THE EFFECTS OF IMMEDIATE FEEDBACK INTERVENTIONS WITH DIFFERENT CONTEXTS THROUGH COMPUTER ASSISTED FORMATIVE ASSESSMENT ON TRANSFER OF LEARNING

Dinçer DEMİR

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Approval of the Graduate School of Educational Sciences

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ABSTRACT

THE EFFECTS OF IMMEDIATE FEEDBACK INTERVENTIONS WITH

DIFFERENT CONTEXTS THROUGH COMPUTER ASSISTED

FORMATIVE ASSESSMENT ON TRANSFER OF LEARNING

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With the technological developments in the field of education, it is easier to give immediate feedback to the students through computer assisted formative assessment. However, there are various factors affecting the efficiency of feedback on learning such as the amount of information provided in the message of feedback. Although there are various studies focusing on the retention effects of feedback, there is scarce research on the effects on transfer of learning. The main aim of this study was to investigate the effects of immediate feedback interventions with different contexts through computer assisted formative assessment on transfer of learning. Quasi-experimental design was employed for this study with quantitative data collection. At the beginning of the study, a prerequisite test was implemented and at the end of the study, a transfer of learning test was applied on paper during the course. Between these tests, students took three online quizzes (one quiz each week) providing immediate feedback interventions with different amount of information regarding the group.

The participants of this study were a group of students attending a state secondary school in Istanbul (N=128). Four different groups were formed in order to investigate

the comparative effectiveness of immediate feedback with different amount of information given in the feedback message: no feedback, correct answer, elaborated feedback, extra-instructional elaborated feedback. The data collected through paper based tests. Findings indicated that although four types of feedback had a significant effect in terms of transfer of learning within groups, there is no significant difference between groups regarding the effects of feedbacks on transfer of learning ($F(3, 124)=$ .815, p>.05). However, students' mean scores in elaborated feedback group increased more than the other groups. A better understanding can be gained from a longer term study focusing on the time spent on feedback to make sure students can learn from it.

Keywords: Feedback, Transfer of Learning, Formative Assessment, Immediate Feedback, Computer Assisted Assessment

ÖZ

BİLGİSAYAR DESTEKLİ BİÇİMLENDİRİCİ DEĞERLENDİRME ARACILIĞIYLA VERİLEN FARKLI İÇERİKLERE SAHİP ANLIK GERİBİLDİRİMİN ÖĞRENMENİN TRANSFERİ ÜZERİNE ETKİLERİ

Demir, Dinçer

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Eğitim alanındaki teknolojik gelişmelerle birlikte, bilgisayar destekli biçimlendirici değerlendirme aracılığıyla öğrencilere anlık geribildirim vermek daha kolay bir hale gelmiştir. Fakat geribildirim mesajında verilen bilginin miktarı gibi geribildirimin öğrenme üzerindeki etkilerini etkileyen çeşitli faktörler vardır. Geribildirimin, akılda tutma etkisi üzerine bir çok çalışma olmasına rağmen, öğrenmenin transferi üzerine etkisi hakkında çok az sayıda çalışma vardır. Bu çalışmanın temel amacı, bilgisayar destekli biçimlendirici değerlendirme aracılığıyla verilen farklı içeriklere sahip anlık geribildirim müdahalelerinin öğrenmenin transferi üzerine etkisini araştırmaktır. Bu çalışma için yarı – deneysel tasarım kullanılmış olup nicel veri toplama yöntemi toplanılmıştır. Çalışmanın başında bir hazır bulunuşluk testi, çalışmanın sonunda da öğrenmenin transferi testi uygulanmıştır ve bu testler ders saati içerisinde kağıt üzerinde yapılmıştır. Bu testlerin arasında, öğrenciler, her hafta 1 tane olmak üzere, gruplara göre belirlenmiş farklı miktarda bilgi içeren anlık geribildirim vermek amacıyla üç test çözmüşlerdir. Çalışmanın katılımcıları, İstanbul'daki bir devlet ortaokulunda öğrenim gören öğrencilerdir (N=128). Farklı miktarda bilgi içeren anlık

geribildirim türlerinin etkilerini karşılaştırmak amacıyla 1) geribildirim verilmeyen, 2) sadece doğru cevabı verilen, 3) ayrıntılı geribildirim verilen, 4) ekstra ayrıntılı geribildirim verilen olmak üzere dört farklı grup oluşturulmuştur. Veriler, kağıt üzerinde yapılan testlerle toplanmıştır. Bulgular dört farklı tür geribildirimin, kendi içlerinde öğrenmenin transferi üzerine anlamlı etkileri olmasına karşın, diğer türlerle kıyaslandıklarına anlamlı bir fark oluşturmadığını göstermektedir ($F_{(3,124)}=.815$, $p>.05$). Ancak, ayrıntılı geri bildirim alan öğrencilerin ortalama puanları diğer gruplara göre daha fazla artmıştır. Öğrencilerin geri bildirimden öğrenmelerini sağlamak amacıyla geri bildirime harcanan zamana yönelik uzun süreli bir çalışmadan daha iyi sonuçlar elde edilebilir.

Anahtar Kelimeler: Geribildirim, Öğrenmenin Transferi, Biçimlendirici Değerlendirme, Anlık Geribildirim, Bilgisayar Destekli Değerlendirme

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LIST OF ABBREVIATIONS

AUC   Answer Until Correct

CA   Correct Answer

CAA   Computer-assisted Assessment

CAB   Computer-based Assessment

EF   Elaborated Feedback

ELFB   Elaborated Feedback

KR   Knowledge of Response

KRC   Knowledge of Correct Response

NOFB   No Feedback

RQ   Research Question

XELFB   Extra-instructional Elaborated Feedback

Chapter 1

Introduction

This chapter contains background of the study, statement of problem, purpose of the study, research questions, and significance of the study.

1.1 Background of the Study

Feedback is a crucial element of learning process in order to improve students' learning and adapt teaching and instructional activities. The term of feedback has many definitions regarding various fields in which feedback is used as an instrument. However, one of the most comprehensive definitions of feedback in the field of education, Narciss (2008) and Shute (2008) define feedback as any information provided after learners' responses by making them informed about their progress to prepare them for further learning outcomes. Phye and Andre (1989) state that feedback is quite important for learning since it helps learners benefit from it to improve or enhance their current knowledge of a particular subject. The main purpose of feedback is to remove the disparity between prior knowledge and target learning outcomes (Hattie, 2009; Hattie & Timperley, 2007; Sadler, 1989).

There are various feedback types related to the field of learning. All types of feedback aim at improving students' learning. According to its purposes and environment it is used, feedback is provided to obtain intended learning outcomes. Especially with the developments of technology in the field of education, the types of feedback are started to be used commonly and effectively. When the literature is reviewed, it is possible to say that content and timing of feedback are two main factors affecting the feedback quality (Goodman & Wood, 2004; Kulhavy & Wager, 1993). Timing of feedback is considered as the time of feedback given as a reflection

to a learner's response. That kind of feedback can be given right after the response is given, which is called as immediate feedback or it can be given after a certain time when students do their tasks, which is called as delayed feedback. This study focused on the effect of immediate feedback since it stated that immediate feedback is mostly preferred by learners (Van der Kleij, Eggen, Timmers & Veldkamp, 2012; Miller, 2009). Also, it is indicated in Kulik and Kulik's (1988) review of meta-analysis that it is better than delayed feedback. Furthermore, technological developments have also improved and provided opportunities for immediate feedback. Content of feedback also differentiates the efficiency of feedback on learning. Content of feedback can be just correct answer or more detailed information about the knowledge assessed in the test item. If a feedback consists of hints, explanation or clarification of correct answer, it is called as elaborated feedback (Shute, 2008).

Assessment is also vital part of learning process since it is an integrated instrument during learning and teaching. It provides information about learners' progress, performance, needs and skills. It also helps teachers to make judgments about students' performances and instruction. Black and Wiliam (1998) define that assessment is any kinds of activities giving information for a source of feedback to adapt teaching and learning processes. Broadly, formative and summative assessments are both main assessment types. Formative assessment that is also described as assessment for learning, is an ongoing process providing information about students' progress and help them improve themselves. However, summative assessment is considered as assessment of learning and it is used to gather information about learners' achievement and evaluate students' learning and teachers' teaching performances at the end of instructional process. Furthermore, formative assessment is also quite fundamental since it gives teachers chances to

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adapt the instruction and check for understanding of learners (Davis, 2015). As valid for immediate feedback, developments in educational technology have increased the amount of formative feedback activities.

Technology has also influenced the field of assessment in the field of education. Regarding the advantages of computer based assessment such as giving timely and customized feedback, reducing the time of grading, and enriching the test with various components, technology has been started to use in education. Moreover, computer- assisted assessment has also provided effective opportunities to improve formative assessment activities (Maier, 2014; Russell, 2010).

In education, all activities are implemented to improve learning. However, developments and changes in today's world and also necessities for 21st century skills, knowledge and skills learned in an instructional process are needed to be used for a new situation, problem or case encountered. Therefore, the importance of transfer of learning has been gradually increasing. Although it is not an easy part of educational concerns, there are various studies in order to improve it. Transfer of learning is stated as it occurs when learners' prior knowledge and skills influence their performances for another learning outcome or another new situation or problem (Bigge & Hunt, 1958). If the new intended learning outcome or problem is similar, it is defined as near transfer, however, if the current situation is different from the prior knowledge or skill, it is described as far transfer which is a challenge to obtain.

1.2   Statement of the problem

With the technological developments, the world has been changing. These changes have influenced the field of education. Especially, the way students learn and necessary knowledge and skills for today's world have also altered. Students

want to own their own learning and be aware of their progress. They want to get benefits of technology and want to get feedbacks on their progress to develop their learning during learning on the contrary to waiting for results until the end of instruction. Moreover, they want to use the skills and knowledge in their real life situations containing problems different from what is taught in the schools.

However, students are exposed to the summative assessment occurring at the end of instruction or term. It only measures what students have learned and give grades as a result of their performances that are mostly preferred by teachers in our country. Thus, students cannot have enough opportunities to improve themselves. Moreover, they cannot use the results in order to adapt the given information for further learning circumstances since they do not have feedback on time to remove gaps or it is too late when they get feedback. Regarding that they are asked to what they have learned, they cannot develop their related creative skills for using these outcomes for another situation. In addition to the facts, formative assessment is not implemented commonly since it takes a long time and hard to give enough personal feedback unless technology is used during formative assessment period. Additionally, while feedback is being given, the content and timing of it is not sufficiently taken into consideration.

In response to this problem, this study proposes to improve the opportunities by providing immediate feedback within different contexts through online formative assessment in language learning. Main aim of the study is to find out several options to improve transfer of learning by presenting various immediate feedbacks with the help of technology for each student.

1.3   Purpose of the Study

There are various types of feedback and immediate feedback is of them. However, there are not enough studies showing that what kind of immediate feedback in terms of the message it includes is more influential for students' performances, especially with computer-assisted feedback. The study aims to investigate the effects of immediate feedback types with different contexts through computer assisted formative assessment on transfer of learning. A set of activities was implemented such as tests on paper and online quizzes through a web 2.0 student response system, Socrative 2.0, to investigate the effects of feedback interventions.

1.4   Research Questions

This study was designed to answer the following main research questions:

RQ.1 Is there a significant difference between prerequisite test and transfer of learning test scores of students within groups? (Groups of No Feedback, Correct Answer, Elaborated Feedback, Extra-instructional Elaborated Feedback)

RQ.2. Is there a significant difference in transfer of learning test scores between groups? (Groups of No Feedback, Correct Answer, Elaborated Feedback, Extra-instructional Elaborated Feedback)

1.5   Significance of the Study

There are basically three main fields indicating the significance of the study. Firstly, even though there are various studies proposing the important of transfer of learning with the relation of feedback, there are not sufficient studies on that issue. Although most of the studies on feedback in the literature implement final tests

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focusing on repeated questions for measuring the retention of knowledge which is also vital for learning outcome, there are not many studies on it. Therefore, Butler, Godbole and Marsh (2013) state that how feedback influences transfer for both theoretically and pedagogically should be studied. This study is aimed at contributing to fill the gap between feedback and transfer of learning.

Secondly, feedback has a crucial role in learning and the information provided by feedback has influential for obtaining learning outcome. Regarding the information given by feedback, correct answer and elaborated feedback are commonly studied. However, as Kulhavy and Stock (1989) mention that extra-instructional feedback, which is used to explain the target instructional outcome with more detailed information is not studied adequately. Moreover, Narciss and Huth (2002) indicate as a result of their literature review that the findings about different types of feedback are incompatible in terms of their effects. In this study, various immediate feedback interventions with different amounts of information are provided immediately to investigate the effects of them.

Thirdly, Lopez (2009) states that computer-based assessment (CBA) provides effective opportunities on giving customized feedback considering learners' needs. Therefore, there is a need for investigating how effective feedback is provided through CBA. Shute (2008) mentions that there are no sufficient studies indicating how computer-based feedback content is constituted. Hence, one of the main purposes of the study is to find out how effective feedback regarding its content is given through computer-based assessment.

Finally, formative assessment, which improves learning, is an ongoing process in learning and it should be seen as a part of learning, not a separate instrument in terms of instructional activities. However, As Black and Wiliam (2009)

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stated there were not adequate attempts to make use of the data collected during formative assessment in order to improve learning and regulation of learning. In this study, it is planned to use the data coming from the results of formative assessment for learning.

1.6 Definitions

Feedback: It is any reactions and responses provided a result of a student's performance on a particular process or activity in order to improve learning and inform the student about his or her performance.

Immediate feedback: It is a kind of feedback which is given immediately after a performance.

Formative assessment: Formative assessment is a kind of assessment evaluating learners' performances while learning and teaching is continuing in order to improve learning activities and learners' performances and also, adapt teaching process.

Transfer of learning: Transfer of learning is to use prior or current knowledge or skills in new circumstances and contexts.

Student response system: It is a technological system that allows the teacher or instructors to present questions and collect data about students' performances on the questions during a lecture or teaching and learning process.

Computer-based assessment: Computer-based assessment, also named as computerized testing, is a way of administering tests in which the answers are electronically collected, assessed or both.

Chapter 2

Literature Review

In this chapter literature about feedback and feedback types, assessment and assessment types and transfer of learning are reviewed. The aim is to provide background information about the related topics.

