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8th Grade Students' Success in Visual Reading and Logical Reasoning Test Items

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Abstract

In the 21st century, the primary goals of education systems are to educate individuals who can understand, perceive and interpret electronic graphics and symbols on the screens and who have advanced logical reasoning skills. Turkish lessons and teachers play essential roles in the acquisition of visual and digital literacy skills, which have become widespread in modern educational approaches. This study aimed to explore 8th-grade students' performances in visual reading and logical reasoning tests by particular variables such as the monthly number of books they read, the daily number of Turkish tests, social media use, Turkish lesson performances, and the socioeconomic status. This non-experimental quantitative study used a correlational design to determine the relationships between variables. The sample consisted of 200 8th grade students from three public secondary schools in Palandöken, Erzurum. The study data were analyzed using descriptive statistics, the Mann-Whitney U test, and Spearman Correlation Analysis. The findings indicated no significant difference between the students' scores from the achievement test and the monthly number of books, and the family's socioeconomic status. However, there was a significant relationship between achievement test scores and Turkish lesson performance, the daily number of Turkish test items, and social media use.

Keywords: Visual reading, logical reasoning skills, 8th-grade students, Turkish lesson, literacy types

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Sekizinci Sınıf Öğrencilerinin Görsel Okuma ve Mantık Muhakeme Testi Sorularındaki Başarıları

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Öz

21. yüzyıl eğitim sistemlerinde, okuduğunu anlayabilen bireylerle birlikte ekranlardaki elektronik şekilleri, işaretleri algılayabilen, yorumlayabilen, mantık muhakeme becerisi gelişmiş bireyler yetiştirmek önemli hâle gelmiştir. Modern eğitim anlayışında giderek yaygınlaşan ve yerleşik hâle gelen görsel okuryazarlık veya dijital okuryazarlık becerisinin kazandırılmasında Türkçe dersinin ve Türkçe öğretmenlerinin katkısı önemlidir. Bu çalışmanın amacı, sekizinci sınıf öğrencilerinin görsel okuma ve mantık muhakeme sorularına yönelik başarılarını çeşitli değişkenler açısından incelemektir. Bu doğrultuda, öğrencilerin görsel okuma ve mantık muhakeme sorularına yönelik başarıları ile okunan kitap sayısı, günlük çözülen soru sayısı, sosyal medya kullanımı, Türkçe dersi başarısı ve ailenin sosyoekonomik durumu arasında bir ilişki olup olmadığı incelenmiştir. Nicel araştırma yaklaşımıyla hazırlanan ve deneysel olmayan bu çalışmada, değişkenler arasındaki ilişki tespit edilmek istendiği için korelasyonel desen kullanılmıştır. Çalışmaya, Erzurum ili Palandöken ilçesinde bulunan üç devlet ortaokulunda öğrenim gören sekizinci sınıf düzeyindeki 200 öğrenci katılmıştır. Katılımcılardan elde edilen veriler betimsel istatistik, Mann-Whitney U testi ve Spearman Korelasyon Analizi ile çözümlenmiştir. Katılım grubu öğrencilerinin uygulanan başarı testinden aldıkları puanları ile ayda okunan kitap sayısı ve ailenin sosyoekonomik durumu arasında anlamlı ilişki bulunmamıştır. Bununla birlikte başarı testi puanları ile Türkçe dersi başarısı, günlük çözülen soru sayısı ve sosyal medya kullanımı arasında anlamlı ilişki tespit edilmiştir.

Anahtar Sözcükler: Görsel okuma, mantık muhakeme becerisi, sekizinci sınıf öğrencileri, Türkçe dersi, okuryazarlık türleri

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Introduction

Scientific and technological innovations quickly spread in our lives in today's world. In parallel with the progress in various fields, novel methods, strategies, and innovations can be observed in education. There is a new and different group of learners today; therefore, one of the initial goals of nations is to raise individuals proficient in communication technologies and metacognitive learning strategies to analytically read, search, question, think and solve problems. In this sense, traditional teaching methods and techniques do not produce satisfactory educational outcomes.

