A PROPOSAL OF AN INSTRUCTIONAL DESIGN MODEL FOR GAMIFIED
LEARNING ENVIRONMENTS: GELD MODEL

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ABSTRACT

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This study is an attempt to develop an instructional design model for gamified learning environments. It is hoped that the model developed in this study could be used as a guide in designing a gamified instructional environment. The main contention of the study is that combining the methods of the traditional teaching with the methods made possible by the computer age would open up new possibilities to enhance the motivations of learners. Technological changes since the last decade of the 20th century has generated new learning needs that the traditional face-to face education is not capable of meeting. By proposing a model for gamified learning environments this study aims to solve the motivation and engagement problems of the current learners in traditional learning settings. In the study, a face-to face method with the integration of an interface in which learners can read the content, solve the challenges, earn badges, communicate with each and the instructor, and see their points, leaderboards, announcement for them has been utilised.

Moving from these premises this formative research study attempts to develop a model that could be used in a learning environment with the main aim of enhancing student motivation through the gamification of courses. In the course used as a case study gamification was integrated into it as an essential element. Thus the study has used empirical material generated in a real life situation. In the production of this model the study evaluated a gamified learning environment throughout the 2014-15 academic year by means of collecting data based on observations, interviews and documents.

The participants were pre-service teachers from the Departments of Early Childhood Education and Foreign Language Education in a university in Turkey. Observations and document collections were made with the total of 118 volunteers and four sets of interviews were conducted with 42 volunteer participants. The results showed that the characteristics of a gamified learning environment and the elements of this environment together formed the GELD model in which the lines between the elements and the categories were fuzzy and these elements and the categories were intertwined. On the basis of these results, some main principles were produced in order to provide guidance for the gamification of a learning environment.

Keywords: Gamification, gamified learning, motivation, instructional design model, learning environment, game elements.

ÖZ

OYUNLAŞTIRILMIŞ ÖĞRENME ORTAMLARI İÇİN BİR ÖĞRETİM TASARIMI MODEL ÖNERİSİ: GELD MODELİ

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Bu çalışma oyunlaştırılmış harmanlanmış öğrenme ortamı için bir öğretim tasarımı geliştirmeyi amaçlamaktadır. Bu çalışmada geliştirilen oyunlaştırılmış modelin bir harmanlanmış öğrenme ortamının tasarımında yön gösterici olması ümit edilmektedir. Çalışma geleneksel öğretim yöntemleriyle bilgisayar çağının olası kıldığı yöntemleri harmanlayarak öğrencilerin güdülerinin ciddi bir şekilde arttırılacağı görüşünden yola çıkmaktadır. Teknolojik gelişmeler 20. Yüzyılın son on yılından itibaren öğrenme konusunda geleneksel eğitimin yüz yüze yöntemlerinin karşılayamayacağı yeni ereksinmeler yaratmıştır. Oyunlaştırılmış öğrenme ortamı için bir model ileri süren bu çalışma, geleneksel eğitim ortamlarında, mevcut öğrencilerin motivasyon ve bağlanma problemlerini çözmeyi amaçlamaktadır. . Çalışmada yüzyüze öğrenme metoduna bir arayüz entegre edilmiştir. Bu arayüzde öğrenciler içerikleri okuyabilir, meydan okumaları çözebilir, rozetler kazanabilir, diğerleriyle ve öğretmen ile iletişim kurabilir, puanlarını, lider tahtalarını ve kendileri için yapılan duyuruları görebilirler.

Bu temelden hareket eden biçimlendirici nitelikli bu çalışmanın temel amacı öğrencilerin öğrenme güdülerini arttırmak için özel olarak yapılandırılmış bir öğrenme ortamında kullanılabilecek bir model geliştirmektir. Bunun için oyunlaştırma unsuru özel bir alan çalışması olarak seçilen bir ders ile bütünleştirilmiştir. Bu çalışma gerçek bir yaşam durumunda yaratılan deneye dayalı verilere dayanmaktadır. İleri sürülen bu modelin geliştirilmesinde bu çalışma 2014-

15 akademik yılı boyunca oyunlaştırılarak farklılaştırılmış bir öğrenme ortamını değerlendirmiştir. Bu değerlendirmede sınıf içinde gözlemler, görüşmeler ve yazılı dokümanlar aracılığıyla toplanan veriler kullanılarak yapılmıştır.

Katılımcılar Türkiye'deki bir üniversitedeki Okul Öncesi Eğitimi ve İngilizce Öğretmenliği bölümlerindeki öğretmen adaylarıdır. Gözlemler ve dokümanlar 118 gönüllü katılımcıyla yapılmıştır ve dört parça halinde yapılan görüşmeler de 42 gönüllü katılımcıyla gerçekleştirilmiştir. Sonuçlar, oyunlaştırılmış bir öğrenme ortamının özelliklerinin ve bu ortamdaki ögelerin birleşerek GELD modelini oluşturduklarını ve bu modeldeki öge ve kategorileri ayıran çizgilerin bulanık olduğunu ve öge ve kategorielerin içiçe geçmiş olduğunu göstermektedir. Sonuçlara bağlı olarak, bir öğrenme ortamını oyunlaştırırken rehber olarak alınabilecek temel prensipler üretilmiştir.

Anahtar Kelimeler: Oyunlaştırma, oyunlaştırılmış öğrenme ortamı, motivasyon, öğretim tasarımı modeli, oyun ögeleri.

To my family and to the 'Marxist Musician',

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CHAPTER 1

INTRODUCTION

"In every job that must be done, there is an element of fun. You find the fun and - SNAP - the job's a game." Marry Poppins (1964).

The purpose of this chapter is manifold: First it provides a background to the study and highlights the main problem. In the light of the main problem, the purpose of the study, the pursued research questions, and the significance of the study along with the definitions of terms used within the study are explored.

1.1 Background of the Study

Digital age, as commonly known, is the era where everything is digitized. Technological advances have made this bold assertion possible as the effects of the advances can be observed in all kinds of fields. These observable changes in the contexts of our daily lives create various kinds of needs and demands. Since the last decade of the 20th century, a young generation of 'digital natives' whose lives have been enmeshed in these new technologies has emerged with these new needs and responsibilities (Prensky, 2001). The inevitability that education could not escape the influences of technology has made it imperative that education incorporates the new needs and responsibilities of this generation imposed by the technological transformations. In such a context, where it is possible to reach any information from anywhere at any time, it will be inappropriate to consider the learning-teaching as separate duality as we thought a century ago. The communication between the learners and the teachers have been shifted from a one-way transmission to a two-way interaction with the paradigmatic change in the pedagogy concept (Johnson, Johnson and Holubec, 1994; Alexander, 2002).

In order to create a learning environment for this generation which is referred to as Generation Z (Levickaite, 2010; Tulgan, 2015; Igel and Urquhart, 2014), it is rather important to know their characteristics and needs. The first principle to keep in mind is that they do not know a world without Internet and similar technologies, as information is just one click away for them (Levickaite, 2010). Consequently, they prefer to get the information when they need it (Jukes, 2008). They are mostly online learners (Levickaite, 2010) and live with interactive communication tools such as Facebook, and Twitter and the like (Jukes, 2008). With the effects of technological shifts in daily lives, variety of skills such as adaptability, technological skills, creativity, critical thinking, collaboration, problem solving and more are demanded from them (Partnership for 21st Century Skills, 2011).

The irony here is that the rise and wider use of technology in education has had a kind of disengaging impact on Generation Zs as far as schools and formal education are concerned (Mcgonigal, 2011). There seems to be a peculiar paradox here: learners prefer to learn everywhere except at the school (Prensky, 2005a). This can be due to the fact that Generation Z, born in an interactive online environment, have been involved in engaging activities in their daily lives, and having comparing these activities with the traditional school works, they may easily get bored and enraged (Prensky, 2005b). These engaging activities such as video games offer learners an environment where they have fun within a continuous interaction and acquire skills and knowledge as a second product (Gee, 2005). That is why learners seem to suffer from engagement problem in traditional school settings today (Mcgonigal, 2011). This disengagement has shown itself in the form of lack of motivation and obviously with a negative impact on their learning as a whole (Lumsden, 1994). In order to solve this problem, and to motivate and engage learners with the learning process, educational games (edutainment), which are designed to teach a particular content, have emerged (Aslan and Balci, 2015). With their motivating and engaging components such as interactivity, customization, agency, hands-on practice and so on (Gee, 2005), they indeed have great potential to solve motivation and engagement problems of Generation Z in education. Realizing this potential, companies create large number of serious games each year; however, they seem to have failed to get as much attention as the commercial games (Zichermann and Cunningham, 2011). In order to point out this difference in popularity between serious games and

educational games, Zichermann and Cunningham (2011) cite two games as good examples: *Civilization* and *SimCity*. These games —produced for entertainment purposes— have become not only very popular but also have contributed to enabling the players for acquisition of a knowledge of history and city as a second product. Many serious games lack this combination of fun and learning.

Unlike these two good examples, which combine fun and learning rather inherently, other serious games also suffer from the problems of being simple and repetitive, focusing on extrinsic rather than intrinsic motivation, leaving out the possibility of the need of an instructor and the like (Egenfeldt-Nielsen, 2007). In spite of these problems, serious games still provide great benefits for learning environments (Lieberman, 2006; McFarlane, et al., 2002). Nevertheless, they are separated from real life, have different notions of time and space and bounded within a *magical circle* (Huizinga, 1955).