2.1 Feedback in Education

The concept of feedback has been studied widely in various fields such as education, training and psychology for a long time since it has a compelling effect in the learning process. Chen (1991) states that using feedback in a positive value in learning environment to ease the quantity and quality of learning has long been accepted, and feedback has been implemented in various instructional models and procedures. In an educational context, feedback attributes to any results of performance which an instructional provider contributes to the learner (Lau, 1978). These instructions can be supplied by teacher, peer, a written agent, parent, self or experience (Hattie & Timperley, 2007). Feedback aids learners to remove the disparity between prior understanding and target objectives (Hattie, 2009; Hattie & Timperley, 2007; Ramaprasad, 1983; Sadler, 1989). Thus, feedback can let students learn what their current level of understanding and their mistakes are and expected learning outcomes can be provided by effective and meaningful feedback during the process.

2.2 Definition of Feedback

There are various definitions about feedback. Feedback is known as an influential instrument for promoting learning (Pressey, 1927). Phye and Andre

(1989) affirm that feedback is quite useful for learning as long as learners make use of it to alter or enhance their current knowledge of a particular subject.

Kulhavy and Wager (1993) state that feedback is generally preferred for three basic objectives such as a reinforcer, a motivator, and information. These objectives determine the main purposes while giving feedback. Some definitions focus mainly on these objectives. Cohen (1985) points out that feedback is one of the most informatively influential components of instructional design but not recognized enough. Because of the fact that there are various types of feedback, it is possible to find different definitions for feedback. These definitions can be mainly categorized in two groups; timing of feedback and content/amount of feedback.

Feedback plays an indispensable role in education and learning regarding its functions and purposes. In instructional contexts, the term feedback means any information given after their answers that make learners be aware of their current level of understanding or performance to adjust learning for further cases to gain learning outcomes expected to learn (Narciss, 2008; 2012; Shute, 2008). Thorkildsen and Reid (1989) define feedback as an instructional and evaluative information given as a result of learners' performances. Bationo (1991) explains feedback as the message is given after learners' responses in a learning circumstance. In addition to these definitions, Kulhavy (1977) affirms that feedback is any actions that tell a learner if an answer to an instruction is true or false. It is widely described that feedback informs learners about their performance or understanding in order to approve, reject, or adjust their previous knowledge (Mory, 2004).

It is stated in the research that there are various ways of providing feedback in order to support learners' understanding, however, these methods do not have equitably positive effect (Hattie & Timperley, 2007; Shute, 2008). A well-known

model of providing feedback that helps learning was put forward by Bangert-Drowns, Kulik, Kulik and Morgan (1991). It has basically five-stage cycling stages of learning;

a)   Stage 1: Stating learners' existing knowledge or motivation

b)   Stage 2: Presenting test items to learners and this starts cognitive process in order   to bring back the knowledge and work for the answer.

c)   Stage 3: The learner answers the test item.

d)   Stage 4: The learner benefits from the feedback to evaluate the answer given after feedback is provided.

e)   Stage 5: The learner adjusts his or her knowledge beliefs or strategies and the cycle starts again with a new altered initial state.

The model further affirms that feedback must be worked intimately to contribute an influence of learning outcome meaning an adjustment of initial state (Bangert-Drowns et al., 1991). Briefly, learner should make use of feedback in terms of correcting errors and misconceptions, improving themselves for further learning situations.

2.3 Types of Feedback

In educational context, there are various types of feedback. These types of feedback are also called in different names although these names address mainly similar definitions. Educational experts try to find out which type of feedback is more effective for learners to provide meaningful learning. Thus, there are many researches on feedback in order to find the most appropriate feedback type. While some researchers work on the timing of feedback (Dempsey & Wager, 1988; Guadagnoli, Dornier, & Tandy, 1996; Kulik & Kulik, 1988), the others study on the

content and amount of feedback (Clariana, 1990; Gilman, 1969; Kulhavy & Stock, 1989). However, broadly saying, there are two main factors providing effective feedback for learning; content and timing (Goodman & Wood, 2004; Kulhavy & Wager, 1993).

In term of content of feedback, Kulhavy and Stock (1989) state that the most effective feedback only informs students about the correct answer of their responses, but also elaborates for gaining the true response for further learning. Therefore, various types and forms of elaborative feedback are widely studied in educational contexts. Among these types of feedback, which have been commonly used and benefited, can be categorized basically in three groups. These forms of feedback are knowledge of result or response (KR), knowledge of the correct response (KCR), answer until correct (AUC). Knowledge of result or response (KR) refers the feedback type informing learners if the answer is correct or wrong. Knowledge of correct response feedback type (KCR) give the correct answer or its solution and the type of answer until correct (AUC) refers the feedback including knowledge of result or response and it wants learners to keep working on the same question until it is done truly. In addition to these types and forms of feedback, elaborated feedback (EF) is another type of feedback on which there are a lot of researches. (Narciss & Huth, 2002; Roper, 1977).

In the literature of educational context, another widely studied type of feedback is formative feedback. Shute (2008) defines formative feedback as "information communicated to the learner that is intended to modify the learner's thinking or behavior for the purpose of improving learning" and it is regarded as "multidimensional, non- evaluative, supportive, learner-controlled, timely, specific, credible, infrequent, contingent, and genuine". Westberg and Jason (2001) point ut

that formative assessment is a process to stimulate effective impression on experiences and to diagnose what learners need to learn. Generally saying, formative feedback is preferred to realize learners' potential and to provide effective learning.

As mentioned above, feedback is broadly studied and researched in the field of education. In another definition, Blignaut and Trollip (2003) put feedback types into three groups; corrective feedback, informative feedback and socrative feedback. Corrective feedback refers to correct content given by teacher according to learners' responses. Informative feedback focuses on teachers' explanations on learners' answers according to the content. For the term of socratic feedback, it is defined as the process of asking reflective questions regarding learners' responses. Furthermore, there is another type of feedback regarding the message of it which is names as emotional motivational feedback consisting of motivational ways and emotional message to motivate and engage students to learn more and to concentrate on a specific context (Sarsar, 2014).

In term of timing of feedback, there are a lot of studies and researches in order to find out what the best time is for giving feedback (Azevedo & Bernard, 1995; Kulhavy & Anderson, 1972; Kulik & Kulik, 1988). In the literature, immediate and delayed feedback are two main feedback types (Shute, 2008; Smits, Boon, Sluijsmans, & Van Gog, 2008). It is defined that immediate feedback as the feedback given immediately after each answer (Dihoff, Brosvic, & Epstein, 2003; Guadagnoli, Dornier & Tandy, 1996; Bationo, 1992; Epstein, 1997). Delayed feedback is described as feedback provided after task or a series of task (Guadagnoli, Dornier & Tandy, 1996; Kulhavy & Anderson, 1972; van der Kleij, Feskens, & Eggen, 2015).

Even though it has been broadly discussed for a long time, there are some differences about the results (Shute, 2008). Morry (2004) correlates the reason of

these differences about the terms with varied effects. For example, immediate feedback is generally provided just after the response in formative assessment. However, delayed feedback is the feedback type which is difficult to apparently describe due to the diversities in the possible level of delay (Shute, 2008). What this means is that delayed feedback can be occurred after the learner responses to all items of the test a few hours a day or even a week later. On the other hand, in computer-based environment, delayed feedback is likely to be described as all feedback which is not given immediately after the learner responses to each item (van der Kleij et al., 2011). Taking into consideration of the the types of feedback, there is a more obvious view on providing feedback regarding theories of Shute (2008) and Hattie and Timperley (2007).
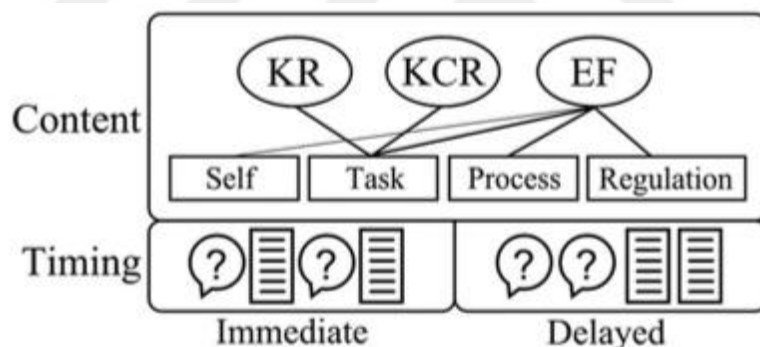
Figure 3. Types of feedback distinguished by Shute (2008) linked to levels of feedback distinguished by Hattie and Timperley (2007) and timing Shute (2008).

2.4 Immediate Feedback and Delayed Feedback

In order to investigate the effects of immediate and delayed feedback, there are many researches conveyed for a long time in the educational literature (Dempsey & Wager, 1988; Kulik & Kulik, 1988).

Shute (2008) defines immediate feedback as message provided right after the learner answers a test item, problem or completes the quiz or a test. Delayed

feedback is defined as the feedback which is given in minutes, weeks or longer time after finishing a test or task.

Since many researches have been conveyed on timing of feedback in educational field, it is highly possible to find out various effects of it on learning (Shute, 2008). While some educational researchers highlight the positive effect of delayed feedback, there also many researchers emphasizing that immediate feedback is better than delayed feedback in terms of learning. For example, Kulhavy and Anderson (1972) point out that delayed feedback is powerful with the effect of delay-retention and it is as significant as immediate feedback. In addition to this, Schroth (1992) also claims that delayed feedback helps transfer.

On the other hand, there are many other researches on immediate feedback proving its effectiveness on learning. In Kulik and Kulik's (1988) meta-analytic review mainly about timing of feedback, it is found out that immediate feedback is more effective than delayed feedback in terms of greater cognitive demands or more complex conceptual learning. Pressey (1950) reveals the findings after a set of studies comparing effectiveness of immediate or delayed feedback on learning that immediate feedback has generally given positive results.

For the learners' perspective immediate feedback is more preferable. Miller (2009) reveals in this study that learners would rather immediate feedback than delayed feedback. In another study, it is put forward that the learners apparently work on immediate feedback compared with delayed feedback (van der Kleij, Eggen, Timmers & Veldkamp, 2012).

In terms of computer-based or computer assisted instruction environments, it can be concluded that immediate feedback is more influential when it is compared with delayed feedback. Azevedo and Bernard (1995) show in their meta-analysis that

immediate feedback is more preferable when compared with delayed feedback, especially in computer-based instruction environments. Additionally, immediate feedback influence influence learning in a positive way. (Arnau, Arevalillo-Herráez, Puig & González-Calero, 2013; Corbalan, Paas, & Cuypers, 2010).

2.4.1 Elaborated feedback: Content of feedback issue is another highly investigated subject in educational field (Bangert- Drowns et al. 1991; Kulhavy & Stock 1989; Mory 2004) and it is also suggested that elaborated feedback is the most influential form of feedback (Bangert-Drowns et al., 1991; Harris, 1994; Pridemore & Klein, 1995). In terms of feedback content regarding its message including, Kulhavy and Stock (1989) categorize feedback into two main categories; verification and elaboration. Feedback of verification verifies if a students' answer is true or false (for instance; ''yes–no'' or ''true or false). Elaboration refers to any kinds of meaningful knowledge which is more than verification (Kulhavy & Stock, 1989). Additionally, that kind of feedback has also been defined as "Knowledge of Correct Response" (KCR) (Clariana 1990; Mason & Bruning, 2001). In another description, elaborated feedback also refers to giving higher order post-response knowledge (Khine, 1996). Shute (2008) points out that elaborated feedback may contain various forms, such as hints, extra information, and a clarification of the true answer.

Kulhavy and Stock (1989) have put types of elaborated feedback into three variations; 1) task-specific; restating of the correct answer for feedback regarding initial question 2) instruction-based; providing feedback including information quoted from the original lesson material 3) extra-instructional; giving feedback consisting of information with examples or explanations in addition to original lesson material.

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Furthermore, Harris (1994) has revealed a result in this meta-analysis of studies related to feedback that elaborative feedback had more efficient influence than knowledge of correct response feedback. Whyte, Karolick, Nielsen, Elder and Hawley (1995) also indicated that elaborative feedback is better than knowledge of correct answer under certain circumstances. This view was also supported by the fact that feedback including an information just for verifying has little influence on improving learning (Bangert-Drowns et al., 1991; Moreno, 2004).

There are important factors affecting the quality of messages given in the content of feedback. Narciss and Huth (2002) states that there are basically three factors influencing effectiveness of informative value of feedback messages:

1. Effectiveness of feedback message and its origin

2. The characteristics of the informational content,

3. The learner characteristics

Generally, content of feedback message can include two fundamentals (Kulhavy & Stock, 1989; Narciss & Huth, 2002); the first fundamental is evaluative component showing the level of achievement related to expected learning outcomes. The second one is informative fundamental including extra information on the task or answer. So, it is possible to get positive effect from informative value of a feedback when function, content and form of feedback are appropriate (Narciss & Huth, 2002).

The load of elaborated feedback is another essential issue in that kind of feedback. The load of elaboration means the total amount of knowledge integrated into feedback content. Load can vary from just for verification like yes-no to increased amount of knowledge in the feedback message like presentation of correct

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answer and additional explanation for the task or solution (Kulhavy et al., 1985; Peeck, 1979; Phye, 1979).

For the effectiveness of elaborated feedback, the study of Roper (1977) indicated that feedback with more information meaningfully improved the probability of learners' correcting initial errors. In addition to these, if feedback message consists of more information, it is superior to the feedback with lack of information (Bangert-Drowns et al., 1991; Kulik & Kulik, 1988; Schimmel, 1983). In another study, Stone (1955) stated that learners provided with less informational feedback achieved worse when compared to the learners provided feedback message including complete information on the reasons of their errors. However, the amount of the information integrated into feedback is a highly sensitive issue since both much information and lack of information in the feedback message may result in negative effects on learning. As Smits et. al. (2008) state that the amount of the information in the feedback message should be optimum since the threat of cognitive load resulting in decreasing the need for instructional guidance may occur when the domain knowledge in the feedback is enhanced.

2.4.2 Elaborative feedback and cognitive load: Kulhavy and Stock (1989) mention that extra-instructional elaboration happens when feedback includes extra information in addition to the instruction and when feedback message with new information is provided for clarification. This is where feedback provider should take into consideration of cognitive load theory in order not to let learners digress from the benefits of feedback. Sweller (1994) states that cognitive load theory presents learning as building schemas regarding limited working memory capacity.

In the literature, Brunken, Plass and Leutner (2003) and Sweller, van Merrienboer and Paas (1998) classify cognitive load into three types such as intrinsic, extraneous and germane;

a) Intrinsic load is defined as information which is necessary for learners' working memory to understand.

b) Extraneous load means giving more information than working memory needs to understand instruction

c) A germane load is cognitive resources promoting learning

Therefore, performance of a learner can be influenced in a negative way if cognitive load is more than the limit of cognitive capacity and this issue should be kept in mind while preparing an instruction and feedback message (Mayer & Moreno, 2003). In addition to this, extraneous load should be determined at the lowest level and most of the cognitive resources should be accompanied with germane cognitive activities in order to obtain accomplished construction of schemas (Chandler & Sweller, 1991; Paas & van Gog, 2006).

