EFFECTS OF GAMIFICATION ON ACADEMIC ACHIEVEMENT AND MOTIVATION IN SECOND LANGUAGE LEARNING

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Onur HÜNER

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Approval of the Graduate School of Educational Sciences

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Assist. Prof. Enisa MEDE
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Arts.

_____

Assist. Prof. Dr. Yavuz SAMUR
Coordinator

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts.

_____

Assist. Prof. Dr. Yavuz SAMUR
Supervisor

Examining Committee Members

Assist. Prof. Dr. Enisa MEDE	(BAU, ELT)	_____
Assist. Prof. Dr. Yavuz SAMUR	(BAU, CEIT)	_____
Assoc. Prof. Dr Serhat Bahadır KERT	(YTU, CEIT)	_____

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Name, Last Name: Onur HÜNER

Signature:

ABSTRACT

EFFECTS OF GAMIFICATION ON ACADEMIC ACHIEVEMENT AND MOTIVATION IN SECOND LANGUAGE LEARNING

Hüner, Onur

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Supervisor: Assist. Prof. Dr.Yavuz SAMUR

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The aim of this research is to find out whether there is a difference in academic achievement as well as the motivation of students when game elements, such as points, achievements are included in second language learning (SLL). The study involved 10th grade students from a private high school in Turkey (N=85) during 6-week learning period. These groups were divided as the experimental group (N=42) and the control group (N=43). In order to analyze the effects of gamification on academic achievement, a pre-test and a post-test were given to both groups. While gamification elements were applied to activities of experimental group, control group followed a non-gamified approach. In order to assess the effects on motivation, intrinsic motivation inventory (IMI) was applied to the experimental group at the end of 6-week period. In addition, a semi-structured interview was conducted with 6 participants from the experimental group in order to support the data with students' view. The results obtained indicate that gamification provides a significant difference in both students' academic achievement and motivation ($t=4.36$, $df=83$, $p<.05$). In addition, the level of motivation towards English lessons was found to increase as well as the academic achievement. IMI results demonstrate that there is a significant difference ($p<.05$) in motivation scores after the gamification elements were implemented ($t=-6.36$, $df=41$, $p<.05$). Finally, students' responses to interview questions demonstrate that some suggestions to be taken into consideration.

Key words: Gamification, Game elements, Academic Achievement, Motivation

ÖZ

OYUNLAŞTIRMANIN İKİNCİ DİL EĞİTİMİNDE AKADEMİK BAŞARI VE MOTİVASYON ÜZERİNE OLAN ETKİLERİ

Hüner, Onur

Yüksek Lisans, Eğitim Teknolojileri Yüksek Lisans Programı
Tez Danışmanı: Yrd. Doç. Dr. Yavuz SAMUR

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Bu araştırma oyunlaştırmanın ve uygulanan oyun öğelerinin, öğrencilerin ikinci dil öğrenimi başarısının yanı sıra öğrencilerin motivasyonlarına yönelik değişimleri bulgulamayı amaçlamaktadır. Araştırma, Türkiye'de özel bir lisede eğitim gören 10. sınıf öğrencilerine uygulanmıştır (N=85). Öğrenciler deney grubu (N= 42) ve kontrol grubu (N=43) olmak üzere iki gruba ayrılmıştır. Araştırma sonuçları hem nitel hem nicel verilerin analizlerini yansıtmaktadır. Oyunlaştırmanın dil başarısı üzerine olan etkisinin sonuçlarını göstermek için hem deney hem kontrol grubuna ön test ve son test uygulanmıştır. Ön test ve son test arasında geçen 6 haftalık dil eğitim süresi boyunca, deney grubunun ders aktivitelerine puan toplama, ödül satın alma gibi oyun öğeleri uygulanmıştır. Oyunlaştırmanın motivasyon üzerine olan etkisini ölçmek için deney grubuna 6 haftalık eğitim süreci öncesi ve sonrası içsel güdülenme envanteri uygulanmıştır (İGE). Son olarak, oyunlaştırmanın dil başarısın ve ders motivasyonuna olan etkilerin daha derin bir şekilde araştırmak için deney grubundan 6 öğrenci ile yarı yapılı bir görüşme gerçekleştirilmiştir. Araştırmadan elde edilen veriler, oyunlaştırmanın hem dil başarısına hem motivasyona olumlu yönde etkileri gözlemlenmiştir ($t=4.36$, $df=83$, $p<.05$). Bu bulgulara ilave olarak, İGE sonuçları, deney grubunun uygulama öncesi motivasyon sonuçlarının 6 haftalık eğitim süreci sonucu arttığını göstermektedir ($t=-6.36$, $df=41$, $p<.05$). Son olarak, deney grubundan 6 öğrenci ile yapılan yapı yapılı görüşmeler, oyunlaştırma uygulamasının üzerine dikkate alınması gereken öneriler ve görüşler sunmaktadır.

Anahtar kelimeler: Oyunlaştırma, Oyun Öğeleri, Dil Başarısı, Motivasyon

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LIST OF ABBREVIATIONS

ARG	Alternative Reality Games
GBL	Game Based Learning
IMI	Intrinsic Motivation Inventory
İGE	İçsel Güdülenme Envanteri
SAPS	Status, Access, Power, Stuff
SLL	Second Language Learning

Chapter 1:
Introduction

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

1.1 Theoretical Framework

Mankind has always been in search of new ways to have fun and spend a good time in all periods of history, and games are one of the most important ways to achieve this (Karataş, 2014). It is highly possible to see examples of societies that created games and archeological evidences suggest that games have been used as a part of human culture since at least 2600 B.C (Avedon & Sutton-Smith, 1971). For example, "Senet", a board game that could be played with two players, dates back to around three thousand one hundred years ago in ancient Eygpt (Piccione, 1990). In addition to this, games that are known by many people such as chess, backgammon also date back to old times. However, for the similar reasons and with the help of the continuously developing technology, physical games have left their position to video games. Since the 1970's and 1980's, video games have been increasing their popularity (Domínguez, Navarrete, De-Marcos, Sanz, Pagés & Herráiz, 2013). Thus, it might be very difficult to find individuals who have not played at least one of these games mobile devices or computers offer

A game offers a system of rules with necessary tasks for players in order to master (Dominquez et al., 2013). In addition, these tasks must be determined as cycles of expertise (Gee, 2003) and according to players' level and abilities (Dominquez et al., 2013), which will encourage players to have an active role in learning those game mechanics (Koster, 2005). For this reason, rather than using actual games, some researchers integrated positive sides of these game mechanics into different contexts (Dominquez, 2013). Thus, a new term which can be used in educational emerged: "Gamification".

Gamification is the concept of "the use of game design elements in non-game contexts". These elements include competition, rewards, badges, individual or group challenges and collaboration or in some cases; leaderboards (Deterding, Dixon, Khaled & Nacke, 2011). The aim of gamification should focus on complementing

user experience as well as providing fun and team work (Deterding et al., 2011). Game design elements should be also added in order to increase engagement and to achieve required behavior (Birch, 2013). Moreover, the elements which gamification provides such as achievement systems, points, challenges and etc. can also be used to promote learning. Kapp (2012) states that badges provide a display of progress for learners while point system can be used as a alternative feedback method to create a connection between the individual and performance (Mekler, Brühlmann, Opwis & Tuch, 2013). In addition, collaboration that games offer can also be used in education as two or more students try to complete one task together. In that case, an apparent improvement in students' performance can be measured when these elements are applied in a classroom environment (Keeler & Anson, 1995). However, besides the fact that gamification can be used as a mean to motivate learners and promote learning. However, Reeve and Deci (1996) state that competition might also cause negative effects in a classroom and cause a decrease in learning. This means before applying, these elements must be considered deeply and carefully.

Because it is a relatively new term, gamification is often confused with another term; game-based learning (GBL). However, Codish and Ravid (2014) state that a distinctive feature between two terms can be found to exist. Through GBL, students are provided with games with various educational goals and these goals can be reached only by playing the game (Kim, Park, & Baek, 2009). Gamification, on the other hand, takes place in a non-game context and therefore, its elements will be applied in a more specific way that does not have a focus on the existing practice of learning but a focus on enabling it to be more engaging for individuals (Codish & Ravid, 2014).

1.2 Statement of the problem

A decline in motivation in education can be observed among students in second language learning (Dörnyei & Csizér, 2002). One of the main reasons for this decrease could be that the needs of changing generation (Gallagher, 2015). A recent survey conducted by Entertainment Software Associations (2015) indicates that 26% of individuals who play video games are under 18 years old. Therefore, these individuals who are motivated to play video games would like to experience contents similar to games they play in different contexts, one of which is education. However, according to the results of the same survey (2015), it is not easy to find games related

to various aspects of education. However, in recent years, the popularity of gamification has been in incline, and it has been used in education to integrate these specific game elements, such as interactivity and rewards, in order to make an ordinary task more engaging (Prince, 2013). Regardless of the reason, the problem concerning the decline in motivation among students must immediately be addressed to improve students' success and overall motivation.

1.3 Purpose of the study

Despite the fact that gamification is currently being used different contexts such as social media, fitness programs and etc, the use of game elements in education is quite a new concept especially in second language learning (SLL). This thesis aims to describe the gamification techniques that have been used during second language learning process and to find out whether these techniques contribute students' performance and motivation. This study applied the mixed research method: collecting, analyzing, and interpreting both qualitative and quantitative data about the main facts in a single study. The quantitative aspect of this study analyzed the results obtained via a pre and post-test as well as the results obtained from intrinsic motivation inventory (IMI). Qualitative aspect, on the other hand, focused on the results obtained via semi structured interviews conducted with students who participated in the study.

1.4 Research questions

This research aims to find out;

1) Is there a significant difference in terms of academic achievement in second language learning when gamification elements are applied?
2) Is there a significant difference in terms of motivation in second language learning when gamification elements are applied?
3) What are the students' perceptions about the gamified instruction in second language learning?

1.5 Significance of the study

Since there are not many examples of gamification elements applied to second language learning in high school education in Turkey, this thesis aims to contribute to academic field by taking a role of example for not only future studies

but also future researches. Although the analyzed body of literature may provide examples of gamification in terms of motivation, there is not much evidence of its efficacy in terms of academic achievement. This study, on the other hand, aims to analyze and demonstrate the results in both terms. Therefore, it will benefit instructors in management of game elements in teaching, as its results may show a different insight to the relatively new term "gamification" and its application in a classroom setting.

Studies with regard to gamification indicate that elements integrated are used to analyze the effects within one group. That is to say, conducted studies mainly aim to focus on the effects of gamification by comparing the results only one group of participants may provide. This study chooses to follow a different path; to analyze the difference comparing the results obtained from two different groups of participants as experimental and control groups.

It is worth mentioning that "gamification" is often confused with the term "game-based learning" (GBL), but both approaches are very distinct. For instance, one of many substantial dissimilarities is that gamification does not require game playing. Nevertheless, some researchers present the results of their studies on GBL as being data on gamification. Therefore, the results of such studies cannot be considered, since they do not correspond to the subject matter of gamification. That being said, the importance of this study lies on its results demonstrating the significance of the implementation of game design elements (*gamification*) - not game playing (GBL) - for student motivation and academic achievement. This study brings to surface that the application of gamification involves game design elements, such as points and achievements, but does not require game playing as a rule.

In recent years, studies have showed that the application of gamification has created learning environments with suitable approaches to increase student motivation and engagement since how today's students think and organize information have shown differences due to the constant exposure to technology. Thus, gamification started to take more part in education (Persky, 2016). Since this study shares a similar approach, it is important to test and evaluate the results of gamified learning environment.

Finally, there are existing tools for the application of gamification in various contexts to be found online. However, the gamification elements implemented in this

study, such as rewards and points, have been originally created by the researcher. Furthermore, the tools designed by the researcher are physical, and were individually planned and modeled to mirror application suggestions from experts (Zichermann & Cunningham, 2011) in the area of gamification. For this reason, this study will not only provide an opportunity for the researcher to test his theories but also to evaluate his own original elements implemented.

Chapter 2:
Literature Review

This section of the study mainly focuses on the studies and researches with regard to gamification in terms of performance, motivation, game design elements, such as points, achievements, competition and cooperation as well as main criticism of gamification. The aim is to provide background information about the related topics.

2.1 Definition of Gamification

The use of games and game-based learning in instruction has continuously become popular to encourage students with better efficiency in learning (Broussard, 2012). These games evolved from board games to more complex video games such as Alternate Reality Games (ARGs) that use the Internet as a main communications platform (Lynch, Mallon, & Connolly, 2015) in order to serve a variety of purposes consisting of orientations and instruction.

However, gamification involves more than physical games to play but as it has been defined as "the use of game design elements in non-game contexts" (Deterding, Dixon, Khaled & Nacke, 2011). Though it might be confusing, due to their definition to separate the difference in meaning between gaming and gamification, quite a few scholars have been able to identify the difference through the characteristics of gamification. Games present interactivity, challenge, risks, and rewards, and have rules and a goal (Pivec, Dziabenko, & Schinnerl, 2003). On the other hand gamification means applying the principles of game elements into and activity to support its effectiveness. When these elements have been applied, games are not the focus of the activity. Focus is to enhance the experience through the principles used in an activity (Becker, 2013).

