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B1 seviyesinde dilbilgisi ölçen çıkartmalı sınavlarda görsel araçların kullanılmasının etkisi: Yarı-deneysel bir çalışma

The effect of using visual aids in cloze tests testing grammar at B1 level: A quasi-experimental study

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ÖZ

Görsel araçların, dil sınıflarında kullanımının öğrenmeyi veya sınıf katılımını teşvik edip etmediklerini görmek için önemli bir miktarda literatür yayınlanmıştır. Dil öğretmenin yanı sıra, görseller, sınav biçeminde de yıllardır kullanılmaktadır, ama dilbilgisi sınavında çoktan seçmeli çıkartmalı sorular aracılığıyla görsellerin türünün ve varlığının ne kadar etkili olduğunu göstermek için bir araştırma eksikliği mevcuttur. Literatürdeki boşluğu kapatmak için, bu mevcut çalışma, çıkartmalı sınavlardaki görsel araçların kullanımının, özellikle gerçek resim, şema veya hiç resim kullanmamanın, öğrencilerin notları ve sınav tamamlama süreleri üzerindeki etkilerini belirlemek amacı gütmektedir. Bu yarı-deneysel, nicel bir çalışmadır. Veri, çoktan seçmeli sorular ile duyum ikiliği ile ilgili bir bağlamda dilbilgisini sınayan çıkartmalı sınavlar vasıtasıyla toplanmıştır. Örneklem, İstanbul'da bir devlet okulunun hazırlık okulunda okuyan 64 adet (27 kadın, 37 erkek) B1 seviyesindeki öğrenciden oluşmuştur. Bütün katılımcılar 18-20 yaşları arasındaydı ve farklı lisans bölümü öğrencileriydi. Toplanan veri SPSS programı ile analiz edilmiştir. Sonuçlar, görsel şekli ve öğrencilerin sınavları tamamlama süreleri arasında önemli bir fark olduğunu ortaya koymuştur. Sınavı tamamlamak farklı grupların 2 ile 7 dakika arasında zamanını almıştır. Gerçek resim grubu en çok zamanı harcamıştır (M=4.45), onu şema grubu (M= 3.47) ve hiç görselin olmadığı grup takip etmiştir (M=3.45). Ama, farklı görselli sınavlara giren öğrencilerin notları arasında anlamlı bir fark bulunmamıştır.

Anahtar Sözcükler: Çıkartmalı sınavlarda görsel araçlar, sınavlarda şema kullanımı, sınavlarda gerçek resim kullanımı, dilbilgisi ölçmede görsel kullanımı

ABSTRACT

A considerable amount of literature has been published about the use of visual aids in language classrooms to see if they foster learning or classroom participation. Visuals have been used in test format for years, as well; however, there is a dearth of research to indicate how effective the presence and the type of visuals in testing grammar through multiple-choice cloze tests. To close the gap in the literature, the current study aims to identify the effect of using visual aids, specifically real pictures, diagrams, and no pictures in a cloze test on students' grades and test completion times. This is a quasi-experimental, quantitative study. The data was collected through cloze tests that tested grammar via multiple-choice items within a context about synesthesia. The sample consisted of 64 B1 level preparatory school students (27 females, 37 males) studying at a state university in Istanbul. The participants were from different majors. The data were analyzed through SPSS. The results revealed a significant difference between the visual types and students' completion time of the texts. It took different groups between 2 minutes to 7 minutes to complete the test. The real picture group spent the most time (M= 4.45), which was followed by the diagram group (M= 3.47) and no visual test group (M=3.45). However, no significant differences were found between the grades of the students who took tests with different visuals.