In the digital age surrounded by visual images, the meaning and extent of the term *literacy* have changed due to the new computer technologies and mass media, which have become widespread in daily life. Traditional text-based literacy does not satisfy the requirements of the age anymore. Thus, the target goal is to reach a high level of visual literacy, characterized by perceiving and making sense of electronic graphics, images, and symbols on the screen (Akpınar, 2009; Akyol, 2011). It should also be emphasized that visual messages and images are used as tables, graphics, emojis, smart signs, boards, and pictures in any communication tools and public places (Arı & Soylu, 2020).

Historically considered, visual information dates back to much earlier times than the written information (Tanrıverdi & Apak, 2013). Humankind attempted to express their views of the universe and nature, their fears, desires, struggles, and relationships with other beings through petroglyphs they created centuries ago (Alyılmaz, 2005). Similarly, today, visual reading refers to understand and interpret the world and social events through images and visuals such as pictures, graphics, symbols, graphics, signs, and colors (Güneş, 2013).

People think visually while figuring out a problem or situation because visual information is processed 60.000 times faster than verbal information in mind. Thanks to visual thinking skills, information can be used more quickly. Logical reasoning and assessments are also easier to understand through visuals (e.g., images, graphics, tables). Thus, visuals can also be called robust and fast carriers of information (Burmark, 2002; Köksal, Temur & Akçam, 2006).

The theoretical studies of grasp, interpretation, and reconstruction of visuals are categorized as interdisciplinary under the heading of "visual literacy" (Öncü Yıldız, 2012). The term *visual literacy* was first used by John Debes, co-founder of the International Visual Literacy Association. Debes (1969) describes visual literacy as a skill that can be improved by using eyes and other sensory organs. Visual literacy skills play a vital role in learning. A person with visual literacy skills can perceive and interpret visual movements, objects, symbols, and other signs in the universe and appreciate and enjoy many visual masterpieces. According to Stokes (2005), visual reading is the set of skills that help people perceive and analyze everything in their environment. For Braden and Hortin (1982), visual literacy is the ability to grasp and use symbols, including the stages of thinking, perceiving, and analyzing various images. Weis (2004) defines visual literacy as the capacity to interpret, use, and create visual tools and suggests using them to improve thinking, decision making, communication, and learning processes. It is a well-known fact that technological images and visuals are embedded in children and teenagers' lives today, which affects the mental perceptions and arousal levels of the new generation (Bleed, 2005). At this point, visual reading is of critical significance as it can attribute meaning to visual messages and produce clear visual messages (Tüzel, 2010). Güleryüz (2004) describes the concept of visual reading as the ability to evaluate a situation and establish a cause-effect relationship. According to Ateş, Sur, and Çelik (2020), visual reading refers to understand and make inferences from any kind of images and sharing those inferences with others. Ünalan (2006) emphasizes that visual literacy is also characterized by grasping and assessing several concepts such as body language and social events as well as visual symbols and images.

Thanks to the technological advancements and innovations, visuals and images can be seen in printing and publishing products such as newspapers, magazines, storybooks, and specifically textbooks. Today, textbooks without images, illustrations, or visuals are considered dull and poor for permanent learning (Ateş et al., 2020). All those recent developments have led educators to seek new methods and practices. Although traditional educational approaches are only concerned with recognizing images, the recent approaches focus on perceptual outcomes and competency gains. However, there are global and local barriers to visual literacy. According to Bleed (2005),

generational differences, technical and political problems, teacher attitudes, and teacher training approaches can be considered among the global challenges. In Turkey, it is still believed that the use of images and visuals would undermine the effects of text-based literacy (Akpınar, 2009).

Students' visual reading skills are measured in international studies like PISA and PIRLS using two different text types: continuous vs. non-continuous. The continuous type includes narrative, expository, and descriptive texts. Non-continuous texts are graphics, tables, maps, and formulas (Güneş, 2013), and they are used to understand, describe, concretize and compare the continuous texts, and apply reflective reading methods on them (Arı & Soylu, 2020).