According to Prince (2013) definition of gamification is integrate specific game elements, often interactivity and rewards, in order to make simple tasks more engaging. Similary, Kapp (2012) defines gamification as game-based mechanics, aesthetics, and game thinking that can allow people to engage, to learn and to solve problems.

2.2 Previous work on gamification in education

A variety of benefits can be harvested by integrated game mechanics and by using the same elements, success can be achieved in educational environments. To give an example, de-Marcos, Domínguez, Saenz-de-Navarrete, and Pages (2013) conducted a study to analyze the effects of gamification in an undergraduate course. They also aimed to compare the effects in terms with academic achievement, participation and attitude. Their results showed that better performance was presented than a traditional e-learning approach in terms of academic achievement for practical assignments. However, participation rates and scores remained low with the new tools, although students' attitudes were positive.

Yosyingyong, Nakrang, Viriyapong and Harfield (2014) applied game design elements into non-game context like mathematics in a topic of plotting polynomial functions. They aimed to investigate students' learning if gamification techniques were able to make the class more enjoyable, interesting and help students mastering their knowledge. They designed and developed a game for Android devices or tablets on the topic of plotting polynomial. Their results indicate that students were able to learn how the graph relating to the written functioned. In addition, by adjusting the coefficient of each term in the function, users were able to learn the true meaning of each coefficient by experience, not by memorizing it. Similarly, Sætre (2013) conducted a study in order to investigate the role and effect of iPads in an educational environment and the use of gamification to improve motivation and learning in maths classes in a high school. The results show that low achievers starts to score more in mathematics in addition to the fact that students were more motivated to go through the same content over and over until they learn. Thus, the researchers claim that the role of gamification functions as a way to modify the content the students learn.

Remembering is another factor in learning. Educators generally tend to expect students to remember the content that is taught in any learning environment. In one study (Krause, Mogalle, Pohl, & Williams, 2015), gamification was implemented in order to analyze retention and learning success. The results of the study show that participants increased their retention scores by 25% and average scores by 23%. In addition, when they included social game elements, these scores were amplified. Students showed an increase of 50% in retention period and 40% in average test

scores. Likewise, Dietz-Uhler, Fisher, and Han (2007) designed an online course with game elements to promote student retention. They noted that these elements provided rich, interactive learning experiences. Thus, retention rates were higher than the averages reported. They found out that in statistics course, average retention rate over six semesters was 95%.

Engagement is a characteristic of games, and it can also lead to deeper learning (Oblinger, 2004). Sharif, (2013) conducted a study on customer engagement aiming to increase performance and to solve engagement issues through gamification. It was confirmed the positive effects of engagement. Not only were the services more satisfactory and fulfilling, but the value of services performances was increased as well. Tvarozek and Brza (2014) aimed to engage students in online courses through interactive badges. They found out that gamification help students engage more with the content presented. A significant number of below average students did show considerable engagement levels. Thus, Positive effects of engagement were found in relation with students' performances. Similarly, Denny (2013) integrated badge-based achievement system into an online learning tool in order to engage learners more efficiently. It was demonstrated that badges had a dramatic effect on number of questions answered. No reduction related to accuracy of students' answer was observed. In addition, it was noted that students found the badges presented fun, and they enjoyed being rewarded. Students' engagement with the learning material or tool was not only expected in classroom environment. Naturally, educators also expect students to continue with the engagement outside of class. De Freitas and de Freitas (2013) created a software-assisted gamification tool called Classrom Live. The software provided rewards in exchange for participation. Feedback given by the students demonstrated that students felt engaged, and they found the software enjoyable. However, although use of the software was entirely voluntary, one interesting fact that students did not only participate during the class they accessed the application in order to get the latest assignment outside of class as well.

Education, as everyone agrees, is not only based on teaching the required content to individuals but also assessing how much of the content taught is remembered or applied when necessary. That's why various techniques to assess students' performance have been created since the beginning of the formal or informal education. Some institutes use exams including multiple choice questions

while others use projects. Concerning this matter, Wood, Teräs, Reiners and Gregory (2013) conducted a study to discuss the design of assessments supported by gamification within virtual environments. They included different assessment elements named rewind, ghost images, save points and multiple lives, and time and space control. They found out that all these gamified elements provided different assessment aspects. For example, while "slow motion" encourages learners to analyze a particular moment in detail, "save points and multiple lives" provided an assessment to be undertaken multiple times in a process of self-assessment or peer-assessment. However, integrating game elements as an alternative assessment tool, such as badges, can also have negative effect on learners (Abramovich, Schunn & Higashi, 2013). In their study, Abramovich et al. (2013) indicates that earning badges can be expected to help learners increase in interest, however, it can also cause a decrease in counter-productive educational goals. Their findings were complementary to other research findings that suggest extrinsic motivators can have negative effect on learning (Deci et al., 2001).

While learning a new content, remembering it for future use and keeping students engaged with the learning material is one focus area of education, educators also expect students to be motivated to keep the engagement ongoing. Gamification follows the same principle. Ott and Tavella (2009) points out that enhancement of motivation in learning tasks is the main objective for the practices of gamification methods or techniques. That is to say, gamification aims to make learning more captivating and attractive, which results in higher motivation. Glover (2013) proposes that in order to encourage expected level of motivation, rewards should be achievable with a sufficient level of effort. They should also not be too easy. O'Donovan (2012) aimed to find whether gamification could increase the motivation of students to complete a coursework. Students' votes indicated that learners' answers varied from "very motivated" to "moderately motivated". Through interaction of a visual story-line, learners felt engaged and badges provided ensured them to be motivated to complete the necessary tasks. Hakulinen, Auvinen and Korhonen, (2015), similarly, implemented achievement badges in an attempt to increase learners' motivation into an online learning environment called TRAKLA2 where students solve interactive and automatically assessed exercises during one semester. Students in treatment group were provided achievement badges for completing the task earlier, solving the problems on the first attempt. Although it was

reported that integrating badges did not have an effect on students' final grades, they had an effect on their behavior. Majority of the students reported that students' felt motivated by the badges used in the study (Hakulinen et al., 2015). According to Kapp (2012) badges are means of providing a visual display of progress and thus, they also play the role of immediate feedback. Individuals can visually keep a track of themselves through the educational module, which will increase the engagement of the students leading to an increase in their motivation.

Even if gamification generally seem to have positive effects on students in terms of motivation, engagement participation, one should also consider the effects of context in which game design elements have been used. Stott and Neustaedter (2013) found out that "best practices" of gamification in education are highly context related. That is to say, a "one-size-fits all" model does not exist as a successful gamification practice. Phelps (2012) noted that "the tricky part, and the part that is ultimately at the core of the experience, is identifying intrinsic rewards relative to the culture of the local community that one is seeking to engage, and building game-like interactions on top of those". In addition, Hamari, Koivisto and Sarsa (2014) pointed out that gamification could provide positive effects. However, the effect depends on the role of context that is gamified and qualities of the users who use it.

In addition to the context wise problems, some research suggests that gamification elements especially the use of badge, point and reward system might have negative outcomes on motivation and learning (Deci, Koestner, & Ryan, 1999). An external incentive can determine one's internal motivation, that is to say, if a reward given for completing a task is considered as informative, individuals might feel that they are in control, which will improve their motivation. On the opposite, when the reward is seen controlling, it might make individuals feel incapable of controlling their own education, leading to a decrease in motivation (Deci et al., 1999, 2001).

2.3 Game design elements

2.3.1 Points and achievements. One of the main goals of education is to encourage students to be more motivated to pay attention and engage with the material or the activity presented. On a large scale, educators give more importance to being intrinsically motivated to learn, which occurs when the eagerness to learn comes from within the student (Deci & Ryan, 2000). Less desire to learn occurs

when students are extrinsically motivated to act or perform due to some outside factor. Intrinsically motivated students are more engaged, and they retain information better, and are generally happier (Deci & Ryan, 2000).

Supporter of gamification in a classroom setting claim that the elements that make games fun, and the nature of games themselves, are intrinsically motivating (McGonigal, 2011). Thus, integrating game mechanics into a classroom setting will help students' increase intrinsic motivation. For this reason, gamification aims to increase intrinsic motivation and to combine it with extrinsic one so as to strengthen motivation and engagement (Muntean, 2011). While intrinsic motivations come from within, the individual decides whether to participate in an activity or not, extrinsic motivations, take place when the individual is determined to make an action by something or someone for example: classifications, levels, points, badges, awards, missions (Viola, 2011).

Most of the gamification projects or modules integrate achievement systems that are quite similar to video game achievements into their tasks. These achievements might not necessarily provide rewards. However, they may provide an objective for learners. Students are mostly familiar with these achievements thanks to online or offline video gaming.

These achievement systems are becoming popular and some educators are trying to integrate achievements into their teaching to motivate learners. Fitz-Walter (2011) found out in his pilot study involving 26 new students that adding gamified achievement design in an instructional module can make the module more enjoyable for learners. Similarly, McDaniel, Lindgren and Friskics (2012) used badges, or achievements, to promote specific types of student behaviors such as taking an exam within a certain timeframe or responding to student work with especially helpful feedback in an online course management system (titled Adventures in Emerging Media). Battista (2014) suggests that even if they are not game themselves, achievements are important elements in game design since they promote and assess participation. They can also recognize competencies, skills, collaborative abilities, leadership and motivational skills when executed well.

Another basic element of gamification is point system. To make it clear, learners achieve various points when/if they are able to complete certain drills, activities and tasks. When point system was combined with a meaningful frame,

context or task, it was found that points did motivate participants to generate a more meaningful task. In addition, both points and meaning on their own and the combination of both increased intrinsic motivation in equal measure (Mekler, Brühlmann, Opwis & Tuch, 2013). The most likely reason why points seemed to be effective and helped learners complete the task more effectively might be due to their function as feedback. “Points establish a clear connection between user effort and performance” (Mekler, Brühlmann, Opwis & Tuch,2013). Attali and Attali (2015) examined the effects of points on performance in a computerized assessment of mastery and fluency of basic mathematics concepts. They conducted their study on adult and middle school participants. No effect of the point manipulation was found on accuracy of responses, however, the speed of responses increased with adult participants. Although they found the same results for the two aspects of performance with middle school participants, higher likeability ratings for the test were revealed. These ratings were found to be higher only in the first of the two sessions. The reason might be due to the result of the overuse of the points’ novelty.

Yet, a significant number of studies suggest that educators should be prudent when it comes to integrating these game elements into a classroom setting to increase intrinsic motivation. These points, should be integrated into learning carefully. Otherwise, they might cause all the effort to increase intrinsic motivation to decrease (Deci et al., 2001). This decrease in motivation might be the result of the possibility that a person might be more focused on achieving badges and that s/he might expect the rewards to be continuous (Tang & Hall, 1995). When the reward is presented, an individual may be more motivated to complete a task. However, when the reward is taken away, same individual may feel there is no reason to complete the task (Lepper et al., 2005). Cognitive evaluation theory (Deci & Ryan, 1985) proposes that letting individuals receive rewards for something that they would tend to do willingly might make individuals see these rewards as a manipulative means of learning, which results in decrease in motivation.

2.3.2 Competition in gamification. Some of today’s games offer players competition through leaderboards. That’s why “gamified” contexts also tend to promote competition, consequently social comparison. Although this study did not directly apply leaderboards as a gamification element, it included some elements that might cause competition among students.

Individuals generally tend to compare themselves to have more understanding of whether their skills, abilities, position and status are sufficient or not when compared to others (Garcia, Tor, & Gonzalez, 2006). Competition might cause individuals to see tasks challenging and as a mean of feedback. In addition, individuals might have the chance of receiving positive feedback, which might also cause individual recognize their level of competence (Tauer & Harackiewicz, 1999).

However, although competition has also been one of the elements used in classroom settings in order for students' motivation on related task or activity, research states that competition might also cause negative effects in a classroom (Reeve & Deci, 1996). As well as some individual skills such as cooperation and problem solving, overall performance may be in decline due to competition (Orosz, Farkas, & Roland-Lévy, 2013). On the contrary, Reeve and Deci (1996) found out that when outcome feedback was varied within the less controlling competition, winning enhanced intrinsic motivation.

Even though competition might be harmful in classroom environment, it is critical not to forget that it might also useful. This difference might be caused by the fact whether the competition served its role as constructive or destructive. Constructive competition offers a fun experience and a more structured ways in order to develop and demonstrate positive interpersonal relations while destructive competition causes negative effects (Fülöp, 2009). Likewise, Lui (2014) integrated gamification in vocabulary learning. It was stated that that gamification helped developed students' competitive spirits leading to an increase in their cognitive and social development. After students were given a task, they had to apply many different skills and use prior knowledge in order to complete it.

