

# Identifying Common Errors of the First Graders in the Writing of Vertical Numbers

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## Abstract

The aim of the study is to investigate the errors that first grade students have made in their writing of vertical numbers which have just been applied by removing cursive writing. Considering the aim of the study, vertical number writing styles of the first-grade students in primary school were analyzed. The sample of the study consists of 116 students who are studying in the first grade of primary school. The study was defined as a case study. A data collection tool was developed for determining the mistakes that students made while writing the vertical numbers in line with the aim of the research. Through the data collection tool, all numbers from 0 to 9 are given as written statements and it is required to write the numbers in the spaces left under them. The results obtained from the analysis of the data include the existing types of errors that are relevant to the number writing in the students after the first literacy teaching processes. According to the results of the research, writing the numbers oblique, vertical-horizontal-diagonal straight lines are drawn in a curvilinear style, curvilinear and circular lines are distorted, numbers are not aligned in the direction of writing, and some numbers are written in reverse have been seen as the most common errors. In accordance with the types of errors identified in the research, it is thought that the emphasis on dictation studies to increase the awareness of students will decrease these types of errors and their frequency. It is also stated that it is important to diversify the related studies as much as possible, taking into consideration the individual differences of the students.

**Keywords:** vertical numbers, the first grade in primary school, writing errors

## 1. Introduction

### 1.1 The Statement of the Problem

Writing is defined as the ability to produce the symbols and signs that are necessary to express our thoughts; text is defined as the forms of words and sentences in the spoken language that are determined on paper with some symbolic shapes and drawings (Akyol, 2001; Celenk, 2007). Although these definitions are not directly addressed, the writing of numbers has an important role in primary school education in relation to mathematics teaching. Just as we use symbols that are called letters to spell words in speech, we can define numbers as symbols which are used to write and display numbers as well. Therefore, the most important symbols that we use to write the language of Mathematics are numbers. The primary Mathematics curriculum consists of four learning areas: Numbers and Operations, Geometry, Measurement and Data processing. While all learning areas are provided at each class level, some sub-learning areas are activated after a specific class. Natural numbers in the learning area of Numbers and Operations and the acquisitions of sub-learning area start with the teaching of numbers, it is aimed to learn larger numbers and steps as the class level increases (MEB, 2018a). Thus, the teaching of numbers is also the basis of primary school mathematics teaching. When studying the literature, neither the teaching of the first reading and writing nor the teaching mathematics were found to be a study on the formal teaching of numbers. Therefore, it emerges that there is a need to investigate the errors that the first-grade students make while writing the numbers in learning processes of first reading-writing and mathematics. In this respect, the aim of the study was determined as the investigation of the errors made by the first-grade students in primary school while writing the vertical numbers. By conducting the study, it is aimed to determine the errors related to the number and the letter writing when the writing skills of students from 2nd, 3rd and 4th grade in primary school are analyzed. It is thought that the study can

prevent the potential mistakes of students when their primary school teachers who have just started or will start their profession carry out the process of reading-writing with their students.

## 2. Method

### 2.1 Research Design

Case study from qualitative research methods was used in the study. According to Stake (1995) and Yin (2009, 2012), case study is a research design in which researchers analyze a situation, often a program, event, action, process, one or more individuals in depth. In the study, research design was determined as case study as the vertical numbers of the first graders in primary school were examined and their learning errors were tried to be analyzed.

### 2.2 Study Group

The first-grade students in primary school are expected to acquire literacy skills in first grade. For this reason, the study was conducted with the first graders. The study group of the research is composed of 116 students who are studying in the first grade of a public school in Istanbul. Thus, it is thought that a positive contribution can be made to the process of determining the errors in the number writing process at the end of the first grade and to the process of gaining the skills of reading and writing.

### 2.3 Data Collection Instrument

The data collection tool used in the research was developed by the researchers in order to detect the typing mistakes.

As the data collection tool for numbers was developed, all numbers from 0 to 9 were written in an appropriate format on A4, and it was required to write the numbers in the spaces left under these written expressions. After the data collection tools were developed, three classroom teachers and three experts were consulted. As a result of the opinions of the experts and teachers, data collection tools were finalized and ready for implementation. Figure 1 shows the visual example of a part of the data collection tool.