Keywords: Visual aids in cloze tests, diagrams in tests, real pictures in tests, visuals in testing grammar

INTRODUCTION

There has been increasing interest in the use of visual aids in education (Dolati & Richards, 2010). Visuals include pictures, models, charts, maps, videos, slides, real objects, charts, flashcards, bulletin boards, chalkboards, slides, overhead projectors, and they make the lessons simpler to understand (Shabiralyani, Hasan, Hamad, & Iqbal, 2015). Educational technology, especially in the area of visual aids, has boosted teaching and learning dramatically, and visuals have become an indispensable part of teaching. With the advances in technology, and the technology available in their daily lives, printed texts alone are no longer attractive for the 'thumb generation' (Alibec, Balagiu, & Patisan, 2016); therefore, keeping students motivated and having them participate in the lesson has become a more challenging task for teachers than ever before. There is a plethora of research that tries to uncover the relationship between success in second language learning and visual use in teaching. A large body of literature has found that providing learners with a visual such as pictures or diagrams before the listening or reading of a passage, helps learners to internalize that passage (Arey, 1999; Herron, Hanley & Cole, 1995; Hodapp, 1978; Mueller, 1980; Rossiter, 2008; Canning-Wilson, 2001). Not only do pictures provide a situational context for developing vocabulary and language comprehension, but it is also believed that learners store information better when it is connected to mental images (Zewardy, 2007). The facilitative role of visual aids is supported by the multimedia principle, as well. It suggests that people learn better from words and pictures than from the words alone (Mayer, 2009). The effectiveness of using visuals in teaching and learning is also supported by dual coding theory, which argues that when the information is received through various channels such as visual and aural, it reduces the cognitive load of learners and allows them to understand better (Mayer, 2001). Fletcher and Tobias (2005) and Mayer (2009) also favor the use of visual aids by claiming that students learn better in environments where the visual and the text are presented together than they do in environments that include the text solely.

Numerous studies have attempted to explain how visuals facilitate or inhibit the learning process of learners in different skills, namely, listening, speaking, writing, and reading comprehension. (Agwu & Ogochi, 2019; Listyani, 2018; Mueller, 1980; Refnaldi, 2019; Zewardy, 2007). To start with, Agwu and Ogochi (2019) found out that students who were taught by using visuals outperformed those who were taught without visuals. Zewardy (2007) also reported that since visuals facilitate understanding, they raise written production and comprehension test scores of language learners. Another study by Litsyani (2018) revealed that pictures, as well as comic strips, were very useful in helping students to write narratives since they aided learners to generate ideas, foster creativity. In the same study, Litsyani (2018) pointed out that students broaden their imagination and motivation in writing despite some difficulties in some facets like ideas, grammar, diction, and plots. Mueller (1980) stated that even though students cannot express their ideas fluently, visuals provided contextual cues for listening passages and hence could reduce their shame, nervous and reminded them about the topic to be described. A recent study by Zewardy (2007) about the affective issues in learning also reported that dealing with a language that learners are not competent at puts them under much stress; henceforth, integrating pictures in language input may lower anxiety level and make students more receptive to classroom linguistic input by looking at situational scenes. A considerable amount of research has been published on the use of visual aids in speaking exercises, as well. One study by Refnaldi (2019) examined the use of different visuals, namely pictures, objects and markers, and found out that pictures were the most helpful visual aid of the three for students. Pictures help data collection and analyzing learner's speech because visual aids help learners elaborate on what they speak and this way produce real-life like samples of their speaking proficiency (Rossiter, Derwing, & Jones, 2008). Several attempts have also been made to reveal the relationship between visual use and reading. In order to go beyond the text, visualization or imagery is a helpful tool (McNamara, Ozuru, Best, & O'Reilly, 2007). So as to cope with the complexity of a literary text, visual aids such as graphics, illustrations, pictures, audio, videos could be used to facilitate students' understanding of the literary concepts mentioned in the texts (Pillai & Vengadasamy, 2010). In another study, Schriver (1997) argues that overall

pictures help language learners because our memory for pictures seems to be better than the memory we have for words. Terrell (1986) also supported the use of visuals in teaching vocabulary by stating that putting an unknown word in the target language with a visual representation is more effective than direct translation and facilitates vocabulary learning. The impact of images has also been proved to be superior to the effect of the texts (Clark & Lyons, 2004).

