The Impact of Multi-sensory Language Teaching on Young English Learners' Achievement in Reading Skills

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Abstract: The present study aimed to investigate the effects of multisensory language teaching on 4th graders' achievement in English reading skills. Two intact groups were selected for the treatment: a control group which was taught through mainstream education, and an experimental group which was taught through MSLT including a variety of pictorial, auditory, and manipulative materials to be used in several game-like reading activities such as matching, sticking, and coloring for a six-week period. The main data source was a 24-item reading achievement test. It was administered three times (pre-, post- and delayed post-tests). Besides, a semi-structured interview with the co-operating teacher, her blog entries and the pupils' diaries were presented as qualitative data. Initially no statistically significant difference between the groups' pre reading achievement test scores had been found. However, both the Mann-Whitney U test results of the post-test and the independent samples t-test results of the delayed post-test revealed statistically significant differences in favor of the experimental group. Based on the findings of the study, it can be inferred that learning through multi-sensory materials have not only made a long lasting impact on the learning experience, but also made learning more concrete and enjoyable; thus, it is more memorable.

Çok Duyulu Dil Öğretiminin Öğrencilerin İngilizce Okuma Becerisindeki Başarısına Etkisi
Öz: Bu çalışma çok duyulu dil öğretiminin 4. sınıf öğrencilerin İngilizce okuma becerisi başarısına etkilerini araştırmayı amaçlamıştır. Uygulama için iki dokunulmamış grup seçildi; normal eğitimle öğretilen kontrol grubu ve 6 hafta boyunca eşleştirme, yapıştırma ve boyama gibi oyun gibi birçok okuma aktivitelerinde kullanılan çeşitli görsel, işitsel ve dokunsal materyalleri içeren çok duyulu dil öğretimi yoluyla öğretilen deney grubu. Ana veri toplama aracı 24 maddelik bir okuma başarı testidir ve ön, son ve kalıcılık testi olarak üç kez uygulanmıştır. Ayrıca, işbirlikçi öğretmenle yapılan yarı-yapılandırılmış mülakat, onun blog yazıları ve öğrencilerin günlükleri nitel veri olarak sunulmuştur. İlk olarak gruplar arasında okuma başarısı skorları açısından istatiksel olarak hiçbir fark bulunmamıştır. Ancak, hem son testin Mann-Whitney U test sonucu hem de geciktirilmiş son testin bağımsız grup t-test sonucu deney grubu lehine istatiksel olarak anlamlı farklar göstermiştir. Çalışmanın sonuçlarına göre, şu anlaşılabilir ki çok duyulu materyallerle öğrenme sadece öğrenme deneyimine kalıcı bir etki sağlamakla kalmamakta aynı zamanda öğrenmeyi daha somut, eğlenceli ve böylece daha unutulmaz yapmaktadır.

1. Introduction

The report by British Council and TEPAV (2013) conducted a collaborative study, between February- July 2013, to analyze the current state of English language teaching and learning in 48 state schools in 12 cities in Turkey so as to find out the reasons for having low level of success in ELT by collecting data through the surveys of students, parents, and teachers. The results ascertained that teaching foreign languages, particularly English, is considered below a satisfactory level in Turkey due to the following reasons such as utilizing grammar-based approach, teacher-centered classroom practices including answering teachers' questions, completing written exercises in a textbook with the aim of passing a grammar-based test, having traditional seating arrangements which makes difficult to organize communicative activities, official textbooks and curricula not taking learners' needs and differences into account besides having inspectorates not specialists in ELT. Similar unsatisfactory results can also be supported by other researchers such as Akpınar & Aydın (2009) and Tarcan (2004). Currently, ELT practices in Turkey heavily rely on visual materials. Even audio materials are used sparingly. Conventional classroom teaching seems to have restricted itself with activities which are based on pen and paper use; thus, learning styles which are not visual or auditory are largely ignored. This unsatisfactory situation forces teachers to be creative and innovative with their teaching methodology. As suggested by Demirel (1990), the success in learning a foreign language depends on the use of appropriate methods by language teachers. Based on this view, the present study argues that the use of multisensory materials and activities in language teaching can equip language teachers with skills to overcome some of the obstacles while addressing young learners' different learning styles.