Visual literacy is increasingly widespread in contemporary education approaches of today. It was integrated into the Turkish education system in 2005 as a new primary education skill (1-5th grades). In the Turkish Lesson Curriculum of 2005, visual reading and visual presentation were discussed as different learning areas that encouraged students to read, understand, and interpret visuals such as images, figures, symbols, pictures, graphics, tables, body language, and natural and social events. It also promoted students' comprehension and logical reasoning skills, categorization competencies, and visualization and concretization of abstract concepts. In the Turkish Lesson Curriculum of 2015 for primary and secondary schools, visual reading was not labeled as a separate area but acknowledged as a part of reading skills (i.e., "*Students use visuals to make sense of what they read*"). Similarly, the visual reading skill was not considered a separate field in the Turkish Lesson Curriculum of 2019. However, it is strongly suggested not to ignore the significance of visual literacy in education programs and curriculums today when students are surrounded by technological and communication tools and visual materials. In their review of the Turkish Lesson Curriculum of 2015, İşeri and Baştuğ (2016) stated that the exclusion of the visual reading and visual presentation skills from the curriculum was an unfavorable outcome for learning. However, about 40 percent of the high school placements test items in recent years are closely related to visual reading and logical reasoning skills. Placement tests, including items that are not available in the curriculum, pose serious problems.

The use of images and visuals facilitates grasping abstract concepts, solving problems that require logical reasoning skills, and visualizing images. Therefore, students should be allowed to examine and read various images to efficiently express themselves, improve comprehension and questioning skills, and learn about their culture and environment. The visual reading process structures and organizes the brain. Students acquire new information and learn to organize and classify the information and concepts and establish relationships (Güneş, 2013). It is also observed that the learning materials enriched with images and visuals improve students' attention span and provide a better understanding of the target content (Bozkurt & Ulucan, 2014). According to Beydoğan (2010), visual thinking also stimulates creativity. Following the visual thinking skills and constructivist approach, students can perform sophisticated mental activities such as analysis and synthesis, interpretation and deduction, and critical and multi-dimensional thinking (Maden & Altunbay, 2016; Sarıkaya, 2017).

Visual reading skills acquisition considerably contributes to Turkish lessons and Turkish teachers, as visual reading is one of the necessary learning skills, such as listening, speaking, reading, writing, and thinking (Güneş, 2013). In this sense, it is suggested to use images and visuals in addition to texts in Turkish lessons; students should be taught how to prepare graphics and tables, and the learning environment should be enriched with activities and practices to improve visual reading skills (Şimşek & Bakır, 2019; Taşgın, İleritürk & Köse, 2018). Hence, students develop logical reasoning skills and keep up with this age's requirements, which refers to the fulfillment of life-oriented education goals (Arı & Soylu, 2020).

Several studies in the literature addressed teachers' knowledge, perceptions, and attitudes towards visual reading, their proficiency in visual literacy, and the challenges they encounter in visual literacy practices (Akpınar, 2009; Ateş et al., 2020; Balun, 2008; Bozkurt, 2011; Kuru, 2008; Özyurt Aydemir, 2016). The findings revealed that Turkish lesson teachers had positive attitudes towards visual reading but did not feel competent in this field and did not receive any visual reading training, so they preferred a text-based instruction approach without visual reading practices. A few studies also investigated the effects of visual literacy activities and practices on visual reading skill