However, Schriver (1997) also acknowledges that pictures can be distracting in those cases when they are all over the text and do not convey any meaningful information, and Shriver also states that there is still controversy about bringing words and pictures in a harmonious way. The presentation of extraneous (i.e., irrelevant or unnecessary) information could inhibit learning with multimedia (Rop, Schüler, Verkoeijen, Scheiter, & Van Gog, 2018). Therefore, it is essential that we are cautious while choosing visuals since they may hinder as well as aid the assessment of language learning. According to Canning-Wilson (2001), pictures on tests must be relevant to learners if a fair test on his second language is desired. She questions the fairness of a test where a female Arabic speaker is tested via a picture of a meeting of man and woman in a night club to have some drink.

A large and growing body of literature has investigated the use of visuals in language learning and teaching; however, far too little attention has been paid to the use of visuals in tests. According to Canning-Wilson (2001), if a visual is used in a testing or teaching situation, it can enhance clarity and give meaning to the text or the message being communicated. In his dissertation, Suvarov (2008) sought to unravel the relationship between photographs, videos, and audio-only format in a listening test and students' scores. The results of the data analysis suggested that there was a statistically significant difference in test-takers' scores for listening passages with different types of visuals: scores for video-mediated listening passages are significantly lower than the scores for audio-only passages and listening passages accompanied by a photograph. In another study that set out to determine the effects of using visuals in testing, Turk and Robertson (2000) found that multimedia components such as pictures, diagrams, and animations that were present in measurement tools contribute to students perceiving, remembering and understanding the item stem. The focus and only data collection tool of this study, multiple-choice tests, which are the most frequently used measurement tools, are generally prepared only in text form. Especially in high stake exams, we are almost unlikely to encounter a test item accompanied by visuals. In one of the rare research in literature, Fırat (2016) tried to find out the effects of using modal, real pictures and no pictures in an elementary school math exam. The results of his study revealed that the students gave more correct answers to the same questions in the tests with real visuals, and in terms of test completion time, the text-only group was more successful than the other groups.

To date, few have addressed the issue of using different sorts of visuals in testing students' language skills through multiple-choice tests; therefore, this study seeks to close this gap in the literature.

This paper aims to answer the following questions:

1. Does the use of real pictures, diagrams, and no pictures in multiple-choice cloze tests affect students' scores?
2. Does the use of real pictures, diagrams, and no pictures in multiple-choice cloze tests affect students' test completion times?

METHODOLOGY

Research Design and Data Collection Instruments

This is a quantitative study, and it has a quasi-experimental design since participants are not randomly assigned to conditions or orders of conditions even though the independent variable is manipulated (Cook & Campbell, 1979). The researcher chose three convenient classrooms to

collect the data. The data were collected through three different forms of the same cloze test with multiple-choice grammar items. The tests included a colored real picture (See Appendix A), a colored diagram (See Appendix B) or no visuals (See Appendix C). The length of the text was 360 words. The text that was used in the test was about an abstract topic, synesthesia. The cloze test involved seven multiple-choice items, and students had to circle the option that they thought was correct.

Participants and Setting

The study was conducted in the Fall Term of the 2019-2020 academic year. The participants were 64 B1 level students (27 females, 37 males) who were studying at the preparatory school of a state university in Istanbul. In the preparatory school, there were 14 classes at the B1 level, and 3 classes were chosen through a convenience sampling method. Students studied a total of 18 hours a week, and in the classrooms, there were students from different majors.

Procedure

First of all, to ensure the content validity of the instrument, target grammar items were identified so as to include a test item from each grammar objective that had been covered until then. Next, the text for the test was chosen and adapted by the researcher. To have the expert opinion, the researcher asked the senior test developers at the school about its appropriateness for the students' proficiency level, and necessary alteration regarding the sentence structures was done based on the discussions. In the next step, and the test items were written by the researcher, and the test was proofread by the test developers of the school to make sure that there was one correct answer and the distractors were plausible. Once the test was ready, the researcher inserted visuals (a diagram and a real picture) into two test formats; one test included no visuals. When the test was ready, three teachers teaching at B1 level volunteered to spare some time of their lesson for the research. The researcher reminded the teachers that students did not have to write their names on the papers but had to time themselves and write the amount of time they spent to complete the text in the allocated space on the cloze tests. Finally, the test with a real picture, the test with a diagram and the test with no visuals were administered in three different classes at the same classroom hour.