1.2. Background to the Study
1.2.1. Multisensory Language Teaching (MSLT)

The term multisensory teaching is defined as "a way of teaching that requires students to activate their full faculties—seeing, hearing, smelling, tasting, moving, touching, thinking, intuiting, enjoying—in a variety of situations" (Baines, 2008, p. 21). Baines (ibid) also asserted that teaching via abstract representation is easy to implement, but it is one of the least effective methods to cultivate learning, whereas teaching through stimulating various senses allows students to gain mastery over abstract language. He further explains that via multisensory learning techniques, students can have a reciprocal relationship between sensory input and thinking, interact with the material more intensely, and retain what they have learned for longer periods of time. Moreover, their intellectual and social potential can be progressed, and their minds can be engaged with play-like lessons which relate to real life. He also highlighted that teachers could overcome the difficulties of student engagement and achievement through hands-on, visual, auditory, and olfactory stimuli and by linking the activity to relevant academic objectives.

Accordingly, using multiple input modes is an advantage not only for learners to maximize their learning, but also for teachers who can make their teaching more colorful, and thus feel professional fulfillment by providing rich and varied opportunities through multiple teaching techniques and multisensory teaching materials (Read, 2007; Nilson, 2010; van Lier, 2011).

1.2.2. Developing Reading Skills of Young Learners

As mentioned by Ahuja & Ahuja (2007), reading is a visual and mental phenomenon. In other words, the reading process is both a sensory process that depends on certain visual skills, such as the identification of symbols, and a perceptual process that involves the interpretation of what is sensed. Thus, reading can be defined as a complex process which requires readers to use extensive knowledge of representations for decoding and deriving literal and figurative

meanings as well as for evaluating the extracted message critically (Dakowska, 2016; Linse, 2005).

Children learn reading firstly by comprehending how sounds are associated with words as symbols. They also realize that words form sentences which are parts of longer texts. As texts become longer and more challenging, comprehending them requires more complex cognitive processes. In time, children need to make more connections between sounds, symbols and parts of the text by activating their schemata. For children, this is certainly a taxing cognitive process, during which they need guidance. Teachers are expected to scaffold learning to enable children to comprehend the text through teaching how to make text-to-text, text-to-self, and text-to-world connections (Pardo, 2004). Moreover, children are also expected to interpret the written text through thinking and talking about the message so that they can ask and answer questions about it, negotiate the meaning with their classmates, and notice multiple interpretations. All these cognitive processes eventually lead to the construction of their own understanding (Ahuja & Ahuja, 2007; Coşgun Ögeyik, 2012).

While reading, the human mind perceives text from two aspects: bottom-up processes (code-first approach) and top-down processes (meaning first approach). The bottom-up processes refer to when learners decode and make sense of a written text using language knowledge such as phonology, grammar, punctuation, cohesion and orthography. On the other hand, the top-down processes refer to 'schema theory' which emphasizes that meaning does not emerge from the text itself, but that learners derive meaning from the printed text using information on topical knowledge, context, author, genre, emotion, experience and culture (Anderson, 2014; Brown, 1994; Johnson, 2016; Kirsch, 2008; Linse, 2005; Murray & Christison, 2011; Nunan, 2011).

Teachers need to address both bottom-up and top-down processes to make sure that children learn both. Bottom-up skills include recognizing letters, associating each letter with its appropriate sounds, identifying individual words, making sense of the word, and chunking words to decode and extract meaning from the written text. Top-down skills include making connections between the text and one's background knowledge, making predictions using contextual clues and constructing knowledge from the combinations of words appearing in the text to make sense of the printed text (Anderson, 2014; Johnson, 2016; Kirsch, 2008).

In order to balance both processes, teachers need to utilize child-appropriate reading techniques such as phonics-based instruction, word games, whole sentence reading, language experience approach, and reading storybooks suggested in the relevant literature. Besides, there are many reading strategies that readers can make use of, such as using background knowledge, reading for matching, reading for sequencing, predicting content from the title, guessing the meaning of unknown words from context, using textual aids to anticipate information, skimming to get the gist, scanning for specific information, reading aloud and reading silently (Cameron, 2001; Johnson, 2016; Linse, 2005; Moon, 2000; Nunan, 2011; Read, 2007; Sharma, 2004; Ur, 1996). Similarly, in teaching English, teachers should integrate teaching of reading skills into their lesson plans after providing learners with sufficient oral input in English. Teachers also should scaffold learning through reading activities with a variety of multisensory teaching aids (Brown, 1994; Burkhardt, 2009; Cameron, 2001; Coşgun Ögeyik, 2012; Hennen, 2009; Murray & Christison, 2011; Pardo, 2004).