acquisition and indicated positive outcomes on students' visual reading skills (Balun, 2008; Çelik, 2017; Doğan, 2015; Erem Özdemir, 2015; Kuru, 2008; Örs & Baş, 2018). In their study, Stokes (2005) found that using visuals positively affected learning. Similarly, White (1987) emphasized that images and visuals contribute to students' intellectual development. Some studies demonstrated the positive effects of visual reading skills on academic performance in Turkish lessons (Arı & Soylu, 2020; Arıkan, 2009; Çam, 2006; Dönmez, 2013). In their studies, Baş and Kardaş (2014), Beydoğan (2010), Hibbing and Rankin Erickson (2003) stressed the favorable effects of visual reading skills on comprehension. Some researchers underlined insufficient number and quality of visual literacy activities in the textbooks (Aydemir, 2016; Çam Aktaş, 2010; Çarkıt, 2019; Deniz, Tarakçı & Karagöl, 2019; Göçer & Tabak, 2012). Avcı and Çelik (2018) conducted an experimental study on the extent of students' visual literacy skills. Similarly, Lieury (1995) carried out a laboratory study with a group of adults. He showed 2500 images to them and asked how many they remembered on different days and times. It was concluded that the participants remembered 90% of the images. However, Bleed (2005) found that the only use of visuals reduced reading rates and vocabulary size. For instance, the vocabulary of a 14-year-old child in the USA was 25,000 in 1950, but it dropped to 10,000 words in 1999. In their studies, Arı and Soylu (2020), Çam (2006), Çelik (2017), Erem Özdemir (2015) and Semizoğlu (2013) proved that students' visual reading skills varied by certain variables.

It is crucial to determine students' patterns of perception, interpretation, and inference in the school environment and daily lives to improve their visual reading skills and identify their weaknesses. The study's main goal was to investigate 8th-grade students' visual reading and logical reasoning performances by certain variables such as gender, the daily number of Turkish test items, Turkish lesson performance, socioeconomic status, daily internet and social media use, and the monthly number of books. No study in the literature addressed the relationships between high school placement tests (e.g., LGS), assessment tests and written exams, and visual reading and logical reasoning skills of 8th-grade students. However, visual literacy skills are included in the assessment and examination system today, so a description of 8th-grade students' success in such test items has become even more critical. The study aims to examine the 8th-grade students' performances in visual reading and logical reasoning items by different variables and contribute to the literature to increase student achievement levels, describe the possible problems, and guide future practitioners and researchers. Since education programs and curriculums are always open to improvement, describing students' performances in visual reading and logical reasoning also contributes to program development studies and future research. In addition to the primary research problem, "What are 8th grade students' levels in visual reading and logical reasoning test items?", the researchers also sought answers to the following sub-problems:

1. Do 8th-grade students' performances in visual reading and logical reasoning performance differ by gender?

2. Do 8th-grade students' performances in visual reading and logical reasoning performance differ by Turkish lesson academic performance?

3. Do 8th-grade students' performances in visual reading and logical reasoning performance differ by the daily number of Turkish test items?

4. Do 8th-grade students' performances in visual reading and logical reasoning performance differ by socioeconomic status?

5. Do 8th-grade students' performances in visual reading and logical reasoning performance differ by daily internet and social media use?

6. Do 8th-grade students' performances in visual reading and logical reasoning performance differ by the monthly number of books?

Method

Research Model

It is a quantitative and non-experimental study using a correlational design to determine whether there is a relationship between two or more variables, measure the degree of relationship, and make inferences. In those studies, a researcher does not manipulate the variables or speculate on a cause-effect relationship but checks the interrelations between variables (Creswell, 2012/2019; Fraenkel, Wallen, & Hyun, 2012; McMillan & Schumacher, 2010). The researcher used an "explanatory design" to explain and interpret interrelations between two or more variables by collecting data at one time (Creswell, 2012/2019). The research explained and interpreted the interrelations between the variables.

Data Collection Tools

The data collection tools are presented below.

Personal Information Form

It consists of 6 questions about students' gender, the monthly income, the Turkish lesson performance, the daily number of Turkish test items they solved, the monthly number of books they read, and the time they spent on the internet and social media daily.