Furthermore, serious games are mainly designed to teach a particular content, consequently rather than designing games for all kinds of activities it would be more pertinent to extract elements that make games fun and bring them together which in turn would motivate learners and would break the magical circle in this entertaining activity. This process of applying game elements in non-game context is called gamification (Deterding, et al., 2011). Chou (2014) describes his vision about this recently fashionable buzzword as "*... a world where there is no divide between what you have to do and what you want to do...*" Recognizing this potential, many fields such as business, politics, healthcare, human relations (HR) and etc. have already adapted gamification in some of their activities (Duggan and Shoup, 2013). Gamification has recently become a buzzword in education as well, and its main concern has been to solve the motivation and engagement problems of the learners (Kapp, 2012). Proponents of the gamification agree that it has a great potential (Kapp, 2012), while its opponents list several design and perception related issues (Groh, 2012; Kelly, 2011; Lepper, et al., 1973; Bogost, 2011). A crucial issue for discussion arises when considering the opponents' objections to gamification concerning the design issue of how the elements should come together and be integrated into the non-game environment. Literature review reveals that there are some already-present design principles, which are proposed by Zichermann and

Cunningham (2011), Ferrara (2012), Hunicke, et al. (2004) and Prensky (2001). Also, Werbach and Hunter (2012) provides a gamification framework for the business field. However, there is no specifically designed instructional model for gamified learning environment. Thus, this study intends to contribute to the literature and aims to fill this gap with a proposal of an instructional design model for such gamified learning environments.

1.2   Problem Statement

The potential of gamification in educational context has been recognized by several researchers (Mcgonigal, 2011; Kapp, 2012; Flores-Morador, 2013 cited in de-Marcos, et al., 2014; Dreyfus and Dreyfus, 1986). These researchers are in agreement that gamification does have a high level of potential to solve the well-known problem that Generation Z face today in schools: lack of motivation and engagement (Lee and Hammer, 2011; de-Marcos, et al., 2014). However, studies conducted on gamification provide both promising and disappointing results (Domínguez, et al., 2013; Duggan and Shoup, 2013; Berengueres, et al, 2013; Bogost, 2011; Robertson, 2010; Kelly, 2011). Successful examples of gamified learning experience such as Khan Academy and Quest to Learn show the potential advantages gamification can bring to educational contexts. On the other hand, gamification is also highly criticized for lacking the core game characteristic and trying to build fun by simply integrating some game elements such as points, badges and leaderboards in non-game occasions (Bogost, 2011; Robertson, 2010). These criticisms are mostly raised by game designers such as Bogost (2011), Robertson (2010), and Kelly (2011), and seem to focus mostly on how the gamified experience is designed and how people use it.

Putting together the points, badges, and leaderboards, namely PBLs, as Chou (n.d.a) — a gamification pioneer — calls, it may not work to motivate learners. Similar to a successful video game, gamification also needs its own design process. First and foremost, it is quite important to examine what makes games so motivating and then, based on a design model, a gamified experience could be created. However, there are just a few gamification design models that exist in the current literature. Some prefer to use game-design models such as MDA (Mechanics, Dynamics and Aesthetics) (Zichermann and Cunningham, 2011), DMC (Dynamics, Mechanics and

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Components (Werbach and Hunter, 2012) and some propose gamification frameworks and models such as Octalysis Gamification Framework (Chou, n.d.b) and Gamification Model Canvas (Jimenez, 2013). However, none of them are particularly built for a gamified learning environment. Some researchers suggest some principles to be followed in designing a gamified experience (including learning environments) (Zichermann and Cunningham, 2011; Kapp, 2012). Although it can be possible to follow these game design models and principles (see Ferrara, 2012) while designing gamified learning experiences, the relative absence or the inadequacies of a gamification design model especially tailored for instructional contexts is extremely crucial. This issue has been the main driving force behind this study.

1.3   Purpose of the Study

The main purpose of this study is to produce an instructional design model for a gamified environment and make a humble contribution to instructional design theory by using empirical data obtained and analyzed from university students. It is believed that such an instructional design model could be used as a guidance in designing a gamified learning environment. This concern has necessitated delving into an analysis of the fundamental characteristics of the gamification process by specifically looking at the question of how to combine its components. It is believed that the model to be developed in here could be utilized in future research for designing gamified learning environments. This engagement stems from the fact that many academic researchers and business practitioners have not paid much attention to the difficulties involved in designing, implementing and optimizing gamification strategies (Plangger, Kietzmann, and Mccarthy 2015). It is clear that without exploring the components that would give the model its distinctive characteristics and without identifying elements and sub-elements specific to a gamified learning environment, this study would not be able to realize its aim.

As the study is based on the investigation of an application of game elements in a redesigned service course, namely CEIT 319-Instructional Technology and Material Development, it seemed inevitable to not only to be faithful to the main components of an instructional design model but also to explore and generate new components from the the path the course followed. This required not only designing the instance

by taking advantage of the existing literature, the institution and expert knowledge, but also including new components and removing the unnecessary, impeding components in order to make the process fairly straightforward. Briefly the current study is interested in developing a model to be useful in the field of instructional design, and thus to contribute to the existing literature for filling the current gap on the designated issue. It is hoped that the model proposed could be instrumental in incorporating gamification in many fields with the purpose of contributing to changes in outcomes and behaviors that could help to attain financial, social and, utmost, educational goals.

1.4   Research Questions

On the basis of the purpose elaborated above, this study focuses on the following research questions:

1.   What are fundamental characteristics of gamification process in order to design a gamified learning environment?
2.   What are the components of the instructional design model to design a gamified learning environment?
3.   How can these components be combined effectively to compose an instructional design model for designing gamified learning environment?

1.5   Significance of the Study

Two important questions underline the main concerns of instructional design models to be utilized in education: what is education and how to conduct education (Reigeluth and Frick 1999). The state of art in design theories reflect the answer to these questions. The answers given to these questions so far has been far from satisfactory as far as guiding the new types of learning necessitated by the technological changes is concerned. In agreement with Reigeluth and Frick's (1999) it can be contended that the existing design theories have not reached the kind of maturity so as to provide guidance about how to utilize the rapidly changing information technology for the newly emerging learning needs. This lack of maturity simply stems from the fact that the 'how to question' in education simply leads to prescriptive guidelines, where the 'what is education' question contributes to descriptive knowledge in education. In fact, neither of these approaches can be

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hundred percent useful in creating a model that can be instrumental in the design of a gamified environment. The most widely used studies in design theory suffer from this shortcoming, as they often offer no more than simple design guidelines and principles (Prensky, 2001). The significance of this study is its attempt to go beyond such prescriptive and descriptive guidelines and principles by producing a model that may be used in the integration of gamification into a learning environment.

In the production of such a model the current study has used empirical material generated in a real life situation. The main aim in doing this was to develop an instructional model and related principles. Although the existing literature does contain principles, there seems to be no specifically designed model that would provide guidance for the creation of such learning environments. . To fill this gap this study has attempted to produce a learning environment in which it evaluated a gamified learning environment throughout the 2014-15 academic year by means of collecting data based on observations, interviews and documents.

Data collection process lasted one academic year (two semesters) and took place in a traditional classroom along with online activities. In line with the recommendations of Reigeluth and Frick (1999), regular iterations were carried out and different contexts, methods and student groups were tried out during this process. In a nutshell it is hoped that the study not only may make a humble contribution to the emerging field of gamification, but also provide some originality by presenting an instructional design model for gamified learning environments that has not been attempted before.s

1.6   Definition of the Terms

Gamification: It is "the use of game design elements in non-game contexts" (Deterding, et al., 2011, p.2).

Game: It is "the voluntary attempt to overcome unnecessary obstacles" (Suits, 1978, p. 41). It is "a competitive activity that is creative and enjoyable in its essence, which is bounded by certain rules and requires certain skills" (Akilli, 2007, p.4).
It is "an organized play" (Prensky, 2001, p.119). It is an activity with traits of goals that the players are supposed to achieve, the rules limiting the activities of the

players, the feedback system to guide the players through the activities to reach goals, and a voluntary participation of the players (McGonigal, 2011).

Serious Games: They are educational digital games designed to be played through computers, mobile devices and game consoles in order to teach a particular subject (Aslan and Balci, 2015).

Game Elements: They are different kinds pieces such as points, emotions, challenges, progression and many more that can be put together to create different types of game context for diverse experiences (Werbach and Hunter, 2012).

Player Type: It is classification of players on the basis of their motivation to play game (Klug and Schell, 2006).

Motivation: It is the forces generated either externally or internally that lead people participate in activities (Deci and Ryan, 2000).

Model: It is "simple representation of more complex forms, processes, and functions of physical phenomena or ideas" (Gustafson and Branch, 1997, p. 17).

Instructional Design Model: is a simple representation of the complex processes of instructional design (Gustafson and Branch, 1997).

Generation Z: Generation Z refers to the people who were born in the mid-1990s and raised in the 2000s (Levickaite, 2010; Tulgan, 2015; Igel and Urquhart, 2014) into a world with the preponderance of the Internet and similar technologies.

CHAPTER 2

LITERATURE REVIEW

Literature review for the current study was carried out with the aim of rationalizing the need for a model in a gamified learning environment. The initial research question formulation revealed a necessity to concentrate on four main areas: Pedagogy in Digital Age, Games, Theoretical Approaches to Motivation and Gamification. In the Pedagogy in Digital Age part, the paradigmatic transformation of pedagogy in the digital age, and the characteristics and the needs of Generation Z were discussed. In Games section, the characteristics and the elements of the games, the player types and the intersection of the games with education (effects and educational games) are examined. Furthermore, in the Theoretical Approaches to Motivation section, four motivation models, which are the most frequently associated with the reasons for playing games (flow, four key elements to more emotions, self-determination theory and Fogg Behavior Model) are examined. Finally, in Gamification section, gamification as a concept, its advantages and disadvantages, examples of the usage of gamification in different fields including the usage of gamification in education, and design models proposed for gamification are presented.