1.2.3. Multisensory Studies with Regard to Reading
The last decade has seen a growth in the number of studies investigating the effectiveness of using multisensory materials in teaching reading skills both in the first language context and second language context. With respect to the first language context, Buelow (2015) developed a strategy called Visual to Print Transfer (VPT) when working as a sixth-grade teacher in a culturally diverse elementary school via texts including a variety of forms such as print, visual, oral, and forms related to digital technologies. After discussing the narrative elements collaboratively, each student wrote about what they understood. The study suggested that the use of VPT, particularly media images of Hollywood icons, motivated students and supported their transfer of knowledge from a visual text to a print text by helping them to analyze and identify textual evidence and to apply a critical perspective to different text types.

Furthermore, Branscombe (2015) conducted a study with 21 third graders to examine the effect of using tableaux, which were also called "still images" or "frozen pictures," as a drama activity in their native language reading comprehension to get the main ideas on informational texts about the Earth and the solar system. The analysis of their survey revealed that the use of a tableau increased the comprehension in most of the students due to its visual and active components.

In another first language context, Martens, Martens, Doyle, Loomis, & Aghalarov (2012) explained the results of their yearlong project with first grade children in which they explored how children gained insight in reading and communicating as well as developed critical thinking skills through brainstorming on and discussion of artistic and textual meanings in five picture books, which were one type of multimodal text that include the linguistic (written text), visual (illustrations), spatial (evident in the design, layout, and composition), and gestural (found in the positions and movement in the illustrations) modes. Participating children responded quite positively to every picture book they read. Moreover, they expanded their understanding of the text by using multiple modes. In addition, the study also indicated that when readers focused solely or primarily on written language their comprehension was limited. One important outcome of this project was that these children became critical thinkers and enhanced their reading and writing abilities via multimodal experiences.

A few studies in a mixed language context have been carried out. For instance, Brown (2013) reported a project where the impact of integrating graphic novels on the language and literacy skills of 18 diverse elementary school students was qualitatively examined. Seven of them were English learners whose first language was Spanish, and thirteen of them were low-level English readers. In guided reading groups, learners firstly read various print-based graphic novels, and later, they wrote their own graphic stories by publishing them in digital format using Microsoft Photo Story. The results of the project revealed that the students' understanding of the story was enhanced through scaffolding techniques in which teachers asked questions and drew the readers' attention to the images.

In another mixed language context, Proctor, Dalton and Grisham (2007) provided a multimedia digital reading environment, including the use of the two work storage databases, namely Work Log and My Glossary. This project aimed at scaffolding reading comprehension of 30 4th-grade Spanish-speaking ESL learners and 14 struggling native speakers by means of defining some reading comprehension strategies such as questioning, clarifying, predicting, summarizing, visualizing, and expressing emotions. The results revealed that the scaffolding provided in the process of the intervention enabled the learners to promote their vocabulary knowledge and reading comprehension.

With regard to second language context, Salkhord, Gorjian and Pazhakh (2013) conducted a study to investigate the impact of digital stories on reading comprehension in 60 young Iranian learners by dividing them into three groups: two experimental groups and one control group. The study hypothesized that digital stories which combine animation pictures, sound, music, rhyme, and narration facilitate the understanding of the meaning more quickly. One of the experimental groups was taught through internet-based instruction, including 10 digital stories with pre and post-reading tasks. The other experimental group was taught through paper-based instruction, including the printed form of the same digital stories, activity worksheets, and pre and post reading activities. The control group was taught through conventional instruction, depending on reading and translation, including the printed text of the same 10 digital stories without any pre or post reading tasks. After the treatment, each group was administered an immediate post-test and a delayed post-test based on the 10 digital stories. The results indicated that the online instruction of digital stories does have a more significant impact on the learners' reading comprehension skill than conventional or paper-based instruction. The results also showed that applying the pre and post reading tasks may improve the learners' reading comprehension.

Wang (2013) carried out a comparative analysis to examine whether multimodal texts produced meaning in a different way to monomodal texts using two multimodal texts combining words and images and one monomodal written text relying on words. The results indicated that a reader could easily interact with a multimodal text since it combined the image and understanding of the subject matter in a coherent event between a writer and a reader, whereas readers received more direction by the writer to get information and knowledge from the monomodal text.

In another study, Walsh (2006) examined the differences between print-based texts and multimodal texts to reveal how readers process each through the scrutiny of a unimodal text using a novel *(Milo's Wolves)* and multimodal texts using a picture book *(The Wolf)* and an internet site *(The International Wolf Center)*. The analysis indicated that readers rely merely on how the words are used to derive meaning from print-based texts. However, readers had opportunities to construct meaning through multiple senses with the help of simultaneous functioning of the modes of prints, images, movements, colors, gestures, 3D objects, music and sound on a digital screen. Reading comprehension required the use of some strategies such as predicting, guessing, imagining and questioning. Although readers engaged with the two types of texts by activating a variety of schemata, such as background, topical, and genre knowledge, how different modes contributed to the meaning-making process was different.