Data Analysis

In order to analyze the data, SPSS version 25 was used. Assessment of the normality of data is a precondition for many statistical tests since, in parametric testing, normal data distribution is an underlying assumption (Mishra et al., 2019). Therefore, first of all, the normal distribution of the data in all groups was assessed through descriptive statistics. Since the results of the tests showed that the data was not symmetric, nonparametric test (Kruskal-Wallis) and descriptive statistics were conducted.

Statement of Publication Ethics

All the rules stated in the "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed in the entire process from the planning, implementation, data collection to the analysis of the data. None of the actions specified under the second section of the Directive, "Scientific Research and Publication Ethics Actions" have been carried out.

During the writing process of this study, scientific, ethical and citation rules were followed; no falsification was made on the collected data and this study was not sent to any other academic media for evaluation.

Ethical committee permission information

The name of the board that carried out ethical evaluation: Yildiz Technical University Ethical Comittee

The date of the ethical evaluation decision: 06.05.2020

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RESULTS

At the outset, to determine if the data is distributed normally, the test of normality was conducted through SPSS, and results indicated that there the distribution of the data was not symmetrical; henceforth, nonparametric tests were administered to analyze the data. In order to determine if there are statistically significant differences between the groups who took the grammar cloze tests with real pictures, diagrams, no visuals and their grades and time in which they completed the tests, independent samples Kruskal-Wallis test was run through SPSS. The results were displayed in Table 1.

Table 1

The Results of Kruskal-Wallis Test

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of COMPLETION TIME is the same across categories of	Independent-Samples Kruskal-Wallis Test	.028	Reject the null hypothesis
2	The distribution of SCORE is the same across categories of	Independent-Samples Kruskal-Wallis Test	.895	Retain the null hypothesis

Asymptotic significances are displayed. The significance level is .05.

As can be seen from Table 1, the difference between students' scores and the type of visuals in different tests was not found to be significant (p >.05). However, as can be seen in Table 1, there was a significant difference between the test completion time of the groups who did tests with real pictures, diagrams and no visuals (p <.05). To further analyze this data, Table 2 demonstrates the comparisons of groups in terms of completion time.

Table 2

Pairwise Comparisons of Kruskal-Wallis Test

Sample1- Sample 2	Test Statistics	Std. Error	Std.Test Statistic	Sig.	Adj.Sig
No visuals-Diagrams	2.709	5.439	.498	.618	1.000
No visuals-Real pictures	-14.180	5.631	-2.518	.012	.35
Diagrams-Real pictures	-11.471	5.510	-2.082	.037	.112

Each row tests the null hypothesis that Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The Significance level is .05
Significance values have been adjusted by the Benforroni correction for multiple tests.

It is evident in Table 2 that there is a significant difference in terms of test completion time between groups with no-visual test and real-pictures test and also groups with diagrams and real pictures (p<.05). However, no significant differences were observed between no-visuals and diagrams groups regarding the time they spent completing the test (p>.05). Since this table is unable to demonstrate which group (no-visual or real picture) needed more time to complete the test, descriptive statistics were run through SPSS, and the results were displayed in Table 3 and Table 4.

Table 3

Descriptive Statistics for the Tests with Real Pictures

		Time	Grade
N	Valid	20	20
	Missing	0	0
Mean		4.4500	5.2500
Median		4.5000	5.0000
Mode		3.00	6.00
Skewness		.220	-.097
Std. Error of Skewness		.512	.512
Kurtosis		-.973	-.869
Std. Error of Kurtosis		.992	.992

Table 3 above shows the descriptive statistics for the tests with real pictures. As can be seen in Table 3, the mean time that was spent doing the test with real pictures was found to be 4.45. On the other hand, descriptive statistics for the tests with no visuals are displayed in Table 4 below. The mean time that was spent doing this test was found to be 3.45, meaning that students who took the test with real pictures (M= 4.45) spent more time doing the test than no visual group (M= 3.45).