2.1 Pedagogy in the Digital Age

"If we teach today, as we taught yesterday, we rob our children of tomorrow".

John Dewey

In this work an attempt was made to produce an instructional design using a new concept, gamification, in order to meet the learning needs of the digital natives in a context they were familiar to. In doing so the pedagogical approach has given a high premium to treating the students as active constructor of the knowledge. This

approach simply reflects the main paradigmatic change the concept of pedagogy has gone through. The following sections discuss the way in which how the concept of pedagogy has changed to incorporate the new needs and demands brought about by the changing technologies.

Following sections also analyze the learning methodologies that have been adjusted to accommodate the contemporary technological changes.

The term *pedagogy* originates from the Greek word *paidagogos* which refers to the slaves who took children to school (Beetham and Sharpe, 2013). The, *paidia* part of the word *pedagogy* simply means children. However while in its contemporary usage the term has a more comprehensive coverage of a much wider range of age groups that also includes adults, its original meaning of guiding learning and leading to learning has been maintained in the concept. Furthermore the concept of pedagogy has often been used as an umbrella term covering two significant phenomenon and their interactions, namely *teaching* and *learning*. This is an interesting occurrence as these two terms are generally used in opposition to each other. It is highly possible to encounter cases in which *teaching* is considered as a denier of the active role of the learners in the process of learning. However, studies conducted by Mayer (1992) and Brown, Collins, Duguid, and Seely (2007) show that the focus of the concept of pedagogy is shifting from teaching to learning, giving learners the role of being the constructor of knowledge rather than a passive receiver (Beetham and Sharpe, 2013). It is clear that the progressive shift from a traditional perspective on learning and teaching has paved the way for the weakening of the boundaries between *teaching* and *learning* phenomena. In this respect, learning does not treat the learners as passive recipients anymore; rather the learners are considered to be active agents in the process of learning. (Johnson, Johnson and Holubec, 1994). Therefore, in this new understanding the role of the teachers necessarily change from the authority-model-unique-source-of-knowledge as proposed by transmission model (Alexander, 2002) to a facilitator of a two-way experience in which a progressive knowledge construction occurs on the basis of the interactions and actions between the teachers and the learners (Bavaro, 1996).

The main reason for this paradigmatic transformation is the changing context and the corresponding demands of the new living conditions. With advances in technology,

information and knowledge have become reachable from anywhere at any time. Therefore, acquiring the knowledge from any source is no longer a valued skill. The contemporary networks between the people and the institutions have now broken the previously existing barriers between them (Beetham and Sharpe, 2013). Yet, Beetham and Sharpe (2013) argue that it is not true to claim that technologies enhance human capacities to learn better, after all, chalk and papyrus were technologies once. However, along with Vygotsky (1978, as cited by Bavaro, 1996, p.5) it is possible to emphasize the significance of a social environment in learning as a developmental process. Obviously such a social environment would contain 'the prior existence of complex cognitive structures' that are part of the culture (learning environment) and are internalized by the learner. These cognitive structures may consist of all sorts of 'tools (e.g., physical materials, linguistic tools) and resources (e.g. such as technology)'. Considering this and the changing environment/context brought about by the changing technologies, regardless of the advantages and disadvantages of this change, the new paradigm has necessitated some alterations in the meaning of the term pedagogy in the digital age as well. Therefore, the newly formed collective intelligence (Segaran, 2007), to which learners can either contribute to or withdraw any knowledge from, has enabled the learners who have been born and raised within this context to acquire new skills and knowledge so that they can meet the demands of their education, work, and daily lives. For these reasons, the following section specifically concentrates and elaborates on the needs and the characteristics of this generation.

2.1.1 Characteristics and Needs of Generation Z

Changing context, as elaborated in the previous section, creates new type of learners with different learning needs, requirements and preferences. Consequently in order to design a learning environment for the learners in question, it is important to examine what their characteristics are and what they need to learn.

Generation Z refers to the people who were born in the mid-1990s and raised in the 2000s (Levickaite, 2010; Tulgan, 2015; Igel and Urquhart, 2014). They are also known as *Digital Natives, iGeneration, iGen* and *Generation Next* (Igel and Urquhart, 2014; Levickaite, 2010; Tulgan, 2015). The references made to the technologies, while naming the generation are mainly due to the close relationship

between these generations and the technology. This generation of learners, which will be referred to as Generation Zers from here on, was born into a world with the preponderance of the Internet and similar technologies, and thus does not know a world without them. Inevitably the Internet and technological-environmental context, into which they were born to, have shaped their main characteristics and learning needs.

As one of the main characteristics of Generation Zers is multitasking they tend to prefer to do several task at the same time without a focus on a specific one (Levickaite, 2010). For instance, they can check a friend's status on Facebook while watching a video in a short break from reading a paper. This continuously and instantly changing focus can be due to the huge world of user-generated information that is a few clicks away from them (Levickaite, 2010) . This easy way of reaching a huge pool of information enables them to demand and instantly obtain the information *whenever* they *need* it (Jukes, 2008). They are in a position to digitize their daily activities including the main ones such as social interaction and communication, hence they can be considered as *instant online* learners (Levickaite, 2010). Due to the extensive time spent online, Generation Zers prefer to master social media tools in order to build their digital social network and manage this digital interaction and communication in the ways they wish to (Tulgan, 2015). Therefore the interaction through technology such as Facebook, Twitter and more has become their most favored form of interaction (Jukes, 2008).

Shifts and advances in technology do not just create an *online generation* but also change the skills demanded from them for work, education and daily lives. Partnership for 21st Century Skills (2011) proposed four basic types of skills learners need to be equipped with in order to blend into the new global economy. They include: life and career skills such as adaptability, productivity, leadership, social and cross-cultural skills, responsibility, accountability, initiative and self-direction; Information, media and technology skills such as information literacy, media literacy and information, communication and technology literacy; Learning and innovation skills such as creativity and innovation, critical thinking and problem solving, communication and collaboration; Core subjects and 21st century themes such as English, mathematics, science, health literacy, global awareness and environmental

literacy. Similarly, Saavedra and Opfer (2012) list seven survival skills for Generation Zers in order to earn a place in the contemporary demanding working conditions:

- ✓ Critical thinking and problem solving;
- ✓ Collaboration and leadership;
- ✓ Agility and adaptability;
- ✓ Initiative and entrepreneurialism;
- ✓ Effective oral and written communication;
- ✓ Accessing and analyzing information; and
- ✓ Curiosity and imagination.

In the present context demanding such high level of thinking and communication skills, performing a particular skill rather than knowing a specific content is a valued and expected behavior (Shaffer, 2006). Therefore, the role of pedagogy and how it can address to the needs and characteristics of Generation Zers need to be redefined within this environment. For that, Saavedra and Opfer (2012) offers nine lessons for educators to deal with the learners in this generation:

- ✓ *Make it relevant*: The curriculum needs to be relevant to learners' lives and they need to see the whole picture in order to be able to link different pieces of information with each other.
- ✓ *Teach through disciplines:* The learners need to gain the discipline-related knowledge as well as the skills associated with the discipline.
- ✓ *Develop thinking skills:* Learners need to develop both lower- and higher-order thinking skills. For example, reading a passage may require lower order thinking skills, yet; answering a reflective question may require higher-thinking skills. A learning environment needs to support both. It was this specific concern in this study that led me to ask students to read the content and answer some thought provoking questions while on their own and, they were asked more demanding questions in the class in order to help them develop higher-order thinking skills.
- ✓ *Encourage learning transfer:* Learners need to *transfer* the knowledge/skills they obtain in a discipline to another discipline or field of knowledge.

- ✓ *Address misunderstanding directly:* Learners may build some misunderstandings based on misconceptions or wrong experiences. As it is important to correct each mistakes immediately throughout this study continuous personalized feedbacks for each learners' work were provided.
- ✓ *Treat teamwork like an outcome:* Collaboration and communication are two of most demanded 21st century skills that the Generation Zers need to acquire. Therefore, in this study, building groups of people and cooperation among them were considered to be important virtues that each student needed to obtain, and an extra point was awarded for their cooperative performance in order to boost further cooperation.
- ✓ *Exploit technology to support learning: As* technology offers new environments to enhance the 21st century skills, it is important to select the appropriate ones.
- ✓ *Foster creativity:* Activities fostering the creativity need to be planned and carried out. For this purpose the students were asked several reflective questions during the in-class and online activities.
- ✓ *Teach students how to learn:* Formal education offers limited learning experiences; however, considering the 21st century skills Generation Zers need to attain, it becomes vital for them to learn *how to learn*. This important skill needs a bit more clarification in order to design a learning environment for Generation Zers.

It is rather peculiar that in schools and formal education the impact of the wide use of technology on Genertion Zs has been one of disengagement (Mcgonigal, 2011). The paradoxical situation that the learners are inclined to learn anywhere except the school is mainly due to the fact that in their everyday lives the generation Z simply compare the traditional school work with those of engaging activities made possible by the interactive online environment in which they have been born. Inevitably Generation Z get bored and frustrated with the school work (Prensky, 2005b), but video games and the like which are highly engaging enable them to be entertained while providing them the opportunities to learn new skills and knowledge in the process (Gee, 2005).

The disengagement problem faced in traditional school environment has a negative impact on the process of learning due to the lack of motivation (Mcgonical, 2011; Lumsden, 1994). The emergence of educational games (edutainment) are directly related to the problems of the lack of motivation and the inability to engage learners with the process of learning. As the purpose of edutainment is to teach a specific content through games (Aslan and Balci, 2015) it seems pertinent to scrutinize the concept of game here.

