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Alleviating reading difficulty in elementary students based on learning styles / Özdemir, O. & Köksal, K.

33. Alleviating reading difficulty in elementary students based on learning styles[1]

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Abstract

This study focuses on the effects of learning styles on correcting the reading errors and improving the reading comprehension skills of elementary school 4th and 5th grade students. The study was conducted over eight weeks with a total of 128 hours, 32 hours each with a total of four students from two elementary schools in the Western Black Sea region, who has reading difficulties without mental, auditory, or visual problems. Ministry of National Education's Turkish textbooks for grades 1-5 were used in the study. The Marmara Learning Styles Scale showed the learning style preferences of three students as auditory and that of the remaining student as visual. For students with a auditory learning style, the researcher created audio recordings with appropriate stress and speed. Before the students read the text, audio recordings were played through headphones. After listening, the students were asked to read aloud. For students with visual learning style, illustrated texts; texts with underlined words; texts with words, syllables and sentences highlighted in colored letters were used. The students' reading errors were corrected by using the word box strategy. The findings showed that, at the final reading that took place at the end of the study, student A was at the frustration level (90%), while students B and C were at the instructional level and student D had progressed to the independent reading level. Consequently, it was concluded that reading and comprehension activities based on learning styles are effective in diagnosing reading difficulties in elementary school students.

Keywords: Reading, reading difficulty, learning styles, reading styles.

İlköğretim öğrencilerinin okuma güçlüklerinin öğrenme stillerine göre giderilmesi

Öz

Bu çalışma, öğrenme stillerinin ilkokul 4. ve 5. sınıf öğrencilerinin sesli okuma hatalarını düzeltme ve okuduğunu anlama becerilerini geliştirme üzerindeki etkisine odaklanmaktadır. Çalışma, Batı Karadeniz bölgesindeki iki ilköğretim okulunda okuma güçlüğü yaşayan dört öğrenci ile sekiz hafta boyunca 32'şer saat olmak üzere toplam 128 saat sürmüştür. Çalışmada Milli Eğitim Bakanlığı tarafından 1-5. sınıflar için uygun görülen Türkçe ders kitapları kullanılmıştır. Marmara Öğrenme Stilleri Ölçeği ile üç öğrencinin öğrenme stili tercihleri ağırlıklı olarak işitsel, diğer öğrencinin ise

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ağırlıklı olarak görsel olarak belirlenmiştir. Araştırmacı, ağırlıklı olarak işitsel öğrenme stili tercihine sahip öğrenciler için, öğrencilerin okuma seviyelerine göre uygun vurgu ve hızda ses kayıtları oluşturmuştur. Öğrencilere metni okumadan önce bu ses kayıtları kulaklık aracılığıyla dinletilmiş ve aynı anda metni takip etmeleri istenmiş, dinledikten sonra kulaklıklar çıkarılarak öğrencilerden sesli okuma yapmaları istenmiştir. Ağırlıklı olarak görsel öğrenme stili tercihi olan öğrenci için ise resimli metinlerle öğretim gerçekleştirilmiş; kelimelerin, hecelerin ve cümlelerin altı çizilmiş ve metinler renkli harflerle vurgulanmıştır. Öğrencilerin okuma hatalarının giderilmesi için kelime kutusu stratejisi kullanılmıştır. Çalışmanın sonunda yapılan son okumadaki bulgulara göre öğrenme stiline sahip olan öğrenci A endişe (%90) düzeyindeyken, işitsel öğrenme stillerine sahip B ve C öğrencileri öğretim düzeyindeyken ve işitsel öğrenme stillerine sahip öğrenci D bağımsız okuma düzeyine çıkmıştır. Bu bulgulara dayalı olarak, öğrenme stillerine dayalı okuma ve anlama etkinliklerinin ilkokul öğrencilerindeki okuma güçlüğünü gidermede etkili olduğu sonucuna ulaşılmıştır.