Dört (Four)	Beş (Five)	Altı (Six)
<input type="text"/>	<input type="text"/>	<input type="text"/>

**Figure 1.** A Part from the Data Collection Tool

### 2.3 Data Collection and Analysis of Data

The data collection tool for the numbers was distributed to the students and they were asked to write the corresponding numbers to the spaces left under the written expressions. After the data collection tools were distributed to students, they were asked to fill in the gaps appropriately. In the process of analysis, the data collection tools applied were examined in general, and papers which were unreadable, which were not mostly filled, or which were filled with irrelevant content were excluded from the evaluation.

Classifications were made concerning common errors by carefully reviewing the data obtained and comparing the numbers with their correct writing style (Figure 2). Figure 2 shows images of the correct type of number (TTKB, 2017).

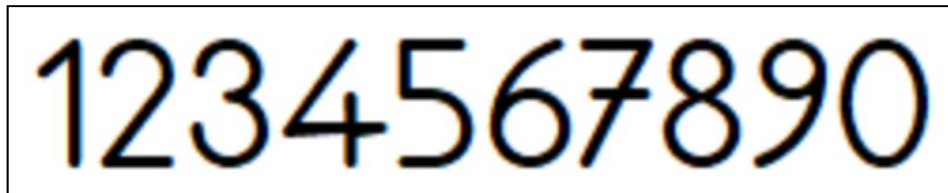


Figure 2. Correct Writing Type of Vertical Numbers

3. Results

In the According to the findings obtained from the research, the types of errors realized for each figure were determined and a table was created for each figure. The representations of error types made and the sample images corresponding to these statements are presented in these tables.

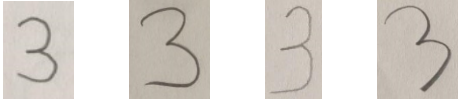
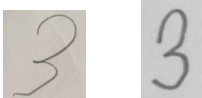

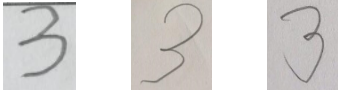



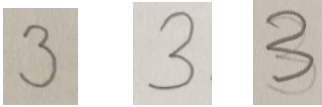
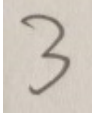
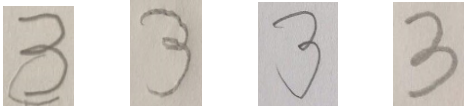

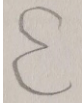
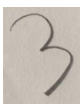
Table 1. Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “1”

Errors in writing of the number 1	Visual Sample				
Placing horizontal line below					
Drawing the number with oblique lines					
The diagonal line at the tip is too long/short					
Writing oblique					
The top tip is not sharp					
Bulging of the top tip					



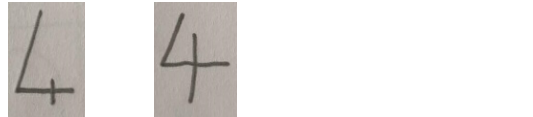

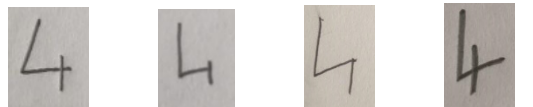
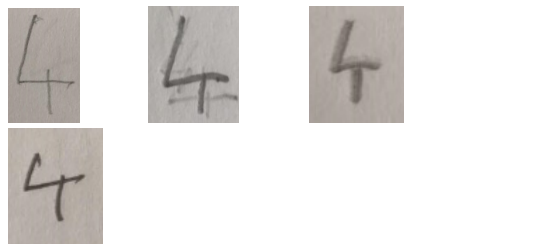
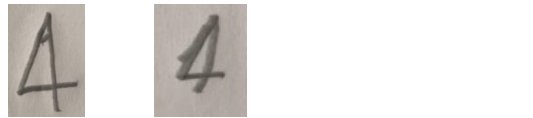
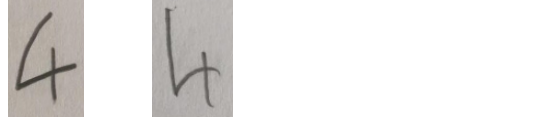

