PISA 2015 ulusal raporu. Ankara: Millî Eğitim Bakanlığı).
- Meinardi, M. (2009). Speed bumps for authentic listening material. *ReCALL*, 21. 302 - 318. 10.1017/S0958344009990048.
- Monette, D.R., Sullivan, T.J. ve De Jong, C.R. (1990). *Applied social research*. New York: Harcourt Broce Jovanovich, Inc.
- Morrow, L. M. (1985). Retelling stories: A strategy for improving young children's comprehension, concept of story structure, and oral language complexity. *The Elementary School Journal*, 85(5), 647-661.
- Özpinar, İ. (2017). Preservice Mathematics Teachers' Opinions on the Use of Digital Stories and Instructional Environments. *Bartın University Journal of Faculty of Education*, 6(3), 1189 – 1210.
- Palanganan, S.T., Atmowardoyo, H. and Weda, S. (2015). English Listening Lesson Library Online, as a Supporting Media in Learning Listening. *ELT Worldwide*, 3 (1), (Online) (<http://ojs.unm.ac.id/index.php/ELT/article/viewFile/1880/869>) Retrieved on July 25th 2016.
- Pallant, J. (2016). *SPSS kullanma kılavuzu SPSS ile adım adım veri analizi*. S. Balcı ve B. Ahi (Çev.). Ankara: Anı Yayıncılık.
- Price, D. M., Strodtman, L., Brough, E., Lonn, S. ve Luo, A. (2015). Digital storytelling: An innovative technological approach to nursing education. *Nurse educator*, 40(2), 66-70.
- Ramirez, D. & Alonso, I. 2007. Using Digital Stories to Improve Listening Comprehension with Spanish Young Learners of English. *Language Learning & Technology*, 11(1): 87–101.
- Reed, D. K., & Vaughn, S. (2012). Retell as an indicator of reading comprehension. *Scientific studies of reading*, 16(3), 187-217.
- Rosdiana (2018). The Use Of Audio Visual As Media In Enhancing Students' Listening Skill. *Getsempena English Education Journal*, 5(1), 146-149.
- Rule, L. (2005). Digital Storytelling Workshop Agenda. Retrieved January 27, 2017, from <http://homepage.mac.com/eportfolios/workshop/AgendaDigitalStory.html>
- Sandaran, S. C. & Lim, C. K. (2013). The use of digital stories for listening comprehension among primary chinese medium school pupils: Some preliminary findings. *JurnalTeknologi (Social Sciences)*, 65(2), 125- 131.
- Silva, M. L., Sanchez Abchi, V. S., & Borzone, A. M. (2010). Subordinated clauses usage and assessment of syntactic maturity: A comparison of oral and written retellings in beginning writers.
- Smeda, N., Dakich, E. ve Sharda, N. (2010). Developing a framework for advancing elearning through digital storytelling. In IADIS International Conference elearning (pp. 169-176).
- Stewart, K. D., & Ivala, E. (2017). Silence, voice, and "other languages": Digital storytelling as a site for resistance and restoration in a South African higher education classroom. *British Journal of Educational Technology*, 48(5), 1164-1175.



- Sümer, S. & Eldeniz Çetin, M. (2018). Comparison of the effectiveness and efficiency of traditional story reading and digital story use on the level of listening comprehension of individuals with intellectual disabilities. *Education Sciences*, 13(1), 44-55.
- Şahin, A. (2020). Basic concepts and definitions of mother tongue. *Inclusive Language Teaching* (Ed. E. Ünal). ss. 263-294. Ankara: Vize Publishing.
- Şahin, A. (2020). Speech training. *Turkish teaching*. (Eds. H. Akyol & A. Şahin), 2th edition. ss. 103-128. Ankara: Pegem Publishing.
- Şimşek, B., & Akyar, Ö. Y. (2020). In Search of Active Life Through Digital Storytelling: Inclusion in Theory and Practice for the Physical Education Teachers. In *World Conference on Information Systems and Technologies* (pp. 377-386). Springer, Cham.