Achievement Test

Before the researchers developed an achievement test with 20 multiple-choice questions to measure students' visual reading and logical reasoning performances, they reviewed the 8th-grade attainments in the Turkish Lesson Curriculum of 2020-2021. Then, they prepared the achievement test items considering the related eight attainments in the curriculum (T.8.3.3., T.8.3.14., T.8.3.23., T.8.3.25., T.8.3.27., T.8.3.29., T.8.3.32., T.8.3.35.) and themes in the 8th Grade Turkish Textbooks (Virtues, The War of Independence and Atatürk, Science and Technology, Individual and Society, Time and Space, Our National Culture, Nature and the Universe, Citizenship). The visual reading and logical reasoning items were prepared with images such as posters, photographs/pictures, graphics, maps/sketches, signs, cartoons, tables, and emojis suitable for 8th-grade students and were supported by discontinuous texts. The test items aimed to evaluate six sophisticated intellectual skills (i.e., recognizing information and relationships, making comparisons and classifications, and the steps of comprehension, assessment, and interpretation). The first version of the 50-item test was examined by one assessment and evaluation expert, four Turkish lesson teachers with ten years seniority, and one visual art teacher to check the validity. Those experts were asked to evaluate the items considering the achievement and theme tables and determine the best 20 items that met the criteria. There were 20 items in the final version, and the number of correct options was equal. A pilot study was carried out with 53 students from the 15th of July Martyrs Imam Hatip Secondary School in Erzurum to check the instrument's reliability. The achievement test was administered online in one class hour. The pilot study data were analyzed using a statistical package program, and to the KR 20 reliability analysis results, it was 0.802, which proved the test's reliability as it was above 0.70 (Tezbaşaran, 1996). The item analysis was also completed, and item discrimination and difficulty levels were calculated for validity. Item discrimination was followed considering specific points: the items with a zero or negative discrimination index cannot be included in the test. If it is 0.40 or higher, the item is perfect. If it is between 0.30-0.40, it is good and can be used. If it is between 0.20-0.30, it can still be used or changed in case of necessity. If it is less than 0.20, the item cannot be used and should be revised (Turgut, 1992). The standard item difficulty index is set at 0.50 for achievement tests, which indicates a medium-level difficulty. Although item difficulty indices in a test are different, the standard mean should be close to 0.50. (Çepni et al., 2008). Table 1 shows the values of achievement test items.

Table 1

Item Analysis Results

Items	Difficulty Index	Discrimination Index
I 1	0.25	0.43
I 2	0.33	0.48
I 3	0.38	0.54
I 4	0.27	0.41
I 5	0.41	0.48
I 6	0.38	0.5
I 7	0.32	0.59
I 8	0.26	0.7
I 9	0.4	0.54
I 10	0.31	0.63
I 11	0.39	0.44
I 12	0.31	0.69
I 13	0.37	0.56
I 14	0.35	0.56
I 15	0.41	0.5
I 16	0.37	0.56
I 17	0.18	0.5
I 18	0.46	0.30
I 19	0.29	0.74
I 20	0.4	0.52
Mean	0.34	0.54

The item analysis results showed that the mean difficulty index was 0.34, and the mean discrimination index was 0.54. Since all items' discrimination index was 0.30 and above, no item was removed from the test. As a result of expert opinions and item analysis, it was concluded that the validity of the achievement test was high.

Research and Sample

The research universe consisted of 8th-grade students studying at public secondary schools. The sample comprised 200 8th grade students studying in three public secondary schools in the Palandöken district of Erzurum. In order for the families to have similar economic levels, students studying in public schools have been included in the study. Of the volunteer participant students selected using the convenience sampling method, 112 (55.7%) were girls, and 88 (44.3%) were boys. The study was carried out with the permission of the Erzurum Governorship and the Provincial Directorate of National Education.

Data Analysis

The data analysis was conducted using a statistical package program and descriptive analysis methods. Since the data did not have a normal distribution, the data were analyzed using the Mann-Whitney U test and the Spearman Correlation Analysis.

Results

The study results are explained in the section below.

Researchers administered Kolmogorov-Smirnov and Shapiro-Wilk tests to determine whether the data had a parametric or nonparametric distribution.