2.3.3 Cooperation in gamification. Since gamification makes use of game elements such as badges, points, achievements and etc, it is not surprising to see individuals play a game collaboratively. Collaboration in games, by definition, occurs when at least two players or more combine their skills to complete certain tasks. In education, games or tasks that promote engagement have also been commonly used. In a collaborative learning activity, individuals work in pairs or in groups, which can also be referred as teams by using their coordinated efforts to achieve a particular educational purpose (Dillenbourg, 1999).

Since some of the tasks that students are expected to complete are similar to the tasks in a game, they require some aspects of collaborative or coordinative work. For this reason, it is useful to have a deeper understanding of how collaboration work and its effects. There are many research studies suggesting collaborative or cooperative learning may enhance learning. To give an example, Janz (1999), Mikkelsen and Gronhaug (1999) found that team based work environments offer possibilities for employees to learn from other colleagues that have more experience and to help each other by working together and sharing knowledge. Collaborative working techniques have also been found to demonstrate an improvement performance of students' when applied in chemistry, sociology of race relations, computer skills and dentistry classes (Keeler & Anson, 1995; Kogut, 1997; Maier & Keenan, 1994). In additon, Yazici (2005) investigated the effects of collaborative learning and found out that orientation of students' collaborative enhances participation and helps students to increase their performance while in teams. Similarly, dividing students into groups was observed to grant them chances to share their ideas and learning experiences as well as promoting the learning performance of both the group and the individuals (Huang, Wu, & Chen, 2012; Hwang, 2012).

Although there is significant amount of research which suggests that collaborative work might possibly have positive effects on learners, there is some which states it might also have negative effects on individuals. This negative effects might be caused due to the fact that individuals in a team may face some conflicts with others in the group (Jehn & Mannix, 2001; Miller, 2003). In addition, Siciliano (2001), Brooks and Ammons (2003) have also discovered that some members of the team can be considered as "high achievers" who completed most of the work required, while others can be "free-riders" who take the advantage of high achievers. This difference in performance can be caused by the lack of balance in the work performed by each team member.

2.3.4 Feedback through gamification. For learners' engagement frequent, intensity and instancy of feedback are beneficial (Berkling & Thomas, 2013). However, providing feedback might take some time due to the fact that grading might take time or time spent for lessons might not be enough to give feedback each student at a time. Therefore, through the immediate and frequent feedback that game design offers, education can be more beneficial (Kapp, 2012). Similarly, Muntean (2011) stated that through positive feedback that gamification provided, students

were able to gain motivation. Furthermore, they became more interested and felt more encouraged to learn.

It was revealed that gamification can be an effective tool for enhancing learning and understanding complex subject matter since it does not only encourage students to engage more but develops learning situations through immediate and instructive feedback loops (Surendeleg, Murwa, Yun & Kim, 2014). Li, Grossman, and Fitzmaurice (2012) created a gamified tutorial system called "GamiCAD" for first time users of a software called "AutoCAD". Via their model, they aimed to provide real-time feedback to the users. They also expected users to recognize success and failures throughout the tutorial. Compared to the previous tutorial system, GamiCAD offered extensive real-time visuals and audio feedback. In an evaluation, they found out that users who used the gamified system (GamiCAD) demonstrated higher subjective engagement levels and performed a set of testing tasks faster with a higher completion rate.

Additionally, teachers present information to their students via scaffolded instruction, meaning the information presented is scaled by difficulty. For this reason, it might be difficult to adjust the information depending on each individual student's needs. However, game mechanics, might manage to keep players at a certain level until they can demonstrate necessary progression (Beed, Hawkins & Roller, 1991).

2.3.5 Characteristics of rewards in gamification. A reward, by definition, means something that is given in recognition in service, effort, or achievement. Rewards are one of the elements that game design elements include (Deterding et al, 2011). As Stott and Neustaedter (2013) suggested practices of gamification are extremely context based and there is not one greatest model that exists for all gamification practices. Different rewards will offer different levels of motivation to different learners, and thus the reward(s) should be carefully implementer in order for an attempt that they would motivate everyone. For instance, a list of rewards can be offered so that individuals can choose the reward(s) that they find to be attractive according to their interests (Glove, 2013). Therefore, rewards used in gamification may vary from one implementation to another. However, Zichermann and Cunningham (2011) suggested a model which rewards may be modified dependently; SAPS. SAPS stands for Status, Access, Power, Stuff.

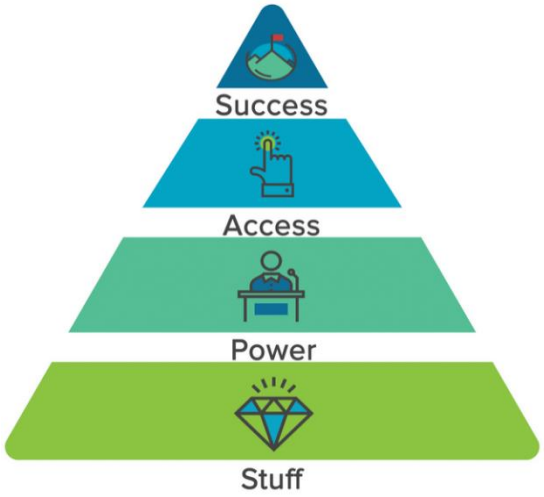

Figure 1. SAPS; Status, Access, Power, Stuff

Figure 1 indicates the design of the reward model; SAPS. First of these reward types is "status". Status gives a position to users or learners in relation to other players. This way, an individual may be able to be recognized by other individuals. Access can help an individual obtain information, objects that other individuals don't have. It can also be defined when individuals are given the opportunity to interact in a private or special way with a company or service. For example, providing top players an opportunity to have a dinner with the company's CEO can be considered as an access reward (Zichermann, 2011). Power can be defined as one individual is over other individuals, objects or information. For example, this might be in the form of a moderator position for a forum or an interactive website. Stuff is the last in the model. It can be defined as providing physical objects, items prizes as rewards, such as money given to an employee as a bonus (Zicherman, 2010).

Zichermann and Cunningham (2011) suggest that stuff rewards can drive participation in the short term, but is not a long-term strategy. In order to achieve long-term motivation for individuals, status, access and power rewards should be included mainly. Thus, intrinsic motivation will be stimulated.

2.4 Criticism of Gamification.

One of the main criticism that gamification receives is that gamification creates "overjustification" effect (Deci et al, 1999). Overjustification effect occurs when aiming to increase motivation by providing extrinsic rewards for completing tasks. Such rewards de-motivate learners with an already high intrinsic motivation.

Lepper, Corpus and Iyengar (2005) suggest that a negative correlation between extrinsic motivation and achievement can be found. Extrinsic motivation elements, such as rewards can decrease learning and achievement.

Another criticism of gamification is that providing rewards does not only reduce intrinsic motivation but it decreases the level of participation as well (Thom, Millen & DiMicco, 2012). Thom et al, (2012) aimed the analyze results when they removed gamification elements from a social networking system. It was found that without extrinsic elements, such as rewards, the level of participation dropped significantly. In addition, the quality of the interactions was, overall, lower during the period when gamification elements were provided.

In addition (Zichermann, 2011) points out that some compulsive behavior can be triggered by gamification. This behavior is observed when an individual focuses on collecting every point presented in previous activities or events rather than focusing on new activities and learning. However, Zichermann (2011) suggest way to reduce the possibility of this potential problem; providing a time limit for each award presented.

Other elements of game design used in gamification can also be effective. For example, leaderboards provide engagement through competition (Kapp, 2012). However, leaderboards are also another criticism of gamification. They can discourage learners since some students do not want to participate in an activity to compete with their friends and receive a rank in a leaderboard (Dominquez et al., 2013). In order to reduce this effect, a less controlling option for competition can be provided (Reeve & Deci, 1996).

When relevant literature was reviewed, it was discovered that gamification might have both positive and negative effects on performance (de-Marcos, Domínguez, Saenz-de-Navarrete, & Pages, 2014; Orosz, Farkas, & Roland-Lévy, 2013). It was indicated that gamification elements could help learners obtain better results on achievement tests (Yosyingyong, Nakrang, Viriyapong & Harfield, 2014; Sætre, 2013). Gamification was observed to help students retain more information (Krause, Mogalle, Pohl, & Williams, 2015) since it provides interactive learning environments (Dietz-Uhler, Fisher, & Han, 2007). In addition, success rates were observed to increase once gamified instruction was presented in a learning context through the engagement gamification offers (Sharif, 2013; Tvarozek & Brza, 2014;

De Freitas & de Freitas, 2013). In addition, games provide collaboration, and thus, it provides learners an opportunity to engage together, which results in increased performance (Janz ,1999; Mikkelsen & Gronhaug, 1999; Keeler & Anson, 1995; Kogut, 1997; Maier and Keenan, 1994; Yazici, 2005). On the other hand, it was also stated that gamification could create a competitive environments, which might result in a decline in motivation (Orosz, Farkas, & Roland-Lévy, 2013; Reeve & Deci, 1996).

Furthermore, gamification was also found to increase learners' motivation as well (Hakulinen et al, 2015). This increase in motivation occurs since the games offer fun to its users (McGonigal, 2011; Muntean, 2011). Another reason for this increase is due to that points and achievements create a meaningful connection between effort and performance (Mekler, Brühlmann, Opwis & Tuch, 2013; Battista, 2014; McDaniel, Lindgren & Friskics, 2012). This clear connection is provided by the feedback that games offer since they might provide a visual display of progress (Kapp, 2012; Surendeleg, Murwa, Yun & Kim, 2014) as well as the opportunity to adjust the information depending on individual needs (Beed, Hawkins & Roller, 1991). However, if these elements were not implemented into teaching carefully, they might lead a decrease in motivation (Deci et al, 1999; Lepper, Corpus & Iyengar, 2005). Learners might focus more on the badges and achievements rather than learning (Tang & Hall, 1995). For this reason, it was stated that these elements should be carefully implemented (Zichermann & Cunningham, 2011) since the effects heavily depend on individuals (Hamari, Koivisto & Sarsa, 2014; Phelps, 2012; Stott & Neustaedter, 2013).

Therefore, this study aims to discover differences in terms of academic achievement (Orosz, Farkas, & Roland-Lévy, 2013) and motivation (Hakulinen et al, 2015; McGonigal, 2011; Muntean, 2011) in second language learning as well as students' perceptions about gamified instruction (Tang & Hall, 1995). In addition, it is also aimed to present suggestions and recommendations for further studies.

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 analyze the difference between gamified and non-gamified instruction in terms of academic achievement and motivation.

3.1 Study Design

This study applied the mixed research method: collecting, analyzing, and interpreting both qualitative and quantitative data about the main facts in a single study (Creswell & Clark, 2007). Gamification in education was evaluated, and the effects of this method on the achievements and motivations were examined. Convenience sampling design was used to analyze the effects of gamification on both achievement and motivation, which comprised the quantitative dimension of the study (Ahrens & Dieter, 1989) since the groups selected for the study were assigned to the researcher previously. However, experimental and control groups were selected randomly. While an achievement test was used to analyze students' achievement on English lesson, intrinsic motivation inventory was used to analyze students' motivation. Qualitative aspect of the study was provided via a semi-structured interview with six participants from experimental group for this study.

3.2 Target population and Participants

The sample of the study was composed of 85 tenth grade students whose ages ranged from 15 to 16 years from a private school in Turkey. A unit on English lesson was taught to the 42 students in the experimental group that consisted of 23 female and 19 male students using gamification strategies and to the 43 students that consisted of 24 female and 19 male students in the control group using a non-gamified approach for 6-week period consisting of 12 English lessons. Socio-economic development of the students, when compared to other students in different high schools in Turkey, was observed to be higher. The same content was taught in both groups during the same weeks with the same activities.

3.3 Procedures

The implementation stage of the study took place over six weeks for two course hours each week. The same content was taught in both groups during the same weeks with the same activities. Table 1 indicates how the study was designed.

Table 1

Design of the study

Groups	Pre-Test	Treatment	Post-Test
Experimental group	O1+O2	X1	O1+O2
Control group	O1	X2	O1

O1: Achievement test

O2: Intrinsic motivation inventory

X1: Gamified instruction.

X2: Non gamified instruction.

Both experimental and control group were asked to take a pre-test before gamification elements were applied. Gamification strategies, such as collecting points, were added to the activities of the experimental group while none of the gamification techniques were implemented to the activities which the control group were expected to complete. At the end of 6-week learning period, both groups were asked to take the same test as a post-test.

In addition, experimental group was also asked to complete intrinsic motivation inventory (IMI) in order to analyze their motivation throughout the gamified instruction experience. Control group, on the other hand, was not required to complete the same inventory since they were not to receive the same treatment experimental group did.