Anahtar kelimeler: Okuma, okuma güçlükleri, öğrenme stilleri, okuma stilleri

Introduction

Education is the process of self-actualization through striving to understand life and adapt to it. One of the most important means for individuals to access education is reading. Reading is not merely about acquiring knowledge; it is an experience that influences individuals both personally and socially. Acquiring effective reading skills is crucial for healthy physical and mental development, the cultivation of thinking and sensitivity, and the development of character and humanity (Akçamete, Güneş, 1992). Reading is the process of thinking with the guidance of a text and constructing meaning from written sources (Harris, Sipay, 1990; Perfetti, 1986). According to Akyol (2005), reading is the pathway to accessing and sharing knowledge. Considering the high literacy rates in developed societies compared to the low literacy rates in underdeveloped societies, it may be argued that literacy is a fundamental requirement for keeping pace with the evolving world.

The acquisition and use of literacy skills not only facilitate keeping pace with modern civilization, but also play a major role in the ease and flow of daily life. Therefore, it is crucial to provide literacy instruction within appropriate learning environments and methods. Despite implementing instructional processes properly, students sometimes still experience unexplained learning difficulties and reading difficulties without being diagnosed as inclusive education students. Various factors influence student success in the process of acquiring literacy skills. Vaughn, Bos, and Schumn (2007) have identified cognitive, neurophysiological, communicative, educational, reader-related, and text-related factors as influences on reading. Reading difficulties do not have a single cause. On the contrary, reading difficulties arise from multiple reasons and are specific to individuals (Wiederholt and Bryant, 1987). Thus, solutions should also be generated individually, and instructional programs should be tailored to address students' needs and mitigate their difficulties. When appropriate instructional methods are used during reading development, reading difficulties can be eliminated or reduced (Hoogeveen, Smeets, and Lancioni, 1989). Instruction for students with reading difficulties should be personalized, effective instructional methods should be adopted, and reading development should be aided with activities and materials that align with student performance (Diken,2010).

In the acquisition of literacy skills, individual differences play a significant role, as they also do in the process of learning. Factors based on individual differences such as intelligence level, sensory thresholds for distinguishing stimuli and past experiences influence not only all aspects of human development but

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also their learning processes. One of these factors that affect learning processes is learning styles (Bacanlı, 2005; Otrar, 2006). According to the Dunn and Dunn learning styles model, individuals learn best through different pathways. Learning styles consist of biological and developmental characteristics that make certain educational environments, methods, and resources effective for some students while they are totally ineffective for others (Dunn and Dunn, 1993, 1994; Dunn, Dunn, and Perrin, 1994; Thies, 2000). According to the model, it is necessary to determine individuals' preferences in the learning environment to ensure learning. Different instructional strategies should be used to provide learning environments that align with individuals' preferences. As a result of this, learners can enhance their learning skills (Hartman, 1995). The Dunn and Dunn learning styles model consists of two types of activities: Determining an individual's learning style, and planning and implementing instruction that is suitable for the identified learning style.

Reading styles refer to the application of the learning styles theory in reading instruction. A reading style encompasses an individual's information processing; emotional, sociological, and physical preferences; and how the reading environment influences their reading ability. The concept of reading style was first developed by Marie Carbo in 1975. Carbo (1980, 1982) defined reading style as an individual's learning style in reading, including environmental, emotional, sociological and psychological stimuli. By catering for a student's reading style, motivation can be increased, failure can be minimized, and the instructional process can be accelerated (Carbo, 1995).

If reading skills of students do not develop, high levels of achievement cannot be expected (Arnbak, 2004). Assessing the reading performance of elementary students with reading difficulties becomes harder without determining how they read, what errors they make in reading, and the level of their comprehension. Likewise, assessing the degree of reading difficulty and deficiency becomes harder without considering reading styles (Carbo et al., 1986; Carbo, 1987). In order to use effective teaching practices, it is first necessary to have a good understanding of the students' characteristics. Recognizing and defining the variables related to the acquisition of reading skills and knowing their distinguishing characteristics play a crucial role in diagnosing and treating children with learning difficulties. Reading styles provide an opportunity for personalized instruction. Small group work enhances teacher-student interaction, contributes more to personalized instruction, enables students to work more effectively, and allows teachers to monitor and provide feedback to students, thus making a great contribution to academic achievement (Vaughn, Thomson, Kouzekanani, Dickson, & Blozis, 2003). These reveal the importance of personalized education in reading and writing instruction. The current study aims to determine the impact of reading activities based on learning styles on the reading skills levels of elementary 4th and 5th graders experiencing reading difficulties but not in inclusive education. To this end, the following questions were addressed:

- Do students' learning styles vary based on grade level?