2.2 Games

In order to understand gamification, it is vital to examine the game phenomenon. However, since the main objective of the study to gamify a course, games are elaborated in order to guide us through gamifying a learning environment; therefore, a detailed literature about the advantages, disadvantages, different types and design of the games are not included in this study. Instead, in this section, definitions, characteristics and the elements of the games, player types and intersection of the games with education are discussed.

"Play is older than culture" says Huizinga (1955, p.1), one of the earliest researchers studying play and game phenomena. Even animals, he points out in his book *Homo Ludens,* play like human beings within the boundaries of some specific rules such as not biting or hurting one other. He continues saying that all activities carried out within this *play* context provide an experience of fun and excitement. Huizinga (1955) defines play as a free/voluntary, pretended (make-believe), meaningful yet unproductive activity that is separated from real life in terms of time and space, and is bounded by rules. In plays, Huizinga (1955) maintains, players create their own realities within the borders of a *magical circle* in which they need to obey the made-up rules that may not mean anything in the real world. Having players (or learners in my case) stepping in this cycle voluntarily was the main purpose throughout the gamification process. Despite the fact that Huizinga only refers to the term 'play' in his book, the features of the play he listed above still provide an important guidance for the future game design (Zimmerman and Salen, 2004). Later, a French researcher named Roger Caillois (1962) wrote a book entitled *Man, Play and Games* as a critique of Huizinga's (1955)' book in which he agrees about the characteristics of the play: 1. "Free"; a voluntary activity, 2. "Separate"; circumscribed within separate

time and space borders, 3. "Uncertain"; unpredicted results depending on the player, 4. "Unproductive"; inability to create real-world goods or money, 5. "Governed by rules"; specific rules to abide by and 6. "Make-believe"; second reality or a free reality. Interesting thing about the book is that Caillois (1962) uses the terms play and game interchangeably maybe due to the fact that the words *play* and *game* have similar meanings in French (Zimmerman and Salen, 2004). Considering this, the characteristics listed by Huizinga (1955) and Caillois (1962) can be taken as references for the characteristics of game.

However, the surprising point about the characteristics and the definition of the game is that it is not possible to put forward an absolute framework. From the selected literature, it is possible to come across different perspectives of researchers with different backgrounds. For example, Ferrera (2012, p.17) forms his ideas about the game characteristics and definition from a game-designer perspective, and instead of providing a "dictionary-style definition", he lists the basic characteristics of a game in order to provide a broad definition for designers to find fresh ways in designing. According to him, a game needs to have:

- ✓ Explicit, measurable and reliable objectives,
- ✓ Environmental constraints that determine the boundaries of the game place and artifacts that cannot be changed in the game,
- ✓ Formal constraints in the form of rules.

According to Ferrera (2012), activities having the features listed above can be characterized as a game. On the other hand, Suits (1978, p. 41), a philosopher defines a game as "the voluntary attempt to overcome unnecessary obstacles". This definition, as Zimmerman and Salen (2004) puts forward, is the cornerstone of the *lusory attitude,* which means that players need to agree to obey pre-determined rules in order to reach a goal in pre-determined paths. This attitude is pretty similar to the characteristics of the game provided by Huizinga (1955) and Caillois (1962).

Another game designer, Greg Costikyan (1994, n.p.) defines game as "A game is a form of art in which participants and termed players make decisions in order to manage resources through game tokens in the pursuit of a goal". He, just like other researchers mentioned above, builds a definition based on the characteristics that a

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game needs to have: players, decisions, resources, tokens and goals. Another game designer, Jane McGonigal (2011) defines a game in her book, *Reality Is Broken: Why Games Make Us Better and How They Can Change the World,* as an activity with traits of goals players are supposed to achieve, the rules limiting the activities of the players, the feedback system to guide the players through the activities to reach goals, and a voluntary participation of the players. Additionally, McGonigal (2001) lists a few more attributes that everyone would agree with: a game needs to have interactivity, virtual environments, narrative, rewards, competition, and graphics; yet, she eliminated them in her definition of a game as they are not the defining features that exist in all games.

There are several more approaches that concentrate on the characteristics and definitions of games. Even though they all share common attributes, providing an absolutely correct definition might not be possible. Therefore, shifting focus from the defintion of a game to a discussion of the eements that comprise a game. Consequently the following section is devoted to the elaboration of the elements of games.

2.2.1   Elements of Games

Werbach and Hunter (2012) equate a game to a box of Lego with different pieces that can conjoin to make various types of objects. Similar to the pieces of Lego, games have different elements that can be put together to create different types of game context for diverse experiences. Considering this assertion, Werbach and Hunter (2012) provides a model of game elements. In this model, there are three categories of elements ordered hierarchically as shown in figure 1: *dynamics, mechanics* and *components (*in a decreasing order of abstraction). Lowest abstract category is the *components* and each *component* is tied to higher level of element(s). Likewise, each element in the *mechanics* level is tied to the element(s) of the *dynamics.*
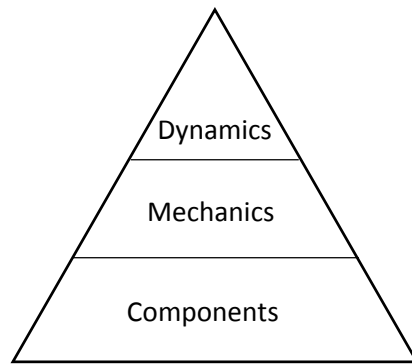
Figure 1. Hierarchical Pyramid of Game Elements

2.2.1.1 Dynamics

Elements within this category are the most abstract ones forming the overall characteristics of a game. It is highly possible that the elements in this category may exist in all games; yet, it is not possible to directly integrate them into a game context. Within this category, there are five elements as listed below (Werbach and Hunter, 2012, p.78):

✓ *Constraints* are the mandatory rules or limitations that limit the players' freedom.

✓ *Emotions* refer to different kinds of emotional experiences such as curiosity, competition, happiness, sadness etc. the players might have in a game context.

✓ *Narrative* is the structure of a game that combines different elements in a coherent way and can be an on-going story or a context, which would make the whole game-experience a meaningful one with a particular purpose.

✓ *Progression is an* element that gives players the feeling of development and growth throughout the game experience.

✓ *Relationships* is the interaction between the players, i.e. may be between different status holding players, or it may be in the form of a competitive relationship with opponents or of a collaborative relationships with teammates.

2.2.1.2   Mechanics

Mechanics are more concrete elements used in games guiding the players to perform specific actions in a bounded context, enabling players to experience different feelings with a different game-play style within the context of the freedom game offers. A crucial point is that one element in mechanics is required to be tied to one or more dynamics. Mechanics are the way dynamics are applied in a game context. For instance, competition can sometimes make players nervous while at the same time exciting them (*Emotions*). The following 10 elements are the integral parts of this category (Werbach and Hunter, 2012, p.79).

✓ *Challenges* are either tasks or puzzles players need to overcome.
✓ *Chance indicates* the possibility of reaching a goal in a game by chance. This random outcome can create uncertainty and surprise.
✓ *Competition refers to* Individuals or groups working against each in order to reach the win-state (reaching the goal in a best manner).
✓ *Cooperation:* Individuals or groups working together in order to reach the win-state (reaching the goal in a best manner).
✓ *Feedback:* This element informs players about how they are doing throughout the game. In this way, players can learn what to do in order to reach the goal of the game.
✓ *Resource Acquisition:* Players can collect items throughout the games. These items can be vital in order to reach the goal of the game.
✓ *Transactions:* Players can buy/sell/exchange the items they have either among themselves or with non-players.
✓ *Turns:* Players have their turns to play the game. This order can be the milestone of the structure of a game such as card-games or it may not even exist in some games such as real-time computer games.
✓ *Win States:* This state shows which team/person win the game /reach the goal of the game. Conversely, there is loosing or drawing status for those who lose the game.

2.2.1.3 Components

Components are the most concrete and visible forms of game elements. They are the elements mostly considered when game-elements are in discussion. Each component must be tied to one or more higher level of categories. There are 14 elements in this category which are listed as below (Werbach and Hunter, 2012, p.80):

- ✓ *Achievements:* These are the goals players need to achieve.
- ✓ *Avatars:* These are the visual representations players create or pick for themselves.
- ✓ *Badges:* These are visual representations of the objectives/goals achieved by players.
- ✓ *Boss Fights:* These are the hardest challenges faced especially at the end of the games.
- ✓ *Collections:* These are the items or the badges players collect through the game.
- ✓ *Combat:* These are the battles players need to fight against the opponents.
- ✓ *Content Unlocking:* Players can unlock new items/contents/levels when they accomplish a particular objective.
- ✓ *Gifting:* Players can give their items/resources to other players for free.
- ✓ *Leaderboards:* These are the lists of the players ranked on the basis of their performance in the game.
- ✓ *Levels:* These are separate steps of the games. Players can progress as they pass different levels.
- ✓ *Points:* These are the numerical representations of the performance players do. Points are highly associated with levels.
- ✓ *Quests:* These are the goals players need to achieve, and the level of their performances, earn them rewards.
- ✓ *Social Graphs:* These are the graphs showing other players within the social network of the player. These can help the player see the others' progress and interact with them.
- ✓ *Teams:* These are the groups of people getting together in order to reach a common goal.

✓ *Virtual Goods:* These are the items players either buy with real-life or in-game money or earn after a guest/challenge. They do not have a real-life value but valuable in a game-context.

The model elaborated above provides a valuable guidance for game-design. In this study, this model was not utilized, as the hierarchical structure was not necessarily needed in gamifying a course; instead, the elements provided were taken as a guide.

As it can be observed from the elements, players have the main role throughout the gaming process. Therefore, in order to design a game, it is important to know for whom you design it for. That is why in the following section, different types of players are discussed.