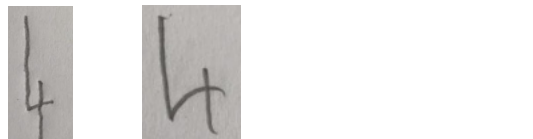
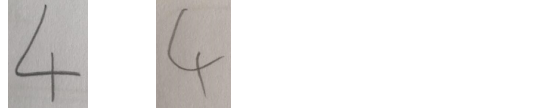
**Table 2.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “2”

Errors in writing of the number 2	Visual Sample				
The bottom horizontal line is not parallel to the floor / sloped up / down					
The bottom horizontal line is too long / short					
The top tip is very long/short					
The middle part is less inclined / the middle line is too long					
The curve of the top tip is small or narrow					
Exaggerating the top curve inward					
Drawing a sharp top instead of a curve top					
Drawing the bottom line with a curve line instead of a straight line					
Drawing the same number several times					

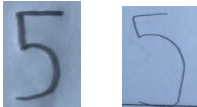
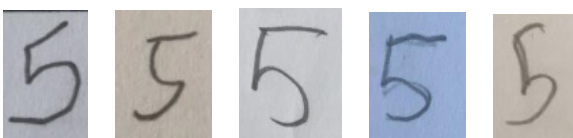
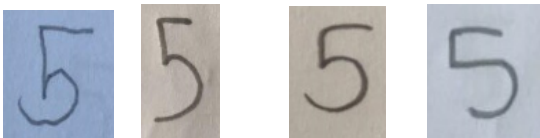
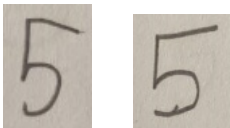
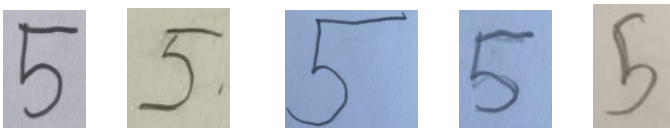

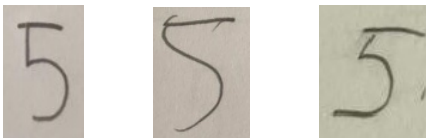
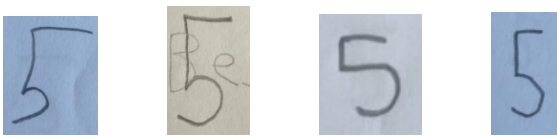
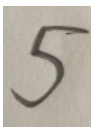
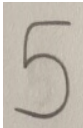
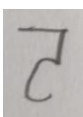
**Table 3.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “3”

Errors in writing of the number 3	Visual Sample
Folding out the bottom and / or the top tip	
Upper / downward folding of the bottom tip and / or top tip	
Drawing the bottom tip and / or top tip very long/very short	
The round parts of the upper and lower parts are not made smooth	
	
The lower part needs to be larger, but here, the upper and lower parts are the same size or larger than the upper part	
Making the bottom part too big from the top	
	
Making mistakes in the junction of the upper and lower parts	
Intertwining the junction of the upper and lower parts	
	
Left / right slanting	
Reverse direction of the number	

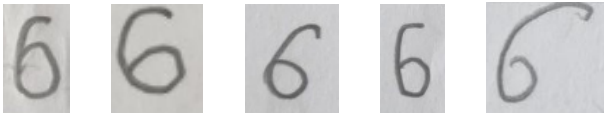
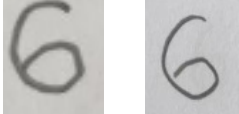
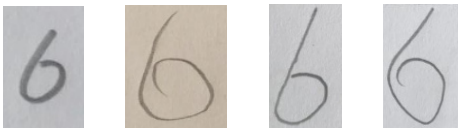
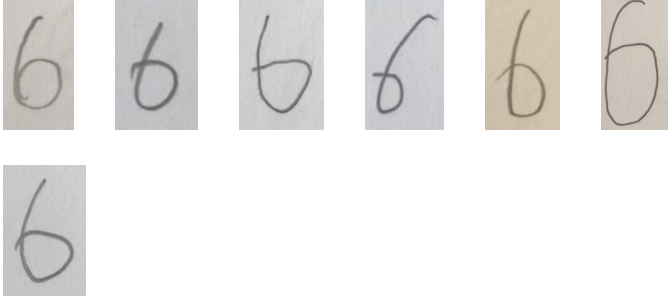