3.3.1 Data collection instruments

3.3.1.1 Achievement test. To analyze the effect of gamification on students' achievement, quantitative data was collected via pre-test and a post-test provided. The test consisted of four sections with a total of 40 questions that were prepared in

accordance with the content and the lesson objectives the course book provided as well as tasks to which the gamification elements applied. These four sections included vocabulary, grammar, reading, speaking and listening. However, writing skill was excluded from the test since the assessment for writing included more subjective approach, which would affect the reliability of the test. Moreover, students were expected to complete the test under 50 minutes. In order for the test to be more effective, learning objectives analysis was conducted on the questions that the four section test offered.

Table 2

Objectives for each test item

Objective	Number of Question
1. Using the correct vocabulary	10
2. Using Passive Voice	8
3. Using Question Tags	4
4. Using Prepositions	3
5. Everyday English	5
6. Identifying the setting in a reading passage	2
7. Identifying the main events in a reading passage	2
8. Identifying numbers in a reading passage	1
9. Identifying the main idea in a listening passage	2
10. Identifying the details idea in a listening passage	3

Table 2 indicates the lesson objectives for each test item. Questions 1 through 10 aimed students to be able to choose the correct word for the provided context. Through questions eleven to twenty-five which were related to English language structure in accordance with the subjects in the course book to be taught, which were passive voice (questions 11-13-16-18-19-22-23-25), question tags (questions 14-17-21-24) and prepositions (questions 12-15-20), students were able to begin to integrate form, meaning and use in academic discourse settings. Questions from twenty-six to thirty aim for students to correctly distinguish responses to be provided in a real life like context. The test items from number thirty-one to thirty-five aims for students to be able to identify the setting, main events (questions 29-30), to articulate main ideas, both stated and inferred in a reading text (questions 27-28) and to identify numbers in a reading passage (question 26). Finally, the tests items that include listening skills aim for students to be able to identify main ideas in a listening passage as well as discovering details in a short listening passage.

3.3.1.2 Intrinsic motivation inventory. In order to analyze students' motivation in English lessons when game design elements were implemented, Intrinsic Motivation Inventory (IMI), which was initially first created and introduced by Ryan in 1982 was used. However, since the students in both experimental and control group were Turkish, a Turkish version of the same inventory (Çalışkur & Demirhan, 2013) was used for this study. In their research, Çalışkur and Demirhan (2013) collected data was obtained from undergraduate university students from two different universities. Considering IMI was translated to Turkish language, it was necessary to add and/or extract some items in comparison to its original version. For this reason, both the Turkish and original versions of the IMI were analyzed and the results demonstrated some differences. These differences are; in pressure/stress aspect, item 20(original) = item 19 (new), item 21=20, item 22=21, item 23=22, in perceived right of choice aspect; item 25=23, item 26=24, item 28=26, item 29=27, in value/benefit aspect; item 27=25, item 30=28, item 31=29, item 32=30, item 33=31, item 34=32. The Turkish version of IMI was scored based on the item score for each item (example; 1 = 1, 7 = 7). However, in the Turkish version of IMI, the items 3, 4, 13, 15, 18, 20, 23, 24, 26 were reversed. That's why, the item responses are subtracted from 8 and results from the item score for each item are used. This way, a higher score will show more of the concept described in the subscale name. Thus, a higher score on pressure/tension means the person felt more pressured or tense; a higher score on value/benefit means the person benefited more; and so on. The subscale scores are calculated by averaging the item scores for the items on each subscale. The inventory does not offer a total score.

3.3.1.3 Interview. For the qualitative dimension, data was collected from the experiment group by using semi-structured interviews to evaluate gamification. In other words, the interviewer did not follow the list of questions but directed more questions to allow for a discussion when necessary (Barriball, & While, 1994). The questions used for the test were prepared by the researcher and subject matter expert.

Each question in the interview was prepared according to areas on which the research questions focus; students' achievement, motivation as well as gamification process in English lesson. For this reason, interview includes questions such as "How do you think this process affected your academic achievement?" or "Do you think you showed enough effort during this gamification process?" to analyze students' thoughts on their achievement, and "How did the gamification process contribute to

your motivation?", "If positive or negative, why?", "What do you think about collecting points?", "Did it motivate you?" to analyze their perception on their own motivation. Additional questions, such as "As you know, rewards have different stock numbers. Did you feel and positive or negative competition when you use your points?" were asked to analyze the gamification process.

3.3.2 Data collection procedures

3.3.2.1 Achievement test. The participants in both experimental and control group were given a test prepared by the researcher and subject matter expert and asked to complete the test as a pre-test at the beginning of the study and a post-test at the end. The test consisted of 40 questions in relation with lesson objectives. These objectives have been presented in a standardized test and participants were asked to complete this test during their course of English class.

3.3.2.2 Intrinsic motivation inventory. The Turkish version of intrinsic motivation inventory (IMI) was given only to the experimental group. Since the gamification elements were implemented only in experimental group's English courses, the control group was not asked to complete IMI. Requiring control group to take IMI would not provide sufficient data for the effects of gamification. One course of an English lesson was allocated for participants to answer the questions listen in IMI.

3.3.2.3 Interview. In order to conduct the semi- structured interview, students were taken to the library, since it could provide a quieter environment to record students' responses to the questions asked. Six students were asked questions related to games and the lesson experience with game design elements implemented. These students were chosen for the interview according to their performance during research process; two students who scored high, two students who scored average and two students who scored low.

To assure the interviewed participants, whose mother tongue is Turkish, would feel more comfortable and could more efficiently explain their thoughts while answering the questions, the interview was conducted in Turkish language. Table 3 indicates the data collection procedure for both experimental and control groups.

Table3

Data Collection Procedure

Groups	Achievement Pre-Test and Post-Test	Intrinsic Motivation Inventory	Treatment	Interviews
Experimental	1 week before and after treatment	1 week before and after treatment	Gamified instruction for 6 weeks	1 week after the treatment
Control	1 week before and after treatment	No intrinsic motivation inventory	Non-gamified instruction for 6 weeks	No interview

Experimental group was required to take the achievement test, intrinsic motivation inventory and to take interview sessions with the researcher. Control group, however, was only asked to take the achievement test. In addition, control group was not asked to complete IMI due to the fact that game elements were not applied to the instruction the participants were to receive.

3.3.3 Implementation procedures. The study involved 85 tenth grade students from a private school in Turkey. Both experimental group and control group were taught the same content on English lesson during six week period by the same teacher. While the experimental group consisted of 42 students, the control group consisted of 43 students. Furthermore, the participants in both groups were in the same age. In addition, they were studying the same course and they followed the same course book. For this reason, in order to analyze the difference in achievement, a pre and post- test were applied to both groups. Both groups were asked to complete 40-question test as the pre-test before beginning the study. After obtaining the results of the pretest, game elements were introduced to the experience group. The implementation stage of the study took place for six weeks for two course hours each week. At the end of this period, both experimental and control groups were asked to complete the pre-test as the post-test**.**

3.3.3.1 Experimental group procedures. The apparent difference between two groups was due to fact that game design elements, such as gaining points for both individual activities and pair/group activities, were implemented for experimental group. Participants in experimental group had a chance to spend these points on desired rewards similar to what modern game industry offers. A set of cards similar to trophies that current video games offer were created. These cards

include some rewards to promote motivation. In order to obtain rewards, students were expected to collect enough points by completing necessary tasks via either completing the assignments given or classroom activities. Moreover, some other elements of gamification such as random events, challenges, and rules to gain or lose points were implemented as gamified instruction. Each student's progress for obtained points was recorded on a digital sheet created by the researcher using Excel, a spreadsheet software developed by Microsoft.

3.3.3.2 Control group procedures. On the other hand, control group was not offered a chance to gain any points from the work they completed. Instead, they were required to complete the same tasks as the experimental group did without any of the game elements provided. After they finished one task, they simply continued to complete another. There were no rewards or no collection of points after completing any of the tasks that the teacher expected the students to finish.

3.3.3.3 Collection of points. Not regarding English background each student has, all students can obtain and spend enough points to increase their performance grade if they complete necessary assignments and classroom activities. These assignments include; videos or voice recordings depending on the context or topics that the unit or module in the course book offers. For example, each video or voice record assignment provide four points if students record their voice or themselves and talk about the necessary topic for three minutes with the language elements such as phrases which they are asked to use during their speech. If the time spend is less than instructed or some language elements to be used are missing, students receive less points. If all of the elements are missing or students do not record a video or their voice, students are not going to receive any points.

Similarly, assignments that require to prepare a power point presentation or a paper which includes pictures also provides points to students if they are completed as they were instructed. For example, students who completed a paper assignment such as an essay are going to receive 8 points if they follow and complete the instructions clearly. However, in order to engage students more during the lesson, surprise element that gamification offers were also applied. For example, when students were observed to be bored or lose their attention, a pop-up question, such as finding the synonym of "X" in the reading passage, was asked and points were given to students who answered the question(s) correctly. In addition, the surprise element was also provided by "weekly events or situations". These random events or

situations from the list created were given to students and were valid for that week. For example, students could lose some points because of an imaginary "thunder storm" that occurred that week. Table 4 indicates a list of activities that students gained or lost points from.

Table 4

List of activities that students gain or lose points from

1- Listening: Students should listen to a recording from the text book and choose the correct answer. Each correct answer within the time limit provides 2 points to the students.
2- Listening: Students should listen to a recording from the text book. Each correct answer within the time limit provides 2 points to students.
3- Speaking: Students should work in pairs and create and present a dialogue within the time limit. Dialogue should include language elements from the text book activity. Each pair receives 5 points if they complete the requirements for the task.
4- Speaking: Students should record their response for the given task and send it to the teacher via e-mail within the time limit. Students who record three-minute video or voice record receive 4 points. Amount of points decrease depending on the students' performance. For example, if one of the students record lasts for between 2 and 3 minutes, the student receives 2 points. If the student's record lasts for less than 2 minutes, s/he receives no points from the teacher.
5- Grammar: Students have to complete the exercises the text book provides in order to receive 1 point for each question asked. Students can also work with a partner or in a group when the teacher instructs them to do.
6- Reading: Students will receive 2 points for each question they answered correctly. The instructor might also require students to work in a group or with pairs during reading activities.
7- Random events: These events are chosen by the instructor in the beginning of the week. The reason for these events is to create a surprise element during learning process to keep the students more engaged and motivated. Their effect lasts for that week. Students might gain or lose their points for that week.
The storm: An imaginary storm takes 8 points from students for that week.

Table 4 List of activities students gain or lose points from (cont.d)

The leprechaun: Students are able to find the mystical creature called leprechaun. All students receive 10 points for that week. The toll: An imaginary toll that tells student that they took a recently built highway to get to the school on time. Students lose 7 points. The lottery: Students are assumed to win an imaginary lottery that gives them 13 points. The inheritance: Students are told to have received an imaginary inheritance from their relative in Egypt. They receive 10 points.
8- Speaking Turkish in the classroom: Students lose 5 points each time they speak Turkish during classroom activities.
9- Being rude in the classroom: Students lose 5 points each time when they treat the teacher or their peers in a rude way.
10- Helping others: Students receive 7 points when they complete their task as required and walk around the class to help their friends to finish their tasks.

There were a total of ten categories of activities. Students were expected to follow these activities in order to gain points. Some activities might have caused students to lose some points. These activities are a combination of behaviors that students should not present and surprise events.

3.3.3.4 Achievements. Achievements were presented in cards. Since students were observed to play mostly video games in their spare time, each achievement was designed and named similarly to a video game achievement. Content for the each achievement, on the other hand, created according to students' needs and preferences, which was identified via the suggestion forums the school administration provided yearly and researcher's observation. Through these achievements, it was aimed to provide students elements in most games such as collaboration, competition, surprise. Furthermore, in order to obtain long term motivational effects, these achievements were created according to principles of rewards (Zichermann & Cunningham, 2011). Students could obtain any achievement from the list as long as they collected enough points and spent them to obtain that reward. However, not all the students from same class could obtain the same rewards since these rewards were limited in stocks for each class. The reason for that they are limited was to promote students to follow the game progress and improve

their awareness as well as promotion for a little competition. Stock numbers are presented at the right bottom of each card. The main objective of these achievements is to improve students' performance grades. Students could attribute to their own performance by collecting and spending points that they collected via assignments and activities. Points needed for each reward were presented on the left top of each reward card.