- Do the reading errors and reading speeds of elementary 4th and 5th graders vary after reading activities tailored to their learning styles?

- What is the impact of reading activities tailored to the learning styles of elementary 4th and 5th graders on their word recognition and reading comprehension levels?

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Method

In this section of the study, information is provided about the model used in the research, the study group, data collection tools, data collection process, and data analysis.

Study Model

This study uses the qualitative research method of case study. While Given (2008) defines a case study as a research approach that involves in-depth exploration of one or a few examples of a phenomenon, Hays (2004) defines it as an examination of individuals, subjects, problems, or programs in close detail. Generalization is not a primary aim in most case studies as the main purpose is to explore the uniqueness of each case. Case study researchers examine each case with the hope of discovering new and exceptional interactions, events, explanations, interpretations, and cause-effect relationships.

The specific type of case study model used in this study is interpretive case study, which falls under the broader category of general-purpose case studies. Interpretive case studies aim to provide detailed and rich information. The researcher aims to gather a substantial amount of data and ensure that they are sufficient to develop or test a theory (Merriam, 1998).

Study group

According to Carnine (2003), if students with reading difficulties are not trained until the 3rd grade, 75% of these students will never become proficient readers at their grade level. However, the situation in Turkey is different due to educational practices in the country and the structure of the Turkish language. The development of word recognition skills in our elementary school students continues beyond grade 1 to grade 2, with equal progress in reading comprehension. Therefore, although some students still face reading difficulties and comprehension problems in grade 3, it is often observed that some start to solve these problems on their own. In addition, our classroom teachers state that many students resolve their problems as they continue grade 3, and those who genuinely have reading and comprehension difficulties are those that still have unresolved issues in grades 4 and 5. Therefore, it was decided that the study group would include students from grades 4 and 5.

The study group in this study consists of four 4th and 5th graders from two elementary schools in the Western Black Sea region, who were not receiving inclusive education. The characteristics of the students in the study group are described below, including their predominant learning style preferences during reading obtained through learning style scale and the types of reading errors they make. In order to maintain ethical standards, the students' names were randomly replaced with letters A, B, C, and D when coding.

Student A

A is a male student in grade 4. Apart from his assignments, he does not engage in reviewing topics from class. A's grades are low, and he almost cannot read. He does not have any mental or physical disabilities, but he struggles with reading. The most common reading error he makes is skipping over words. A's predominant learning style is visual learning, and he is primarily influenced by emotional factors within his learning style. He requires a lot of motivation, which is why visual aids such as pictures, crayons, and the use of a board with illustrations and colors for him to write syllables were used to motivate the student and capture his interest.

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Student B

B is a female student in grade 4. Apart from her assignments, she does not engage in reviewing topics from class. B is a moderate achiever. She does not have any mental or physical disabilities, but she struggles with reading. The most common reading error B makes is adding or omitting words. B's predominant learning preference is auditory learning, and she is primarily influenced by physiological and emotional factors within her learning style. B's attention easily wanders, and she requires a lot of motivation. Therefore, individualized study sessions were provided at designated time intervals. To reduce anxiety levels, B was sometimes given the opportunity to read poems that she enjoys and finds easy to read.

Student C

C is a male student in grade 5. Apart from his assignments, he does not engage in reviewing topics from class. C's grades are above average. He does not have any mental or physical disabilities, but struggles with reading. The most common reading error C makes is adding or omitting words. His predominant learning preference is auditory learning, and he is primarily influenced by physiological factors within his learning style. C's attention easily wanders and was therefore given individualized study sessions at designated time intervals.

Student D

D is a female student in grade 5. Apart from her assignments, she does not engage in reviewing topics from class. D is a moderate achiever. She does not have any mental or physical disabilities, but she struggles with reading. The most common reading errors D makes include adding, omitting, skipping, and misreading words. Her predominant learning style is auditory learning, and she has adapted well to all the factors within her learning style. Therefore, she was occasionally given short relaxation breaks and allowed to consume her favorite snacks.