Table 4

Descriptive Statistics for Tests with no Visual

		Time	Grade
N	Valid	21	21
	Missing	0	0
Mean		3.4571	5.2857
Median		3.5000	6.0000
Mode		4.00	6.00
Skewness		.669	-.597
Std. Error of Skewness		.501	.501
Kurtosis		1.012	-.518
Std. Error of Kurtosis		.972	.972

DISCUSSION AND CONCLUSION

The present study was designed to determine the effect of visual use in testing grammar specifically through cloze tests since very little was found in the literature about this relationship. The first question on this paper sought to answer the effects of using real pictures, diagrams and no visuals on students' scores. The results of this study did not show any statistically significant relationship between the mentioned variables. However, the findings of the current study do not support the previous research (Firat, 2016; Suvorov, 2008; Turk & Robinson, 2000) in which they indicated a significant relationship between the type of visuals and students' grades.

The second question in this research was to see if the use of real pictures, diagrams or no visuals had any effect on students' test completion times. The findings of this study seem to be consistent with the research by Firat (2016), which demonstrated that the text-only group outperformed the text+model picture and text+real picture group in terms of test completion time. It is apparent from the results of this particular study that integration of a visual aid into the cloze test did not result in an increase in the scores of the learners; therefore, we can

conclude that using a real picture in a cloze test was to the detriment of the test taker. A possible explanation for this might be that, as also highlighted by Schriver (1997), the real picture and the diagram chosen might not have been facilitative in conveying the meaning of the concept of synesthesia in the text. Furthermore, this result may also be explained by the fact that the exam papers of students are never printed in color for the quizzes and midterms within the term, so it was possible that they spent more time looking at the pictures.

Implications and Limitations of the Study

The findings of this study have important implications for test developers working at test offices at universities in Turkey. The question of whether to insert a visual within a test or what type of visual to insert may not be as crucial or they may avoid printing visuals in color in the tests they prepare.

Finally, a number of important limitations need to be addressed. Firstly, the current study has only examined students at B1 level, and the sample was only 64 students. A larger sample with students from a different level of proficiency could lead to different results. Another limitation of this study is the length of the test. The test through which the data was collected only consisted of seven questions. Thirdly, the study did not evaluate the use of different visuals in different skills. Therefore, further research is needed to account for the effect of using different types of visual aids in different tests such as listening and reading or test formats such as gap-filling by making use of a larger sample and sample from different proficiency levels

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Support and Thanks

As author, I do not have a statement of support or thanks for the process of conducting the research.

Contribution Rate of Researchers

The entire process of the research was carried out by the only declared author of the article.

Declaration of Conflict of Interest

As the author of the research, I state that I have no statement of interest / conflict.

Statement of Publication Ethics

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GENİŞLETİLMİŞ ÖZ

Giriş

Dil öğretiminde görsel araçların kullanımı yeni bir oldu değildir ve metne dayalı bilgiye yardımcı olmak üzere kullanılan görseller genellikle fotoğraflar, çizimler, videokasetler, filmler, sunular, şemalar ve animasyonlardan oluşmaktadır. Teknolojideki yenilikler ile birlikte, sadece metinler yeni nesil için yeterli gelmemektedir. Alanda yapılan çalışmalara bakıldığında, görsel araçların öğrenmeye katkısını ortaya çıkarmaya çalışan oldukça fazla çalışmaya rastlanabilir ve çoğu çalışma görsel araç kullanımının öğrenmeye katkısı olduğunu ortaya koymuştur. Ama görsel araç kullanımının sınıf içerisinde yapılan sınavlardaki, özellikle bu çalışmada kullanılan çıkartmalı sınavlarda, yardımcı olup olmadığı ile ilgili çok sınırlı çalışma vardır, bu yüzden bu çalışma, literatürdeki boşluğu kapatmayı hedeflemektedir.

Yöntem

Bu araştırma aşağıdaki soruların cevaplarını bulmayı hedeflemektedir;

1. Gerçek resim veya şema kullanımı veya hiç görsel kullanmamak çok seçmeli çıkartmalı sınavlarda öğrencilerin notlarını etkilemekte midir?
2. Gerçek resim veya şema kullanımı veya hiç görsel kullanmamak çok seçmeli çıkartmalı sınavlarda öğrencilerin sınavı tamamlama sürelerini etkilemekte midir?