- Tabachnick, B. ve Fidell, L. (2013). *Using Multivariate Statistics*. (6th International edition) (cover) edn. Boston, [Mass.].
- Tabieh, A. A., Al-Hileh, M. M., Afifa, H. M. J. A., & Abuzagha, H. Y. (2021). The effect of using digital storytelling on developing active listening and creative thinking skills. *European Journal of Educational Research*, 10(1), 13-21. <https://doi.org/10.12973/eu-jer.10.1.13>
- Thalheimer, W., & Cook, S. (2003). How to calculate effect sizes from published research: A simplified methodology. <https://doi.org/10.1113/jphysiol.2004.078915>
- Thistle, J. J., & McNaughtona, D. (2015). Teaching active listening skills to pre-service speech-language pathologists: A first step in supporting collaboration with parents of young children who require AAC. *Language, Speech, and Hearing Services in Schools*, 46(1), 44–55. [https://doi.org/10.1044/2014\\_LSHSS-14-0001](https://doi.org/10.1044/2014_LSHSS-14-0001)
- Tour, E., Gindidis, M. ve Newton, A. (2019). Learning digital literacies through experiential digital storytelling in an EAL context: an exploratory study. *Innovation in Language Learning and Teaching*, 1-16.
- Tsou, W., Wang, W. & Tzeng, Y. (2006). Applying a multimedia storytelling website in foreign language learning. *Computers & Education*, 47(1), 17-28. Retrieved from <https://www.learntechlib.org/p/67102/>. on the 22.04.2019.
- Türe Köse, H. B. (2019). *The effect of digital storytelling on listening skills in preschool children*. Master Thesis. Kütahya Dumlupınar University Institute of Educational Sciences, Kütahya.
- Uslupehlivan, E., Kurtoğlu Erden, M. & Cebesoy, Ü. B. (2017). Digital Story Creation Experiences of Pre-service Teachers. *Uşak University Journal of Social Sciences*, 10(Special Issue 2), 1-22.
- Vandergrift, Larry. (2005). Relationships among Motivation Orientations, Metacognitive Awareness and Proficiency in L2 Listening. *Applied Linguistics*. 26. 10.1093/applin/amh039.
- Weger, H.; Castle, G. R. ve Emmett, M. C. (2010). Active Listening in Peer Interviews: The Influence of Message Paraphrasing on Perceptions of Listening Skill, *International Journal of Listening*, 24(1), 34-49.
- Wise, J. C., Sevcik, R. A., Morris, R. D., Lovett, M. W., & Wolf, M. (2007). The relationship among receptive and expressive vocabulary, listening comprehension, pre-reading skills, word identification skills, and reading comprehension by children with reading disabilities. *Journal of Speech, Language, and Hearing Research*, 50(4). [https://doi.org/10.1044/1092-4388\(2007/076\)](https://doi.org/10.1044/1092-4388(2007/076))
- Wolff, F. I.; Marsnik, N. C.; Tacey, W. S. ve Nichols, R. G. (1983). *Perceptive Listening*. New York: CBS College Publishing. [www.herts.ac.uk/envstrat/HILP/guide/Appendices/App2Listen.doc](http://www.herts.ac.uk/envstrat/HILP/guide/Appendices/App2Listen.doc) (Erişim Tarihi: 17.06.2005).

- Xu, Y., Park, H. ve Baek, Y. (2011). A new approach toward digital storytelling: an activity focused on writing self-efficacy in a virtual learning environment. *Educational Technology ve Society, 14(4)*, 181-191.
- Yüksel, P., Robin, B. ve McNeil, S. (2011). Educational Uses of Digital Storytelling around the World, Proceedings of Society for Information Technology and Teacher Education International Conference, 07 Mar, Chesapeake, VA: AACE, 1, 1264- 1271.
- Zimiles, H., & Kuhns, M. (1976). A Developmental Study of the Retention of Narrative Material. Final Report.