2.2.2 Player Type

Why do people play? According to Huizinga (1955), they simply play for fun. Bartle (2003) agrees with this assertion and further claims that players have fun due to different characteristics of the game. On the basis of the existent differences between the source of the fun, players can be classified into certain categories (Bartle, 1996). Similarly, Klug and Schell (2006) also maintain that players can be differentiated according to the motivation to play a game. Several researches including Bartle (1996), Klug and Shell (2006), Yee (2006) and Marczewski (n.d.) have classified game players into different categories by looking at their motivations to play games. The earliest attempt by Bartle (1996) to classify player types on the basis of motivations in playing Multi-User Dungeons games (a predecessor of Massively Multiplayer Online Games) mainly generated four types Killers, Socializers, Achievers and Explorers.

✓ Killers: These type of players are generally interested in provoking and causing drama, and impose these on other players within the scope that the virtual world provides. It is possible to cite trolls, hackers, cheaters, attention farmers the most ferocious and skillful player versus player opponents within this category.

✓ Socializers: The main interest of socializers is to establish in relations with the other players rather than playing the game per se. They are simply

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interested in being a part of the community and being instrumental in spreading knowledge and a human feel

✓ Achievers: They are fired by the feeling of achievement by overcoming the difficulties either posed by the game or difficult challenges they create for themselves. The level of pleasure these competitive players drive is in parallel with the level of difficulties posed.

✓ Explorers: Their source of excitement is the discoveries thy make in minute details of the game as well as exploring the world. Having worked out the nitty-gritty of the game these players may know how to play the game better than the producers of the game and this gives them further impetus to discover more and more about the game.

Having theorized about separate types of players, Bartle (1996) further discussed the dynamics between these player types. In doing so he examined the differences and the similarities between player types in terms of their orientation to either world of the game or to other players, and their way of playing the game; i.e. either acting on their own or interacting with the world of the game or other players. On the basis of his analysis, Bartle (1996, n.p.) produced a model called Player Interest Graph (see Figure 2 below).

ACTING

KILLERS   ACHIEVERS

PLAYERS ←————————————→ WORLD

SOCIALIZERS   EXPLORERS

INTERACTING
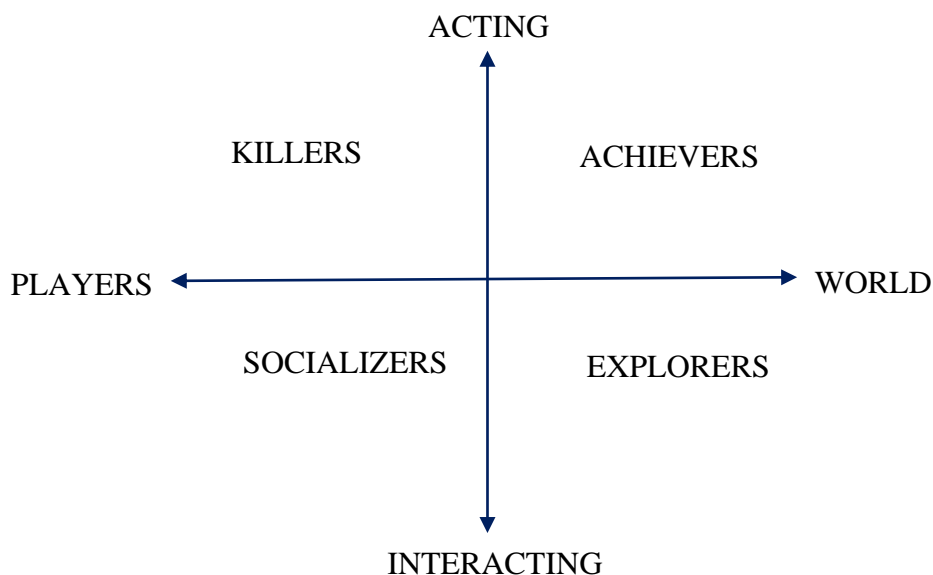
Figure 2. Bartle's (1996) Player Interest Graph

Despite its attractiveness, Bartle's model has some flaws some of which the researcher (2005) admitted. In his article called *Virtual Worlds: Why People Play,* he (2005) discussed these flaws and developed a new version of the model which defines eight player types. According to Bartle (2005), one of the drawbacks of the early version was that it was not able to explain why and how player type change over time and how some player types particularly the *Killers* have some sub-types. Consequently he proposed another dimension with two polar ends to the *Player Interest Graph* to solve these problems: *explicit or implicit.* According to the new model, each player type has two sub-types (Bartle, 2005): Opportunists (Implicit Achievers), Planners (Explicit Achievers); Grievers (Implicit Killers), Politicians (Explicit Killers); Networkers (Implicit Socializers), Friends (Explicit Socializers); Scientists (Implicit Explorers), Hackers (Explicit Achievers). These eight categories, however, do not seem to be supported by their creator as Bartle (2003, p.170) says: "The conflicts between some of the eight are meaningful, but for others the old types work just as well and are better at encapsulation."

Apart from those drawbacks, Bartle (1996) admits that his classification was not grounded in a scientific study but rather in his experiences as a game designer. The results of a scientific study of this classification was published by Yee (2006) in his article entitled *Motivations of Play in MMORPGs*. Here Yee (2006) criticizes Bartle's Player Types for its lack of scientific approach and claims that Bartle's model does not provide a ground to classify players in that the components of separate player types may not be correlated, and in some cases they may be overlapping for different player types. In order to provide a scientific background to player types, Yee (2006) carried out a factor analysis and, indicated the existence of three separate components identifying the motivation of a player: Achievement, Social and Immersion. Achievement component has three subcomponents: Advancement, Mechanics and Competition; Social component has three subcomponents: Socializing, Relationship and Teamwork; finally, Immersion component has three subcomponents: Discovery, Role-play, Customization and Escapism.

Several other researchers have also aimed to classify player types. For instance, Klug and Schell (2006) suggested nine player types based on players' motivation to play

games. The player types they propose are: Competitors, Jokers, Directors, Storytellers, Explorers, Collectors, Achievers, Performers and Craftsmen. Similarly, Andrzej Marczewski (n.d.) classifies player types into five categories: Player, Socializer, Free Spirit, Achiever and Philanthropist.

Even though Bartle's player types have been criticized for several reasons as elaborated above, it has been a widely used one. A good example of a piece of work produced under Bartle's influence is an online test called Bartle's Player Type Test developed by Erwin Andreasen and Brandon Downey (Bartle, 2003). This is an online test composing of 30 random questions in order to classify players in one of the four player types offered by Bartle (1996). This test has been criticized for allowing the participants to select themselves, for not having a 'neither' option in answering the questions asked about three or more player types and for being able to link player types to each other (Bartle 2003).

Even though the test results may not be reliable about the players in this thesis, the test was used in order to separate the learners into different groups. Designing a course based on a particular group of people in traditional school settings may not be possible as the students are regularly selected for each class in each department. Therefore, the course was not designed on the basis of the player types attending the course. Instead, the test was used for supporting the narrative (Harry Potter-alike story such as being separated into four houses) and grouping the students in order to create both collaborative and competitive environment. The relationships between the results of the test and any other variable have not been the focus of this study.

As mentioned before, designing a course for a group of students with different experiences, skills and interests in games was not possible. Instead of building the course upon students' relationship with the games, an environment was tried to build in order to make the students feel like players in a gamified environment to perform certain behaviors to obtain certain results. Consequently the following section concentrates on the intersection of games and education.

2.2.3 Intersection of Games and Education: Two Perspectives

Up to this section, pedagogy and games phenomena have been examined separately. Before discussing the gamification in a learning environment a brief elaboration of

how to use games as a pedagogical tool seems to be necessary. This will be done with three different concerns in mind: the possible impacts of the games on learning, the nature of educational games, and how games are used as models in education.

2.2.3.1 The Impacts of Games on Learning

Applying games in education goes as far back as the times of the emergence of games. However, the recognition that games might have a significant impact on education is fairly new thus research in this area is in its infancy. This may be partly due to the resistance of the people involved in traditional education and their on-going habits and beliefs (Moreno-Ger. et al., 2009). The increasing number of studies in recent years on the advantages and disadvantages of game integration into education seem to have been breaking down the stubborn borders developed by the traditionalists approach to education. This section attempts to provide a brief elaboration of the current literature on the impacts of games (especially, video games) in education.

A short quotation from Lieberman (2006, p.380) would serve a well as an introductory statement: "All games are educational games. The question is: What are they teaching?" In order the answer this question, Lieberman (2006) lists nine learning areas that games have a positive impact on: motivation to learn, perception and coordination, thinking and problem solving, knowledge, skills and behaviors, self-regulation and therapy, self-concepts, social relationships, and attitudes and values.

First, games have the potential of motivating learners (Reigeluth and Squire, 1998). Similarly, Prensky (2001) indicates in his study that games possess the potential of providing a learner-centered, more entertaining and more captivating learning experience. Likewise, Parker (2003) says games can make learning more attractive that may have a lessening effect on demotivation and dropouts. However, games do not guarantee the motivation towards the learning experience as the demand to designed environment may be due to the narrative and the interface (Zhong-Zheng, et al., 2013). As the issues of motivation will be discussed in detail in the upcoming chapters we will not concentrate on it here.

As for perception and coordination, Subrahmanyam, et al. (2001, p.13) asserts that games can develop "spatial representation," "iconic skills," and "visual attention" of learners. Greenfield and his colleagues (1994) believe that players get better in visual attention as they go through games. Likewise Rosenberg, et al. (2005) claim that games may enhance the eye-hand coordination. On the other hand Lieberman (2006) points out that enhancement in visual attention and spatial perception lead the advancement of learners in technological tools as well, which provides them with future employment opportunities.