**Table 4.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “4”

Errors in writing of the number 4	Visual Sample			
Inclined drawing of horizontal line				
Inclined drawing of vertical line				
Drawing of vertical line very short/long				
Drawing of horizontal line very short/long				
Incorrect positioning of vertical line, it needs to position slightly to the right of the horizontal line				
The vertical line is not placed directly in the middle of the horizontal line.				
Combining the vertical line with the top tip of the figure				
All parts in the number needs to be straight line, but here, some parts are drawn as a curve				
Drawing the diagonal line of the number very short				
The number needs to be diagonal but here, it is drawn without a slope				
The diagonal line and the horizontal line of the number are not angled				

**Table 5.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “5”

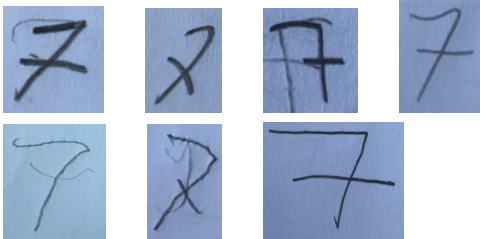
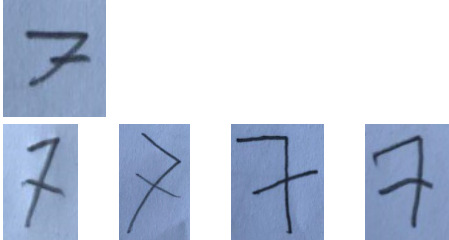
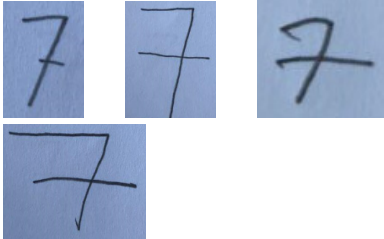
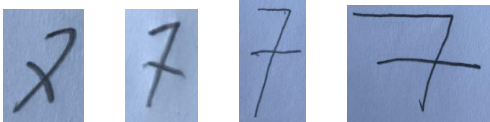
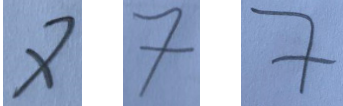


Errors in writing of the number 5	Visual Sample
The height of the round part is very large / very small	
The round part is incorrect, its shape is distorted, its bottom tip is long/short	
	
Drawing the horizontal line curved.	
Drawing the horizontal line curved instead of straight	
Drawing the horizontal line very long/short	
A bulge / gap formation in upper left corner	
Drawing vertical line very short/long	
Drawing the number oblique	
The points that need to be sharp are not sharp and using a curved line instead of straight line	
Writing the number reversely.	

**Table 6.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “6”

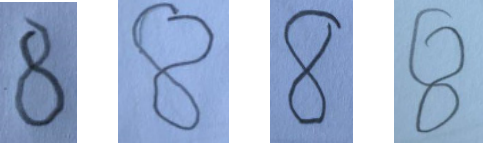

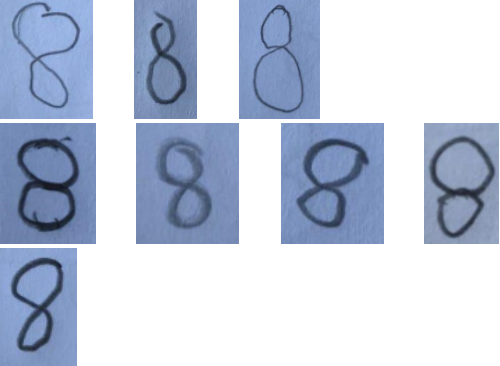
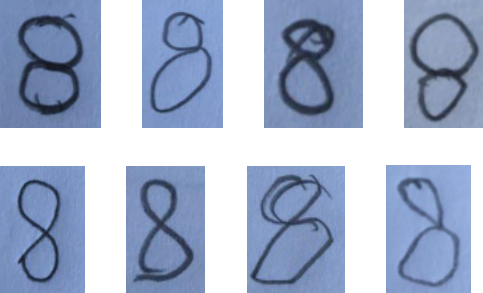