Bu çalışma nicel bir çalışmadır. Bu çalışmada, çoktan seçmeli sorular barındıran aynı çıkartmalı sınavın, üç farklı görsel içeren şekli kullanılmıştır. Kullanılan sınavlar renkli gerçek bir resim, renkli bir şema içermekte ya da hiçbir görsel barındırmamaktadır. Metinde kullanılan konu, görsel bir yardımcıya ihtiyaç duyulunabilineceği düşünülen "duyum ikiliği" hakkındadır.

Çalışma 2019-2020 eğitim öğretim yılında yapılmıştır. Katılımcılar İstanbul'da bir devlet üniversitesinde okuyan 64 (27 kadın, 37 erkek) B1 seviyesindeki hazırlık okulu öğrencilerinden oluşmaktadır. Araştırmaya katılan öğrencilerin sınıflarında, farklı bölümlerde okuyan öğrenciler mevcuttur.

Verileri analiz etmek için SPSS 25. Versiyon kullanılmıştır. Öncelikle verinin normal dağılıp dağılmadığı test edilmiştir, sonuçlar verinin normal dağılım sergilemediğini gösterdiği için parametrik olmayan testler (Kruskal-Wallis) ve betimleyici istatistik kullanılmıştır.

Bulgular

Dilbilgisi çıkartmalı sınavına katılan gruplar arasında, sınavı tamamlama ve aldıkları notlar bakımından önemli fark olup olmadığını belirlemek için SPSS aracılığıyla bağımsız örneklem Kruskal-Wallis testi yapılmıştır. Sonuçlar, öğrencilerin sınavdan aldıkları notlar ve sınavlarda kullanılan görsel araçlar arasından anlamlı bir fark olmadığını ortaya koymuştur. Ama aynı testin sonuçlarına göre öğrencilerin sınavı tamamlama süresi ve kullanılan görsel araç arasındaki fark anlamlı çıkmıştır. Bu ortaya çıkan anlamlı farkın, hangi görsel araçlara göre farklılık gösterdiğini belirlemek için Kruskal-Wallis testinin ikili mukayese sonuçlarına bakılmış ve sadece hiç görselin kullanılmadığı ve gerçek resimin kullanıldığı iki sınav arasında sınavı bitirmek için harcanan zaman bakımından anlamlı bir fark olduğu görülmüştür. Sonrasında, hangi grubun (hiç görsel kullanılmayan, gerçek resim kullanılan) sınavı bitirmek için daha fazla zaman harcadığını belirlemek için, SPSS ile betimsel istatistik yapılmıştır. Sonuçlar ortaya koymuştur ki, hiç görsel kullanılmayan testi yapan grup (M= 3.45), gerçek resim kullanılan gruptan (M= 4.45) sınavı daha önce tamamlamıştır.

Tartışma ve Sonuç

Bu çalışma, literaturde çok kısıtlı çalışmanın bulunması sebebiyle, dilbilgisi ölçmede, özellikle çoktan seçmeli çıkartmalı sınavlarda, görsel kullanımının öğrencilerin notları ve sınavı tamamlama süreleri üzerindeki etkilerini ölçmek için yapılmıştır. İlk araştırma sorusu, bahsi geçen değişkenlerin öğrencilerin notları üzerinde etkisi olup olmadığını sorgulamaktadır. Bu

araştırmadan elde edilen veri, bahsi geçen değişkenler ile öğrencilerin aldıkları notlar arasında anlamlı bir ilişkinin olmadığını ortaya koymuştur. Bu araştırmanın sonuçları daha önceden yapılan bazı araştırmalar (Suvorov, 2008; Turk & Robinson, 2000; Firat, 2016) ile çelişmektedir.