Furthermore, Smits et al. (2008) mention that the learners may have some difficulties about relating and integrating the information given in the learning material into their cognitive schemata when they are provided lower level of guidance. It can be concluded that students need to focus on the topic harder in order to comprehend it if the level of their prior knowledge is not adequate. Considering Vygotsky's (1978) concept of zone of proximal development, students' prior knowledge should be supported and increased in order to facilitate the learning. In conclusion, in order to keep the information given by the feedback message in an optimum level, what should be done is to enhance prior knowledge rather than

increasing the amount of information provided by feedback resulting in cognitive overload.

There is a correlation between cognitive load effect and effectiveness of feedback. Cooper (1990) mentions that according to cognitive load theory, the design of the information will be developed if the role and limitations of the working memory is kept into consideration properly. Therefore, Sweller, van Merriënboer and Paas (1998) state that one of the basic goals of instruction is to minimize cognitive load in working memory. Thus, while designing feedback message, the capacity of working memory should be taken into account. Holroyd and Coles (2002) state that raising the cognitive load of the feedback feedback decreased the functional efficacy of the medial–frontal learning system and a conclusion of the study recommends that learning may not occur as efficiently as in high cognitive load situations since the neural system which is responsible for learning is weakened.

There are various results about feedback and cognitive load in the literature. Yeh, Tseng, Cho, Barufaldi, Lin and Chang (2012) indicated that feedback decreased 10th grader students' cognitive load while learning science from animation-based instruction. Moreno (2004) in the same line found that explanatory feedback diminished cognitive load in inquiry learning. On the other hand, ambiguity and cognitive load may cause low results on achievement (Kluger & DeNisi, 1996) and it is likely to decrease willingness to benefit from the feedback (Ashford, 1986). Moreover, Scheeler, Macluckie and Albright (2008) suggest that the message of feedback should be short enough to minimize the distraction. To support that fact, Coninx, Kreijns and Jochems (2013) mention that if the message in the feedback gets longer, it will result in cognitive (over)load. Additionally, when redundant materials are removed from the message, which is known as redundancy effect, performance

on learning may be improved (Mousavi, Low & Sweller, 1995; Cerpa, Chandler & Sweller, 1996; Mayer, Heiser & Lonn, 2001; Renkl & Atkinson, 2003).

2.5 Assessment

Teaching refers to instructional activities used by teachers in order to help learners achieve their intended learning outcomes (Qu & Zhang, 2013). This is where assessment is needed to be done in order to measure how much the target outcomes are obtained. Cheng, Rogers and Hu (2004) point out that all kinds of teaching and learning models want teachers to decide on judgments about learners' engagement and progression towards intended learning outcomes.

For a long time, the term ''assessment'' was basically described as the process of making judgments on the efficiency of educational activities when it was done (William, 2011). Hence, assessment is one of the critical issues of the educational process since it allows to measure what learners have learned so far accordingly (Joosten-ten Brinke, van Bruggen, Hermans, Burgers, Giesbers, Koper & Latour, 2007). Ausubel (1968) stated that the most influential element affecting learning for teachers is to decide what learners know currently and teach according to this current situation.

Black and Wiliam (1998) define that assessment is any kinds of activities providing information for a source of feedback to adapt teaching and learning activities that teachers and students implement to assess themselves. Assessment is also widely described as a process for gathering information in order to design teaching programs, educational policy for the stakeholders of it (American Federation of Teachers, National Council on Measurement in Education, and national Education Association, 1990). Nitko and Brookhart (2005) point out that

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decisions about teaching and learning processes are affected by judgments including their performance (summative assessment) and ways to develop them (formative assessment). Because of these facts, Taras (2008) states that assessment is seriously fundamental for education in terms of authorization and improving learning.

As a result, there is a continuous discussion on comprehending activities to help learning according to expected learning outcomes, and to be done during learning process as forms of assessment (William, 2011). Although there are various descriptions about assessment, it is broadly accepted that assessment is a process of gathering, interpreting and making use of data to make decisions on learners' achievements and performances in education (Harlen, 2007). In order to improve learning, William (2011) points out that assessment should direct learners for upcoming situations and inspire them to active themselves in order for improvement. Additionally, Broadfoot and Black (2004) support this statement by declaring that assessment should be an instrument improving learning and personal reinforcement.

Allen, Corder and Davis (1997) state that there are mainly four reasons for assessment:

a)   to implement teaching research

b)   to comprehend learners' learning progress

c)   to mentor teaching

d)   to follow the eventual teaching and learning case.

In order to understand better the differences between summative and formative assessment, it is necessary to go deeper for these terms.

2.5.1 Summative assessment: Summative assessment, which is alternatively described as assessment of learning in terms of its purpose, is used for evaluating learners' learning and teachers' teaching at the end of a teaching process (Nitko & Brookhart, 2005).

In another description, summative assessment is a type of assessment to sum up the achievement of a learner at the final stage with the aims of validity and reliability (Sadler, 1989; Torrance & Pryor, 1998). Moreover, Bloom, Hastings and Madaus (1971) pointed out that summative assessment is an assessment of the learning and teaching processes, validity of the instructional program and education research in order to classify, identify, or evaluate of progress after a course or at the end of the term. Shaoqian (2003) also states that summative assessment is that teacher uses it to determine what the learners can remember regarding the target instruction and to make judgments about it.

Sadler (1989) declares that summative assessment is different from formative assessment in terms of its purposes that is summarizing the achievement of a learner after a course. The main difference between formative and summative assessment is about goal and effect but timing is not a concern (Sadler, 1989).

Moss and Brookhart (2009) describe the characteristics of summative assessment (assessment of learning) as a) its purpose is to measure fulfillment, b) implemented occasionally to analyze what has occurred, c) its main focus is on the product of learning d) regarded out of learning cycle, e) teacher- oriented f) inflexible regarding its measurements, g) used for verification of final results.

To sum up, summative assessment has both advantages and disadvantages. Although summative assessment gives quite clear quantitative data for analysis of teaching, teachers can analyze the results in order to help the following teaching

instruction (Heaton, 1989). For instance, when a teacher finds out that the learners are not good at certain type of subject, teacher can analyze that and then, he or she may modify his or her instruction for the next instructional term accordingly. Also, it may inform learners about what they need to improve related to the results of the assessment. Especially for the multiple choice tests, Qu and Zhang (2013) affirm that summative assessment has mainly two weaknesses such as learners may guess the answer in case they have no knowledge about the test item or they do not have enough time to make a choice, and also learners do not have any chances of stating their subjective opinions because they are limited to choose the one among the given options. So, it can be said that it limits high level of thinking skills. Additionally, regarding the test anxiety, summative assessment causes more anxiety compared with formative assessment because of level of perceived threat or self-awareness considering evaluative pressure (Kurosawa & Harackiewicz, 1995; Schwarzer & Jerusalem, 1992).

2.5.2 Formative assessment: According to the literature review done by Black (2003), different definitions exist because of the terms of assessment and formative and a lot of teachers and researchers have misunderstanding on the term of formative assessment. Brown (2004) defines formative assessment as an assessment evaluating learners during the learning and teaching process and learners make use of this information provided by formative assessment process in order to improve themselves and both teachers and learners use the information as feedback. Hattie (2009) and Yeh (2009) state that formative assessment is an influential instructional process which develops learners' achievement.

Sadler (2010) suggests that formative assessment should interpret the comprehension of learners' by containing feedback information and let them to make

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use of it in upcoming learning situations. "Formative assessment is concerned with how judgments about the quality of student responses (performances, pieces, or works) can be used to shape and improve the student's competence by short-circuiting the randomness and inefficiency of trial-and-error learning" (Sadler, 1989 p.120).

In addition to these definitions, Black and Wiliam (1998b) and Assessment Reform Group (2002) state that formative assessment in learning environment is as a kind of assessment that informs about students' learning in order to be analyzed and used by the stakeholders of learning and to make judgments on further instructional objectives. Davis (2015) also notes that formative assessment gains its significance by giving teachers chances to modify the instruction and check for learners' comprehension. In addition, as Sadler (1989) clarified in his early study on the theory of formative assessment, feedback also is an important part of teaching by giving teachers obvious facts about the learner's' progress requiring that teachers (and ultimately students) have a clear vision and let them appraise students' improvement.

Moss and Brookhart (2009) define the characteristics of formative assessment, alternatively named as assessment for learning as;

a) Its purpose is to improve learning and achievement

b) It is timely implemented during learning process

c) Its focus is on learning process which means that it a part of learning.

d) It lets the stakeholders of learning use the assessment collaboratively to cater the needs after finding out them.

e) It is a continuing process affected by the learners and teacher feedback.

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f)   Teachers and learners make use of the information provided by this assessment to adapt further development.

As mentioned above, Bennett (2011) states that formative assessment is also described as assessment for learning since it focuses on making decisions on learners' improvement in contrast to summative assessment, which is also regarded as assessment of learning, that is implemented to determine how well a learner carries out expected learning objectives (Ecclestone, 2010). Moreover, summative assessment focuses on current situation of learning obtained by a learner at a certain time, but main aim of formative assessment is to improve students' learning for further instructional steps.

Since formative assessment provides timely informative feedback, it intends to improve learning of students and that makes it a form of learning or assessment as learning (Spector, 2015). As Sadler (1989) states that formative assessment takes into consideration of learners' answers and uses them to make immediate decisions on improving learners' comprehension and skills.

It is also discussed that formative assessment, which is called as assessment for learning related to its purpose, is considered as an essential part of successful teaching, learner motivation, engagement and higher levels of achievement (Ecclestone, 2010, Johnson, Becker, Cummins, Estrada, Freeman & Hall, 2016; Narciss, 2008; Spector, 2015; Woolf, 2010).

It is stated that assessment for learning is a way for classroom assessment which is a part of learning process (Stobart, 2008). Wiliam and Thompson (2007) indicate that there are mainly five strategies to improve assessment for learning in learning environments;

a) analyzing and comprehending learning purposes and providing ways for achievement,

b) improving useful instructional activities and tasks elaborating learning,

c) giving feedback to improve learners,

d) helping learners work collaboratively,

e) making learners own their own learning.

The assessment for learning uses assessments and their results in various ways such as engaging learners in learning, modifying teaching processes regarding these results, in response to assessment results, leading self or peer assessment and giving students feedback (Assessment Reform Group, 1999; Stobart, 2008). Therefore, formative assessment also has another advantage because of the fact that it is seen as a support of learning rather than evaluating with grades (Bloom, et al., 1971)

On the other hand, Black and Wiliam (1998a) state that feedback information in formative assessment which is provided as a response to results is highly crucial for effective learning. Thus, Bloom (1984) states that formative assessment should be seen as both feedback and instruction that corrects.

Black and Wiliam (2009) and Clark (2012) mention that formative assessment is a kind of assessment providing immediate feedback during learning process and it positively influences students' learning, motivation and self-regulation.

Reviewed articles and meta-analyses summarizes the effectiveness of formative assessment implementations can be influenced by three main factors (Black & Wiliam, 1998; Hattie & Timperley, 2007);

a) Characteristics of assessment such as learning content, form of assessment, frequency of assessment, feedback and so on.

b) Features of learners, for example goal-oriented or motivated

c) Factors of context such as teacher or school.

In conclusion, it can be proposed according to their review of the literature done by Leahy and Wiliam (2011) that formative assessment has the most efficient influence on learning and success of students. Moreover, Shepard (2005) indicates that formative assessment promotes learning by understanding what is good work, showing the way of achieving and also improving the behavior of thinking and learning to learn.

2.5.3 Computer-assisted formative assessment: Technology has been gradually influencing and changing various fields. Education is one of those fields that include effects on it. Assessment is one of the important components influenced by the field of educational technology. Assessment is a remarkably significant component which supports the educational process since it gives data on what the learners are learning and how they progress (Joosten-ten Brinke et al., 2007).

With the introduction of technology in the classroom, teachers have been provided a lot of technological tools to improve learning for students when educational technologies have taken their place in learning environments (van der Kleij, Eggen, Timmers & Veldkamp, 2012). One of these opportunities is computer-assisted assessment (CAA) that is a kind of assessment where learners reply items in a computer environment instead of using a traditional paper-and-pencil tests. The literature recommends that CAA can have instructional benefits since it gives a chance to students to get immediate feedback during the test. The fact signifies that

teachers should characterize assessment as a part of learning process that is an vital facet of the assessment for learning approach. Considering assessment for learning, feedback is stated that it is a fundamental part of improving learners for further learning circumstances (Stobart, 2008).

Newly, information and communication technologies have been integrated into assessments (Terzis & Economides, 2011). Computer based assessment technologies have been seen as a solution in the field of assessment in order to mechanize its process (Charman & Elmes, 1998; Chatzopoulou & Economides, 2010; Economides & Roupas, 2007).

Bennett (1998) forecasted that CBA would bring effective impacts for new developments in testing and assessment. CBA can be investigated into two ways. One of them is summative assessment that measures if a learner achieves intended outcomes of learning. The other one is formative assessment that improves learning with informative feedback in order to provide learners to obtain learning goals (Birenbaum, 1996; Economides, 2006, 2009; Moridis & Economides, 2009).

As Hattie (2009; 2012) stated in his book consisting of evidences based on over eight hundred meta-analyses of fifty thousand research articles and more than 200 million students, formative assessment was introduced as one of the most influential way to improve student learning. Wiliam, Lee, Harrison and Black (2004) also stated learners' achievement was improved when formative assessment integrated into learning and teaching. Moreover, Bulunuz, Bulunuz, Karagoz and Tavsanli (2016) showed that formative assessment provided chances to develop the skills of explanation, interpretation and reasoning of learners.

Regarding Narciss' (2008) extensive overview on timely and informative feedback, need for changes have occurred in the field of formative assessment. Also,

improvements in learning technologies has prompted the chances to benefit from technology to support learning with formative assessment (Johnson et al., 2016; Woolf, 2010).

It is stated that learning may occur more effectively if learners are provided timely feedback while taking the test (van der Kleij et al., 2012). Therefore, Hattie and Timperley (2007) suggest that the disparity between students' existing knowledge and the intended learning outcomes can immediately be removed through computer-based environment in compared to a traditional environment. Lopez (2009) asserts that CBA has an important advantage of possibility of giving the learner customized feedback that is provided by the computer by presenting feedback regarding the response given by the learner. This feedback can be in the form of giving only correct answer for an item or elaborately that informs the learner about the information that the test item refers. (van der Kleij et al., 2012).