Errors in writing of the number 6	Visual Sample
Drawing the top part curled	
Drawing the number like the letter G	
Not closing round full, leaving space	
Emerging bulge at the tip point of the round	
Drawing a straight line while the number does not have a straight line	
The round is not drawn properly	



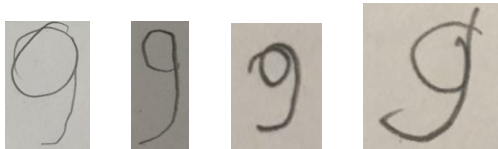
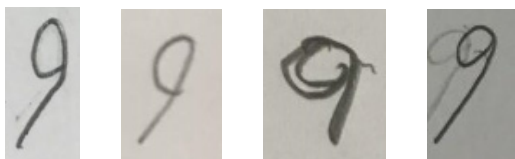
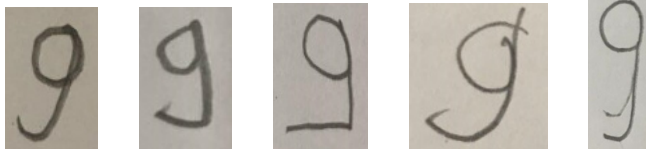
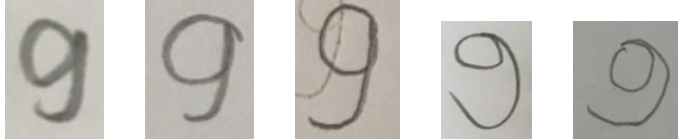
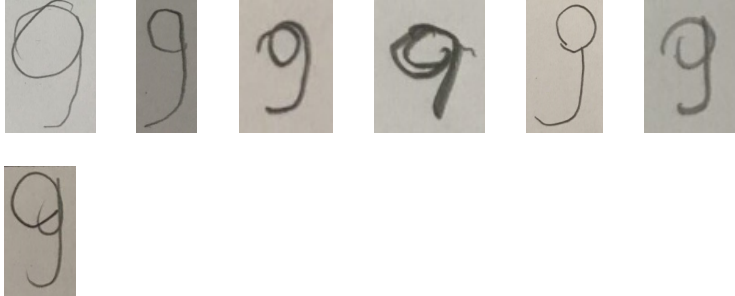
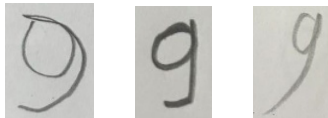
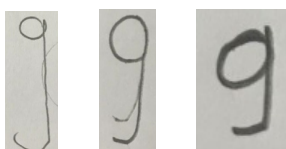
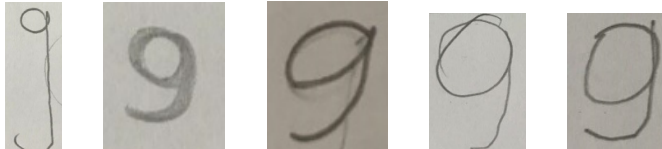
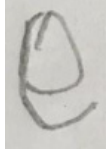
**Table 7.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “7”

Errors in writing of the number 7	Visual Sample
The horizontal lines at the top and/or in the middle and/or the diagonal lines needs to be straight but here, drawn oblique.	
Horizontal lines in the upper and/or in the middle needs to be parallel to the floor, but here, they are drawn inclined.	
Drawing the horizontal line in the middle very long/short	
Drawing the horizontal line in the middle very long/short	
The top right side of the number is drawn with a curved line instead of an angled line.	
Drawing the diagonal line perpendicular or close to it	
Drawing the diagonal line very long / short	

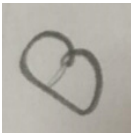
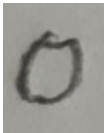

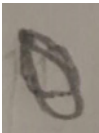
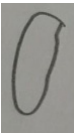
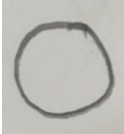
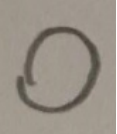
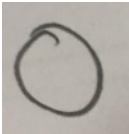
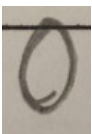
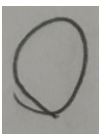