By taking into account the results of the aforementioned studies which proved the efficiency of providing multimodal texts to improve learners' reading achievement and progress, this experimental study aimed to investigate the impact of using a variety of multisensory materials and activities to increase learners' reading skills in English through the following research questions.

1. Is there a statistically significant difference between reading achievement scores of the control and experimental groups immediately after the implementation of MSLT?
2. Is there a statistically significant difference between reading achievement scores of the control and experimental groups a month after the implementation of MSLT?
3. What are the views of the teacher and the pupils on learning English, particularly reading through MSLT?

2. Method

The study was based on a mixed method approach including both a quantitative/positivist paradigm and a qualitative/interpretive paradigm to analyze the data to detail the various effects of MSLT on the learners' achievement of their reading skills. In state primary schools throughout mainstream education in Turkey, student composition of each class is formed randomly, which allows no intervention by an outsider agent. Due to this practice, the researchers did not have any control over the student profile. For this reason, the current study employed the quasi-experimental research type with the nonequivalent comparison groups design.

2.1. Context and Participants

The participants were 45 fourth grade pupils (9 and 10-year-olds) enrolled in a state primary school which is located in the city of Bursa in the North-West of Turkey. The researchers have been cooperating with this school for 3 years in accordance with the protocol between the Turkish Ministry of National Education and teacher education institutions. Therefore, this practicum school was chosen as the site for this study because of practical reasons: the location was convenient, and the researchers were already familiar with the student profile, the school personnel, and the school environment.

There were two intact groups of 4th grade classes: a control group which was given mainstream education, and an experimental group which was given the multisensory treatment. The group whose weekly schedule fit the researchers' weekly schedule was assigned as the treatment group. The pupils are introduced to English for the first time in the 4th grade in Turkish state schools, which was the time of the data collection. Therefore, our participants were not expected to have any previous knowledge of the English language. Based on the pre-test results, it was clear that the pupils in two classes were similar in terms of their demographic features and background knowledge. An experiment was conducted in the first term of 2012-2013 academic year. At the end of the treatment, both groups were measured to see if there was a significant difference between them. Their teacher was female with nine years of teaching experience with children. She was positive, helpful, energetic, tactful and cheerful. She seemed to have a positive attitude towards teaching English and her students.

2.2. The Treatment (MSLT)

The educational plan for the treatment group included the contents of three units within the coursebook "İlköğretim English 4 Student's – Workbook 1": unit 3, Family Members; unit 4, Clothes; and unit 5, Body Parts. Although the same teacher taught both the experimental and control groups, the participants in the control group were taught through following the coursebook, whereas the participants in the experimental group were taught via a variety of multisensory reading materials, including pictures, puzzles, PowerPoint presentations, songs, dramatic performances, rhymes, cartoons, masks, drawings, pictures, flashcards, posters, animations, photos, videos, toys, puppets and realia. Furthermore, reading activities consisted of the following activities: read and match; read and perform; read and correct the mistakes; read and color; and read and stick, all of which can be seen in the following pictures:

Picture 1 Pupils when doing read and perform activity

Picture 2 The teacher and the pupils when using a puppet monster to do a read and perform
activity

2.3. Instrumentation
2.3.1. Quantitative Instrument
The quantitative instrument was the reading achievement test prepared by the researchers.
With respect to the process of construction of the reading achievement test, the Starters level
Oxford Cambridge Young Learners English Tests (TYL), originally designed for ages 7-12,
were examined to determine appropriate test types for 4th grade foreign language learners. As
a result of the investigation, the following categories were included in the test:

1) Choose whether five sentences (4 points per each) are yes /no by looking at the
    picture of the character;
2) read five short passages and match them with the pictures (5 points per each);
3) read five speech bubbles and draw a line from each speech bubble towards the
    speaker (5 points per each);
4) read ten descriptive sentences and color two pictures accordingly (3 points per
    each).

The language input is simple and short supported with colorful pictures.

The tests were reviewed by seven experts who had MA or PhD degrees in teaching young
learners, the knowledge of testing and evaluation in ELT, and the knowledge of material
evaluation and adaptation. They made suggestions and comments which required certain
changes to improve the tests in areas such as the wording of the questions, distribution of the
scores for the items and parts, number of items in each part, sequence of the items, and
alternative samples for each part.