CBA is frequently used since it yields various benefits for teachers such as test security, cost and time reduction, speed of results, automatic record keeping for item analysis and distance learning (Drasgow & Olsen-Buchanan, 1999; Mazzeo & Harvey, 1988; Parshall, Spray, Kalohn, & Davey, 2002; Smith & Caputi, 2005; Tseng, Macleod, & Wright, 1997). From the learners' point of view, CBA is seen as more encouraging, dependable, unbiased, relaxing, easy and fun (Croft, Danson, Dawson & Ward, 2001).

Computer-assisted assessment is suggested as an influential way to improve formative assessment practices in learning environments (Russell, 2010). Computer-assisted tests decrease the time of grading, and they provide a various of options to integrate text and audiovisual information (Maier, Wolf, & Randler, 2016).

Scalise and Gifford (2006) offer taxonomy of item types preferred in computer-based assessment. They categorized items with fully structured responses, intermediate structured responses and fully structured responses. Items with fully structured answers can measure deep comprehension of theoretic knowledge, whereas they result in spending a lot time for teachers to grade since grading that kind of item in computer based assessment environments is not quite common. Moreover, items with fully structured answers cannot assess high level of learning processes. While assessing through computer-based environments, learning can also be improved through providing feedback timely. Thus, it is possible to declare that feedback provided by CBA has an important effect for learning.

Regarding the effects of feedback in CBA, there are various views in the literature. Some researchers have investigated advantageous impacts on learners' achievement considering certain methods of providing feedback (Corbalan, Paas & Cuypers, 2010; Lee, Lim, & Grabowski, 2010; Smits, Boon, Sluijsmans & van Gog, 2008; Wang, 2011). However, some other studies state that no effects were found (Clariana & Lee, 2001; Gordijn & Nijhof, 2002; Kopp, Stark, & Fischer, 2008). It can be concluded that the features of the feedback intervention and the expected level of learning outcomes are related to the condition that must be taken into consideration while investigation the impacts of CBA feedback on students' learning outcomes. Furthermore, variables like learners' attitudes and motivation have an important effect on it (van der Kleij et al., 2012). As it is seen that there are various results regarding CBA, there is a need for more study on the effects of CBA in learning.

2.6 Transfer of learning

In educational point of view, there is a common interest in providing new opportunities for learners to obtain new concepts, information and problem-solving skills. A main goal of teaching is to transfer learning to new circumstances and contexts (Resing, Bakker, Pronk, & Elliott, 2016). Thorndike and Woodworth (1901) anticipate that if the transfer task is similar to the goals and methods which are implemented for the learning task, transfer can occur.

It is a widely recognized challenge to use what learners have learned for new related learning outcomes (Bransford & Schwartz, 1999; Day & Goldstone, 2012; De Corte, 2003). Holyoak (1984) states that learners need to find out the relationship between two problems which is similar to each other to reveal transfer (Brown, 1982; Brown, Bransford, Ferrara, & Campione, 1983).

Mayer (2002) states that according to the revised version of Bloom's taxonomy of educational objectives, they include five cognitive process are gradually related to transfer which are to understand, apply, analyze, evaluate, and create but other one is related to retention which is to remember;

a)   Understand: it is the most common process used in the schools and it refers to the integration of prior knowledge into the new knowledge and students are supposed to interpret, exemplify, classify, summarize, infer, compare, and explain.

b)   Apply: it refers to implement procedures in order to solve problems or perform exercises by executing and implementing their prior knowledge.

c)   Analyze: it refers to go deeper into the material and find out the relationships by differentiating, organizing, and deconstructing.

d)   Evaluate: it refers to check and critique the standards and criteria to make judgments.

e) Create: Students are expected to produce original products by presenting, planning and executing problem.

Holyoak (1984) defined transfer as a process of realizing a relation between a current and an intended problem which is also called transfer task. Marini and Genereux (1995) describe that transfer of learning happens if current learning influences new learning or performances. Broad (1997) mentions that transfer of learning is the efficient and ongoing performances of learners that they reflect the skills and knowledge that they have obtained during learning process on their performances for their responsibilities. In other definition, transfer can be widely described as impact of existing learning on learning of, or reply to another task (McGeoch, 1942). In Bigge and Hunt's (1958) definition on transfer of learning, it is referred that it occurs when learners' learning outcomes on a circumstance affect their performances or learning situations for another situation. Additionally, transfer of learning is related to concept of 'learning to learn' where the main purpose is to implement what has been learned previously in the process of learning into a new task (Thrun, 1996).

Hassan and Abdolreza (2013) regarded transfer of learning, which is also named as transfer of training in the literature, as a type of learning that has an influence of another type of learning as a result of previous learning outcomes (Kuo & Chao, 2014). Fletcher and Shaw (2012) state that transfer of learning must be the main purpose of a teaching process. There are also other definitions for transfer of learning and these are similar to the previous descriptions. Cormier and Hagman (1987) define that if current knowledge and competences influence the learning performance for another knowledge and competences to be learned, transfer of learning occurs.

Barnett and Ceci (2002) categorize the taxonomy of transfer into nine elements that refers to the ones transferred. These elements are learned skill, performance change, memory demands. On the other hand, they are grouped as knowledge domain, physical context, temporal context, functional context, social context, and modality.

Near and far transfer are the most studied aspects in transfer of learning in terms of identification of the types of transfer promoting meaningful understanding of transfer and these two types of transfer have a common agreement on them by educators. Forsyth (2012) explains that difficulty about the transfer is related to similarity or difference about the target and core of a transfer problem is interrelated to each aspect. Barnett and Ceci (2002) describe the aspects as near and far transfer. Near transfer is an aspect of high level of similarity between prior knowledge and target learning. On the other hand, far transfer is an aspect of high level of difference between these two kinds of instructional elements.

Williams and Romero (2011) define that it is called as near transfer if the prior knowledge and intended learning outcomes show a high similarity and it can be easily learned. However, far transfer is the ability to use past learning experiences and knowledge in order to manage with a new and different kinds of problems. In other words, that kind of transfer necessitates that a learner should analyze and handle the differences of target learning outcomes using existing knowledge and it is hardly dealt with (Wu & Kuo, 2014).

According to Haskell (2001), for the type of near transfer, it is expected to transfer prior knowledge for another learning situation which is similar to previous one. Jones, Antonentkot and Greenwood (2012) affirm that "near transfer is the exemplar of implementing instructional learning to real world situations.

Furthermore, Clark, Nguyen and Sweller (2006) state that near transfer tasks require to use the same procedures while performing for target tasks. The preceding studies indicated that individual difference may have an effect on near transfer performance (Goska & Ackerman, 1996; Woltz, Gardner, & Gyll, 2000). Woltz et al. (2000) mentioned that learners' tendency to engage in the intended learning situations and resistance resulted from overloaded affairs may have an influence on veracity of cognitive skill performance and in the veracity of performance in near-transfer.

Clark et al. (2006) clarify that it is expected from learners to adapt their skills and knowledge to each new circumstances in terms of far transfer. According to Jones et al. (2012), the implementation of analogical reasoning skills is necessary for far transfer.

2.6.1 Factors affecting transfer of learning: There are various factors affecting transfer of learning such as learners' prior knowledge, design of instruction, characteristics of learners and work or training environment. As mentioned above, transfer of learning is quite essential in the educational field. Alsagheer (2011) states that transfer of learning supports learners to perform successfully regarding their previous learning situations. In order to provide transfer, there are some factors that affect the level of transfer. Wittrock (1974) maintains that the possibility of transfer in a certain realm arises in case knowledge base within a certain knowledge is increased for that realm. As a result, it can be concluded that learners have a tendency to transfer as long as the target learning task is dependable with their prior knowledge (Osborne & Wittrock, 1985). Mestre (2002) also emphasizes that the factor of obtaining initial knowledge is a prerequisite for transfer and the context, which refers to the relationship of the contexts learned and to be learned, is also a deterministic factor.

Moreover, Baldwin and Ford (1988) state that characteristics such as personality, ability and motivation of learners are instrumental for achievement of transfer. Cheng and Ho (2001) also reveal three dependent variables respectively influencing the level of transfer according to their studies on the field. These factors are personal, motivational and environmental factors. It is stated for the characteristics of individual that characteristics such as personality and self-efficacy have an impact on transfer. Self-efficacy is described as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1988, p. 285). Cheng and Ho (2001) mention that high level of confidence positively affect the expected performance and their tendency to use what they have learned from an instruction. Seyler, Holton, Bates, Burnett and Carvalho (1998) also indicate that learners are more motivated to transfer their learning for new situations as long as their level of confidence is high. Furthermore, Colquitt, Lepine, and Noe (2000) reveal the finding that motivation to learn is meaningfully associated with learning and transfer measures. Blume, Ford, Baldwin and Huang (2010) stated in their meta-analysis that use of skills that transferred is more important than the efficiency of transfer. It is also supporting the fact that highly motivated trainees tend to use trained skills more frequently.

Baldwin and Ford (1988) also point out that the design of instruction that also named as design of training is another point influencing the level of transfer. It is stated in Baldwin and Ford's (1988) study that embodiment of learning principles (Bass & Vaughan, 1996), sequencing the instruction material (Gagne, 1962) and the relation of outcomes and instructional load (Campbell, 1971; Ford & Wroten, 1984) are the factors influencing design of instruction. To Baldwin and Ford's (1988) study, design of the training has been indicated as the most meaningful research

attention to improve the quality. However, transfer fails if inefficient opportunities are provided for learners to learn in the first stage (Lee, 1998; Lee & Pennington, 1993; Littlefield, Delclos, Lever, Clayton, Bransford & Franks, 1988). In spite of its advantages for initial learning, overly contextualized knowledge can interfere transfer since knowledge is too related to its real context (e.g. Gick & Holyoak, 1980).

Baldwin and Ford (1988) developed a training transfer model including three factors: characteristics of trainees (ability, personality, motivation, and organizational commitment), design of training (the extent to which the course design supports transfer), and characteristics of work environment or transfer climate (peer and supervisor help, and chance to apply).
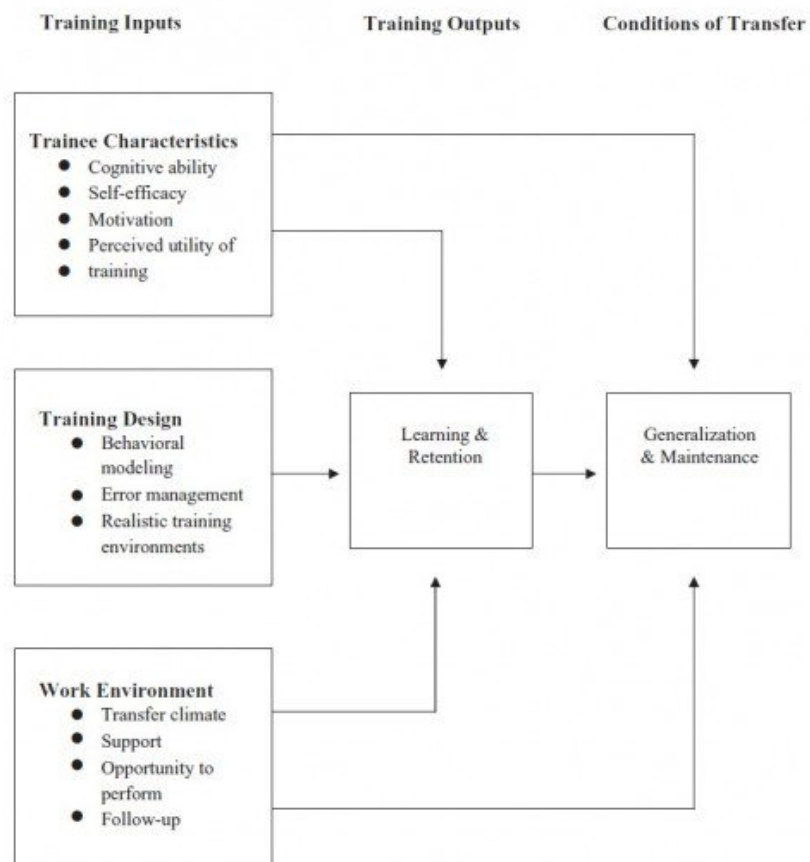

Figure 4. Model of transfer training by Baldwin and Ford (1988).

In model of Baldwin and Ford (1988), it is indicated that training outcomes and training-input are postulated to directly or indirectly affect the conditions of transfer. For transferring of trained skills, Kirkpatrick (1967) emphasizes the importance of achievement of learning and retaining the training material. Furthermore, characteristics of trainees and the work environment are presupposed to influence transfer directly disregarding prior knowledge or retention of the training material. Moreover, training outcomes which refers to retention and learning are seen as directly influenced by design of training, characteristics of trainee, and the work environment characteristics in terms of educational inputs. Thus, the tree training inputs provide an indirect effect on transfer as a consequence of their effect on training outcomes.

In addition to previous suggestions and factors affecting transfer of learning, there are some others ways to improve it. Van Merrienboer, Shuurman, De Crook and Paas (2002) state that increasing germane cognitive load and decreasing extraneous one to draw learners' attention are important ways for an effective training to obtain higher achievement in transfer performance. According to Paas (1992) and van Merrienboer et al. (2002), transfer performance is positively affected when learners complete a task and solve a problem with the given instruction which is meant as completion effect (Paas, 1992). Moreover, Atkinson, Renkl and Merrill (2003) revealed in their studies that decreasing steps of solution can ease both near and far transfer.

2.6.2 Measuring transfer of learning: Various factors influence the process of measuring transfer of learning. Understanding the quality and the level of transfer which is enabled by assessment is also a vital part of learning and transferring. Direct correlation is found between understanding an instruction correctly and ability to

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transfer the instruction and benefit from it in another task (Shepard, 2000). Hence, it is important to be conscious about the level of understanding to adapt it for further situations. Mayer (2009) defines that transfer test is a kind of assessment that measures learners' performance to solve a problem that is not obviously presented in the initial material or to use prior knowledge in new situation. Carpenter (2012) maintains that one way to measure transfer is to apply an assessment of memory for information under a new context which is different from the information that learned in initial context. However, Shepard (2000) underlines that true understanding providing opportunities for transfer is flexible, related and generalizable in contrast to memorization. Also, if good results are aimed to obtain at the end of a transfer process, it would be better to give various and a lot of applications and exercises while learning (Bransford, 1979).