Playing games are also positively associated with critical thinking and problem solving skills, (McFarlane, et al., 2002; Ritterfeld et al., 2004; Schneider and Lockl, 2002), decision making and knowledge acquisition (Schneider and Lockl, 2002). Games provide an environment in which learners can follow the learning materials in their own pace, get personalized feedback, and repeat materials as much they wish to (Reigeluth and Squire, 1998). However, there are those who oppose the assertions above by claiming that learners memorize some verbal or visual input in order to reach the win state which makes it impossible to reach higher-level of thinking (Gredler, 1996). Another significant disagreement represented by Prensky (2001) is on the issue of critical thinking as he claims that the opportunity of critical thinking decreases, especially in the games requiring non-stop speed.

Apart from the skills mentioned above, playing games is conducive to the enhancement of a wide range of skills such as mathematics (Klawe, 1999), listening, reading and vocabulary skills (Chen and Yang, 2013), computer usage skills (Subrahmanyam, et al., 2001), using of wheelchair safely for disabled learners (Hasdai, Jessel, and Weiss, 1998), and overcoming phobias (Wiederhold, 2003). These are just a few examples of skills that games might enhance and their wide range is a significant indication of their wider use.

According to Gee (2005) a good game can provide learners with different identities to act, continuous interaction, opportunity of producing rather than just consuming, risk-taking, customization of learning and playing styles, agency of their own learning process, well-ordered problems enabling hands-on practices, challenge and consolidation, just-in-time and on-demand learning, situated meanings of learning materials, challenging and manageable tasks, focus on relationships rather than

separate facts, opportunity of lateral thinking and exploration, working in teams, and performance before feeling competence.

On the other hand, the assertions specified above cannot be fully accepted due to the scarcity of empirical studies, and the limited and contradictory nature of the evidence provided by them. For example, Randel, Morris, Wetzel, and Whitehill (1992) stated that there was no difference between traditional teaching and games. In another study, Dempsey, Lucassen, and Rasmussen (1996) points out the absence of emphasis on the learning outcomes in studies of the impacts of games on learning. Also, according to Rosas, et al. (2003), games lead to a higher motivation and better learning outcomes than the traditional teaching; however, a similar study by Facer et al., (2004) shows that learners are interested in the learning process because of the gaming experience they get not because of their motivation for the class.

In short, there is no doubt that the emergence of a new genre called serious games in educational games is strongly related with the realization that games may have a potential for educational purposes.

2.2.3.2 Educational Games

Educational games, also known as *edutainment* (Zichermann and Cunningham, 2011) or *serious games* are digital games designed to be played through computers, mobile devices and game consoles in order to teach a particular subject (Aslan and Balci, 2015). In recent years there has been a great deal of interest in educational game design especially by companies who create thousands of games each year in search of new venues for profit maximization.

Despite the popularity of edutainment genre, most games created within this genre seem to fail to generate a sensation as did the game *Where in the World is Carmen Sandiego* released in 1985 (Zicherman and Cunningham, 2011) and aimed to teach about countries and capital cities . Here a major question arises: "why does not recent educational games catch the same fame?" There may be a few reasons c for this. First of all, as the problem itself indicates, the movement towards educational games have been hugely popular, and it is highly possible that the target group in the educational-game market may be divided as they may be attracted to different games in this filed.

Games found a place in instructional environment around 3000 BC in China (Dempsey et al., 1996, cited in Akilli, 2004, p.31), yet, it has taken around 5000 years for educational video games to show up in educational stage with the release of first educational programming language, *Logo Programming* in 1967, mostly known for its turtle graphics (Heick, 2012). After that, one of the most popular educational games, *The Oregon Trail* was released in 1971 (Sierra, 2013). After a while, Cruickshank and Telfer (1980) published an article called *Classroom Games and Simulations* in 1980 and elaborated on the advantages and disadvantages of the computer games in educational context. Similar to current researchers they maintain that computer games provided learners with a responsive context in which they can solve everyday problem. They cite that the limited availability and expensiveness of the products were a source of disadvantage. Similarly, Malone (1980) argued in his book that computer games can be helpful to teach several contents. Even though it has been more than 30 years since the studies about the first educational games, there is not a total agreement on the benefits of the computer games in education. However the sense of the potential of the genre to offer good business might be the reason of the popularity of this genre.

Another problem might be the fact that educational games have the same *boring* content as with the traditional education. In other words changing the environment from a traditional classroom to a technological environment does not necessarily mean that the same content would be offered with a different package (Prensky, 2011). On the other hand, claims that the interactive context educational games provide might be the solution to overcome this barrier (Rieber, 1996).

Another issue with the edutainment, as Johnson (2009) claims, is the failure to have a reasonable balance between the game-elements and the content. Likewise (Zicherman and Cunningham, 2011) suggests that involvement of the teachers and the parents in edutainment would nullify the fun element in the genre and learners (especially young learners) might feel this change from a fun point to an educational point. Therefore, instead of making fun as a byproduct of education, he offers to make the learning as the byproduct of fun. For example, the games *Civilization* and *Simcity* are not educational games, yet they have different sets of content in their structural background which would enable the players to have fun and learn at the

same time. Egenfeldt-Nielsen (2007) points out in his article *Third Generation Educational Use of Computer Games* that with the subtraction of the fun, educational games turn into quizzes presented in a graphical interface.

Using *Math Blaster,* another popular and successful educational game released in 1983, as a sample, Egenfeldt-Nielsen (2007) outlines the main features of and the problems faced by the edutainment genre. According to him (as cited in 2007) educational games:

- ✓ focus on extrinsic motivation than intrinsic motivation,
- ✓ mostly fails to integrate learning experience (learners prefer to skip learning content and focus on the game elements),
- ✓ provides drill-and-practice experience rather than understanding and thinking,
- ✓ mostly have simple and repetitive game-play rather than creative one,
- ✓ have rather smaller budget compared with the commercial games,
- ✓ do not require the presence of an instructor; rather assume that learners can take the responsibility of their learnings,
- ✓ have less place in the market and distribution opportunities compared with the commercial games.

Despite these problems, educational games still remain quite popular in the game-design sector and in the academic circles as several studies emphasize the fact that games can offer a learning context with lots of benefits (Lieberman, 2006; McFarlane, et al., 2002).

2.3   Theoretical Approaches to Motivation

Consider a group of children playing and pretending to be a group of adults drinking tea with fake and empty cups and chatting about daily problems they face in the work place. If one in the group prefers not to play the game and says "This is not a cup of tea!" what would happen next? Possibly, she would not be invited to the next fake-tea party. So, she loses her chance of socializing with the children in the group. To be a part of the group can be the ultimate goal of other children pretending to drink tea

and be adults. So, here two major questions arises: why do people play games? What is the motivation behind this enormous attraction to games? Zicherman and Cunningham (2011) outline four personalized motivators: relieving stress, socializing, mastering and having fun. In order to design a gamified learning environment, it is important to understand the motivation of playing games. Ryan, et al. (2006) says that psychological studies conducted on games mostly search for negative effects of games on humans; not many studies have been done to investigate the motivation to game-playing habit. Therefore, the aim of this section is to concentrate on the neglected area of motivation by concentrating on four motivation models that are either proposed for or can be associated to the reasons for playing games.

2.3.1 Flow Theory

Designers from a variety of fields ranging from fashion to cinema and games seek to provide happiness to the people in a good faith to the spirit of Aristotle who 2,300 years ago stated that the ultimate goal of the humans is to find individual happiness. Yet to begin with all the designers need to know what the core of this happiness is. An attempt to answer this quest came from a psychology professor, Mihaly Csikszentmihalyi in the mid-1970s with the *Flow* phenomenon (Chen, 2007).

The flow is a psychological state, also referred as the zone of optimal experience, in which people lose track of time and space, fully focus on the activity they do and the pleasure they get. The name flow was inspired by the experience of immersion and the pleasure felt during a water current flow takes one (Csikszentmihalyi, 1990).

In the zone, people are highly motivated to continue their activities, and they pay all their attention to the activities (Csikszentmihalyi, 1990). This experience would indeed serve greatly to the learning processes by ensuring to keep the attention of the learners on the learning materials. However, in order to achieve this instructional designers and instructors need to know how it would be possible for their learners to reach this zone and stay in it. In order to attain this goal, Csikszentmihalyi (1990) emphasizes on the need to have a balance between the challenge of the activity and the skills of the learners. According to him, the activities or the tasks should be challenging enough to push the person but not too challenging to make him/her

anxious so that the person would stay in the zone. The main point here is that if the challenge is too easy for the skills of the people, they get bored; if the challenge is too hard for the skills of the people, they become anxious. The flow zone is when the relationship between skills of a person and the challenge is balanced. In order to illustrate this relationship, Csikszentmihalyi (1990) provides a challenge/skill graph (see Figure 3 below).
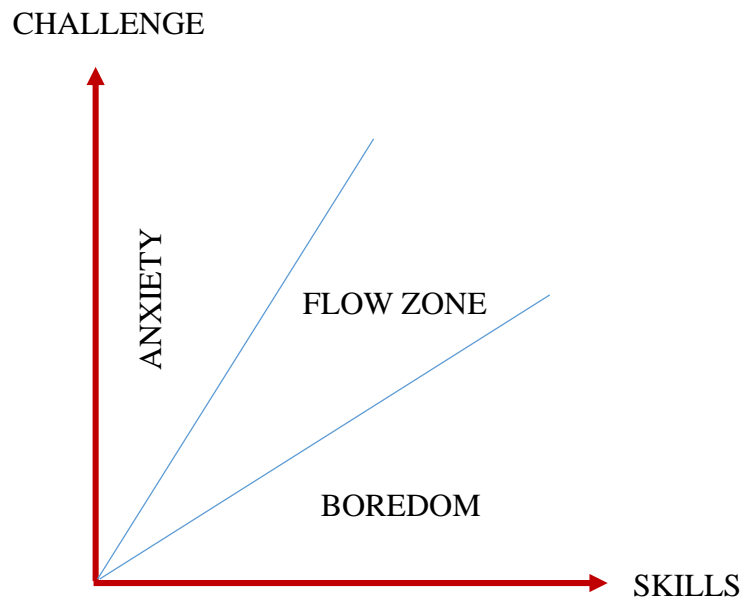
Figure 3. Flow Zone

Along the with the balance between the skills and the challenge, Csikszentmihalyi (1990) lists several factors for a person to be equipped with in order to reach the flow state: a challenging activity that requires skills, the merging of action and awareness, clear goals and immediate and clear feedbacks, the concentration on the task at hand, the sense of control, the loss of self-consciousness and the transformation of time.