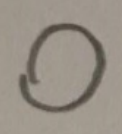
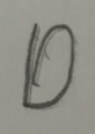
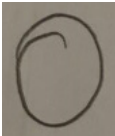


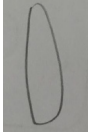
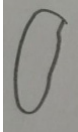
**Table 8.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “8”

Errors in writing of the number 8	Visual Sample
The formation of space/bulge at the junction of the round	
Drawing the upper part or the lower part very large/small	
Drawing the upper part and lower part in the same size or drawing the upper part bigger	
The wrong style of the construction (two round drawing in a row, starting to draw from the wrong place)	
Not to draw circle/circles properly	
Drawing the circles in different alignments	

**Table 9.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “9”

Errors in writing of the number 9	Visual Sample
Making the circle shape improperly	
Drawing the tail with a curved line instead of a straight line	
Making the lower part curved or angled, drawing the number like the letter g, extending the tip of the number tail very long	
	
Starting to draw from the wrong direction	
The formation of a bulge at the end of the circle	
Drawing the diagonal line perpendicular or close to it instead of drawing with a curved line	
Drawing the bottom part very long/short, making the round part very big/small	
Drawing the number reversely	

**Table 10.** Types of Common Errors and Sample Visuals from These Errors Which Were Made about the Number “0”

Errors in writing of the number 0	Visual Sample				
Drawing the curve improperly					
Drawing the round fully					
Not paying attention to the direction of drawing and the formation of bulges in various places					
Drawing the number oblique					
Drawing the number very thin and long					

**4. Conclusion and Discussion**

It is expected that students who are at the level of first grade get the acquisitions related to the number writing fully in the process of the first reading-writing. In the studies, it was found that the students studying in higher grades had some deficiencies related to their first reading and writing skills (Akyol & Sever, 2017; Kusdemir et al., 2018). Therefore, it was aimed to determine the deficiencies related to the number writing of the students in the study. The findings obtained for the study are expressed by giving sample images to the reader for more concrete understanding of the types of errors made for each number and these types of errors. In this section, the situations which are frequently done for each number and common problems in the writing of all numbers are emphasized and discussed in detail. One of the errors in question for all numbers is that the numbers are written in a right or left-hand direction. In fact, the numbers must be written vertically (MEB, 2018b). Although not extensively identified, there are students who make these mistakes. One of the reasons for this type of error is that the ability to write the number upright may not be achieved. This deficiency arises especially in the case of numbers with vertical straight lines resulting from the vertical lines cannot be drawn straightly. It has been determined that the lines that need to be drawn vertically found slanting to the right, slanting to the left, and sometimes parallel to the floor. For this reason, attention should be paid to the ability to draw vertical lines vertically while performing dictation studies in the first reading and writing processes. In numbers without vertical lines, it is thought that the reason why the number is written as oblique is that when the student starts to draw the number, she/he cannot consider the number as a whole. To the degree that the student can visualize the shape of the number as a whole in his mind with all the details, he will be able to write the number more properly. In this context, it will be useful for students to provide activities which create awareness about the specific features of the numbers in their learning process of the number writing.

When all numbers are considered, it is seen that the lines used in the writing of the numbers are vertical line, horizontal line, diagonal line, curved line and circular line.

When writing the numbers 1, 2, 4, 5, and 7 that contain lines which can be expressed as straight lines such as vertical lines, horizontal lines and diagonal lines, a similar error type has been observed. In this error type, it was seen that students draw straight lines as curvilinear lines. In other words, some students did not acquire the ability to draw the line straight properly. On the other hand, errors that the shape of the curve is not made in the way it needs to be and that there are diagonal places in the line requiring to be curvilinear was seen frequently in the numbers 2, 3, 5, 8, and 0 which are drawn with curvilinear lines. It was determined that the circle was not exactly rounded, there were angled parts, the round was not fully joined, and there were bulges at the top and bottom were the errors made in the numbers 6 and 9 including circular lines. Regarding these errors, it can be said that the importance of dictation studies emerged again.