Data collection tools

In the study, the Marmara Learning Styles Scale, Error Analysis Inventory, Word Box Strategy were used as data collection tools.

Marmara learning styles scale

This study used the "Marmara Learning Styles Scale" (Şimşek, 2007), which was developed considering the theoretical framework of the learning styles test developed by Dunn and Dunn (1981) and is widely used across the world to assess students' learning styles. The purpose of this test is to determine the learning styles of elementary students aged 9-11 in grades 3, 4, and 5. The scale consists of a total of 94 items in four main dimensions: environmental, emotional, sociological, and physiological. The sociological dimension has 5 sub-dimensions, while the other dimensions have 4 each, making a total of 17 sub-dimensions. These items help identify students' predominant learning styles. The scale obtained a Cronbach's alpha coefficient of .6630, which is within acceptable limits, albeit not very high. Considering the Spearman-Brown results of the Marmara Learning Styles Scale for the entire group, a high coefficient value of .531 was found. Coefficient calculations using the Guttmann technique were also made, reaching an acceptable level of .6650 for the entire group (Şimşek, 2007).

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Error analysis inventory

The word recognition and reading comprehension levels of the students were determined using the "Error Analysis Inventory" adapted by Akyol (2005) from Haris and Sipay (1990), Ekwall and Shanker (1988), and May (1986). This inventory is used to assess readers' individual reading and comprehension levels. It identifies three types of reading levels and provides information about word recognition, comprehension, and the types of errors made. The independent level refers to the child's ability to read and comprehend materials appropriate for their level without the help of a teacher or another adult. The instructional level indicates the child's ability to read and comprehend with the support of a teacher or an adult. The frustration level represents the level at which the child understands very little of what they read and/or makes many reading errors (Akyol, 2006). To determine the reading level, the reading level calculation table adapted by Akyol from Ekwall and Shanker (1988) was used. The reading level is determined based on the intersection of the word recognition and the comprehension levels according to the table.

Word box strategy

The Word Box Strategy was developed in 1963 by D. B. Elkon. This strategy helps students to make letter-sound correspondence and spell words based on the letter-sound sequence. The technique involves dividing a rectangle into boxes for each sound heard in a given word. Completing the word box involves the stages of segmenting the sounds, matching letters to sounds, and writing the letters. It emphasizes the relationship between reading and writing. The word box assists elementary school students in becoming aware of sounds, word recognition, and syllabication skills. This technique visually demonstrates the relationships between sound and written units, thereby also teaching students about alphabetic principles (Joseph, 2002; Devault and Joseph, 2004; Angus, 2007).

The Word Box Technique involves several sequential steps: saying the word out loud, placing a finger for each sound in the word, counting the matching fingers for the number of each sound unit in the word, drawing boxes for each sound unit, saying and writing the sound units that match the boxes, reading the word, and writing the word multiple times under the boxes (Angus, 2007).

Data collection process

After obtaining the necessary legal permissions from the Ministry of National Education (MEB) and student families, the study group was determined in eight easily accessible elementary schools with the help of school principals who had previously been informed about the study in detail and 4th-5th grade teachers. As a result, 45 students were asked to read aloud from texts appropriate to their grade levels. The oral readings were recorded on video and assessed with the Error Analysis Inventory to identify four students who showed a high level of reading frustration but had not been placed in inclusive education. The study was conducted in the counseling and guidance units of the schools during weekdays and at the university where the researcher worked on weekends. The study was conducted over 8 weeks, with a total of 128 hours, with 32 hours dedicated to each student. Turkish language textbooks approved by the Board of Education for Grades 1, 2, 3, 4, and 5 were used in the study. The predominant learning style preferences of the study group were determined by administering the Marmara Learning Styles Scale. Three out of the four selected students had the auditory learning style, while the remaining one preferred visual learning. For the three students who preferred the auditory learning style, the researcher created audio recordings with stress and speed that matched their reading levels. Before

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reading the texts, these audio recordings were played for the students on headphones, allowing them to follow along with the texts. They were given the opportunity to listen to longer texts twice. After listening, the headphones were removed, and they were asked to read aloud. If a student read the text at a lower level than the previous one, they were instructed to listen to the audio recording again and perform another round of oral reading. For the student who preferred the visual learning style, instruction was provided using illustrated texts; texts with words, syllabi and sentences highlighted and underlined in colored letters. The student also used crayons to underline sections they thought were necessary. In addition, the students' reading errors were identified, and the word box strategy was used to help correct them.