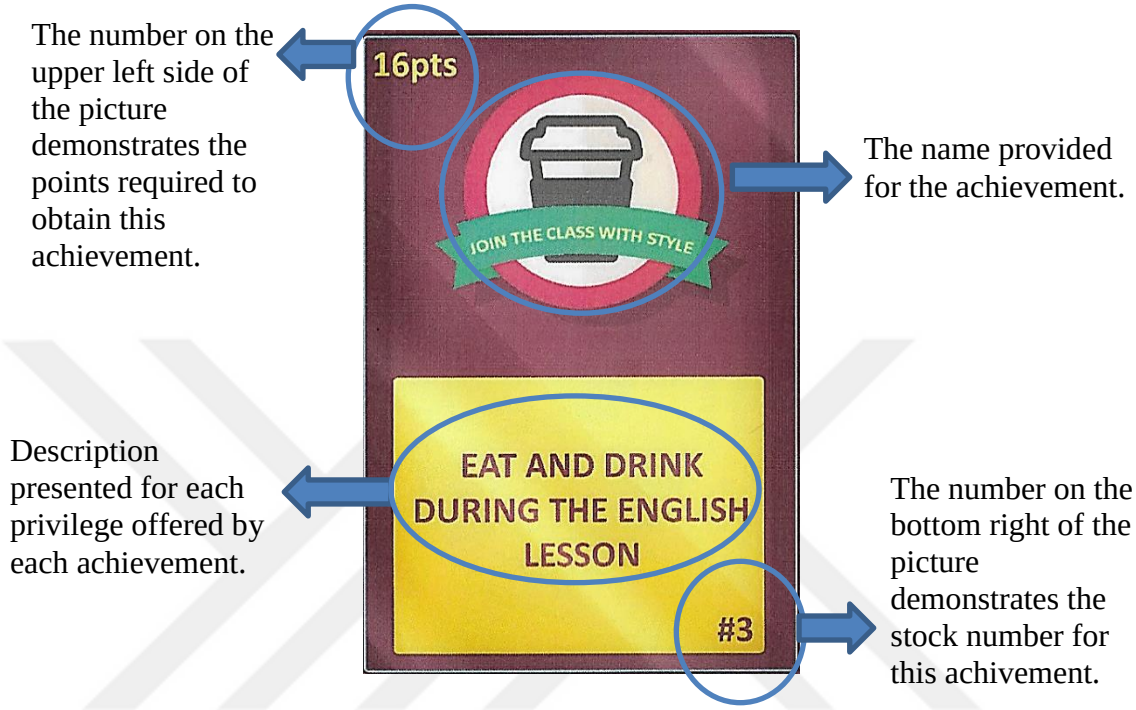

Figure 2. Join the class with style achievement.

First of these rewards is **"Join the class with style"** achievement. In order to obtain this achievement, students had to spend sixteen points. After they received the achievement students could eat snacks or drink tea, coffee etc. during lesson hours. However, although this achievement looked like a reward, it was actually a "trap" card. The aim for this trap was to promote students to choose a project with the points they collected. Students generally found sixteen points too much to spend for a snack and instead they turned towards to other rewards that were beneficial for their performance grade.

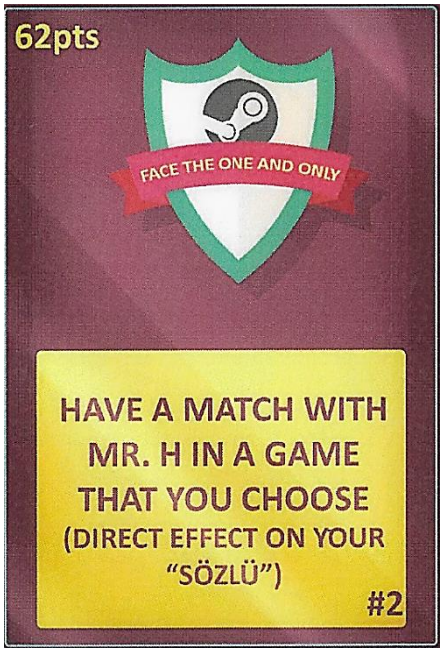

Figure 3. Face the one and only achievement.

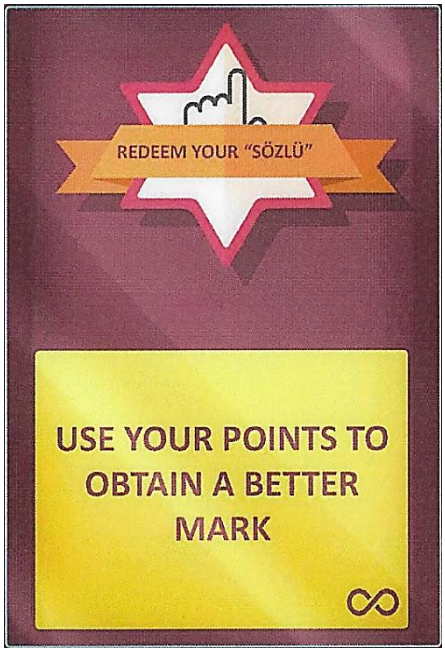

Figure 4. Redeem your sözlü achievement.

"Face the one and only" achievement was designed to promote students' to share a social experience with their teacher as well as increasing their performance grade. Students who collected and spent sixty-two points were able to be play a game including video games with their teacher. An increase in motivation was expected since some students wanted to share a gaming experience with their teachers.

"Redeem your sözlü" was an achievement for students who did not want to spend their points on any rewards but on their performance grade only. Some students were observed to be collectors and not eager to spend their points. For this reason, Students who achieved this reward was able to convert their points into their performance mark. This achievement was unlimited in stocks as students could convert their points any time they preferred.

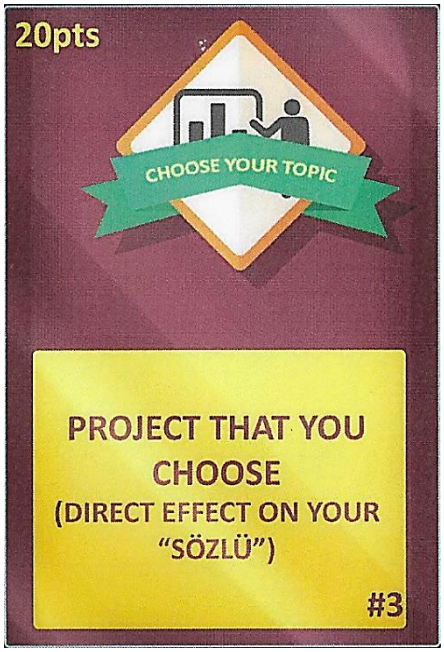

Figure 5. Choose your topic achievement.

Figure 6. Free stayla achievement.

"Choose your topic" was an achievement which required students to prepare project with a topic related to their interest. The projects included certain English language elements as well as some other instructions to follow in order to complete. By spending twenty points, students had the chance to prepare a project that results with obtaining a certain score for their performance grade. For example, students who completed a project had received thirty points for their performance mark. In order to promote a little competition, this achievement had a limited number of two.

"Free stayla" was another trap that looked like an achievement. Students had to collect and spend thirty points in order not to have weekend homework. The reason why this achievement was actually a trap was because high amount of points that the achievement required. Students were expected to choose more beneficial rewards for their performance grade.

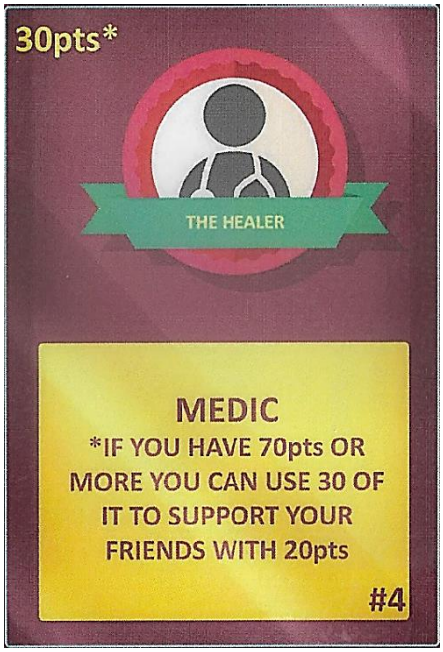

Figure 7. The healer achievement.

Figure 8. V.I.P achievement.

"The healer" was designed to promote community spirit by helping other students in the class. Students who was able to collect seventy points had to spend thirty points of and could give twenty points to their peers in need. Peers who received twenty points could spend them on any achievement they preferred. This achievement was designed to engage lower achiever students more in the learning process through cooperation.

"V.I.P" achievement provided an opportunity for students no to wait in any queue for a week in the cafeteria. This achievement could be obtained by students who were able to spend forty points. It is a limited VIP reward that's why its stock number is one for all the classes. Through this reward, it was aimed to provide little competition naturally included in most games.

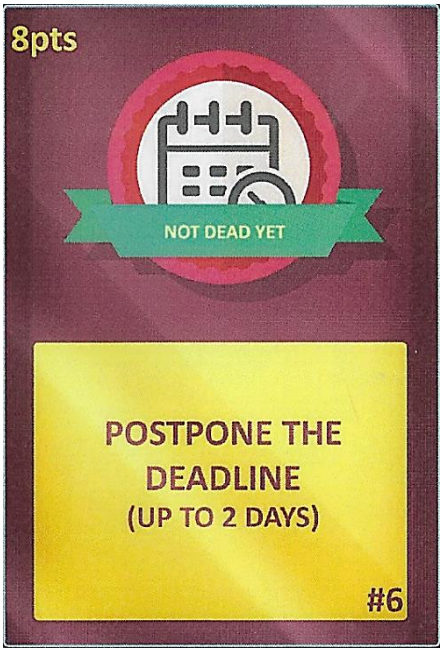

Figure 9. Not dead yet achievement.

Figure 10. The musician achievement.

"Not dead yet" is yet another trap that looked like an achievement. Students who were not loyal to the deadlines required for assignments were required to spend eight points of their total points to postpone their assignment for extra two days. The objective for this "reward" was to promote students to bring their projects on time. Otherwise, their points would be taken as a punishment.

"The musician" achievement was designed for students who wanted to express themselves via a song. These students who spent twelve points had the opportunity to choose a music playlist for classroom activities when conducted as well as having the opportunity to increase their performance grade. Since teachers aim to draw students' attention to the activity continuously, this achievement was decided to have infinite number in stocks.

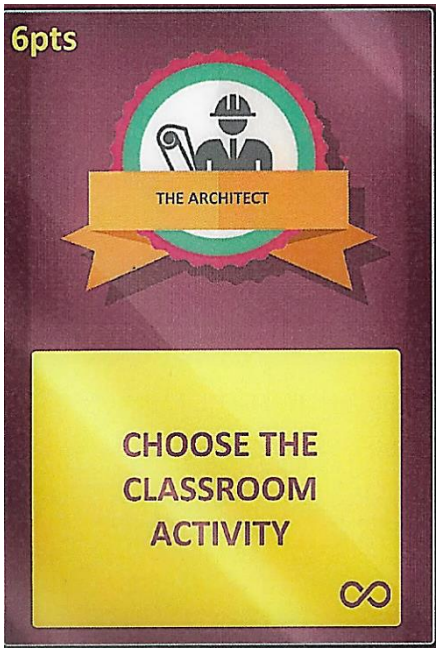

Figure 11. The architect achievement.

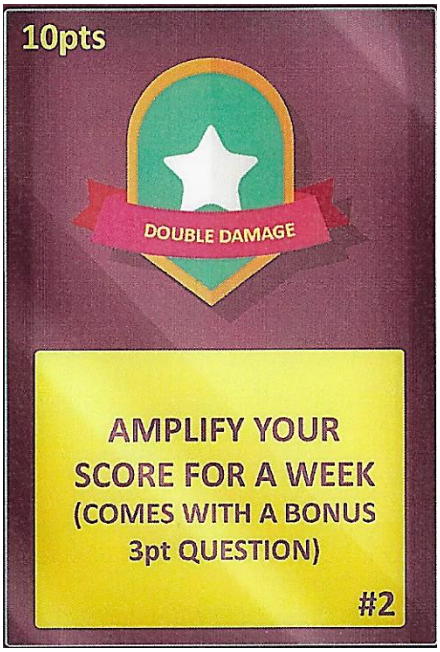

Figure 12. Double damage achievement.

"The architect" reward was able to be obtained by students who spent six points. These students had the opportunity to choose and perform 1-2 minute classroom activity from the energizer activities list during the lesson. Its number in stock is infinite for the same reason "the musician" achievement explains.

The last achievement is called after popular video games **"double damage".** Student who spent ten points could obtain this achievement. This achievement enabled students to double their points which they collected for one week. That is to say, if student was expected to receive four points for recording a voice record assignment, s/he would be given eight points instead. In order to promote more students, upon obtaining the achievement, students would be asked a three-point question. If they answered correctly, three points will be given to them and they would be spending seven points for the question. However, since this reward might create unfair competition, stock number of the achievement is two.