Blume, Ford, Baldwin and Huang (2010) clarify three specific characteristic of transfer measurement are notably valuable. Firstly, the timing of measurement should be carefully taken into consideration. The time of measuring transfer can be implemented immediately after instruction or after some time lag. Blume et al. (2010) expect that the relationship between predictors (like cognitive ability, awareness, motivation, and a supportive work environment) and transfer will be more likely to be closer when transfer is measured immediately after instruction which is also referred as near transfer by Barnett and Ceci (2002). Taylor, Russ-Eft and Taylor (2009) point out that longer time lags may result in smaller effect sizes as resulting from learning decay or too little time between instruction and transfer of learning test may also result in less opportunities for learners to benefit from freshly learned competences or less cases to observe for rates. Secondly, the source of transfer ratings can influence transfer interrelationship. Taylor et al. (2009) found

that when it was compared with supervisor, peer and subordinate ratings, the effect of self-ratings for the managerial training transfer was the most influential. In the third phase, Blume et al. (2010) explain that transfer is measured as both the use of a trained information or skill and the effectiveness of the trainee in implementing the knowledge or skill. Xiao (1996) has studied on effectiveness measure of transfer. In his study, he assessed transfer of circuit board production workers 9 months after training. The workers reflected that the training let them improve the way and the speed of carrying out their tasks. On the other hand, accountability also plays an important role for a successful assessment process of transfer of learning. Bates (2003) states that assessment of transfer increases its accountability for the stakeholders of it in terms of transfer achievement and it contributes the atmosphere of making use of learning and its implementation of the target task. Longnecker (2004) reveals in his study including a survey for two hundred and seventy-eight managers that initial learning attempts to enhance transfer of learning is increasing accountability for implementation. Campione and Brown (1990) stated that good transfer is to generalize knowledge and to support strong comprehension, therefore, a good assessment of transfer should be in the same line with the idea that old understandings should be asked in new ways and inspire for new implementations and encourage for creating new connections. Furthermore, in Butler, Godbole and Marsh's study (2013), explanation feedback and correct answer were compared. In the study, two experiments were implemented and groups received correct answer, explanation feedback and no feedback as response to short answer test after participants studied the target text. Two days later, they took final test consisting of both repeated questions and new inference questions and findings indicated that two types of feedback gave similar results, however explanation feedback had more

positive results on new inference questions. In the study of Butler (2010), it was aimed to investigate whether test-enhanced learning could be applied to improve transfer. In the study, four experiments were implemented. Participants studied a text and they took tests or restudied the text. A week later, each group took a final test including different types of questions including either repeated questions or new inferential questions with the same knowledge domain or different knowledge domain. Results showed that test-enhanced learning improved both retention and transfer of knowledge. Tüker (2013) investigated near and far transfer learning in Maths which was based on cognitive load theory principles. In the study which lasted for twelve weeks, various ways implemented to see the effect such as survey, reflective journals, online forums, achievement tests and interviews. During twelve weeks, participants studied on the context in various learning activities mentioned above and feedback was given at certain level of the study. Two achievement tests had the same test items including both near and far transfer questions at equal amounts and the first achievement test was applied in week 6 and the last one applied on the last week. Findings showed that students performed better in near transfer problems than far transfer problems regarding achievement test results. Moreover, Aydın (2016) conveyed a research investigating the effects of flipped classroom model on academic achievement, assignment stress level and transfer of learning. In eleven-week long study, pretest and posttest were used to analyze the effects. In order to measure the effect of transfer of learning, academic achievement test developed by researcher and experts were used. Additionally, participants were given seven assignments to measure transfer of learning and these assignments were analysed by related forms. During the study, experiment group was provided a flipped classroom model including the target subject with presentations and videos

enabling them to study out of the classroom. Results in terms of transfer of learning indicated that significant difference couldn't be found between experiment and control groups.

Chapter 3

Methodology

This chapter provides information about the research methodology implemented in this study. This part includes detailed information about design of the study, selection of participants, data collection tools, data collection procedures and tools and data analysis, validity and reliability of the study and limitations of the study. The purpose of the study is to demonstrate the effects of immediate feedback with different amount of feedback interventions in computer-based formative assessment on students' transfer of learning in language learning.

3.1 Research Design

This study focuses on immediate feedback including different amount of information through computer assisted formative assessment which is fundamentally important for learners' learning and its effects on transfer of learning in language learning. Regarding technological developments, the field of education and assessment have been affected accordingly. The technological developments in the field have provided many opportunities to use it effectively for improving learners' learning and for teachers' classroom activities including giving feedback and applying assessment.

Feedback has an effective impact on learning. Studies indicate that feedback is quite influential if it is given just after students' responses for an item of a test (Azevedo & Bernard, 1995; Kulik & Kulik,1988; Pressy,1950; van Der Kleij et al., 2012). Although it was not easy to provide considering the conditions of the past, technological tools, especially with the development of web 2.0 tools, provide easy

and fast opportunities to give immediate feedback. On the other hand, formative assessment, which focuses on process to improve students' learning and teachers' teaching by adapting instruction for further situations and instructional objectives in contrast to summative assessment, has been positively affected by technological developments. It has become easier to apply and integrate into the learning process. Moreover, it helps learners own their learning and be aware of it and their progress. Thus, this study is based on how different immediate feedback considering the context of feedback through computer assisted formative assessment affect students' transfer of learning for language learning in a fixed curriculum of Ministry of Turkish National Educational in a state school.

Quasi-experimental design was used in this study. Groups were assigned randomly to four treatment groups (four classrooms). The same researcher gave the same lecture about the related objective of the subject to all groups, however the feedback interventions were different for each group (Table 1).

Table 1

Design of the Study

Groups	Feedback Type Three Quizzes	Prerequisite test	Quiz 1-2-3	Transfer of Learning Test
Group 1	No Feedback	O1	X	O2
Group 2	Correct Answer	O1	X	O2
Group 3	Correct Answer and Elaborated Feedback	O1	X	O2
Group 4	Correct Answer and Extra- Instructional Elaborated Feedback	O1	X	O2

O1: Prerequisite test
X: Quizzes
O2: Transfer of learning test

The study included one prerequisite test and one transfer of learning test in order to find out what their levels are at the beginning and how the process affected their transfer of learning at the end of the study. The study lasted for five weeks with three weeks of treatment. During the process between prerequisite test and transfer of learning test, three online quizzes were implemented. Each quiz had twenty multiple choice questions related with the unit. Test items were designed from 2nd unit of students' main course book regarding the objectives of the unit, titled "Teen Life". The feedback interventions were provided by the online student response system, called Socrative 2.0. Totally ten objectives were selected regarding the objectives of the unit and two test items were written for each objective. In three quizzes, one prerequisite test and one transfer of learning test, totally 100 test items were asked and each test item were written differently regarding the objectives.

3.2 Target Population and Participants

The participants of this study were 8th grade students of a state secondary school which is state school in Istanbul. The reason of selecting this group was that the teacher of the students was the researcher of the study that enabled the researcher to control the groups closely. Another reason was that they were getting prepared for TEOG examinations (a national standardized exam for 8th graders) and their motivation to learn and to achieve the target content related to the content of TEOG Exam was considered higher than the other groups. All groups were assigned in each study group randomly.

In the groups, there were 128 (65 males and 63 females) students in total. Group of no feedback had 22 students (14 males and 8 females), group of correct answer had 35 students (17 males and 18 females), group of elaborated feedback had

36 students (19 males and 17 females), and group of extra-instructional elaborated feedback had 35 students (15 males and 20 females).

Socio economic status of the students is almost equal since it is a state school. The school is a state school in a province of Bayrampaşa. The school has few high-achieving students but there are mostly middle or low achieving students. In terms of technological features, the school has smart boards in the school but there is no internet connection. However, students had opportunities to access to the internet at their home, in an internet café or at their friends' or relatives' home.

Table 2

Demographic Information of Participants in the Study

Group	Gender		Total
	Male	Female	
No feedback	14	8	22
Correct Answer	17	18	35
Elaborated Feedback	19	17	36
Extra-Instructional Elaborated Feedback	15	20	35

3.3 Procedures

In this part, source of data, data collection procedures, data analysis procedures, reliability and validty of the study are presented.

3.3.1 Data Collection Tools and Instruments: Two basic tools were used in this study to collect data, prerequisite test and transfer of learning test. Paper-based tests were used for prerequisite test and transfer of learning test (see Appendix A and B). The data were collected at the beginning and at the end of the study during class time. In addition to these two tests, 3 quizzes were implemented during the

procedure in order to give different types of feedback to the students (see Appendix C, D, and E). For the three quizzes, an online assessment and student response tool, named Socrative 2.0, was used on students' own time and place. However, the data collected from quizzes were not used. As the students answered the quizzes at their own time and place, the researcher could not control the other variables such as looking at other sources, asking friends and family.

3.3.1.1 Prerequisite test and transfer of learning test: For prerequisite test, before the study, a pilot test was applied for a group including 150 (N=150) participants who were at the same grade with the target group from different classrooms of the same school. The test consisted of 10 test items including one objective for each test item. However, analysis showed that Cronbach alpha reliability of the test was not proper for the test (α=0.444). Therefore, again, the pilot test was revised to design a valid and reliable test. In order to obtain expected results, the number of test items was increased and two test items for each objective were prepared (Table 5). Additionally, a consultancy meeting was conducted with a teacher of English working in a state school and a lecturer of English working in a university. The test items were revised again according to their suggestions and opinions. After the revised pilot test, which was the prerequisite test of the study, was applied to the different pilot group again (N=75), the KR-20 reliability results showed that the test provided proper reliability for the study (α=0.858) (Table 3).

Table 3

Reliability Statistics of Pilot Test

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,858	,859	20

According to item discrimination index, items which are 0,19 and below it need to be removed from the test and only one item was identified in this interval in the test and the item (rjx=0,19) was changed. The items which are between 0,20-0,29 need to be improved and only one item (rjx= 0,28) was identified in this interval in the test and the vocabulary of the item was changed. The items which are between 0,30-0,39 are identified as a good item and the items which are above 0,40 are identified as excellent item. Therefore, the analysis indicated that there are seventeen excellent test items and two good test items in the test (Table 4).

In terms of item difficulty which is the proportion of students that answer each item correctly, the range must be between 0 and 1. If the range gets closer to 1, it means that it is an easy item and if the range gets closer to 0, it means that it is a difficult item. When the items of the test were analyzed, it is indicated that there are four test items which are easy and there are sixteen test items which are moderate. The average item difficulty was identified as moderate ($\overline{P} = 0,585$) (Table 4).

Table 4

Statistics of Each Test Item (N=75)

Number of Question	Mean	Std. Deviation	Correlation of item difficulty (Pj)	Item discrimination value (rjx)
q1	,493	,5033	0,488	0,70
q2	,587	,4957	0,721	0,33
q3	,413	,4957	0,535	0,51
q4	,787	,4124	0,744	0,28
q5	,440	,4997	0,512	0,56
q6	,680	,4696	0,674	0,51

Table 4 (cont.d)

Number of Question	Mean	Std. Deviation	Correlation of item difficulty (Pj)	Item discrimination value (rjx)
q7	,693	,4642	0,605	0,65
q8	,400	,4932	0,442	0,33
q9	,547	,5012	0,651	0,37
q10	,627	,4869	0,605	0,65
q11	,613	,4903	0,535	0,79
q12	,613	,4903	0,628	0,51
q13	,520	,5030	0,535	0,51
q14	,613	,4903	0,558	0,56
q15	,667	,4746	0,581	0,70
q16	,413	95,47	0,512	0,74
q17	,640	,4832	0,651	0,56
q18	,560	,4997	0,512	0,74
q19	,707	,4584	0,651	0,56
q20	,573	,4979	0,558	0,19

Test items were designed to measure transfer of learning. In the test, test items were prepared with new inference questions regarding the studies of Butler (2010) and Butler, Godbole and Marsh (2013). Content validity was provided with the views of subject matter experts stating that the items of the test measure what was expected to measure considering the objectives of the related unit. In order to

investigate students' ability and performances of transferring their knowledge on final test, each test item in prerequisite test, transfer of learning test and quizzes included new inference questions regarding previously learned concepts covering the objectives of the determined unit for the study and all the items in the tests and quizzes were different accordingly (Appendix G).

Table 5

Objectives for Each Test Item

Objective	Number of Question
Using Simple Present Tense	2
Asking and answering for a certain information	2
Asking question for information	2
Making question in Simple Present Tense	2
Making negative and affirmative sentences in Simple Present Tense	2
Using the structure of would like	2
Describing activities with adjectives	2
Completing sentences with correct form and structure	2
Using frequency adverbs and time expressions properly	2
Sequencing and writing sentences in Simple Present Tense	2

3.3.1.2 Quiz tool for feedback interventions: Socrative 2.0 is an online assessment and student response tool. It can be used on any platform having an internet access. Socrative 2.0 allows to present various types of questions such as open-ended, true-false and multiple choice questions. In this study, the type of multiple choice question was preferred. It also enables to give immediate feedback like both correct answer and explanation option enabling to give longer information

about the item. Another feature of the tool about the order of questions and answers in the test item were used in order to hinder collaboration while taking the test and each student taken the test items with different order (Figure 3). In the study, various feedback features were used to give various types of feedback (Appendix H). For the group of no feedback, all feedback features were deactivated. They did not take both correct answer of the item and explanation about the correct answer and they automatically passed to the next question after submitting their answers. For the group of correct answer, students saw only true answers of the questions just after their responses and then, they were able to go to the next question (Figure 4). For the group of elaborated feedback, students received both correct answer and explanation about the correct answer just after they submitted their answer and then, they were able to see the next question (Figure 5). For the group of extra-instructional elaborated feedback, the students received correct answer of the test item and also, they took extra information about the question both specific for the correct answer and also for general information about the related objective of the question (Figure 6).

Socrative 2.0 is easy to use Web 2.0 tool. Students can directly enter the test through using socrative student feature of it. Students are expected to enter the name of the room. In these rooms, students take the test assigned and created by teachers. When the assessment begins, the instructor can select to display live results as they are submitted or hide the results until all responses are received (Figure 7). For teachers, all data collected for each assessment are recorded and archived within Socrative 2.0 and can easily be retrieved and exported in an Excel spreadsheet for formal documentation. In addition to these, it provides on time results and downloadable reports including students' progress and responses.

Figure 3. Sample screen of question and answer randomization .

Figure 4. Sample screen for correct answer.

Figure 5. Sample screen of elaborated

feedback.

Figure 6. Sample screen for extra-

instructional elaborated feedback.

Figure 7. Sample screen of following live results.

3.3.2 Data Collection Procedures

There were four groups of students for the study. Each group was selected randomly. The study lasted totally 5 weeks including 3 weeks of treatment from the implementation prerequisite test to the transfer of learning test. After applying prerequisite test to all groups, each group took three quizzes during the study. Each week, they took an online quiz out of the class by the web 2.0 tool of Socrative which is a study response system commonly preferred for formative assessment. Before they were assigned to the online tests, they had been informed about how to use the Socrative tool in the class and a poster giving information about instructions about using the tool was hang on the walls of the classes.