Data analysis

In this study, the learning styles of the study group were determined by using the LISREL 13.0 software package. The frequency levels of the reading errors made by the students were determined by using percentages. The reading and reading comprehension levels of the students were determined by using the error analysis inventory calculation tables.

Findings

This section presents the findings of the statistical analyses conducted on the data related to the research questions in the study.

Findings about the first research question

Findings regarding the first research question of the study, "Do the learning styles of elementary 4th-5th grade students with reading difficulties vary based on grade level?":

Of the students in the study group, two are in grade 4 and the other two in grade 5. It was found that the predominant learning style of one of the grade 4 students was visual learning style, and that of the other was auditory. Both grade 5 students were found to predominantly have the auditory learning style.

These findings clearly indicate that students' predominant learning styles differ individually rather than based on grade level.

Findings about the second research question

Findings regarding the second research question of the study," Do the reading errors and reading speeds of elementary 4th and 5th graders vary after reading activities tailored to their learning styles?" are presented in the table 1.

Table 1. Findings on reading errors and reading speed at preliminary and final reading stages

Student	A		B		C		D	
Student Grade Level	4		4		5		5	
	Preliminary Stage	Final Stage	Preliminary Stage	Final Stage	Preliminary Stage	Final Stage	Preliminary Stage	Final Stage
Text Grade Level	1	1	4	3	5	5	1	3

Word Count of Text	26	35	393	192	250	271	99	304
Reading Duration (min)	4-4,5	3	19,5-20	4,5	2,5-3	4,5	2,5-3	7,5
Reading Speed (Number of words/min)	6	12	20	43	89	60	37	41
Number of Reading Errors	17	4	113	11	59	5	25	25

As shown in table 1, A was given a 26-word text at grade 1 level for preliminary reading. While reading this text, A was able to read 6 words per minute; therefore, the reading speed was determined as 6 words/minute. By the end of the reading, A had made 17 reading errors. In the final reading, A was given a 35-word text at grade 1 level. While reading this text, A was able to read 12 words per minute; therefore, the reading speed was determined as 12 words/minute. By the end of the reading, A had made 4 errors.

B was given a 393-word text at grade 4 level in the preliminary reading stage. While reading this text, B was able to read 20 words per minute; therefore, the reading speed was determined as 20 words/minute. By the end of the reading, B had made 113 reading errors. In the final reading, B was given a 192-word text at grade 3 level. While reading this text, B was able to read 43 words per minute; therefore, the reading speed was determined as 43 words/minute. By the end of the reading, B had made 11 errors.

C was given a 250-word text at grade 5 level in the preliminary reading stage. While reading this text, C was able to read 89 words per minute; therefore, the reading speed was determined as 89 words/minute. By the end of the reading, C had made 59 reading errors. In the final reading, C was given a 271-word text at grade 5 level. While reading this text, C was able to read 60 words per minute; therefore, the reading speed was determined as 60 words/minute. By the end of the reading, C had made 5 errors.

D was given a 99-word text at grade 1 level in the preliminary reading stage. While reading this text, D was able to read 37 words per minute; therefore, the reading speed was determined as 37 words/minute. By the end of the reading, D had made 25 reading errors. In the final reading, D was given a 304-word text at grade 3 level. While reading this text, D was able to read 41 words per minute; therefore, the reading speed was determined as 41 words/minute. By the end of the reading, D had made 25 errors.

These findings clearly show that following reading activities tailored to their learning styles, students displayed an increase in reading speed, a decrease in the number of reading errors, and an improvement in reading comprehension percentages.

Findings about the third research question

Findings about the third research question," What is the impact of reading activities tailored to the learning styles of elementary 4th and 5th graders on their word recognition and reading comprehension levels?" are presented in the table 2.