Moreover, five state primary school English teachers who were still teaching to 4th graders were also asked both to check the items to find out whether the test adequately sampled the content area (family members, clothes, and body parts), and whether the pictures selected for the tests were interesting. The elaborated versions of the tests were reexamined by the experts. After getting approval from the experts, the tests were piloted. In addition to the content validity, to ensure the face validity, 5 pupils participated in the pilot study. These pupils were asked to comment on the reading test.

In order to test the internal consistency, the 25-item reading test was administered to a group of 30 4th grade pupils as a pilot study. Based on the analysis of the item total correlation of the 25 items in the reading test, item 16 was removed from the test as the Corrected Item-Total Correlation value was low (0.127) for this item. The reliability analysis of the participants' answers on the remaining 24 items revealed a Cronbach's alpha score of $\alpha = .86$, which enabled the researchers to use the 24-item reading test in the present study. With regard to the main study, the analysis revealed a Cronbach's alpha score of $\alpha = .83$ in the post reading test and $\alpha = .87$ in the delayed post vocabulary test.

2.3.2. Qualitative Instruments

The qualitative instruments were the learners' diaries, the teacher's blogs, and the researchers' semi-structured interview with the teacher. The students in both the experimental and control groups were given diaries to write about their experiences, ideas and feelings with regard to each English lesson during the treatment. The students were at a beginner level; thus, they wrote their diaries in Turkish.

The teacher wrote her observations, feelings, and views about teaching each lesson with multisensory materials and activities regularly for 6 weeks in her blog. She inserted pictures of materials used in the classroom and students doing activities for each lesson in her blog comments. She wrote her blog in Turkish in order to appeal to not only English teachers but all teachers who desire to apply innovative ideas in their classes. The parts of her blog included in this study were translated from Turkish into English.

The semi-structured interview was conducted with the teacher immediately after the intervention and again immediately after the retention test to delve into the results obtained from the quantitative results. The interview, which was conducted in Turkish, was initially audio recorded and later transcribed for the analysis. The interview questions were as follows:

1. What are your views about MSLT? What are your positive and negative experiences during the program when you compare MSLT with the traditional method?
2. Can you compare the groups in term of motivation, attitude, and learning?
3. How can you evaluate the results particularly the increased scores emerged from the retention test?

2.4. Data Collection

The study was conducted after receiving approval from the Department of Research and Development of Education, the National Educational Directorate, and after getting an informed consent form from every pupil's parents. In the beginning of the experiment, the reading test was given to both groups as a pre-test to determine whether the groups were equal regarding their background knowledge on the target subject. The treatment was concealed within ordinary classroom routines. The time allocated to teach each unit was approximately two weeks. Because three units were involved in this study, the duration of the treatment was six weeks. A week after the treatment, the pupils were given the post-test to assess their

achievement in reading. A month after the treatment the pupils were given the delayed post-test to measure the retention.

2.5. Data Analysis

In this section, results of the data analyses based on achievement tests, diaries and the teacher's blog will be presented in the order of the research questions given above.

The independent sample t-test was used to calculate the delayed post-reading test achievement, whereas the Mann-Whitney U statistical test, due to the lack of conditions of normality (Nachar, 2008), was used to analyze the pre and post reading achievement scores. Furthermore, with regard to the qualitative part of the study, codes and categories were drawn from the data of the learners' diaries, the teacher's blog and the interview extracts by the researchers via the inductive content analysis technique.

Because the current study was a part of a PhD thesis for one of the researchers, in the process, the emerging categories, the scope of the data, and the similarities within and the differences between these categories were checked by the thesis monitoring committee to ensure the credibility of the results (for further see Elo et al., 2014).

3. Results

The table below presents the analysis of pre-reading achievement test scores to find out whether the groups were equal in terms of their reading comprehension.

Table 1
Mann-Whitney U Test Results of Treatment Groups' Pre-Reading Achievement Test Scores

Treatment Groups	N	*Mdn*	Range	Mean Ranks	Sum of Ranks	U	Z	P
Experimental	21	3	21	19	456	260	-.099	,921
Control	24	0	16	27.57	579			

The Mann-Whitney U test results indicated that there was no statistically significant difference between the groups' pre reading achievement test scores (U = 260, p = .921). Since there was no statistically significant difference between the groups' reading comprehension in the target subjects of the study, the groups could be described as equal to each other in terms of their reading skills.