Table 2

Normality Test Results

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	**n**	**p**	**Statistics**	**n**	**p**
Achievement test score	.127	200	.000	.951	200	.000

(p<0.05)

As seen in Table 2, the data did not show a normal distribution (p<0.05). The coefficient of skewness is -0.610 and the coefficient of kurtosis is -0.346. According to the q-q plot and histogram graphics analysis, the graph was skewed to the left and did not show normality. Since all items' discrimination index was 0.30 and above, no item was removed from the test. The Mann-Whitney U test was applied to determine differences by gender as the data did not have a normal distribution, and Spearman Correlation Analysis was used to describe the relationships between variables.

Table 3

Mann-Whitney U Test Results by Gender

	Gender	**N**	**Mean Rank**	**Total Rank**	**u**	**z**	**p**
Achievement test score	Girl	112	111.92	13535.50	3648.500	-3.159	.002*
	Boy	88	85.96	7564.50			

(p<0.05)

Table 4

Correlation Analysis Results regarding the Students' Test Scores and Turkish Lesson Performance

	Achievement score	**Turkish lesson performance**
Achievement test score	1	0.440**
Turkish lesson performance	0.440**	1

** p < 0.01

There was a significant relationship between the students' visual reading achievement test scores and Turkish lesson grades (p <0.05). As stated in the literature, the relationship between variables is "weak" if it is between +0.35 and -0.35, it is "medium" if it is between +0.35 and +0.65 or between -0.35 and -0.65, and it is "strong" if it is between +0.65 and 1.00 or between -1.00 and -0.65 (McMillan & Schumacher, 2010). In this sense, there was a moderately positive correlation between the two variables (r = 0.440).

Table 5

Correlation Analysis Results regarding the Students' Test Scores and the Daily Number of Turkish Test Items They Solved

	Achievement test score	**Daily number of Turkish test items**
Achievement test score	1	0.312^{**}
Daily number of Turkish test items	0.312^{**}	1

** p < 0.01

According to Table 5, there was a significant relationship between the students' visual reading achievement test scores and the daily number of Turkish test items (p <0.05). A weak but positive correlation was found between the two variables (r = 0.312).

Table 6

Correlation Analysis Results regarding the Students' Test Scores and the Socioeconomic Status

	Achievement score	**The socioeconomic status of the family**
Achievement test score	1	0.129
The socioeconomic status	0.129	1

p<0.05

As shown in Table 6, there was no statistically significant relationship between students' visual reading achievement test scores and their socioeconomic status (p <0.05).

Table 7

Correlation Analysis Results regarding the Students' Test Scores and Daily Social Media Use

	Achievement score	**Daily social media use**
Achievement test score	1	-0.140*
Daily social media use	-0.140*	1

* p<0.05

There was a significant relationship between students' visual reading achievement test scores and social media use (p <0.05). A weakly negative relationship was measured between the two variables (r = -0.140).

Table 8

Correlation Analysis Results regarding the Students' Test Scores and the Monthly Number of Books They Read

	Achievement score	**The Monthly Number of books**
Achievement test score	1	-0.36
The monthly number of books	-0.36	1

p<0.05

According to Table 8, there was no statistically significant relationship between the students' visual reading achievement test scores and the monthly number of books they read (p <0.05).

Discussion, Conclusion and Recommendations

This study investigated the relationships between 8th-grade students' success in visual reading and logical reasoning test scores and particular variables. The results were discussed with similar research findings in the literature.

The achievement test was applied to 200 8th grade students, and the average of correct answers was approximately 66%, which indicates a medium level of success. In their study with 203 students, Arı and Soylu (2020) found that the average of correct answers in the visual reading test was approximately 77%, and the students had fine visual reading skills. Similarly, Sarıkaya (2018) emphasized that students had good and promising visual reading skills.