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Table2. Findings on word recognition and comprehension levels at preliminary and final reading stages

Student	A		B		C		D	
Student Grade Level	4		4		5		5	
	Preliminary Stage	Final Stage	Preliminary Stage	Final Stage	Preliminary Stage	Final Stage	Preliminary Stage	Final Stage
Text Grade Level	1	1	4	3	5	5	1	3
Word Count of Text	26	35	393	192	250	271	99	304
Word Recognition Level	F	F	F	I	F	I	F	I
Percentage of Reading Comprehension	0	0	20	60	75	96	40	83

F: Frustration level I: Instruction level

As shown in table 2, in the preliminary reading stage, A read a 26-word text at grade 1 level. While reading this text, A was able to read 17 words per minute; therefore, the reading speed was determined as 17 words/minute. By the end of the reading, A had made 17 reading errors, indicating that A's word recognition was at the frustration level. A did not provide any answers to simple comprehension questions, resulting in a reading comprehension percentage of zero in the preliminary reading stage. In the final reading, A was given a 35-word text at grade 1 level. While reading this text, A was able to read 12 words per minute; therefore, the reading speed was determined as 12 words/minute. By the end of the reading, A had made 4 errors, showing that A's word recognition was at the frustration level (90%) but nearing the instruction level. As A did not provide any answers to simple comprehension questions, the reading comprehension percentage in the final reading stage was also zero.

In the preliminary reading stage, B read a 393-word text at grade 4 level. While reading this text, B was able to read 20 words per minute; therefore, the reading speed was determined as 20 words/minute. By the end of the reading, B had made 113 reading errors, indicating that B's word recognition was at the frustration level. The responses that B provided to simple comprehension questions showed a reading comprehension percentage of 20 in the preliminary reading stage. In the final reading, B was given a 192-word text at grade 3 level. While reading this text, B was able to read 43 words per minute; therefore, the reading speed was determined as 43 words/minute. By the end of the reading, B had made 11 errors, indicating word recognition at the instruction level (94%). The responses that B provided to simple comprehension questions led to a reading comprehension percentage of 60 in the final reading stage.

In the preliminary reading stage, C read a 250-word text at grade 5 level. While reading this text, C was able to read 89 words per minute; therefore, the reading speed was determined as 89 words/minute. By the end of the reading, C had made 59 reading errors, indicating that C's word recognition was at the frustration level. The responses that C provided to simple comprehension questions showed a reading comprehension percentage of 75 in the preliminary reading stage. In the final reading, C was given a 271-word text at grade 5 level. While reading this text, C was able to read 60 words per minute; therefore, the reading speed was determined as 60 words/minute. By the end of the reading, C had made 59 errors,

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indicating word recognition at the instruction level (98%). The responses that C provided to simple comprehension questions led to a reading comprehension percentage of 96 in the final reading stage.

In the preliminary reading stage, D read a 99-word text at grade 1 level. While reading this text, D was able to read 89 words per minute; therefore, the reading speed was determined as 89 words/minute. By the end of the reading, D had made 59 reading errors, indicating that D's word recognition was at the frustration level. The responses that D provided to simple comprehension questions showed a reading comprehension percentage of 40 in the preliminary reading stage. In the final reading, D was given a 304-word text at grade 3 level. While reading this text, D was able to read 41 words per minute; therefore, the reading speed was determined as 41 words/minute. By the end of the reading, D had made 25 errors, indicating word recognition at the instruction level (92%). The responses that D provided to simple comprehension questions led to a reading comprehension percentage of 83 in the final reading stage.

While the comprehension percentages for A were zero in both the preliminary and final reading stages, B displayed an increase in the comprehension percentage from 20 to 60, C from 75 to 96, and D from 40 to 83 in the preliminary reading phase.

These findings clearly suggest that reading activities tailored to students' learning styles lead to an increase in students' word recognition and reading comprehension levels.