The first research question of the study aimed to find out whether there was a statistically significant difference between reading achievement scores of the treatment groups immediately after the implementation of MSLT. Table 2 displays the analysis of the post-reading achievement test scores of the groups.

Table 2
Mann-Whitney U Test Results of Treatment Groups' Post-Reading Achievement Test Scores

Treatment Groups	N	*Mdn*	Range	Mean Ranks	Sum of Ranks	U	Z	P
Experimental	21	71	61	31.83	668.50	66.50	-4.222	,000
Control	24	42	65	15.27	366.50			

The Mann-Whitney U test results revealed that there was a statistically significant difference between the treatment groups' reading comprehension (U = 66.50, p = .000, r = -0.629). The median scores of the groups indicated that the experimental group (*Mdn* = 71) outperformed the control group (*Mdn* = 42) in their reading comprehension (see Table 2).

The second research question of the study aimed to reveal whether there was a statistically significant difference between reading achievement scores of the treatment groups a month after the implementation of MSLT. To answer this question, the reading retention test was administered to both groups a month after the treatment, and their scores were compared using an independent samples t-test as shown in Table 3.

Table 3
Independent Samples T-Test Results of the Treatment Groups' Reading Retention Scores

Treatment Groups	N	$\overline{X}$	SD	df	T	P
Experimental	21	80.09	18.843			
Control	24	51.70	18.205	43	-5.134	.000

When p value was considered [t = -4.381; p =, 000] in table 3, the t-test result indicated that there was a statistically significant difference with a large effect size (d = 1.53; r = 0.60) between the groups' reading comprehension. The mean scores revealed that the experimental group (*M*= 80.09) outperformed the control group (*M*= 51.70).

The results of the analyses of the narratives from the pupils' diaries, the teacher's blogs, and the teacher's interview with the researchers were used to answer the third research question which aimed to find out the views of the pupils and the teacher with regard to reading in English.

The overall results which emerged from the diary extracts of the experimental group indicated that learning English through MSLT was nothing short of fun and entertainment because the multisensory activities used in the study were designed to suit their age and taste. As a result, most of the pupils were very happy, and they all appeared to have developed positive attitudes towards the English course as indicated in the below diary extracts which were translated into English by the researchers.

> I will explain my thoughts and feelings about today's lesson. Today we had fun because our teacher brought three monsters, and I and my group members formed our own monsters by reading the description of our group's monster. It was an enjoyable game …(P 7)

> I love English my dear diary especially when Nihan teacher let me go to the board. Today I read out a card to my friend and attached two eyes to the right place on a puppet monster. I felt very happy. I very much like to write about my feelings in my dear diary…(P 10)

In addition, some of the pupils mentioned the difficulties they had when reading in English as seen in the following extracts:

> I understand English because I like it, but I cannot read in English sometimes… (P 4)

> Because I cannot understand, it is difficult to comprehend what I am reading in English…(P 6)

> I understand everything because our teacher read perfectly and clearly…(P 7)
>
> The teacher handed out the worksheet, and we completed them. She stuck the charts with pictures on the board, and we read the words by adding plural forms of clothes. I got a little bit bored…(P 8)

The participants in the control group also reported some views about reading in English in their diaries as reflected in the following statements

> Our English lesson was good, but it was difficult to read…(P 8)
>
> English is just a language like Turkish, but reading English letters is different…(P 14)
>
> Today we were going to have an exam, but our teacher forgot it. Never mind. We will study more. Anyway, we had a good lesson, but it was difficult to read. I am looking forward to the next lesson…(P 16)

In addition, the teacher wrote about her feelings, observations, and views on SLT in her blogs. The followings are related to reading aspects:

> …My pupils match the pictures with the written words of the clothes stuck on the sticks. To take the colorful sticks in their hands was enjoyable enough for them…
>
> In this lesson, I realized that it was more useful and effective to do the activity via a big colorful cardboard stuck on the board than to do via an individual worksheet at the end of the lesson. It is always more interesting for pupils to touch, to feel and to have the product outcome and succeed together…
>
> We planned our reading activity as a settling activity after the stirring ones. We read the paragraphs and matched with the pictures on the worksheet individually. However, the most fun part of the lesson was doing the same activity by touching the big pictures on the board as a reading game…

It is apparent in their diary extracts that multisensory materials and activities increased the pupils' willingness and desire to be actively involved in stimulating and challenging activities accompanied by manipulative materials. In fact, some individuals complained that they were not given a chance to be personally involved in activities and manipulate the materials as much as they would have liked. Some of the pupils became very upset when they could not get their costume to perform in the drama activity, hold the puppets one more time, or take a turn although they raised their hands.