	Name Surname	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10	Lesson 11	Lesson 12	Projects	Points Spent	Achievements	Total
2	Student 1	10	12	17	8	6	20	16	14	22	24	12	10	80	-102	Choose your topic + face the one	149
3	Student 2	5	6	5	4	5	4	10	12	6	20	16	13	40	-47	double damage +V.I.P	99
4	Student 3	3	3	2	4	6	ABSENT	10	12	12	10	8	13	40	-36	post pone deadlinex2 + choose y	87
5	Student 4	10	20	22	26	12	16	15	17	16	32	26	16	80	-142	choose your topicx2 + face the or	166
6	Student 5	3	4	6	12	8	15	6	7	7	10	10	11	0	-54	postpone deadlinex3 + Free styla	45
7	Student 6	6	6	7	8	9	12	12	20	22	17	12	14	0	-32	Join the class with style	113
8	Student 7	10	12	8	22	24	16	17	15	13	24	20	17	80	-40	choose your topicx2	238
9	Student 8	7	6	8	12	7	6	18	16	10	14	7	8	40	-52	not dead yetx2 +choose ur top+ fr	107
10	Student 9	5	7	7	8	9	12	9	9	7	18	8	11	0	-40	double damage+medic	70
11	Student 10	16	17	30	26	20	20	14	14	21	22	18	21	40	-98	Medic+ double damagex2 + Choo	181
12	Student 11	12	14	13	13	22	24	13	13	17	5	ABSENT	11	0	-24	the architectx4	133
13	Student 12	ABSENT	11	15	8	9	24	10	14	8	7	3	6	40	-40	d.damagex2	115
14	Student 13	3	3	6	7	4	6	10	8	11	7	4	4	0	0		73
15	Student 14	3	4	6	9	29	12	8	12	9	14	8	12	40	-30	double damagex2+choose your tc	136
16	Student 15	10	14	9	9	13	14	11	12	9	11	14	11	40	-44	the musicanx2+ choose your topi	133
17	Student 16	3	5	7	12	8	15	6	7	7	13	10	11	0	-30	Freestyla	74
18	Student 17	6	7	8	12	15	16	4	8	7	8	9	5	40	-44	not dead+join wit style+ choose y	101
19	Student 18	10	12	8	22	24	ABSENT	ABSENT	15	13	24	20	17	80	-40	choose your topicx2	205
20	Student 19	15	14	26	28	14	13	11	16	22	26	13	17	80	-174	face the onex2 + choose yur topic	121
21	Student 20	7	6	8	7	9	12	11	18	22	17	14	14	40	-32	choose your topic + the musician	153
22	Student 21	10	11	14	15	12	11	10	9	15	14	14	17	80	-102	choose your topicx2+ V.I.P	130

Figure 13. Sample of the spreadsheet to keep track of points collected or spent.

Figure 13 indicates the sample of the spreadsheet created and used by the researcher in order to keep the track of students' points as well as the achievements they chose to obtain. Red columns demonstrate the lesson students were absent in. Green column represents the points gained via the achievement "Medic".

3.3.4 Data analysis procedures

3.3.4.1 Achievement test. The data collected was analyzed by using the software that is called Statistical Package for the Social Sciences (SPSS). The results of the pre-test and the post-test obtained from both experimental and control group were analyzed.

In order to answer the first research question 1 (Is there a significant difference in terms of academic achievement regarding second language learning when gamification elements, such as points, achievements are applied?) group statistics were examined to analyze the significance between the pre-test and the post-test for each group. However, in order to examine whether there is a meaningful difference between gamified learning and non-gamified learning, an independent sample t-test for both pre-test and post-test was also conducted.

3.3.4.2 Intrinsic motivation inventory. The data collected from the participants related to motivation was also analyzed by using the same software (SPSS). Nevertheless, the results of the motivation before and after a gamified application were obtained only from the experimental group.

For the second research question (Can gamification elements when applied in a classroom environment provide a significant difference in terms of students' motivation towards second language classes?), the results from a paired samples test

were analyzed in order to find out a meaningful difference before and after the gamification elements were presented.

3.3.4.3 Interview. The data analyzed was developed through thematic analysis via the coding process divided by theme/subtheme table (Leedy & Ormrod, 2001). Therefore, students' answers through interview were analyzed in 3 main categories; academic achievement, motivation, and gamification elements. These main categories included 11 further subcategories. These further subcategories include questions such as "How do you think this process affected your academic achievement?", "Were there times that you found boring?", "Do you think this in-class gamification elements resemble to regular games?" The findings are in accordance with research questions that intended to find out whether there is a significant different in terms of academic achievement and motivation in second language learning after gamification elements were applied as well as aiming to find out what students' perceptions are about gamification in second language learning.

3.3.5 Reliability of data instruments

3.3.5.1 Achievement test. The internal consistency analysis was conducted by the researcher himself for this study. For the study participants, a total of 54 students were selected from 11th grade. The reason to choose 11th graders is the fact that they had already been familiar with the content from the previous year. In addition, these students had not only passed but also completed the same lesson objectives from the previous year using the same course book.

11th grade students were asked to answer 40-item English quiz from the module that they had already studied. The game elements were applied during the same module for 10th grade students. The students were also offered extra credits for English lesson for being a part of the study, however, students who didn't participate could also obtain the same amount of credits by completing a school project.

Table 5

Reliability Statistics for achievement test

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.84	0.87	40

By analyzing the data obtained from 54 participants, the internal consistency of the test was found to be α=0.843. Since Cronbach's alpha coefficient higher than 0.70 is considered sufficient for the scales to be used in studies, this result indicates that the achievement test to be used has a moderate level of internal consistency.

Table 6

Statistics for each test item (N=54)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	51.52	52.59	0.42	0.84
Q2	51.44	51.31	0.58	0.83
Q3	51.48	53.39	0.28	0.84
Q4	51.33	52.79	0.34	0.84
Q5	51.63	53.48	0.35	0.84
Q6	51.52	52.82	0.38	0.84
Q7	51.63	53.22	0.39	0.84
Q8	51.44	54.52	0.11	0.85
Q9	51.57	53.57	0.29	0.84
Q10	51.63	53.79	0.29	0.84
Q11	51.39	51.04	0.13	0.87
Q12	51.54	52.63	0.42	0.84
Q13	51.33	53.21	0.28	0.84
Q14	51.69	52.94	0.54	0.84
Q15	51.48	53.12	0.32	0.84
Q16	51.61	52.51	0.5	0.84
Q17	51.52	52.59	0.42	0.84
Q18	51.44	52.7	0.37	0.84
Q19	51.54	52.4	0.46	0.84
Q20	51.39	53.98	0.18	0.84
Q21	51.33	54.64	0.09	0.85
Q22	51.33	52.6	0.37	0.84
Q23	51.65	53.14	0.43	0.84
Q24	51.5	53.2	0.31	0.84
Q25	51.54	53.54	0.28	0.84
Q26	51.57	52.25	0.51	0.84
Q27	51.46	51.46	0.56	0.83
Q28	51.67	52.34	0.63	0.84
Q29	51.57	52.51	0.47	0.84
Q30	51.69	52.79	0.57	0.84
Q31	51.43	53.04	0.32	0.84
Q32	51.52	52.37	0.45	0.84
Q33	51.56	51.99	0.54	0.84
Q34	51.43	54.17	0.16	0.84
Q35	51.22	53.65	0.22	0.84
Q36	51.37	53.86	0.19	0.84
Q37	51.19	53.25	0.28	0.84
Q38	51.28	52.28	0.41	0.84
Q39	51.22	54.21	0.14	0.84
Q40	51.41	53.91	0.19	0.84

Table 6 shows reliability statistics for each test item. If deleted, Cronbach's alpha coefficient for each item would still be higher than 0.70. This result indicates that the questions in the achievement test have a moderate level of internal consistency.

Table 7

Item difficulty and discrimination index

Question	Item difficulty	Item Discrimination
1	0.5	0.77
2	0.47	1
3	0.53	0.54
4	0.53	0.85
5	0.69	0.54
6	0.56	0.77
7	0.69	0.54
8	0.53	0.54
9	0.67	0.62
10	0.67	0.77
11	0.61	0.62
12	0.67	0.77
13	0.53	0.54
14	0.69	0.69
15	0.58	0.69
16	0.64	0.85
17	0.56	0.77
18	0.5	0.92
19	0.53	0.85
20	0.39	0.46
21	0.42	0.38
22	0.42	0.69
23	0.69	0.69
24	0.69	0.54
25	0.67	0.46
26	0.64	0.85
27	0.56	0.92
28	0.64	0.85
29	0.64	0.69
30	0.72	0.62
31	0.58	0.69
32	0.58	0.85
33	0.5	0.92
34	0.58	0.54
35	0.39	0.46
36	0.47	0.38
37	0.31	0.54
38	0.44	0.92
39	0.36	0.54
40	0.56	0.46

Table 7 indicates the difficulty and discrimination for each item in the achievement test. According to the results, although it has questions ranging from very easy (question 30) to difficult (question 37), the test can be considered to have medium difficulty in total (M= 0.56) (Rodriguez, 2005).

For item discrimination Crocker and Algina (2008) suggests that if an index of discrimination is lower than 0.20, that question is replaced. Similarly, if an index of discrimination is above 0.40, it implies that the question is a good discriminator. None of the questions for this achievement was found to be below 0.20, which implies that the test includes items that can discriminate well (M=0.68).

Table 8

Test of Homogeneity of Variances

Score			
Levene Statistic	df1	df2	Sig.
.127	1	83	.72

Table 8 indicates that cronbach's alpha coefficient for each item would still be higher than 0.05, indicating that both experimental and control groups have equal variances.

3.3.5.2 Intrinsic motivation inventory. Original reliability and validity study of the scale were conducted by McAuley, Duncan and Tammen. The internal consistency was found to be $\alpha = 0.85$. However, since the students in both experimental and control group were Turkish, a Turkish version of the same study was used for this study. A study to analyze internal consistency was also conducted by Demirhan and Çalışkur (2013). Their study indicates that Cronbach Alpha $\alpha = 0.8694$ and Pearson correlation was found as $p < 0.01$ implying the fact that internal consistency for the structure of İçsel Motivasyon Envanteri(IGE), the Turkish version of IMI, positive correlations between scale and sum were found to be significant.

3.3.5.3 Interview. Questions for the semi-structured interview were prepared by the researcher with the help of subject matter expert. However, participants were

rated only by the researcher. In order to make the interview a more reliable measure, another rater should be needed.

3.4 Limitations

Although it was carefully prepared and conducted, this research, undeniably, has its shortcomings and limitations. First of these limitations is that reliability statistics for IMI was measured via the data collected from university students. On the other hand, in this study, IMI was applied to students who studied in a private high school.

Rewards prepared for this research were created according to participants' needs. However, these needs were identified not only by the researcher's observations but also school environment. Presenting the same rewards to a different group of participants may not provide the same results. In other words, results in this study should be considered valid only for the students that participated in this study. For further research possibilities, it would be logical to conduct a better needs analysis before implementing such rewards.

Lack of time was another shortcoming for this research. The study lasted during a 6-week period. Six weeks may not provide enough time not only for participants to increase their performance but also for the researcher to observe all of the participants' motivation towards the gamification process. If conducted again, it would be wiser to do this research in longer periods of time.

Another limitation of the study is that although questions for the semi-structured interview was prepared by the researcher with the help of subject matter experts, the participants were rated only by the researcher. Upon applying a similar interview, another rated should be needed in order to make the interview a more reliable measure.

In order to keep the track of points that students collected throughout 6-week learning period, a digital sheet was created by the researcher using Microsoft Excel software. However, although keeping the track of a small group of students may be relatively easy, applying it to experimental group, which is a littler larger than a small group, was a bit challenging. It might be even more challenging if applied to larger groups.

Most important shortcoming of the research is English background that the participants' have. Although both experimental and control group followed the same curriculum, it might be more than difficult to find out how much English they were exposed to after school. One participant might have had more activities that required a certain level of English language in his or her spare time such as watching movies in English, playing computer games designed for English language speakers than another participant, which might violate the equality of having a similar background.

Chapter 4:

Findings

In this section, the results are presented according to the research questions. The research aims to find whether there is a significant difference in terms of academic achievement regarding second language learning when gamification elements, such as points, achievements are applied and if these elements gamification elements when applied in a classroom environment can provide a significant difference in terms of students' motivation towards second language classes. Moreover, students' responses to interview questions were analyzed in order to obtain a deeper understanding in application of gamification.

4.1 Findings about students' academic achievement

In order to find out whether gamification elements caused any significant differences in terms of students' academic achievement, participants were asked to complete a test before and after gamification elements were implemented for the experimental group.

Table 9 indicates the results of the pre-test for both experimental and control groups.

Table 9

Independent samples pre-test t-test results

Groups	N	M	SD	SE	df	Sig.(2-tailed
Experimental	42	13.71	6.83	1.05	83	0.82
Control	43	14.05	6.76	1.03	82.9	0.82

According to the independent sample t-test results, no significant difference was found before applying gamification elements between experimental (N= 42) and control group (N=43) since the value was found to be .82 (p>.05).

Table 10 indicates the results of the post-test for both experimental and control groups.

Table 10

Independent sample post-test t-test results

Groups	N	M	SD	SE	df	Sig.(2-tailed
Experimental	42	28.45	7.27	1.12	83	.00
Control	43	21.6	7.2	1.1	82.91	.00

After the gamification elements were implemented, there was found a significant difference in scores of experimental (N=42) and control groups (N=43). The significance value was found to be .00 ($p<.05$).

Table 11 indicates the results of the pre and the post-test for the experimental group.

Table 11

Experimental group independent samples t-test results

Experimental Group	N	M	SD	SE	Sig.(2-tailed
Pre-test	42	13.71	6.83	1.05	.00
Post-test	42	28.45	7.27	1.12	.00

There was found a significant difference in scores of experimental group after the gamification elements were applied. The significance value was found to be .00 ($p < .05$).