There was a statistically significant difference in girls' visual reading achievement test scores. In their study with 1053 5th grade students from private and public schools, Çam (2006) also found similar positive differences in visual reading test scores in favor of female students. Hekimoğlu (2016) also determined a statistically significant difference in students' visual literacy achievements by gender. Female students had a higher visual literacy level than male students. In their study with 414 fifth-grade students, Semizoğlu (2013) observed a significant difference in visual reading tests in favor of female students. However, in their study of Karaçam (2020) and Sarıkaya (2008) measured no significant difference in students' visual literacy level by gender.

Similarly, in their studies with 5th-grade students, Arı and Soylu (2020) found no relationship between visual literacy and gender. Çelik (2017) carried out a similar study with 7th-grade students and found no statistically significant difference in visual reading performance by gender. Since those

studies in the literature were carried out with different samples and times, the differences in visual reading performance by gender are acceptable outcomes.

There was a moderately positive correlation between the participants' visual reading test scores and Turkish lesson achievement scores. Thus, it can be inferred that as the students' visual reading skills improve, their Turkish lesson achievement scores increase, which overlaps with the findings of Çam (2006). and Arı and Soylu (2020). Çam (2006) found a high level of significance between 5th-grade students' visual reading scores and Turkish lesson performance in their research. Similarly, Arı and Soylu (2020) revealed a moderately significant relationship between Turkish lesson performance and visual reading scores. It is known that students' attention span and comprehension performance increase thanks to visual reading (Bozkurt & Ulucan, 2014). Students with advanced visual reading skills can easily understand long paragraphs in Turkish lessons and recognize implicit meanings, cause-effect relationships, and metaphors.

There was a weak but positive correlation between the students' visual reading achievement test scores and the daily number of Turkish test items. In this sense, as the daily number of Turkish tests rises, students' visual reading skills improve. Visual reading help students learn to organize and categorize information, establish relationships, and solve problems efficiently (Güneş, 2013). The students who frequently solve similar questions get used to such tests and easily grasp the logic of testing and details.

No significant relationship was found between the participants' visual reading achievement test scores and their socioeconomic status, which might stem from the fact that they were from similar socioeconomic backgrounds. However, there are different findings in the literature. For instance, in their studies of Çam (2006), Semizoğlu (2013), Arı and Soylu (2020) found a significant relationship between the visual reading mean scores and socioeconomic status. The visual reading scores of students from high-income families were significantly high. Hekimoğlu (2016) emphasized that private school students' visual reading performances were higher than public school students.

There was a statistically significant difference between the students' visual reading achievement test scores and their time on social media. A weak and negative relationship was found between the two variables, which might indicate that as the daily duration of social media use increases, visual reading performance declines. Today, there is no time and place limitation for access to social media, and students become addicted to social media as the time they spend online increases (Bilgilier, 2018), which is thought to result in loss of control, lack of reasoning, and visual perception skills, and thus a decline in academic success. There are various findings regarding the use of social media in the literature. For example, Hekimoğlu (2016) found a significant relationship between students' visual literacy performance and computer use. Those who said, "I never use the Internet" and "I use it for over four hours" had lower visual literacy performance than those who said "I use less than an hour daily" and "I use it for one to three hours daily.". However, in their studies, Baş and Kardaş (2014), Çam (2006), and Karaçam (2020) concluded different findings indicating that the students' visual reading skills improved as the type and use of communication tools in their homes increased.

There was no significant relationship between the students' visual reading achievement test scores and the monthly number of books they read, which might stem from the lack of visuals and images in the books. It is known that books with illustrations promote students' visual skills (Doğan, 2015). Çam (2006) found that students who regularly read magazines and newspapers had sophisticated visual reading skills.

This study attempted to determine the interrelations between 8th-grade students' performance in visual reading and logical reasoning questioning, and specific variables. The study findings and results were discussed above. It was concluded that the students showed an average performance in visual reading tests, so they should be improved. The visual reading success was associated with students' performances in Turkish lessons and the daily number of Turkish test items they solved. Therefore, it is suggested to do more visual reading and logical reasoning activities in Turkish lessons, prepare Turkish exam items to improve this skill and include more visual reading practices in the Turkish Lesson Curriculum.

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