When writing studies are performed; it would be beneficial to focus on activities to improve students' skills related to the mentioned situations by taking these types of mistakes into consideration. Teaching processes should be carried out to increase awareness of students about drawing straight line, drawing curved line according to the shape of the number and drawing circular line with full round. However, it is obvious that it is crucial to take individual differences into account in learning when teaching in the process of the number writing. Therefore, activities in these processes need to be diversified as much as possible according to the student (Dogan & Sahin-Taskin, 2018). At this point, the positive impact of the parent involvement activities on the teaching process should not be underestimated (Dogan & Sahin-Taskin, 2016).

It is also apparent that one of the common causes of typing errors in all numbers is that students do not use the correct writing direction when writing numbers. In fact, the main theme of the study constitutes whether the students pay attention to the writing directions in the number writing process. However, when the number writings of the students were examined, it was observed that some types of errors were related to failure to comply with the direction of writing the number. It is thought that it would be useful to emphasize the importance of writing directions and its details carefully (Akyol, 2001; Gocer, 2014).

Another important point that needs to be emphasized about the typing errors is that some numbers are reversed. In this study, it was observed that the number of 3, 5 and 9 numbers was written in reverse. However, this is the case for every number that is different from the symmetry image according to the vertical axis. There are two reasons for this. One of them may be that the student does not have the necessary knowledge or awareness about the shape of the number. If there are some deficiencies in the student's learning process such as cognitive, emotional or psychomotor, this may have happened. On the other hand, it should be considered whether there is a need for special education for the students who make typing errors (Kodan, 2016). One of the issues that need to be considered in relation to the writing errors in the scope of the study is whether the student is performing these errors due to a difference such as dyslexia. It will be appropriate to conduct a study regarding of the students who are wrong about the number writing reversely.

## References

- Akyol, H. (2001). *Türkçe İlk okuma-Yazma Öğretimi*. Ankara: Gündüz Eğitim ve Yayıncılık.
- Akyol, H., & Sever, E. (2017). Okuma Yazma Güçlüğü ve Bir Eylem Araştırması: İkinci Sınıf Örneği. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi (Date of publishing: 25.06.2018)*.
- Çelenk, S. (2007). *İlkokuma- Yazma Programı ve Öğretimi*. Ankara: Maya Akademi Yayınları.
- Doğan, M. F., & Şahin-Taşkın, Ç. (2016). Öğrencilerin Öz-Düzenlemeli Öğrenme Becerilerinin Gelişiminde Anne-Babaların Rolü. *International Journal of Curriculum and Instructional Studies*, 6(12), 1-18.
- Doğan, M. F., & Şahin-Taşkın, Ç. (2018). Turkish Adaptation of Children's Perceived Use of Self-regulated Learning Inventory. *Educational Research and Reviews*, 13(10), 375-381.
- Göçer, A. (2014). *Etkinlik Temelli İlkokuma ve Yazma Öğretimi* (2nd ed.). Ankara: Pegem Akademi
- Kodan, H. (2016). Yazma Güçlüğü Olan Üçüncü Sınıf Öğrencisinin El Yazısı Okunaklılığının Geliştirilmesi: Eylem Araştırması. *Türkiye Sosyal Araştırmalar Dergisi*, 2, 523-539.
- Kuşdemir, Y., Kurban, H., & Bulut, P. (2018). Yazma Güçlüğü Yaşayan Bir Öğrenci İle İlgili Eylem Araştırması. *Uluslararası Türkçe Edebiyat Kültür Eğitim (TEKE) Dergisi*, 7(2), 1190-1209.

- Millî Eğitim Bakanlığı. (2018a). *Matematik Dersi Öğretim Programı* (İlkokul ve Ortaokul 1, 2, 3, 4, 5, 6, 7 ve 8. Sınıflar). Ankara.
- Millî Eğitim Bakanlığı. (2018b). *Türkçe Dersi Öğretim Programı* (İlkokul ve Ortaokul 1, 2, 3, 4, 5, 6, 7 ve 8. Sınıflar). Ankara.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks: Sage Pbc.
- Talim & Terbiye Kurulu Başkanlığı. (2017). *TTKB Dik Temel Abece*. Yazı Fontu.
- Yin, R.K. (2009). *Case study methods: design and methods* (4th ed.). Thousand Oaks: Sage Pbc.
- Yin, R.K. (2012). *Applications of Case Study Research*. Thousand Oaks: Sage Pbc.

**Note**

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