Four groups of the study were provided different immediate feedback considering the context of the feedback. The control group received no feedback. The other groups took three different kinds of immediate feedbacks. One group took only correct answer, one group took elaborated feedback and the other group took

extra-instructional elaborated feedback. The type of correct answer included only the true answers of the test items. Elaborated feedback gave information about correct answer and the reason of it. The type of extra-instructional elaborated feedback contained the information of correct answer and also detailed information about reason of the answer and also extra information about the objective of the test item. At the end of the process, a posttest applied for each group. Prerequisite test and transfer of learning test were applied on paper in the classroom. The tests lasted for 40 minutes that is a class time and two minutes for each items which is similar to the TEOG test that they are mainly getting prepared for and nothing is given for students as a result or reward of the test.

3.3.3 Data Analysis Procedures

In this section, specific statistical procedures are listed below for each research question separately. For the first research question, (Is there a significant mean difference between prerequisite test and transfer of learning test scores of students within groups?) the paired samples t-test was used to see if there is any significant difference between test scores (prerequisite test and transfer of learning test scores). Both tests included 20 questions with 4 multiple-choice items asking 2 questions for each outcome of the unit. The total score of the test was calculated as 20 points. When a measurement of the same participants in relation to a correlated variable before and after an experimental treatment is taken, it is about time dependent repetitive measurement of participants and obtained measurements are correlated (Büyüköztürk, 2005). T-test decides if a statistically significant difference in the mean of a dependent variable between two groups which are related exists. All the assumptions related with the t-test were met to conduct the analysis.

For the second research question, (Is there a significant mean difference in transfer of learning test scores between groups?) a one-way ANOVA test was conducted after analyzing the data was normally distributed and homogeneity of variance was observed. Before conducting one-way ANOVA to see the difference between groups in transfer of learning test, one-way ANOVA used to see if there is any significant difference between prerequisite test scores of the students. Later, the one-way analysis of variance (ANOVA) is used to decide if any statistically significant differences between the means of three or more independent (unrelated) groups exist. All three assumptions were checked before conducting ANOVA. A value of $p<0.05$ was considered significant.

In order to analyze the differences between groups, post hoc tests were used. A value of $p<0.05$ was considered as significant. As ANOVA does not tell which group or groups makes difference, post hoc tests were employed whether the difference existed between groups. For the post-hoc tests, Tukey test was conducted because it is more appropriate for multiple comparisons than t-test is (Linton & Harder, 2007). For this reason, some groups were mentioned as follows: No feedback (NOFB), Correct Answer (CA), Elaborated Feedback (ELFB), Extra-Instructional Elaborated Feedback (XELFB).

3.3.4 Reliability and Validity

For reliability and validity of the study, the test used in the study was analyzed according to Cronbach alfa reliability ($\alpha=0.858$) through SPSS and reliability was provided (Table 3). Also, the average item difficulty was identified as moderate ($\overline{P} = 0,585$) (Table 4). For validity, a consultancy meeting was done with

two subject matter experts and validity of the test was provided considering their suggestions and offers.

In order to provide content validity of the prerequisite and transfer of learning tests, the researcher and two subject matter experts prepared and checked test items whether the items of the tests measure the objectives of the study that are aimed to be measured (Appendix F). In terms of face validity, it was obtained by subject matter experts stating that the test seems to measure what is presented to measure. Also, after piloting of the prerequisite test and regarding the feedbacks given by subject matter experts, some test items changed and improved. Since content validity of the tests was provided, parallel testing has not been implemented for the test of transfer of learning.

3.4 Limitations

There were some limitations of the study. One of them is resulted from students' internet access opportunities. Some of the students do not have a proper and adequate internet access. However, a device with an internet connection was provided for those students in the school time. Secondly, the time of the study was a special time period for the participants. They were getting prepared for TEOG exams and they had a very busy schedule even after the school. Thus, some of them did not spend their time for the quizzes properly. They were expected to take the quizzes in two days after releasing but the time had to be increased since they did not finish their task on time. In addition, the time spent on reading feedback could not be analyzed since the tool used in the study does not support such a feature. Therefore, it is not possible for the researcher to say that students spent enough time for reading and understanding the feedback given. Also, time spent on the test is not provided by

the tool used. Another limitation was the academic levels of the students. Most of the participants of the study were low-achievement students. Thus, their inner motivation to learn and achieve were not enough to concentrate on the given tasks. The other limitation was about the honesty of the responses. Validity and reliability were limited to the honesty of the students' responses because of the fact that students did their tasks anytime and anywhere they wanted. Moreover, validity of this study was restricted to the reliability of the data collection instruments used.

3.5 Delimitations:

The generalizability of the findings of this study was limited to because of its use of a convenient sample of 8th grade students from a state school. The sample size was limited to the number of 128 students from only one school. So, the results could be different with different environment, larger population and different instructors.

Chapter 4

Results

In this section, the results are presented according to the research questions.

4.1 Research question 1

Is there a significant difference between prerequisite test and transfer of learning test scores of students for within groups? (Groups of No Feedback, Correct Answer, Elaborated Feedback, Extra-instructional Elaborated Feedback)

To examine the significance of mean difference between prerequisite test and transfer of learning test scores within groups, t-test test was conducted for each group Table 6). There were four types of feedback interventions in the study including no feedback (NOFB), correct answer (CA), elaborative feedback (ELFB) and extra-instructional elaborated feedback (XELFB).

Table 5

Paired Samples Statistics for the Groups

		Mean	N	Std. Deviation	Std. Error Mean
No Feedback	Prerequisite test	7,6818	22	2,33781	,49842
	Transfer of learning test	10,5909	22	4,03153	,85953
Correct Answer	Prerequisite test	9,1143	35	3,75556	,63480
	Transfer of learning test	11,8286	35	4,42909	,74865
Elaborated Feedback	Prerequisite test	8,9722	36	3,45986	,57664
	Transfer of learning test	12,1111	36	4,01268	,66878
Extra-Instructional Elaborated Feedback	Prerequisite test	9,7143	35	3,02511	,51134
	Transfer of learning test	12,1714	35	3,76115	,63575

When paired samples statistics for the groups were analyzed, it is seen that there are improvements for each group (Table 6). No feedback group obtained $\bar{X}$= 7,68 from prerequisite test and $\bar{X}$= 10,59 from the transfer of learning test. Correct answer group obtained $\bar{X}$= 9,11 from prerequisite test and $\bar{X}$= 11,83 from the transfer of learning test. Elaborated feedback group obtained $\bar{X}$= 8,97 from prerequisite test and $\bar{X}$= 12,11 from the transfer of learning test. Extra-instructional elaborated feedback group obtained $\bar{X}$= 9,71 from prerequisite test and $\bar{X}$= 12,17 from the transfer of learning test. Therefore, it can be interpreted from the findings that treatment implemented to all groups had an positive effect on transfer of learning performances.

On the other hand, findings from paired sample tests indicated that all feedback interventions revealed significant difference within groups regarding the results between their prerequisite and transfer of learning test scores (Table 7) .

Table 6

Paired samples test statistics for the groups

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
					Lower	Upper			
NOFB	PRT - TOLT	-2,91	2,81	,60	-4,15	-1,66	-4,856	21	,000
CA	PRT - TOLT	-2,71	3,25	,55	-3,83	-1,60	-4,941	34	,000
ELFB	PRT - TOLT	-3,14	3,84	,64	-4,44	-1,84	-4,904	35	,000
XELFB	PRT - TOLT	-2,46	3,50	,59	-3,66	-1,25	-4,152	34	,000

NOFB: No Feedback
CA: Correct Answer
ELFB: Elaborated Feedback
XELFB: Extra- Instructional Elaborated Feedback
PRT: Prerequisite test
TOLT: Transfer of learning test

For all groups, t-test results revealed that scores of the group was between tests significantly different (p< .000) (Table 7). Therefore, it can be mentioned that all types of treatment applied to the groups was not more significance between each

other and all types of feedback intervention almost equal effect on groups' transfer of learning performance.

4.2 Research question 2

Is there a significant difference in transfer of learning test scores between groups?

In order to see whether the groups were equal in terms of prerequisite scores, a one-way ANOVA was conducted on the prerequisite test scores. First, the assumptions of ANOVA -the normality ($p > .05$) and homogeneity of variance ($p > .05$) were checked through Kolmogorov- Smirnov tests respectively (Table 8).

Table 7

One-Sample Kolmogorov-Smirnov Test for Prerequisite Test

		Prerequisite Test
N		128
Normal Parameters (a,b)	Mean	8,9922
	Std. Deviation	3,29757
Most Extreme Differences	Absolute	,147
	Positive	,147
	Negative	-,088
Kolmogorov-Smirnov Z		1,669
Asymp. Sig. (2-tailed)		,008

a Test distribution is Normal.
b Calculated from data.

According to the results of Kolmogorov- Smirnov tests assumptions were sustained for ANOVA. After the normality and homogeneity of variance were checked, one way ANOVA was conducted (Table 9).

Table 8

One-way ANOVA Statistics for Prerequisite Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	56,562	3	18,854	1,765	,157
Within Groups	1324,431	124	10,681		
Total	1380,992	127			

One way ANOVA showed that all groups were almost equal before the intervention (F(3, 124) = 1.765, p > .05) (Table 9). To examine the significance of mean difference of transfer of learning test scores between groups, a one-way ANOVA was conducted (Table 10). There were four types of feedback interventions in the study including no feedback (NOFB), correct answer (CA), elaborative feedback (ELFB) and extra-instructional elaborated feedback (XELFB).

Table 9

One-way ANOVA statistics for transfer of learning test

	SS	df	MS	F	P
Between Groups	40,488	3	13,496	,815	,488
Within Groups	2052,817	124	16,555		
Total	2093,305	127			

Findings showed that there is no significant difference between groups (F(,124)=.815, p>.05) (Table 10). However, in order to analyze if there is any difference between these four groups, post-hoc analysis was conducted (Table 11).

Table 10

Post-hoc results of different feedback groups for transfer of learning test results

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
NOFB	CA	-1,23766	1,10702	,679	-4,1206	1,6453
	ELFB	-1,52020	1,10107	,514	-4,3876	1,3472
	XELFB	-1,58052	1,10702	,485	-4,4634	1,3024
CA	NOFB	1,23766	1,10702	,679	-1,6453	4,1206
	ELFB	-,28254	,96585	,991	-2,7978	2,2327
	XELFB	-,34286	,97262	,985	-2,8758	2,1901
ELFB	NOFB	1,52020	1,10107	,514	-1,3472	4,3876
	CA	,28254	,96585	,991	-2,2327	2,7978
	XELFB	-,06032	,96585	1,000	-2,5756	2,4550
XLFB	NOFB	1,58052	1,10702	,485	-1,3024	4,4634
	CA	,34286	,97262	,985	-2,1901	2,8758
	ELFB	,06032	,96585	1,000	-2,4550	2,5756

Although there is mathematical difference regarding mean scores within groups after related feedback interventions, findings show that results are not significantly different between groups ($p > .05$) (Table 11). However, compared to other feedback intervention, elaborated feedback had more positive effect on results of transfer of learning test although it was not significantly different.

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Chapter 5

Discussion and Conclusion

This chapter aims to present a summary of the findings about the present study. There are also recommendations for further research.

5.1 Discussion of Findings for Research Questions

The aim of the study was to investigate the effects of immediate feedback with different contents given through computer based formative assessment on transfer of learning. The study was applied to 128 8th grade students for 3 weeks in their regular English classes. During the study, a prerequisite test was implemented at the beginning and a transfer of learning test was implemented at the end. Between the tests, students took three online quizzes (one quiz each week) through a student response system, called Socrative 2.0 and according to the groups, they took different immediate feedback types as a response to their answer. The study had four groups and the groups had no feedback, correct answer, elaborated feedback and extra instructional elaborated feedback after giving answers for the test items. In the study, all test items were designed according to the objectives of unit two, titled Teen Life, of their English main course book. There were two items for each objective in a test and totally, students had 20 questions in all tests and quizzes. Regarding transfer of learning abilities, all test items were prepared differently but the same objectives accordingly.

Prior to study, a prerequisite test was applied on paper in the class time for all groups. A one-way ANOVA test was conducted for prerequisite test results and findings showed that there was not significant difference between groups and all groups was equivalent for the study ($F(3, 124) = 1.765$, $p > .05$) After prerequisite test, all groups took three online quizzes. However, each group received different

immediate feedback types. Group of no feedback didn't take any feedback after answering the questions and directly passed to the next questions. Group of correct answer received only the correct answer of the test item after their responses. Group of elaborated feedback took correct answer of the test item and also, they took explanations about the correct answer. For the group of extra instructional elaborated feedback, students received both correct answer and elaborated feedback with extra explanation considering the objective of the test item.

After completing quizzes, students took a transfer of learning test including 20 test items on paper in the class time. The test items were also designed regarding the same objectives of the unit but differently from prerequisite test and quizzes. In order to analyze the effects of different feedback interventions within groups, t-test was employed for each group. Findings indicated that mean scores are all significantly different for all groups (F(3,124)=.815, p > .05). It can be concluded that all types of immediate feedback interventions have a positive effect on transfer of learning. The findings show that all groups improved their mean scores in the transfer of learning test. Therefore, it can be interpreted that immediate feedback regardless of feedback interventions has a constructive influence on transfer of learning. In the same line, Kulik and Kulik (1988) stated in their meta-analytic review that feedback that is given just after the response is more efficient than the other types of timing of feedback, for example delayed feedback. Additionally, Pressey (1950) mentions that immediate feedback has generally given positive results. Moreover, it is also stated that immediate feedback affects learning positively (Arnau, Arevalillo-Herráez, Puig & González-Calero, 2013; Corbalan, Paas, & Cuypers, 2010). Furthermore, the message given in the feedback can be interpreted as a factor influencing learning positive regarding the mean scores of transfer of

learning test comparing with the prerequisite test in the study. Narciss and Huth (2002) affirm that feedback has a positive effect when function, content and form of feedback are given properly. On the other hand, it is seen from the findings that the group of no feedback has also improved their mean scores although they did not receive any feedback as a result of their responses. The finding can be interpreted that, especially for the low achieving students, they are not affected negatively in terms of motivation by seeing their wrong answer as an immediate feedback intervention. It is in the same line with Ammons (1956) stating that knowledge of performance may influence motivation negatively if a student does not achieve well. Thus, it can be concluded that all kinds of feedback interventions in the study have a positive and significant effect on transfer of learning.