The interview results have supported the idea that the pupils' participation increased because of the comprehensive nature of MSLT. The teacher enthusiastically emphasized that every pupil, including those labeled as being uninterested and having a low language aptitude, could find something interesting and motivating among the variety of multisensory materials and activities; thus, MSLT was more engaging. She suggested that the pupils' levels of interests, attention and motivation regarding what the coursebooks offer should be taken into account before labeling them lazy. She also admitted that learning becomes more fun and permanent

when the coursebook was supported by supplementary materials and activities. Furthermore, when the teacher becomes a slave to prescribed books, it is highly likely that the lesson will be teacher centered. However, MSLT puts learners in action, and teachers are expected to take more of a passive stance while still being active.

The results obtained from the interview also drew our attention to the use of manipulative as opposed to technological materials. Despite being a digital-native, the teacher believed that practicing language should be face-to-face through touching, doing, and experiencing because she observed that the pupils were more interested in the games played with manipulative materials than computer games. She attributed learners' increased interests to the kinesthetic aspect of manipulative materials, and she emphasized that learners spend less energy pressing the button or clicking the mouse. In her blogs, she explained that it was difficult for her to convince them to stay in their places when colorful and attractive multisensory materials were first presented in the classroom.

On the other hand, the diary extracts taken from the control group might portray the mainstream English education in Turkey. That is, most of the participants within the control group attributed the importance in the subjects to the level of difficulty and enjoyment, preparation for the lessons and exams, completion of exercises and homework, help from the teacher, new things to learn, responses to questions, and correct responses to questions. They also mentioned their favorite coursebook activities such as playing bingo, singing a song, and drawing and coloring a picture. The results also indicated the pupils' held negative views and feelings towards doing revision and writing in a mechanical way. Despite having difficulties in dealing with some of the points, they fostered positive attitudes towards the English course as a result of their love for their teacher saying that she makes the lesson more enjoyable for them.

4. Discussion
The results of the current study are in line with the following studies conducted by Buelow (2015); Branscombe (2015), Brown (2013), Martens et al. (2012), Proctor et al. (2007), Salkhord et al. (2013) who investigated the impact on learners' reading comprehension by a variety of multisensory materials, including different images, print-based graphic novels, pictures, vocabulary webs, dramas, graphic organizers, picture books, digital reading environments, digital videos, and digital stories. Therefore, it is plausible to further extend the results of the aforementioned studies that aimed to develop reading skills in English to the findings of the current study which also investigated the effects of MSLT on 4th grade learners' reading achievement in English. In line with the literature, the short reading texts were supported by multisensory materials such as different big colorful pictures, a variety of realia such as clothes, handcrafted models, magnetic monsters bodies, puppets, and a big hand-made puppet monster. The pupils were usually expected to read the texts in pairs or groups, but sometimes they read individually. Moreover, they were asked to show that they understood by manipulating multisensory materials depending on the reading tasks such as matching, finding, sticking, and doing something physically. Thus, with regard to reading achievement, when compared to reading the coursebook supported by pictures and limited audio, the success of MSLT could primarily be attributed to the use of a variety of multisensory reading materials and activities.

In addition, in this study, some of the texts were read cooperatively through PowerPoint slides and digital stories. Hence, the success of the reading in this intervention program can also be attributed to the collaborative aspect of reading. The results of diary extracts and the teacher blogs showed that the pupils liked group work activities more than individual ones. This

might be due to the fact that they are naturally talkative and social; they feel relaxed when working together, and their interpretation of the text can be facilitated through negotiation with their peers.

Besides, the use of MSLT, particularly through manipulative materials rather than visual materials, fostered the pupils' love for reading as reported by one pupil who stated that she became very happy when she read out a card to her friends and attached the detachable two handcrafted fiber eyes as the target body part to the right place on a puppet monster. Moreover, in a *Read and Perform* activity, which involved three magnetic monster bodies and a variety of magnetic body parts, two more pupils expressed their positive feelings towards this learning style saying that they had a barrel of fun when forming their own monster in the competitive group reading game, and they hoped that the other lessons would be as enjoyable as that day's lesson. On the other hand, one pupil reported that he got a little bit bored when matching the pictures on the board with the written words he was expected to read. This could be because the concrete operation children loved manipulative materials more than the visual materials. The result contrasted with the findings of the first research question which revealed that the pupils were predominantly visual, then auditory and last kinesthetic learners. However, it is compatible with the cooperating teacher who claimed in the interview that the pupils were mostly kinesthetic and liked the manipulative materials the most.