4.2 Findings about students' motivation

In order to find out if gamification elements when applied in a classroom environment can motivate students during the learning process, intrinsic motivation inventory was applied only to the experimental group at the end of 6-week gamification process.

Table 12 shows the intrinsic motivation inventory (IMI) test results for before and after gamification elements were presented to experimental group.

Table 12

Intrinsic Motivation Inventory Pre and Post Results

IMI	N	M	SD	SE	df	t	Sig.(2-tailed
Pre-test	42	143	21.01	3.24	41	-6.36	.00
Post-test	42	167.1	23.76	3.67			

Significance value was found to be .00 ($p < .05$), which implies that there is a significant difference in students' motivation.

4.3 Findings about students' perceptions on gamification

In order to discover students' perceptions about gamified instruction, students were interviewed at the end of 6-week learning process. Via their responses obtained from a semi- structured interview, it was aimed to discover whether gamified instruction helped them improve their academic achievement and increase their motivation as well as obtaining feedback in order to evaluate what students' perceptions are about gamification in second language learning.

Table 13 demonstrates students' answers to the questions; "What types of games do you play?" and "Digital games or physical games?"

Table 13

Types of games the students play

Game Types	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Physical Games		X	X			
Digital Games	X	X	X	X	X	X

When students' responses were analyzed, it was found that only two students play both digital games and physical games while the rest prefers digital games. The students express their opinions as follows;

> I play digital games, mostly, such as role playing games. (Student 1, Interview, 27th March, 2017)

I play mostly on phone […] and […] I play volleyball. (Student 2, Interview, 27th March, 2017)

Table 14 demonstrates students' opinions considering the similarities of gamification elements and games.

Table 14

Thoughts on gamification

Thoughts on Gamification Process	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Similar to other games	X	X	X	X		X
Not similar to other games					X	

It was clear that except one student, all of the students consider these elements similar to games. The students express their opinions as follows;

It was similar to the achievement system in games. (Student 4, Interview, 27th March, 2017)

In my opinion it was not similar to games […] there is no level increase like in games. (Student 5, Interview, 27th March, 2017)

Table 15 demonstrates students' answers to the question; "How do you think gamification process contributed to your motivation?" and "If positive, why?, if negative why?"

Table 15

Thoughts on motivation

Motivation	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Positive	X	X	X	X	X	X
Negative				X		X

While majority of students found this process fully motivational, others stated that effect of motivation fluctuates. The students express their opinions as follows;

> I can say it motivated me quite a lot since it resembles the games I play as I have said before." Student 1, Interview, 27th March, 2017)

> I did not want to do my homework, at first but… I started to do.(Student 3, Interview, 27th March, 2017)

> At first, in a positive way […] It was fun to collect points but later the focus was to collect, I would do my homework only to collect points" (Student 4, Interview, 27th March, 2017)

> It motivated me at first… but it seemed the cooperation was broken [...] it became too competitive". (Student 6, Interview, 27th March, 2017)

Table 16 demonstrates students' answers to the question; "How do you think gamification process contributed to your academic achievement?" and "If there is a positive or a negative effect, why?"

Table 16

Thoughts on academic achievement

Academic Achievement	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Positive	X	X	X	X	X	X
Negative						

All of the students agree that gamification elements help them increase their performance. The students express their opinions as follows;

> When points involved, you want to answer all the questions. (Student 2, Interview, 27th March, 2017)

> It affected my performance this way… I was very happy. (Student 6, Interview, 27th March, 2017)

Table 17 demonstrates students' answers to the question; "Did it affect your concentration on the lesson positively or negatively?"

Table 17

Thoughts on concentration

Effect on Concentration	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Positive effect			X	X	X	
No effect	X	X				
Negative effect						X

Two students stated there was not any effect on their concentration while other four students expressed that effect was visible. However, only one student among them stated that this effect was a negative one. The students express their opinions as follows;

> Since I started to participate in the lesson, I started to listen more effectively. (Student 3, Interview, 27th March, 2017)

> Noise, yes. If we had worked together without points, I think there might have been less noise. I would be more concentrated. (Student 6, Interview, 27th March, 2017)

Table 18 demonstrates students' answers to the question; "So, during this gamification process, do you think that you made enough effort?"

Table 18

Thoughts on effort shown

Enough effort shown	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Yes	X	X	X	X	X	
No						X

It also indicates that all students, except one, stated they made enough effort. The students express their opinions as follows;

> It would not be a lie if I said I put enough effort. (Student 1, Interview, 27th March, 2017)

Honestly, at first I thought it was more like a game but later, I realized it was serious too, but I was too late. (Student 6, Interview, 27th March, 2017)

Table 19 demonstrates students' answers to the question; "Did you feel any pressure while collecting points?"

Table 19

Thoughts on pressure felt

Pressure felt	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Positive effect		X	X	X		X
No effect	X				X	

According to the table, only two students did not feel a pressure positively or negatively. Other students felt pressure from time to time, but they stated it did not affect them in a negative way. On the other hand, they stated that they felt pressure but this pressure affected them positively. The students express their opinions as follows;

There might have been momentary stress […] it was more like fun between us. (Student 4, Interview, 27th March, 2017)

[…] I felt peer pressure more really […] I do not think it was negative though. (Student 6, Interview, 27th March, 2017)

When the answer was incomplete, you would not receive points. This push me a bit but in a good way. (Student 2, Interview, 27th March, 2017)

Table 20 demonstrates students' answers to the question; "Do you think this process was fair to everyone?"

Table 20

Thoughts on fairness

Fairness	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Yes	X	X	X		X	X
No				X		X

Answers to these questions vary according to students. While student 1, 2 and 5 found it fair, student 4 and 6 think that it was completely fair to everyone. Only student 3 found it both fair and unfair. The students express their opinions as follows;

> I think there were some shortcomings. For example, not everyone can answer a surprise question" (Student 4, Interview, 27th March, 2017)

> Everyone could have obtained same points […] it was fair. (Student 5, Interview, 27th March, 2017)

Table 21 demonstrates students' answers to the question; "During these process, there were some tasks and work that you did in pairs or in a group. Did these tasks or work teach you anything?"

Table 21

Thoughts on learning through cooperation

Learning from others	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Yes	X		X		X	X
No		X		X		

Answers might be related to performance or social skills and so on. Only two students reported that these tasks did not have any effects on them, while others reported they learnt while they were trying to complete the tasks together. However, student 2 who reported she did not learn, also said she taught more during these activities. The students express their opinions as follows;

> They did not teach me much. I may have taught some things […] I used to explain like a teacher. (Student 2, Interview, 27th March, 2017)

> […] helped me improve my friendship. (Student 3, Interview, 27th March, 2017)

> To obtain points, people used to do it individually and combine it at the end. For this reason, they did not contribute much. (Student 4, Interview, 27th March, 2017)

Table 22 demonstrates students' answers to the question; "As you know, rewards were limited in number. For this reason, when you spent your points, did you feel any negative or positive competition?"

Table 22

Thoughts on competition

Effect on competition	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Positive effect	X	X	X		X	
Negative effect				X		X

While all the students agree that these elements created competition, only students 4 and 6 consider its outcomes negative. The students express their opinions as follows;

> […] via this rivalry, there occurred some competition and thus, I think my level of participation increased. (Student 1, Interview, 27th March, 2017)

> […] there was competition […] when you see others outrun you and you give up. (Student 4, Interview, 27th March, 2017)

> […]This created a bit of competition. Since this situation distracted me, I can say it was negative. (Student 6, Interview, 27th March, 2017)

Table 23 demonstrates students' answers to the question; "Were there times that you found it boring?"

Table 23

Thoughts on feeling of boredom

Feeling bored	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Yes				X	X	
No	X	X	X			X

Except students 4 and 5, none of the students said they were bored during learning process. The students express their opinions as follows;

> I am a student who always participates, besides I collected points and increased my score. For this reason, I did not feel bored. (Student 2, Interview, 27th March, 2017)

> […] you know initial enthusiasm? After that passed, it started to be boring [...] in those moments, I felt a bit bored. (Student 4, Interview, 27th March, 2017)

> Sometimes, it might have been boring. For example you do not want to do anything. However, in order to increase my score I listened to the lessons. (Student 5, Interview, 27th March, 2017)

Table 24 demonstrates students' answers to the question; "Would you prefer to have the same process?"

Table 24

Thoughts on willingness to repeat

Willingness to repeat	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Yes	X	X	X	X	X	
No						X

All the students, except one (student 6) stated that they would be willing to experience the same process. The students express their opinions as follows;

> I would like to experience. It was fun but short. (Student 2, Interview, 27th March, 2017)

> It was more enjoyable compared to other English classes. (Student 4, Interview, 27th March, 2017)

> I would remove quick questions. […] Then maybe, I would. Otherwise, I would not prefer. (Student 6, Interview, 27th March, 2017)

In brief, all of the interviewed students stated that they were into games either digital or physical. In addition, they found the application of game elements quite similar to the games that they played. When the data was analyzed, we could see that these elements helped them increase their language scores through the competitive and collaborative characteristics of games. Students, on the other hand, expressed different opinions about motivation although they found the experience fun, fair and without pressure. Most importantly, all interviewed participants agreed that they would like to have the same experience again if offered.

Chapter 5:
Discussion and Conclusions

This chapter aims to present a summary of the findings about the present study as well as suggestions for further researches.

5.1 Discussion of Findings.

The aim of the study was to investigate the effects of gamification elements on students' academic achievement and motivation. The study was applied to 85 10th grade students for 6 weeks during their regular English classes which included 2 lessons a week. Before the study, a pre-test was implemented at the beginning, and a post-test was implemented at the end for both experimental (N=42) and control (N=43) groups. During the learning process, gamification elements were applied for the experimental group while the control group continued with non-gamified elements. Both groups also followed the same course book with no exceptions for 6-week learning period.

The first research question was to find out a difference in scores between a gamified and non-gamified instruction. Results of the pre-test indicate that there is no significant difference in mean scores between the experimental and the control groups since the significance value was found to be .82 ($p > .05$). After the treatment, the post-test results show that the experimental group scored higher on the test ($M=28.45$, $SD=7.27$) while the control group achieved less ($M=21.60$, $SD=7.20$). When independent sample t-test results of the post-test are analyzed, a significant difference was found between groups ($p<.05$). Therefore, using gamification created a significant difference in academic achievement between experimental (N=42) and control group (N=43).

The results of this study are compatible with some other results of studies in the field. Birch (2013) used points in a study to analyze the effects of gamification on students' performance, which resulted in increasing performance. Similarly, in this study, a point system was implemented into learning. In order to analyze this effect more closely, interviewed students were asked if they thought gamification had any effect on their academic achievement. Although some of them explained their ideas on its weaknesses, all of the students came to agree that gamification helped them

increase their performance. However, overall performance can also decline due to competition (Orosz, Farkas, & Roland-Lévy, 2013) as well as that it can develop students' competitive spirits leading to an increased performance (Lui, 2014). That's why, students were asked what they felt about collecting points. One of the students who achieved the least score among others also stated that even though it was also competitive at times, and thus distracting, collecting points increased his performance. Some studies also indicate that providing points or rewards may result in a decline in achievement (Lepper, Corpus & Iyengar, 2005), however, results of this study indicate that participants in experimental group scored significantly higher compared to their previous results before game elements were presented.

However, various other reasons for achievement other than collecting points can be stated. One of them might be due to possibility that gamification elements help students have an active role in learning process (Koster, 2005), in other words; a deeper understanding can be led by engagement (Oblinger, 2004). However, participation rate could still be low (Dominquez et al., 2014). Similar to the study conducted by Denny (2013), this study tends to agree that achievement systems can increase the level of engagement. In order to analyze this effect, students were asked 2 questions; if gamification was similar to the games that they play and whether or not they felt that they showed enough effort. Their answers are corroborative that gamification increase engagement. Except one student, all of the students agreed that applied gamification elements were similar to the games. One of the students even explained that they were similar to the achievements in games. Most importantly, 5 of the students interviewed explained that they showed enough effort during the period when gamified instruction applied.

Game elements encourage collaboration among students, which help learners improve their performance (Keeler & Anson, 1995). In order to identify the effect of collaboration on performance, participants were asked if they learnt anything during the implementation of game elements when they worked with one another. Only students 2 and 4 stated that this collaboration did not have any effect on them. However, the main difference between both participants is that student 2 stated that she did not learn but she taught to her friend, which is an indication of sharing knowledge (Janz, 1999, Mikkelsen & Gronhaug, 1999). Student 4, on the other hand, stated "…it was not a group work. Everyone used to do it individually and they used to combine their work at the end". This might be due to reason that some students in

group work complete all the work while the others do not participate, which leads negative results in learning (Brooks & Ammons, 2003).