In order to investigate the effect of different immediate feedback interventions between groups, a one-way ANOVA test and for the post-hoc test, Tukey test were conducted. Findings indicate that each type of feedback is not significantly different between each other (F(3,124)=815, p>.05) (Table 9). Although all feedback types had a significant difference on transfer of learning within themselves, they are not between each other. There are various results in the literature on the effect of different feedback types. Harris (1994) revealed in the meta-analysis of studies on feedback that elaborated feedback is better than knowledge of correct answer under certain situations. Supporting that ideas, Roper (1977), Bangert-Drowns et al. (1991), Kulik and Kulik (1988) and Schimmel (1983) mention that feedback message with more information is more efficient than the one with less information. Contrary to them, the results indicated that there is no significant difference between different feedback types in the study. However, the type of elaborated feedback has indicated slightly positive difference regarding mean

scores comparing to the types of no feedback, correct answer and extra instructional elaborated feedback.

According to the difference of mean scores of groups between prerequisite test and transfer of learning test (Figure 8), findings indicate that the group of elaborated feedback (X=3,14) obtained higher improvement than the group of no feedback (X=2,91), the group of correct answer (X=2,71) and the group of extra-instructional elaborated feedback (X=2,46).   Although there is no significant difference between groups, it can be interpreted that elaborated feedback is more influential than the other groups. The group of extra-instructional feedback obtain the least improvement and the reason of it can be as a result of cognitive load effect. The extra-instructional feedback contained the longest feedback message and as Coninx et al. (2013) mentioned that the cognitive load will increase if the feedback message gets longer and also as Ashford (1986) stated that it may decrease the motivation to respond to the feedback.
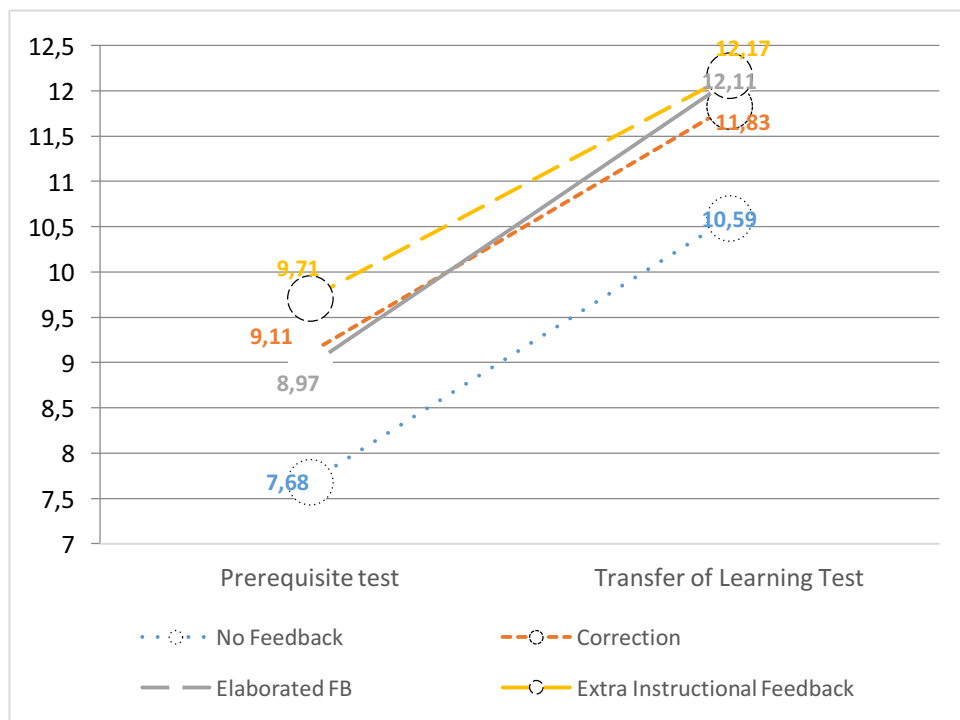

Figure 8. Mean scores of four groups.

5.2 Recommendations

This study tried to find effects of immediate feedback interventions with different contexts on transfer of learning. It was found that immediate feedback with four types of content had positive effects on transfer of learning within groups, however there is no significant difference between groups. Regarding the duration of the study, for further research, the effects of different feedback interventions on far transfer of learning can be studied. Another suggestion for further research is to implement a questionnaire focusing on students' motivation and attitudes about the study. In addition to these, the participants of the study were selected from a state school and most of the students in the groups were low achieving students. Therefore, implementing the study for different schools from various background and for larger population to increase the effect of the study and its reliability is another suggestion for further studies. Another suggestion is to measure the relation between the effect of immediate feedback with different context and time spent on feedback. Also, time spent on the test while taking the quizzes can be taken into consideration. The study was only about the effects of different contents of feedback. Therefore, the effect of timing about the feedback can be studied in further researches. Additionally, another group which does not take any quizzes can be added into the groups in order to investigate the effects of quizzes with different feedback interventions. On the other hand, the treatment process lasted three weeks and it may be seen a short period. Thus, a longer treatment period for more than one unit can be studied in another study.

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APPENDICES

Prerequisite test

Sınıf:_____ No:_____

1. Teachers _____ homework every Monday.

a. gives
b. give
c. is giving
d. are giving

2. My parents bring me a new toy ___ the weekends.

a. on
b. in
c. with
d. Under

3. True friends don't prefer _____

a. Tell a lie to keep promises
b. Telling a lie to keep promises
c. To tell a lie to keep promises
d. Telling a lie to keeping promises

4. do / leave / what / you / time?

a. Do you leave school what time?
b. What you do leave school time?
c. What time do you leave school?
d. Do you what leave time school?

5. People _____ read a newspaper in the morning.

a. On Sundays
b. Rarely
c. Every week
d. Once a week

6. Amber prefers walking in the nature. She thinks it is _____ .

a. Terrible
b. Interesting
c. Bored
d. Bad

7. A: How often does Helen have parties?
   B: _____

a. In the evening
b. yesterday
c. today
d. sometimes

8. Where would Richard like _____ on Monday?

a. To have breakfast
b. Has breakfast
c. To has breakfast
d. Having breakfast

9. Linda eats three eggs on Sundays?

Altı çizili sözcüğü cevap olarak verecek soru hangisidir?

a. How often does Linda eat eggs in the mornings?

b. How many eggs Linda eat in the mornings?

c. How many eggs does Linda eat in the mornings?

d. When eggs does Linda eat in the mornings?

10. Aşağıdaki cümlenin olumsuzu hangisidir?
    People go for a walk in winter.

a. Do people go not for a walk in winter.
b. People doesn't go for a walk in winter.
c. People don't goes for a walk in winter.
d. People don't go for a walk in winter.

11. She _____ two eggs and cheese at breakfast.

a. Eats
b. Eat
c. Eating
d. Does eat

12. They / prefer/ do / how often/ zorbing?

a. How often they do prefer zorbing?
b. Do they prefer how often zorbing?
c. How often do they prefer zorbing?
d. How often do they zorbing prefer?

13. She plays the piano_____.

a. sometimes
b. always
c. twice a day
d. never

14. Why would you like _____ every evening?

a. To orange juice
b. Orange juice
c. Orange juicing
d. To orange juicing

15. We play hide and seek in the garden every Monday.

Altı çizili sözcüğü cevap olarak verecek soru hangisidir?

a. What time do you play hide and seek?
b. How often do you play hide and seek?
c. When do you play hide and seek?
d. Where do you play hide and seek?

16. Aşağıdaki cümlenin olumlu hali hangisidir?
Judith doesn't get up early on weekdays.

a. Judith get up early on weekdays.
b. Judith gets up early on weekdays.
c. Judith do gets up early on weekdays.
d. Judith does get up early on weekdays.

17. We _____ in a big city and I go to a high school in this city. I _____ very early _____ the morning to go to school. My school is not close to our home and my mother _____ to the school every morning.

  a. Lives / get up / in / take
  b. Lives / get up/ on / take
  c. Live / gets up / on / takes
  d. Live / get up / in / takes

18. In Italy, students go to school on weekdays. They often do their homework. They usually go to school by bus. They are into going to school and they love learning.

Aşağıdaki sorularda hangisinin cevabı yukarıdaki paragrafta yoktur?

a. How often do they do their homework?
b. Do they like going to school?
c. How do they go to school?
d. What do they do every day?

19. Kate and Henry are crazy about playing bossaball. They find it _____ .

a. exciting
b. boring
c. terrible
d. Unbearable

20. I. What do you think about listening to music?
II. Why not!
III. What about going to rock concert then?
VI. I think it is very enjoyable.

Yukarıdaki diyaloğun doğru sıralanışı aşağıdaki hangi seçenekte verilmiştir?

a. I - III- II -IV
b. I - VI -III- II
c. III- VI - I - II
d. I - II - III- VI

Appendix B: Transfer of Learning Test

Transfer of Learning Test

Sınıf:____ No:_____

Aşağıdaki sorularda boşluğa gelmesi gereken en doğru şıkkı seçiniz.

1.Fred and Daniela _____ news online every Sunday.

a. read
b. reads
c. is reading
d. are reading

2. My desk mate solves problems ___ Monday and Wednesday.

a. on
b. at
c. with
d. in

3. Helen doesn't prefer _____

a. go to beach to see a movie
b. going to beach to seeing a movie
c. going to beach to see a movie
d. go to beach to seeing a movie

4. does / casual clothes/ how / he /often/wear ?

a. How does she often wear casual clothes?
b. Does she how often wear casual clothes?
c. How often does she wear casual clothes?
d. How often she does wear casual clothes?

5. Children _____brush their teeth in the evening.

a. in the mornings
b. always
c. every day
d. three times a day

6. Serkan doesn't prefer going shopping. He says it is _____ .

a. healthy
b. trendy
c. boring
d. interesting

7. A: How do you go to school?
B: _____
a. by bus
b. tomorrow
c. every day
d. usually

8. Where would Thomas like _____ in the evenings?
a. to does exercise
b. does exercise
c. to do exercise
d. doing exercise

9. The school starts at 8.40 every weekday.

Altı çizili sözcüğü cevap olarak verecek soru hangisidir?

a. How often does the school start?

b. What time does the school start at 8.40?

c. Where does the school start every weekday?

d. When does the school start at 8.30?

10. Aşağıdaki cümlenin olumsuzu hangisidir?
We go cycling to the part every day.

a. Do we go cycling to the part every day?
b. We don't go cycling to the part every day.
c. We doesn't go cycling to the part every day.
d. They don't go cycling to the part every day.

11. Taylor _____ with us for the concert.

a. coming
b. comes
c. does come
d. come

12. do / take/ they / Where/ the bus?

a. Do where they take the bus?
b. Where do the bus they take?
c. Where do they take the bus?
d. Do they take where the bus?

13. We hang out with friends_____.

a. rarely
b. sometimes
c. once a month
d. often

14. What time would they like _____ in the afternoon?

a. to meeting
b. meeting
c. meet
d. To meet

15. He goes cycling to the riverside.

Altı çizili sözcüğü cevap olarak verecek soru hangisidir?

a. How does he go cycling?
b. Who goes cycling to the riverside?
c. When does he go to the riverside?
d. Where does he go cycling?

16. Aşağıdaki cümlenin olumlu hali hangisidir?
Cats don't eat cheese after morning.

a. Cats eat cheese before morning.
b. Cats do eat cheese after morning.
c. Cats eat cheese after morning.
d. Cats eats cheese after morning.

17. Ayşe never _____ horror films because she_____it very terrible but she and her friends rarely _____horror movies in the cinema because her friends _____ these movies.

a. prefers/ finds / see / like
b. doesn't prefer/ find / sees / likes
c. prefers/ finds / sees / likes
d. prefers/ find / see / likes

18. My classmate, Umut, has a bike. He likes cycling very much. He often goes to the park to ride a bike on weekends but he is not good at fixing his bike.

Aşağıdaki sorularda hangisinin cevabı yukarıdaki paragrafta yoktur?

a. Where does he go cycling?
b. Who has a bike?
c. What time does he go cycling?
d. Can he fix his bike?

19. I am fond of reading newspaper online. I think it is _____ .

a. ridiculous
b. terrible
c. boring
d. terrific

20. I. Are you busy tonight?
    II. Not at all.
    III. It sounds great.
    VI. How about watching soccer on TV?

Yukarıdaki diyaloğun doğru sıralanışı aşağıdaki hangi seçenekte verilmiştir?

a. I - II - III- VI
b. I - II - IV - III
c. III- VI - I - II
d. IV- III - I - II

Appendix C: Quiz 1

QUIZ-1 ELGB   Score: _____

1. The student _____ his room on Sundays.
   (A) is tidying
   (B) are tidying
   (C) tidy
   (D) tidies

2. People do their project work ___ nights.
   (A) at
   (B) In
   (C) with
   (D) on

3. Students don't prefer _____
   (A) reading a book to study
   (B) read a book to studying
   (C) read a book to study
   (D) reading a book to studying

4. Aşağıda karışık verilmiş kelimelerden yapılacak soru hangisidir?
   Does/ How / she / get / often/ up / early?
   (A) Does she often get up how early?
   (B) How often does she get up early?
   (C) Does she how often get up early?
   (D) How does she often get early up?

5. Some students do their homewok........
   (A) never
   (B) rarely
   (C) three times a week
   (D) sometimes

6. Tony and I don't prefer doing snowtubing. We think it is _____ .
   (A) Terrible
   (B) Interesting

(C) Exciting

(D) Trendy

7. A: Where does Jason have breakfast?
B: _____

(A) In the morning

(B) at home

(C) at 7.00 a.m.

(D) usually

8. When would Kate like _____ at this cafe?

(A) eat dinner

(B) eating dinner

(C) to eat dinner

(D) to eats dinner

9. She likes having breakfast "at 7.00" on Mondays.

Tırnak içindeki sözcüğü, cevap olarak verecek soru hangisidir?

(A) When does she like having breakfast at 7.00?

(B) What time does she like having breakfast on Mondays?

(C) What time does she like having breakfast at 7.00 on Mondays?

(D) What does she like doing at 7.00 on Mondays?

10. Aşağıdaki cümlenin olumsuzu hangisidir?

Your friend has a shower at noon.

(A) Your friend doesn't has a shower at noon.

(B) Your friend don't has a shower at noon.

(C) Your friend don't have a shower at noon.

(D) Your friend doesn't have a shower at noon.

11. Jack and Joe _____ thriller movies every Saturday night.

(A) watch

(B) watches

(C) watchs

(D) watching

12. Aşağıda karışık verilmiş kelimelerden yapılacak soru hangisidir?

many / how / pencils / you / have / do?

(A) How many pencils do you have?

(B) How many have you do pencils?

(C) Do you have how many pencils?

(D) Do you have pencils how many?

13.   She_____ listens to heavy metal.

(A) everyday

(B) hardly ever

(C) once a day

(D) on weekends

14.   Would you like _____ this evening?

(A) coffeeing

(B) to coffee

(C) coffee

(D) To coffeeing

15.   They do "snowshoeing" in Uludağ in Winters.

Tırnak içindeki sözcüğü cevap olarak verecek soru hangisidir?