Results, discussion and recommendations

The findings related to the first research question of the study showed that while A's preferred learning style was visual, B's preferred learning style was auditory. It was also found that both D and C, who were fifth-grade students, had auditory learning style preferences. These findings indicate that learning style preferences vary from one individual to the next, rather than according to grade level. Similarly, in a study conducted by Şimşek (2007), it was found that the dominant learning styles of elementary school students in grades 3, 4, and 5 did not vary with respect to grade level. The study also revealed that as students get older and advance in grade level, differences occur in their perceptual preferences, but no change occurs in their predominant learning styles. Dunn et al. (1994) suggested that children in early grades (1st, 2nd, and 3rd) tend to have tactile and/or kinesthetic learning styles, while Ingham (1991) and Jarsonbeck (1984) found that students in higher grades (4-8) prefer visual and auditory learning styles, though they also added that learning style preferences are individual choices rather than dependent on grade level. Koch (1983) conducted a study based solely on age levels without considering reading skills and found that grade 2 students had a higher preference for tactile/kinesthetic styles and were less inclined towards visual and auditory learning preferences as compared to 4th, 6th, and 8th graders.

According to the findings regarding the second research question, it was found that in the study where the entire group started the study at the 1st grade level, the number of reading errors decreased in A's grade 1 reading, B's grade 3 reading, C's grade 5 reading and D's grade 3 reading after the implementation of reading activities tailored to learning style preferences. Other than C, all students displayed an increase in the number of words read per minute/reading speed. The decrease in C's reading speed was achieved through the use of the word box strategy, which aimed to address the student's word recognition and reading comprehension issues. This decrease in reading speed is a positive decrease. Additionally, it was found that the number of reading errors and reading speeds did not vary by grade level but from one individual to another. Similarly, in a study conducted by Joseph

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and McCachran (2003) obtained positive results by implementing the word box technique with struggling readers and students with learning difficulties. Devault and Joseph (2004) stated that the word box technique improves students' fluent reading. The semi-structured nature of word boxes helps students become aware of sounds and letter sequencing. Angus (2007) mentioned that the word box strategy enhances coding skills.

According to the findings regarding the third research question, it was found that in the study where the entire group started the study at grade 1 level, A's word recognition at grade 1 reading activities was at the frustration level and reading comprehension percentage was zero; B's word recognition at grade 3 reading activities had increased to the instruction level and reading comprehension to 60%; C's word recognition at grade 5 had increased to the instruction level and reading comprehension to 96%; and D's word recognition at grade 3 had increased to the instruction level and reading comprehension to 83% with reading activities tailored to learning style preferences.

Based on these results, it can be stated that reading activities organized according to students' learning style preferences led to an improvement in the word recognition levels of all students in the study group, except for A, and also an increase in comprehension percentages to varying degrees. It can therefore be concluded that activities tailored to learning styles had a positive impact on improving word recognition levels and comprehension percentages. The different results that A obtained may possibly be attributed to yet undiagnosed difficulties.

The findings of Vaughn et al. (2003) that small group work enhances teacher-student interaction, contributes to individualized instruction, promotes efficient student work, facilitates teacher monitoring of students, aids in providing feedback, and significantly contributes to academic achievement corroborate the 2nd and 3rd findings of the present study.

The results of a study conducted in 10 states across the United States, focusing on reading and learning styles among students in grades 1-9 from different socio-economic levels, showed that the reading/learning styles program implemented in the experimental groups yielded significantly different reading achievement results from the control group (Barber, Carbo, 1994). These findings are also consistent with the 2nd and 3rd results of the current study.

Sondra and O'Tuel (1989) offered 847 grade 4 and 5 students a year-long reading/learning styles training program. Their result that the experimental group students had significantly higher comprehension and word test scores than the control group also mirror the results obtained here.

An experimental study that used reading/learning styles showed that the average reading comprehension test score for the experimental group, which received instruction tailored to their learning styles, was 58, while the control group had an average score of 39. In the spelling test, the experimental group had an average score of 49, compared to 28 for the control group. These findings are also similar to the results of the current study, suggesting that activities designed according to learning styles have positive effects on reading and reading comprehension (Carbo, 1995).

Based on the results of the current study, it can be suggested that students' learning styles should be identified starting from grade 1, and instruction should be planned in accordance with their preferred learning styles within the framework of the curriculum. Reading laboratories may be established in schools for students who face reading difficulties, so that they can receive personalized reading

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instruction. Naturally, it would also be beneficial to add the topics of learning styles and reading styles into Elementary Teacher Education programs, for teacher candidates to study in classes such as early literacy training and Turkish language education.

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