One of the distinguishing characteristics of the flow experience is that the activities done during this state are intrinsically rewarding, and Csikszentmihalyi (1990) calls this experience as autotelic experience. The word autotelic is the combination of two Greek words: *auto*, meaning self and *telos* meaning goals. When combined, it simply means "self-contained activity" (Csikszentmihalyi, 1990, p.67). Therefore, if a person use his/her high-skill levels in order to overcome a challenging case, s/he gets intrinsically motivated as s/he feels better for her/his skills and abilities. This is one

of the basic purposes of the games in which the levels get higher as the player gets more experienced and skilled. Therefore, playing a game can put players into a flow state, and as the player achieves the goals and becomes more skilled with the upcoming harder challenges, s/he gets intrinsically motivated to play more and more (Csikszentmihalyi (1990). Therefore, the success of a game can be judged according to whether it puts the players in the flow state (Holt, 2000 cited in Chen, 2007).

2.3.2 Four Keys to More Emotions

As emphasized before, the main motivator of the game is fun (Huizinga, 1955; Lazarro 2004). Nicole Lazarro (2004), an expert in player experiences published a paper called "Why We Play Games: Four Keys to More Emotion without Story" and elaborated the experiences and emotions of players in games. According to her study, the fun people experience during the game-playing can be derived from different keys. For that, she listed four keys: hard fun, easy fun, altered states and the people factor. Her analysis of popular games indicated that at least three of the four keys listed above would be present in them (Lazarro, 2004).

Lazarro (2004, p.3) defines hard fun as "emotions from meaningful challenges, strategies, and puzzles". In hard fun, players overcome obstacles, beat challenges and solve puzzles within predetermined goals. Through this journey, they create and apply strategies to reach the goals and demand for feedback and progress in the meantime. Players in hard fun want to evaluate their skills and seek for accomplishment. Easy fun, on the other hand is described as "grab attention with ambiguity, incompleteness, and detail" (Lazarro, 2004, p.4). In easy fun, players prefer to appreciate the experience rather than winning. Instead of specific goals, this fun provides the experience of exploring new places and the storyline with or without interesting people, resolving the mystery and ambiguity and deciding between different options. Players in this fun would like to feel immersion and curiosity. Altered States as Lazarro (2004, p. 4) points out, "generate emotion with perception, thought, behavior, and other people". One of the major reasons of playing games is the feelings players experience throughout the games. Based on the experiences in the game, the internal state of the players go through different stages such as from fear to relief or from sadness to happiness. The final key is the people, and according to Lazarro (2004, p.5), this factor "creates opportunities for player competition,

cooperation, performance, and spectacle." This key is valid for players who like to interact with other players in or out of the game. Some players might even prefer to play game they do not like for other players they want to interact with.

2.3.3 Self-Determination Theory

Self-determination theory (SDT from now on) underlines the elements that either promote or weaken motivation and lists different types of motivations on a scale from extrinsic to intrinsic. Extrinsic motivation is generated by external forces that lead people to participate in activities which have certain outcomes and goal. Intrinsic motivation, on the contrary, is when people are motivated to start/continue an activity because they want to have pleasure/fun/satisfaction, being free from external forces (Deci and Ryan, 2000).

For a novice of a particular activity, it can be hard to have an intrinsic motivation at first. In such a case extrinsic motivation would serve well to attract the person to participate. Following this the person can develop an intrinsic motivation by transforming external forces into internal regulations within the influences of a social context. This shift is called internalization and SDT offers two internalization concepts: introjection and integration (Deci, et al., 1994). The variety of forms of regulations used to distinguish between various degrees of internalization such as the external, introjected, identified, and integrated internalization are formed by the utilization of the concepts of introjection and integration along with other concepts.

External regulation is the classical reinforcement/punishment based regulation. Skinner's operant theory underlines this regulation very well. External regulation depends on external forces such as rewards or punishments (Deci and Ryan, 2000). The externally driven behaviors depend on external forces they provide little/no autonomy and can disappear if the external forces are withdrawn (Deci and Ryan, 1985, cited in Deci and Ryan, 2000). In a game environment, giving badges/points and leveling up can be cited as typical examples for this regulation. Introjected regulation is pretty similar to the external regulation in terms of immediate feedback/punishment/reward for performing a certain behavior. However, introjected regulation differs from the first regulation in that here administer of the reinforcement is the person himself/herself. There is a level of internalization in this

regulation as the person holds the control of the possible results of the behaviors. On the other hand, it is still far away from the intrinsic regulation level because there are no internal values (Deci and Ryan, 2000). As an example to this regulation, a student can award herself with a bar of chocolate when she finishes reading a chapter. This behavior does not seem to be affecting the game-behaviors as self-awarding is possibly used to finish unpleasant activities. Identified regulation is when people recognize the value of a behavior, accept it as a personal goal (mostly, long term), and practice it to reach that goal. It is more internalized than introjected regulation as the person accept the behavior as a part of her/his identity and get autonomous outcomes. However, it is still an external motivation since rather than pure satisfaction and happiness, the behaviors have a particular goal (Deci and Ryan, 2000). For the sake of socializing with other children, the case of children who reluctantly may be playing a game that they might find to be ridiculous can be given as an example to this. The last and the most autonomous regulation in the extrinsic motivation is integrated regulation. In this, people recognize the value of the behaviors and perform them without a certain goal. It is the most internalized regulation; yet, it differs from intrinsic motivation in terms of the fact that some activities done in this regulation might not be fun at all (Deci and Ryan, 2000). For example, a person can play a computer game because s/he thinks it is important to feel to catch up with the new generation. On the basis of the characteristics of these four regulations, a spectrum from extrinsic to intrinsic can be proposed as in Figure 4 below.

External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation

Extrinsic   Intrinsic
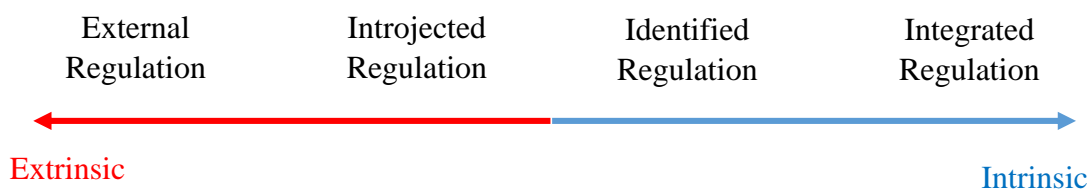
Figure 4. The spectrum of the Regulations from Extrinsic Motivation to Intrinsic Motivation

Although it is possible to encounter the regulations specified above in games and plays, the core idea behind these is the intrinsic motivation (Frederick and Ryan, 1993; Zichermann and Cunningham, 2011). STD highlights the fact that there are three needs that underline the intrinsic motivation: autonomy, competence and relatedness (Ryan, et al., 2006).

Autonomy means willingness and eagerness to perform an activity. It is associated with the volition and the internal values felt for the respective activities (Ryan, et al., 2006). If a person has a choice of selecting from some options, gets an award only for constructive feedbacks and experiences these in an authority free instructional environment, only then the autonomy, intrinsic motivation may be enhanced (Ryan, et al., 2006). If we consider a contrary case, in which the person does not have the privileges of choosing and freedom, the intrinsic motivation may disappear (Deci, Koestner, and Ryan, 1999). Similarly games, as Bartle (2004, 2006) underlines, are voluntary acts in which players' autonomy is high. However, players' eagerness to play different kinds of games would differ according to the game design. In game design as far as the players are concerned three things are significant: freedom over choices and different paths, flexibility to plan and follow the plan and the rewards that reflect the feedbacks for their actions (Ryan, et al., 2006). Competence is the urge for challenge and accomplishment (Deci, 1975 cited in Ryan, et al., 2006). In order to improve their competence, hence intrinsic motivation people need to participate in demanding challenges, to obtain new abilities and skills while trying to overcome these challenges and to get positive feedback during this process (Ryan et al., 2006). In agreement with this view Deci and Ryan (1980) argue that positive feedbacks breed the feeling of competence while negative feedbacks may lead to the feeling of incompetence. In an intuitive and readily mastered game environment conducive to use game elements, players may face demanding challenges and get positive feedbacks that can enhance their competence, hence intrinsic motivation (Ryan, et al., 2006). Final necessity to create intrinsic motivation is relatedness. Even though this need is not as powerful as the other two in order to create intrinsic motivation, it has also a distinctive role in it. (Deci and Ryan, 2000). Relatedness means the need to interact with other people either real ones or the computer-generated ones (Deci and Ryan, 2000). Especially in today's games, it is pretty common to play the same game with multiplayers, in which it is possible to interact (mostly needed).

2.3.4 Fogg Behavior Model.

Based on the previously discussed motivation models, in a game context, the main goal is to put the players in flow state, and enable them experience at least three keys

of emotions and feel intrinsically motivated. However a major question arises here: how can one manage all these from the very beginning of the game-playing experience? In order to answer this question Fogg Behavior Model (FBM) is elaborated in this section.