(A) What do they do in Uludağ in Winters?

(B) How do they do snowshoeing in Uludağ in Winters?

(C) What do they do snowshoeing in Uludağ?

(D) Where do they do snowshoeing in Winters.

16.   Aşağıdaki cümlenin soru hali hangisidir?

Geoege fixes his bike every week.

(A) George does fix his bike every week?

(B) Do Goerge fixes his bike every week?

(C) Does George fix his bike every week?

(D) Does George fixes his bike every week?

17.   My friend is Tim. He _____ for a big company but he _____ on weekends. So he _____ going walking with his family. They usually _____ going to seaside.

(A) Works/ doesn't work / likes / prefer

(B) Works / don't works / likes / prefers

(C) Works / doesn't works / likes/ prefers

(D) Work / doesn't' works/ like /prefer

18. Jack is a student in a secondary school. His favourite activity is cycling. He usually goes cycling on weekends. He is bad at fixing his bike, so his father helps him when he has a problem with his bike.

Aşağıdaki sorularda hangisinin cevabı yukarıdaki paragrafta yoktur?

(A) Where is Jack a student?

(B) What does he like doing?

(C) Why does he go cycling on weekends?

(D) Who helps him about his bike problems?

19. They can't stand watching comedies. They find it _____ .

(A) exciting

(B) trendy

(C) fun

(D) unbearable

20. I. No, thanks. I don't prefer those kinds of movies.
II. Do you have any plan this afternoon?
III.No, not at all.
IV. Why don't we watch a romance movie?

Yukarıdaki diyaloğun doğru sıralanışı aşağıdaki hangi seçenekte verilmiştir?

(A) II-I-IV-III

(B) II-III-IV-I

(C) IV-III-II-I

(D) IV-II-III-I

Appendix D: Quiz 2

ELGB-II   Score: _____

1. Dilek _____ eggplant for every dinner.
   - (A) have
   - (B) Having
   - (C) is having
   - (D) has

2. Students do their homework ___ the evenings.
   - (A) at
   - (B) In
   - (C) with
   - (D) on

3. Students don't prefer _____
   - (A) getting up early to staying up late
   - (B) get up late to stay up late
   - (C) getting up early to stay up late
   - (D) get up early to staying up late

4. Do /when / they / brush / teeth/ ?
   - (A) Do they brush teeth when?
   - (B) When do they brush teeth?
   - (C) When they do brush teeth?
   - (D) When brush they do teeth?

5. Most of the students study ....
   - (A) always.
   - (B) rarely .
   - (C) sometimes.
   - (D) every weekend.

6. We prefer doing bassaball. We think it is _____ .
   - (A) terrible
   - (B) terrific
   - (C) bad

(D) boring

7. A: Who has lunch at noon?
B: _____
(A) at noon
(B) in the afternoon
(C) at 12.00
(D) Jason

8. When would Kate like _____ at this cafe?
(A) to play games
(B) play games
(C) to playing games
(D) playing games

9. She likes "having breakfast" at 7.00?

Tırnak içindeki sözcüğü cevap olarak verecek soru hangisidir?
(A) What does she do at seven?
(B) What does she like doing at seven?
(C) Who likes having breakfast at seven?
(D) When does she like having breakfast?

10. Aşağıdaki cümlenin olumsuzu hangisidir?

My classmate leaves home in the afternoon.
(A) My classmate don't leaves home in the afternoon
(B) My classmate doesn't leaves home in the afternoon
(C) My classmate does leaves home in the afternoon.
(D) My classmate doesn't leave home in the afternoon

11. They _____ to school every weekday.
(A) go
(B) goes
(C) are going
(D) going

12. often / how / does / she / watch / movies?
(A) How often does she watch movies?
(B) How does she watch often movies?

(C) Does she how often watch movies?

(D) How often she does watch movies?

13. 13. He_____ eats junk food on Sundays.

(A) every weekend

(B) rarely

(C) twice a day

(D) on weekends

14. Would he like _____ tonight?

(A) party

(B) partying

(C) to party

(D) to partying

15. They go to Antalya "in summers".

Tırnak içindeki sözcüğü cevap olarak verecek soru hangisidir?

(A) Where do they go in summers?

(B) When do they go to Antalya?

(C) Do they go to Antalya?

(D) How often do they go to Antalya in summers?

16. Aşağıdaki cümlenin soru hali hangisidir?

Linda sings a song every evening.

(A) Does Linda sings a song every evening?

(B) Do Linda sings a song every evening?

(C) Who sings a song every evening?

(D) Does Linda sing a song every evening?

17. My close friend is Julie. She _____ in a big city but she _____ that city. So she _____ to live in a small city.
Her family and she _____ go to move another city.

(A) Lives/ doesn't like/ wants/ want

(B) Live/ don't likes/ want / want

(C) Lives / doesn't likes/ wants / wants

(D) Lives / doesn't likes/ wants / want

18. Atıf is a gamer. He is into playing games. He plays games three times a week. He meets his friends to play games on weekends.

Aşağıdaki sorularda hangisinin cevabı yukarıdaki paragrafta yoktur?

(A) Is he into playing games?

(B) How often does he play games?

(C) Why does he meet his friends?

(D) Where does he play games?

19. They are fond of playing tennis. They find it _____ .

(A) terrible

(B) ridiculous

(C) interesting

(D) Unbearable

20. I. No, why are you asking?
II. Are you busy today?
III.What about meeting outside?
IV. It is a great idea.

Yukarıdaki diyaloğun doğru sıralanışı aşağıdaki hangi seçenekte verilmiştir?

(A) II-I-III-IV

(B) III-IV-I-II

(C) II-IV-III-I

(D) I-II-III-IV

Appendix E: Quiz 3

ELGB-QuizIII   Score: _____

1. Richard and Henry _____ to work on weekdays.
    (A) drive
    (B) drives
    (C) are driving
    (D) driving

2. My father rides a bike __ 5.00 p.m. every Sunday.
    (A) in
    (B) at
    (C) with
    (D) on

3. Teachers prefer _____
    (A) use computer to give worksheet
    (B) using computer to give worksheet
    (C) using computer to giving worksheet
    (D) use computer to giving worksheet

4. she /fix/does /her bike / how/ ?
    (A) How does she fix her bike?
    (B) Does she how fix her bile?
    (C) How she does fix her bike?
    (D) Does her bike fix how she?

5. My parents go shopping ....
    (A) hardly ever
    (B) often
    (C) five times a month.
    (D) sometimes

6. I prefer hiking to zorbing because I think zorbing is _____ .
    (A) interesting
    (B) boring
    (C) trendy

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(D) fun

7. A: How do you go to school?
B: _____

(A) in the morning

(B) on weekdays

(C) by bus

(D) sometimes

8. Aşağıdaki cümlenin soru hali hangisidir?

I brush my teeth after getting up.

(A) Do you brush your teeth after getting up?

(B) Why do you brush your teeth after getting up?

(C) Does you brush your teeth after getting up?

(D) What time do you brush your teeth after getting up?

9. I "often" walk to school on Fridays?

Tırnak içindeki sözcüğü cevap olarak verecek soru hangisidir?

(A) How do you walk to school on Fridays?

(B) Where do you walk on Fridays?

(C) When do you walk to school?

(D) How often do you walk to school on Fridays?

10. Aşağıdaki cümlenin olumsuzu hangisidir?

I have a shower in the mornings.

(A) I haven't a shower in the mornings.

(B) I don't have a shower in the mornings.

(C) I do have a shower in the mornings.

(D) I doesn't have a shower in the mornings.

11. My cat _____ fish once a week.

(A) Eats

(B) Eat

(C) Is eating

(D) eating

12. music / they / prefer / kind of / listening to / do?

(A) What do they prefer listening to kind of music?

(B) What kind of music do they listening to prefer?

(C) What music do they prefer kind of listening to?

(D) What kind of music do they prefer listening to?

13. My school_____ starts at 8.40 in the morning.

(A) every day

(B) always

(C) five times a week

(D) in the evening

14. Would he like _____ at noon?

(A) lunch

(B) to lunch

(C) lunching

(D) lunches

15. "Barny" goes to bed late every night.

Tırnak içindeki sözcüğü cevap olarak verecek soru hangisidir?

(A) How does Barny go to bed late every night?

(B) When does Barny go to bed late ?

(C) Who goes to bed late every night?

(D) Where does Barny go every night?

16. We are close friends. We _____ at school and _____breakfast together at school. I sometimes _____ something at home but she _____ anything without me.

(A) Meet/have / eat / don't have

(B) Meet/ has / eats / doesn't has

(C) Meet/have / eat / doesn't have

(D) Meets/ have / eat / don't has

17. Leyla is a new student in our class. She is fourteen years old. She likes studying together and she is very hardworking student.

Aşağıdaki sorularda hangisinin cevabı yukarıdaki paragrafta yoktur?

(A) Who is Leyla?

(B) How often does she study?

(C) How old is she?

(D) Does she like studying together?

18. We hate watching horror films. We find them _____ .

(A) terrific

(B) interesting

(C) exciting

(D) unbearable

19. I. Are you doing anything this evening?
II. That's a great idea.
III.Why don't we eat out?
IV. Nothing special. Why?

Yukarıdaki diyaloğun doğru sıralanışı aşağıdaki hangi seçenekte verilmiştir?

(A) I-IV-III-II

(B) III-IV-I-II

(C) II-IV-III-I

(D) I-II-III-IV

20. Where would you like _____ your dinner?
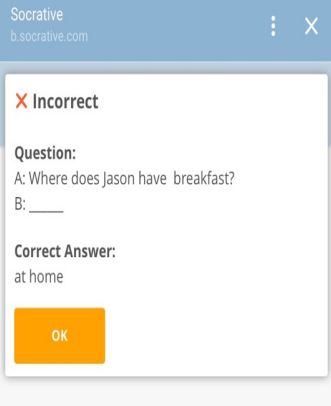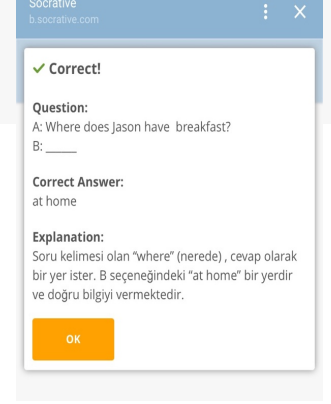
(A) has

(B) have

(C) to have

(D) having

Appendix F: Distributions of Objectives of the Tests

Objective	Number of Question	Items in PRT	Items in TOLT
Using Simple Present Tense	2	1,11	1,11
Asking and answering for a certain information	2	7,18	7,18
Asking question for information	2	9,15	9,15
Making question in Simple Present Tense	2	4,12	4,12
Making negative and affirmative sentences in Simple Present Tense	2	10,16	10,16
Using the structure of would like	2	8,14	8,14
Describing activities with adjectives	2	6,19	6,19
Completing sentences with correct form and structure	2	2,3	2,3
Using frequency adverbs and time expressions properly	2	5,13	5,13
Sequencing and writing sentences in Simple Present Tense	2	17,20	17,20

*PRT: Prerequisite Test

*TOLT: Transfer of Learning Test

Appendix G: Sample Screens for Feedback Interventions in Quizzes

GROUP	QUESTION	FEEDBACK
NO FEEDBACK	7 of 20 A: Where does Jason have breakfast? B: _____ A In the morning B at home C at 7.00 a.m. D usually SUBMIT ANSWER	AFTER SUBMITTING, DIRECTLY PASSESS TO THE NEXT QUESTION WITHOUT GETTING ANY FEEDBACK
CORRECT ANSWER	7 of 20 A: Where does Jason have breakfast? B: _____ A In the morning B at home C at 7.00 a.m. D usually SUBMIT ANSWER	Socrative b.socrative.com ✗ Incorrect Question: A: Where does Jason have breakfast? B: _____ Correct Answer: at home OK
ELABORATED FEEDBACK	7 of 20 A: Where does Jason have breakfast? B: _____ A In the morning B at home C at 7.00 a.m. D usually SUBMIT ANSWER	Socrative b.socrative.com ✓ Correct! Question: A: Where does Jason have breakfast? B: _____ Correct Answer: at home Explanation: Soru kelimesi olan "where" (nerede) , cevap olarak bir yer ister. B seçeneğindeki "at home" bir yerdir ve doğru bilgiyi vermektedir. OK

EXTRA-INSTRUCTIONAL ELABORATED FEEDBACK	7 of 20 A: Where does Jason have breakfast? B: _____ (A) In the morning (B) at home (C) at 7.00 a.m. (D) usually SUBMIT ANSWER	Socrative b.socrative.com ✕ **Incorrect** **Question:** A: Where does Jason have breakfast? B: _____ **Correct Answer:** at home **Explanation:** Soru kelimeleri sorulardan istenilen bilgiyi almak için kullanılır. Where:nerede When: ne zaman How many: kaç tane How much: ne kadar Why: Neden Who: kim Which: hangi What type/kind: ne tür What time: saat kaçta How: Nasıl Sorularına cevap ister. Soru kelimesi olan "where" (nerede) , cevap olarak bir yer ister. B seçeneğindeki "at home" bir yerdir ve doğru bilgiyi vermektedir.

Appendix H: Curriculum Vita

PERSONAL INFORMATION

Surname, Name: Demir, Dinçer

Nationality: Turkish (T.C.)

Date and Place of Birth: 10 May 1985, Bartın

Marital Status: Married

Phone: +90 532 164 77 57

email: dincherdemir@gmail.com

EDUCATION:

Degree	Institution	Year of Graduation
BS (English Language Teaching)	Muğla University	2007
High School	Bartın Davut Fırıncıoğlu Anadolu Lisesi	2003

WORK EXPERIENCE

Year	Place	Enrollment
2007-2016	Ministry of National Educational	Teacher of English

FOREIGN LANGUAGES

Advanced English, Basic German

CERTIFICATES

Next Generation Teacher Training Program-Pearson

Training of Project Management-İstanbul Provincial Directorate of National Education

School of Languages Trainer Education Program -Sabancı University

Teacher Development Course - British Council

Training of Learning Leader Teacher -Teachers Academy Foundation

English Language Teaching Methods and Techniques- Management-İstanbul Provincial Directorate of National Education

Teaching English to Speakers of Other Languages Certificate - Lingua Edge

PUBLICATIONS

Demir, D. (2014). Lesson Idea: The Ping Pong Effect. *The Belta Bulletin*, no. 3, p. 30-31.

Demir, D. (2015). Digital Storytelling: *The Belta Bulletin*, no. 4, p. 32–35.

HOBBIES

Running, Technology, Spearfishing, Nature Walking, Blogging