Investigating the effects of gamification on motivation was another purpose of this study. It was aimed to find out if there is a significant difference in motivation between gamified and non-gamified instruction. For this reason, in order to find out their motivation related perception towards English lessons, participants were asked to complete intrinsic motivation inventory survey (IMI) before and after gamified instruction presented. In addition, they were asked some questions during the interview in order to have a better understanding of their perceptions about motivation.

The results of IMI indicates that significance value of the test was found to be .00 ($p<.05$), which implies that there is a significant difference between gamified and non-gamifed insruction, in other words, gamification can increase the level of motivation. An increase can be observed in IMI scores of students in experimental group ($M=167.10$) when compared to their initial scores before the gamification elements were implemented. However, students' responses during interview were observed to change from one individual to another. While some students found gamification quite motivating others found it less motivating.

The main objective of gamification is to make learning more captivating, leading to higher motivation (Ott & Tavella, 2009). Mekler et al. (2013) also found out that collecting points had a positive effect on students' motivation. However, in order to analyze the effects on motivation more efficiently, 6 students were asked if the gamification process was motivating overall. While four of the students found this process fully motivational, others stated that effect of motivation fluctuates. One noticeable response came from student 4; "*At first, in a positive way. … It was fun to collect points but later the focus was to collect, I would do my homework only to collect points".* The reason of decline in motivation might be due to aiming to increase motivation by providing extrinsic rewards for completing tasks (Deci et al, 1999). Another noticeable response came from student 6; "*It motivated me … but it seemed to me that it was broken later*". This might cause due to the overuse of point novelty (Attali & Attali, 2015). However, when students were asked if gamification was a boring experience overall, same student also stated that she did not find this

experience boring and she would participate in a process like this if some elements had been removed.

Competition might provide immediate feedback (Tauer & Harackiewicz, 1999) but it might also have negative effects on motivation (Orosz et al, 2013). In order to find out the effects of competition on motivation, students were asked about their perceptions. Overall interviewed students stated that competition created had a positive effect on them and in fact, one student stated that via the rivalry, there his level of participation increased. This increase in motivation through competition might be caused when constructive competition occurs (Fülöp, 2009). In order to find out whether this competition was a constructive or destructive one, students were asked if they had felt any pressure. Students' responses indicated no sign of pressure during the time gamified instruction given. In fact, four of them stated that they felt pressure but it did not have any negative effects on them. One noticeable response came from student 4; *"There might have been momentary stress, …it was more like fun between us."*

Muntean (2011) suggested that gamification provided both intrinsic and extrinsic motivation, however extrinsic motivation can decrease achievement (Deci et al, 1999; Lepper, Corpus & Iyengar, 2005,). Nevertheless, the data related to what achievements were preferred indicates that majority of students were motivated to choose projects in order to increase their score. Moreover, responses collected from students indicate that they collected points to increase their English score, and were highly motivated. Therefore, this study suggests that extrinsic motivation might be beneficial in terms of performance and motivation.

Providing extrinsic rewards can cause a decline in intrinsic motivation (Thom, Millen & DiMicco, 2012), however, if status, access and power rewards should be provided mainly, intrinsic motivation will be stimulated (Zichermann & Cunningham, 2011). The results from the interview seem to support this point. When students were asked how they used the points they collected, all of the students expressed that they preferred to use them to increase their scores. One student also added that she spent some of those points to drink coffee in the class, which demonstrates she chose a reward that could give her access.

Although participants had both positive and negative opinions on the effects of gamification, when they were asked whether they would prefer to experience the

same process, all participants, except student 6, stated that they would like to experience it again. However, student 6 also implied that she would like to experience it again if some conditions were improved.

Investigating students' perceptions about gamified instruction was the final aim of this study. Responses received from interviewed students indicate that majority of students found applied game elements fun and engaging (De Freitas & de Freitas, 2013; Denny, 2013). They stated that these elements shared similarities with the games they played in their spare time. Thus, gamification had a positive effect on their academic achievement and motivation. They felt a certain amount of pressure, however, most of the students stated that it did not have a significant negative effect on their motivation. Working together with their peers helped them to complete the necessary tasks more easily (Yazici, 2005). Although some students agreed that implemented game elements caused a decline in their motivation due to competition, they did not find a dramatic effect on their concentration. In fact, majority of them found gamified instruction fair to all their peers, and thus, they focused on their learning (Fülöp, 2009; Tauer & Harackiewicz, 2004). When they were asked whether they would like to have a similar experience in their English lessons, majority of students stated that they would prefer gamified instructions since it was more engaging when compared to other English lessons they previously had.

All in all, this study aimed to find the effects of gamification on academic achievement and motivation as well as understanding students' perceptions about gamified instruction in second language learning. It was found that gamification could provide help to enhance learners' experience as well as providing fun and engagement. By providing positive feedback, students are encouraged and more stimulated to learn (Kapp, 2012; Muntean, 2011). Most importantly, it can also play a role in boosting learners' motivation to study (McGonigal, 2011). Although the test results show a general increase in scores of performance and motivation, it would be better to remember that the experience it offers can change from one implementation to another due to various factors, such as time, learners' characteristics and preferences. For this reason, educators should carefully plan before implementing such elements since those elements can have negative effects as well as positive ones (Stott & Neustaedter, 2013). Therefore, some suggestions should be taken into consideration for future research.

5.2 Recommendations for future research

First of all, the reliability statistics for Turkish version of IMI was originally measured by Çalışkur and Demirhan (2013) via the data collected from university students. However, there is a possibility that the Turkish version of IMI might not be quite valid since it was applied to students who belong to a different age group. For future studies, it should be noted that before applying the same version, reliability analysis of the same inventory could be conducted for this specific age group.

In addition, this study took place in a 6-week learning period. It provided only small period of time to investigate the long-term effects. If conducted again, it would provide different effects in a longer period of time.

Although some students were interviewed about their experience throughout the time the study was conducted, a small number of students may not provide a complete insight for the implementation of game elements. For further research, it would be wiser to conduct more interviews with more participants.

Moreover, achievements for this study were created and prepared according to the students' needs and preferences through the researcher's observations. Therefore, the results related to both motivation and performance are limited to the number of the participants in the study. It would not be coherent to generalize these results to a different number of individuals.

To keep track of the students' data in this research, Microsoft Excel software was used. And in spite of the relatively small number of participants, it was time-consuming for the researcher to keep track of every student's points. If gamification was to be applied, instructors should not forget that with the help of an online management system it would be easier to implement and keep track of elements such as badges, points, etc.

The final recommendation for future research would be to analyze the learners' level of English background in a more detailed way. Although the participants in this study took the same course and were reported to have a similar level of English, it is unknown whether these participants had equal amount of exposure to the target language. For future studies, in order to minimize the gap between participants, extra activities or multi-media related materials should be provided to both groups.

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APPENDICES

A. Intrinsic Motivation Inventory

1	**Yaşınız:**		
2	**Cinsiyetiniz:**	☐ **Erkek**	☐ **Kadın**
3	**Mesleğiniz:**		

GÜDÜLENME ENVANTERİ

	Bu envanter iş güdülenmesi ile ilgilidir. Aşağıdaki ifadelerden her birinin sizin için ne ölçüde geçerli olduğunu (işiniz çerçevesinde) düşünerek 1'den 7'ye kadar olan numaralardan uygun olanını işaretleyiniz.	**Hiç gerçek değil (1)**	**2**	**3**	**Bir dereceye kadar (4)**	**5**	**6**	**Çok gerçek (7)**
1	Bu işi yapmak çok hoşuma gitti.	☐	☐	☐	☐	☐	☐	☐
2	Bu işi yapmak eğlenceliydi.	☐	☐	☐	☐	☐	☐	☐
3	Bunun sıkıcı bir iş olduğunu düşündüm.	☐	☐	☐	☐	☐	☐	☐
4	Bu iş hiç ilgimi çekmedi.	☐	☐	☐	☐	☐	☐	☐
5	Bu işi çok ilginç buldum.	☐	☐	☐	☐	☐	☐	☐
6	Bu iş bence hayli eğlenceli.	☐	☐	☐	☐	☐	☐	☐
7	Bu işi yaparken çok zevk aldım.	☐	☐	☐	☐	☐	☐	☐
8	Bu işte iyi olduğumu düşünüyorum.	☐	☐	☐	☐	☐	☐	☐
9	Diğer çalışanlarla kıyaslandığında bu işte oldukça iyi olduğumu düşünüyorum.	☐	☐	☐	☐	☐	☐	☐
10	Bir süre çalıştıktan sonra bu işte epeyce yeterli olduğumu hissettim.	☐	☐	☐	☐	☐	☐	☐

11	Bu işteki performansımdan memnunum.	☐	☐	☐	☐	☐	☐	☐
12	Bu işte olabildiğince ustayım.	☐	☐	☐	☐	☐	☐	☐
13	Bu, benim pek iyi yapamadığım bir iştir.	☐	☐	☐	☐	☐	☐	☐
14	Bu iş için çok çaba sarf ettim.	☐	☐	☐	☐	☐	☐	☐
15	Bu iş için kendimi zorlamadım (çok çaba sarf etmedim).	☐	☐	☐	☐	☐	☐	☐
16	Bu iş için çok çabaladım.	☐	☐	☐	☐	☐	☐	☐
17	Bu işi iyi yapmak benim için önemliydi.	☐	☐	☐	☐	☐	☐	☐
18	Bu iş için fazla enerji harcamadım.	☐	☐	☐	☐	☐	☐	☐
		Hiç gerçek değil (1)	**2**	**3**	**Bir dereceye kadar (4)**	**5**	**6**	**Çok gerçek (7)**
19	Bu işi yaparken çok gergindim.	☐	☐	☐	☐	☐	☐	☐
20	Bu işi yaparken çok rahattım.	☐	☐	☐	☐	☐	☐	☐
21	Bu iş üzerinde çalışırken endişeliydim.	☐	☐	☐	☐	☐	☐	☐
22	Bu işi yaparken baskı altında hissettim.	☐	☐	☐	☐	☐	☐	☐
23	Bu işi yapmanın benim seçimim olmadığını hissettim.	☐	☐	☐	☐	☐	☐	☐
24	Bu işi seçip seçmeme konusunda doğrusu bir seçeneğim yoktu.	☐	☐	☐	☐	☐	☐	☐
25	Bu işi yapmam gerektiğini hissettim.	☐	☐	☐	☐	☐	☐	☐
26	Bu işi başka seçeneğim olmadığı için seçtim.	☐	☐	☐	☐	☐	☐	☐

27	Bu işi seçtim, çünkü seçmeyi istedim.	☐	☐	☐	☐	☐	☐	☐
28	Bu işi yapmam gerektiği için yaptım.	☐	☐	☐	☐	☐	☐	☐
29	Bu işin benim için epeyce faydalı olabileceğine inanıyorum.	☐	☐	☐	☐	☐	☐	☐
30	Bu işi tekrar yapmayı isterim çünkü bana bir şeyler katıyor.	☐	☐	☐	☐	☐	☐	☐
31	Bu işi yapmanın benim için yararlı olabileceğine inanıyorum.	☐	☐	☐	☐	☐	☐	☐
32	Bunun önemli bir faaliyet olduğunu düşünüyorum.	☐	☐	☐	☐	☐	☐	☐

B. Interview Questions

1- Öncelikle oyun oynar mısın?

2- Ne tür oyunlar oynuyorsun? Dijital mi yoksa fiziksel oyunlar mı?

3- Peki yapılan bu sınıf içi çalışmanın oyuna benzediğini düşünüyor musun? Neden?

4- İngilizce derslerindeki oyunlaştırma süreci senin için eğlenceli miydi? Neden?

5- Oyunlaştırma süreci motivasyonuna ne yönde katkı sağladı? Olumlu ise neden olumsuz ise neden?

6- Kaç puan topladın ve topladığın puanları ne yönde kullandın daha çok? Neden?

7- Peki puan toplamak konusunda ne düşünüyorsun? Seni motive etti mi? Nasıl?

8- Peki bu sürecin ders başarını ne yönde etkilediğini düşünüyorsun? Olumlu veya olumsuz bir etki olduysa neden?

9- Derse konsantrasyonunu olumlu veya olumsuz yönde etkiledi mi? Neden?

10- Peki bu oyunlaştırma süreci boyunca, yeterli çabayı gösterdiğini düşünüyor musun?

11- Puanları toplarken üzerinde bir baskı hissettin mi? Neden?

12- Peki bu sürecin herkes için adaletli olduğuna inanıyor musun? Neden?

13- Bu süreçte, grup halinde ya da partnerinde beraber yaptığınız ödevler veya görevler vardı. Bu görevler veya ödevler sana bir şeyler öğretti mi?

14- Biliyorsun ki her ödülün belli bir sayısı vardı. Bu yüzden puanları harcarken herhangi olumlu veya olumsuz bir rekabet hissettin mi?

15- Sıkıcı olduğunu düşündüğün anlar oldu mu? Neden?

16- Bir daha böyle bir süreci yaşamak ister miydin? Veya tekrar yaşaman halinde neleri değiştirmek isterdin?