İkinci araştırma sorusu, görsel resim veya şema kullanmanın, ya da hiç görsel araç kullanmamanın öğrencilerin sınavı tamamlamaları konusunda etkili olup olmadığıydı. Elde edilen sonuçlara göre, bahsi geçen değişkenler ile sınav tamamlama süresi arasında anlamlı bir fark bulunmuştur ve bu anlamlı fark sadece hiç resim kullanılmayan grup ve gerçek resim kullanılan grup arasında gözlenmiştir. Betimleyici istatistik sonuçlarına göre, gerçek resim grubu en çok zamanı harcamıştır (M=4.45), onu şema grubu (M= 3.47) ve hiç görselin olmadığı grup takip etmiştir (M=3.45). Bu sonuçlar, daha önce Fırat (2016) nın yaptığı araştırma ile benzer sonuçlar ortaya koymuştur.

Bu araştırma ortaya koymuştur ki, öğrencinin dilbilgisinin ölçüldüğü çıkartmalı bir sınav içerisine bir görsel araç yerleştirmek, onların notlarını arttırmada önemli bir rol oynamamıştır. Bilakis, sınavda gerçek bir resim kullanmak, öğrencilerin sınavı bitirme sürelerini arttırmıştır. Bu durumun mümkün bir açıklaması olarak "duyum ikiliği" ile ilgili seçilen görsel, Schriver (1997) nin de ifade ettiği gibi, kavramın anlamını aktarmak konusunda yardımcı olmamış olabileceği söylenebilir. Ya da, fazladan harcanan zaman, öğrenciler ilk defa sınavda renkli bir resim ile karşılaştıkları için, resme bakarak beyhude zaman geçirmiş oldukları şekline açıklanabilir.

APPENDIX A: TEST WITH REAL PICTURE

Gender: Female ……. **Score**: ……..

Male …….

Test Completion Time: ……minutes

The Colorful World of Synesthesia

The number "6" is a bright shade of pink. Listening to a cello smells like chocolate. And eating a slice of Pizza creates a tickling sensation on the back of your neck. These are some of the interesting examples of an unusual condition: synesthesia. This condition causes people to see sound, smell colors, or taste shapes. Therefore, people With synesthesia (or synesthetes) **1)** ……. a blending of their senses every time they see, smell, taste, touch, or hear.

A research group in the mid-1990s **2)**…….. brain-scanning techniques to measure synesthesia. The experiments revealed that as soon as a synesthete heard a word, the smelling part of the brain **3)**…….. , too. However, that type of activity did not occur in non-synesthetes. Some synesthetes say their condition can be uncomfortable at times. Therefore, the lives of people with synesthesia are **4)** …….. the ones who do not have this condition. Yet, for ages, many people **5)** …….. synesthesia; including famous Russian writer Vladimir Nabokov and physicist, Richard Feynman. They thought of their abilities as a gift and used it as a creative force.

So how can the sound of a musical instrument lead to color? These days, scientists **6)**…….. to discover exactly how information from the senses comes together in the brain. There is a lot of hardship and mystery behind this unique condition. However, the scientists believe that soon they 7) …….. better ways to identify the reasons for synesthesia and how it leads to the combination of different senses together.

Please circle the best option

1.	**a**. were experiencing	**b**. experience	**c**. have experienced	**d**. experienced
2.	**a**. have used	**b**. had used	**c**. used	**d**. would use
3.	**a**. has responded	**b**. respond	**c**. will respond	**d**. responded
4.	**a**. not as easy as	**b**. easier than	**c**. less easy	**d**. the easiest
5.	**a**. were having	**b**. have had	**c**. are having	**d**. will have
6.	**a**. will be trying	**b**. have tried	**c**. will try	**d**. are trying
7.	**a**. are developing	**b**. developed	**c**. will develop	**d**.have developed

APPENDIX B: TEST WITH A DIAGRAM

Gender: Female …… **Score**: ……..

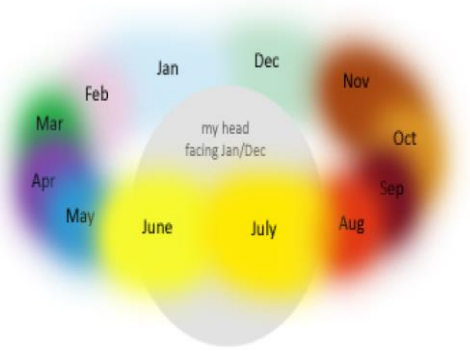
Male ……

Test Completion Time: ……minutes

The Colorful World of Synesthesia

The number "6" is a bright shade of pink. Listening to a cello smells like chocolate. And eating a slice of Pizza creates a tickling sensation on the back of your neck. These are some of the interesting examples of an unusual condition: synesthesia. This condition causes people to see sound, smell colors, or taste shapes. Therefore, people With synesthesia (or synesthetes) **1)** ……. a blending of their senses every time they see, smell, taste, touch, or hear.