According to Wang (2013), multimodal texts which combine the images and texts to present the subject matter directly upon the viewer's first impression promote easy interaction with the text and comprehension of the subject matter. In line with Wang, in the present study, readers were provided with numerous visual, tactual and action-based clues with the texts to facilitate their comprehension of the texts. Based on the results which emerged from the diary extracts, it is clear that reading was also considered difficult not only for some of the participants in the control group, but also for those in the experimental group. Although they expressed their positive attitudes towards the English course and some reading activities, some of them had difficulties reading in English. One of them thought that reading was not only difficult but also boring, particularly with regard to the activity which required learners to read individually and to do a matching activity. The teacher's blog also showed that the pupils did not enjoy the individual reading activity based on the worksheet that included a matching activity. Instead, they like and prefer cooperative reading activities such as reading games. This is also supported by some of the diary extracts. For instance, in her diary, one of the pupils stated that she had fun when the teacher had them form their own monsters as a group with the help of manipulative materials by reading the descriptions of the monster. Nonetheless, some of the participants seem to have developed negative attitudes towards reading in English, which was also reported by Kirsh (2008) and Farrell (2009) who explained that YLs found it cognitively difficult to both decode symbols and comprehend the message. In addition, one of the pupils stated that s/he could understand the text with the help of the teacher. It seems that this particular pupil needs his/her teacher as a facilitator. It is possible that these discontent kids may have had reading difficulties in Turkish.

Based on the t-test results, a statistically significant difference appeared between the treatment groups with the reading retention scores after the implementation of MSLT favoring the experimental group, which is in line with Salkhord et al. (2013). It is helpful to bear in mind the words of Masuhara (2007) who points out that if the text triggers positive emotion, readers are likely to add value, interest, and meaning to the text, which results in a durable memory to assist recall. It is no surprise that the pupils in the experimental group reported mostly positive feelings with regard to multisensory reading activities, particularly accompanied with manipulative materials and action-based activities.

5. Conclusion

The overall results of the study revealed that MSLT was an effective technique in developing pupils' reading skills in English. The cooperating teacher emphasised in the interview that this intervention had been successful because it has led pupils to foster positive attitudes towards learning English, which motivated them to study more even at home. In addition, they were likely to study more just before administering the delayed post-test due to their written English exam. Thus, it was apparent that MSLT revealed positive attitudes towards learning English, which helped the pupils not only to better learn new information but also to keep it in their long-term memory.

Including English as a school subject in the curriculum as early as 2nd year does not itself guarantee successful learning in Turkey, but the use of appropriate techniques does, on the condition that they are applied by qualified and competent teachers who are particularly educated to teach YLs and who are equipped with the required knowledge of learning theories, children's characteristics, and the best possible ways to teach YLs. In a nutshell, if teachers do not want to paint every pupil in a single brush using one method they should follow MSLT which can pave the way for every learner to progress in language learning by integrating a variety of activities into the classroom learning experience.

The findings of the study provide methodologically-sound evidence that implementing MSLT, which appeals to a child's senses such as seeing, hearing, and feeling in TEYLs, can promote language learning. In fact, multisensory materials have been used by some English teachers as an indispensable part of some contemporary child-appropriate techniques in Turkish YLs' classrooms. However, there is a paucity of research to reveal its positive impact on learners' reading achievement in English. Therefore, in addition to this study, further studies are needed to reveal advantages and disadvantages of teaching English through MSLT at all proficiency and age levels. It is hoped that MSLT will be well placed in the mainstream Turkish EFL classroom in order to ensure the success of language learning and teaching.

The outcome of the study has implications for many stakeholders in foreign language education in Turkey. For instance, more comprehensible coursebooks should be published to include more multisensory materials and activities to have better connections among the texts and visuals including pictures, drawings, photographs, graphs, charts, etc. Moreover, providing print-rich environment is significant for the pupils' exposure to English not only inside the classroom but also outside the classroom. In elementary schools, to scaffold the teaching and learning process and foster positive attitudes towards learning English, a variety of literacy and visual materials could be provided to extend exposure beyond language classrooms to include all around elementary schools such as the walls of corridors, doors, windows, gardens, etc. For teachers, no method can guarantee success in learning a foreign language, including MSLT. However, elementary school English teachers can use colorful, attractive, and purposeful multisensory materials which hit visual, auditory and kinesthetic learning styles at the pre reading phase to draw students' attention to the reading text and to motivate them to do reading tasks.

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