A research group in the mid-1990s **2)**…….. brain-scanning techniques to measure synesthesia. The experiments revealed that as soon as a synesthete heard a word, the smelling part of the brain **3)**…… , too. However, that type of activity did not occur in non-synesthetes. Some synesthetes say their condition can be uncomfortable at times. Therefore, the lives of people with synesthesia are **4)** …….. the ones who do not have this condition. Yet, for ages, many people **5)** …….. synesthesla; including famous Russian writer Vladimir Nabokov and physicist, Richard Feynman. They thought of their abilities as a gift and used it as a creative force.



So how can the sound of a musical instrument lead to color? These days, scientists **6)**…….. to discover exactly how information from the senses comes together in the brain. There is a lot of hardship and mystery behind this unique condition. However, the scientists believe that soon they 7) …….. better ways to identify the reasons for synesthesia and how it leads to the combination of different senses together.

Please circle the best option

1.	**a**. were experiencing	**b**. experience	**c**. have experienced	**d**. experienced
2.	**a**. have used	**b**. had used	**c**. used	**d**. would use
3.	**a**. has responded	**b**. respond	**c**. will respond	**d**. responded
4.	**a**. not as easy as	**b**. easier than	**c**. less easy	**d**. the easiest
5.	**a**. were having	**b**. have had	**c**. are having	**d**. will have
6.	**a**. will be trying	**b**. have tried	**c**. will try	**d**. are trying
7.	**a**. are developing	**b**. developed	**c**. will develop	**d**.have developed

APPENDIX C: TEST WITH NO VISUAL

Gender: Female …… **Score**: ……..

Male ……

Test Completion Time: ……minutes

The Colorful World of Synesthesia

The number "6" is a bright shade of pink. Listening to a cello smells like chocolate. And eating a slice of Pizza creates a tickling sensation on the back of your neck. These are some of the interesting examples of an unusual condition: synesthesia. This condition causes people to see sound, smell colors, or taste shapes. Therefore, people With synesthesia (or synesthetes) **1)** ……. a blending of their senses every time they see, smell, taste, touch, or hear.

A research group in the mid-1990s **2)**…….. brain-scanning techniques to measure synesthesia. The experiments revealed that as soon as a synesthete heard a word, the smelling part of the brain **3)**…… , too. However, that type of activity did not occur in non-synesthetes. Some synesthetes say their condition can be uncomfortable at times. Therefore, the lives of people with synesthesia are **4)** …….. the ones who do not have this condition. Yet, for ages, many people **5)** …….. synesthesla; including famous Russian writer Vladimir Nabokov and physicist, Richard Feynman. They thought of their abilities as a gift and used it as a creative force.

So how can the sound of a musical instrument lead to color? These days, scientists **6)**…….. to discover exactly how information from the senses comes together in the brain. There is a lot of hardship and mystery behind this unique condition. However, the scientists believe that soon they **7)** …….. better ways to identify the reasons for synesthesia and how it leads to the combination of different senses together.

Please circle the best option

1.	**a**. were experiencing	**b**. experience	**c**. have experienced	**d**. experienced
2.	**a**. have used	**b**. had used	**c**. used	**d**. would use
3.	**a**. has responded	**b**. respond	**c**. will respond	**d**. responded
4.	**a**. not as easy as	**b**. easier than	**c**. less easy	**d**. the easiest
5.	**a**. were having	**b**. have had	**c**. are having	**d**. will have
6.	**a**. will be trying	**b**. have tried	**c**. will try	**d**. are trying
7.	**a**. are developing	**b**. developed	**c**. will develop	**d**.have developed