FBM developed by B.J. Fogg in 2009 mainly seeks to explain the factors behind human behaviors. According to Fogg (2009) people behave purposefully only if three factors co-exist in the required levels at the same time. For a behavior to be performed, first, people need to have the necessary motivation and skills, then, a trigger is needed for the demanded outcome to occur (Fogg, 2009). For example, a person can feel the flow and be intrinsically motivated in a particular game. However, how is it possible for this person to start the game in the very first place? Here, as Fogg (2009) claims that FBM comes to the stage and provides a rough guideline to do it. In order to reach a targeted behavior, people need to have both moderate motivation and skills. As the level of motivation and skills increase, the likelihood of the occurrence of the behavior increases as well. After that, at a certain point, a trigger happens and the targeted behavior is performed. For each factor, Fogg (2009) provides the following subcomponents.

By motivation, Fogg (2009) seems to be talking about only extrinsic motivation (incentive to do a certain behavior) as the subcomponents he listed below are external incentives. For him that there are three core motivators that lead people to a certain behavior.

- ✓ Pleasure or Pain: Accepting the inappropriateness of the pain motivator, Fogg (2009) points out that these are the strongest motivators whose can be observed immediately after the action. These are primitive motivators such as sex drive and hunger (Fogg, 2009).
- ✓ Hope or Fear: These motivators are basically the anticipation of a particular result; hope is for good one and the fear is for the bad one (Fogg, 2009). For example, in a game context, players can start a game hoping that they will enjoy playing that.
- ✓ Social Acceptance or Rejection: People prefer to perform activities in order to be accepted by a social group or keep doing a particular activity even it is not

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pleasant in order not to be rejected by a social group. Facebook idea was mostly built upon this motivator (Fogg, 2009).

As for the ability, Fogg (2009) underlines the importance of the level of the skills required for a certain activity to be performed. If an activity is too hard for a person, s/he may prefer not to do it. In a game environment, rather than teaching players to do the specific actions, it is important to design the environment based on simplicity. For simplicity, Fogg (2009) offers six strictly connected elements to exist: less money, less time, less physical effort, less brain cycles, less social deviance (compliance with social norms) and less non-routine.

Finally, Fogg (2009) offers that after the necessary motivation and skills, a trigger event needs to happen for the targeted behavior. Trigger is anything telling a person to perform a particular activity. There are three triggers: sparks, facilitators and signals. Different forms of triggers can serve as sparks to enhance the motivation of the person with low one. Triggers are for people with high motivation but low skills, and signal is when people are highly motivated and skilled to do an activity. These are just for reminding. The factors in FBM are illustrated below in Figure 5.
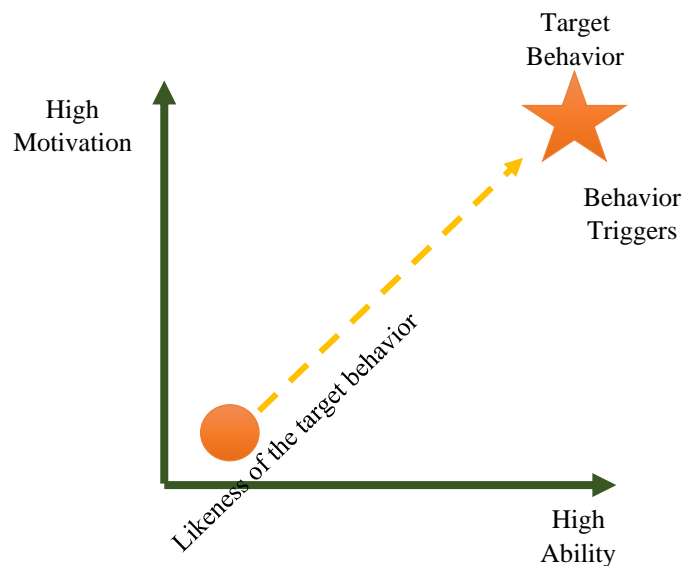
Figure 5. Factors of Fogg Behavior Model

2.4 Gamification

Dopamine is a hormone released when people act behaviors or participate in the activities they enjoy, leading people to engage the relevant behaviors/activities. This experience of dopamine release directly and positively affects the decision-making behavior breeding an enthusiasm to show a similar behavior or repeat the same activity which in turn produces more dopamine (Wardle, Treadway, Mayo, Zald, and de Wit, 2011). In 1988, Koepp and his colleagues were the first ones to identify and prove the release of dopamine in video game players during the game-playing activity. Along with dopamine release, possible positive effects of video games and their highly strong relationships with motivation (discussed in pervious chapters) raises the question of why do not we use game-playing in our daily lives. It must be realized that game-playing is such an activity that help us think better, motivates us to engage in more in the activities we do in our daily lives, especially the ones we are not particularly willing to do. The people who wish to answer this hypothetical question very enthusiastically would be the Generation Z discussed in previous chapters. In order to address their characteristics and needs (elaborated above), it is important to speak in their language. "Engage me or enrage me" they demand (Prensky, 2005b, p.1). For that, something they are highly involved, engaged and motivated to do in their daily lives might be needed: games. More than 95% of today's generation know the game-culture (Bozkurt and Genc-Kumtepe, 2014), and what they can feel while playing games. (Bozkurt and Genc-Kumtepe, 2014) since they have been growing up as digital game players (Bozkurt and Genc-Kumtepe, 2014). Comparing this engagement in game fun activity with the daily activities (especially school activities), it would not be so surprising to see the lack of motivation and enthusiasm towards the school (Gee, 2005; McGonigal, 2011). In order to solve this problem, serious games have been developed. However, designing games for each school activity or daily unpleasant activities would not be possible. Therefore, there was a need to break the magical circle of the games. Hence, as a parallel to serious games trend, the idea of integration of game elements that make them fun to play in non-game context was put forward (Deterding, et al., 2011). Hereby, the gamification term came to the stage. In this chapter, gamification as a concept and practice is elaborated in detail. First, the concept of gamification its

advantages and disadvantages will be discussed and then, examples of gamification in different fields, the usage of gamification in education, the design models proposed for gamification and finally instructional designs in gamification will be scrutinized. Gamification is a new title given to an old approach. Consider the widespread problem that parents face while feeding their children with something they do not particularly like to it. In order to solve this problem, parents say that food in the spoon is an airplane that needs to land, and for that children need to undertake the hero role by opening their mouths for the airplane to land. Given the children a storyline and a mission to complete, children embrace their roles and open their mouths and eat the food. By eating the food, they accomplish a challenge and get possibly a verbal reward from the parents. In the next rounds of food challenge, they probably open their mouths without objection, thanks to the dopamine released during this short gamification experience (Zichermann and Cunningham, 2011). Another example case comes from (Csikszentmihalyi, 1990) the story of a factory worker, Rico. He needs to finish a task in around three seconds, and he does it around six hundred times a day. All of his friends feel the burnout, but even though he has been working in the same job for 5 years he does not feel the burnout as each day as he starts to work with a challenge to beat his own record.

The term gamification originated from the digital media industry in 2008 and became widely known in the second half of 2010 (Deterding, et al., 2011). The basic idea behind this term is to motivate and engage people in a game and do real-life activities using the game elements (Zichermann and Cunningham, 2011). In other words, as Deterding, et al. (2011, p.2) expresses "gamification is the use of game design elements in non-game contexts". By game, Deterding, et al (2011) refer to any kind of fully-fledged games (played within the game boundaries or magical circle as Huizinga (1955) refers and they refer the constituting parts that define the characteristics of games as the design elements. Composing of game elements, not the game itself is one of the distinctive features of gamification that differentiates it from serious games: This aspect helps gamification to break the boundaries of a game, and gives it the ability to be integrated in daily lives (Deterding, et al., 2011, p.2). Similarly, Jane Mcgonigal (2011) defines Alternate Reality Games as "a game you play in your real life", which can be taken as a definition for gamification. On the other hand, Huotari and Hamari (2011) consider gamification from a service-

marketing perspective and define it as a "service packing where a core service is enhanced by a rules-based service system that provides feedback and interaction mechanism to the user with an aim to facilitate and support the users' overall value creation". As seen, there are several definitions of gamification but throughout this study Deterding's definition will be used as his definition is much more superior to its competitors due to its comprehensiveness. Thus is imperative to consider its possible advantages and disadvantages.

2.4.1 Benefits of Gamification

Gamification offers several benefits. The basic idea as discussed above is to motivate and engage people in the process of solving a real-life problem. It is this feature of gamification that has led many researchers to believe that it has a great potential in engaging, motivating, activating targeted behaviors and building loyalty to the gamified experience (Deterding, et al 2011, Zicherman and Cunningham 2011; Zicherman and Linder, 2010). The following quotation from Portnow and Floyd (n.d., cited in Osheim, 2013, p.14) is quite helpful in fully understanding the targeted benefits of gamification: "…better contextualiz[e] our work and making sure that the theme or setting is psychologically conducive to the activity itself. Kinda like how you go to Disneyworld and everything, down to the trash bins near the line for the rides all fit within the setting and don't break you out of that mindset of enjoying the ride".

Moreover, gamification helps to increase wider use of the games in daily lives (Helgason, 2010). This helps to break the boundaries games have, and make them more ubiquitous. Another benefit of gamification is its ability to make these non-game activities (daily life) more fun and motivate people to perform them and keep them in the flow (Zicherman and Cunningham, 2011). This opportunity gamification offers seems to have the potential to resolve many burnout problems workers and student dropouts face. Yet, the contradictory results (different results in adv.) that have emerged, necessitate the need for further studies in order to prove its effectiveness in the sacred purpose of *ludification* of daily life. Gamification has a great potential to reach the current generation. A good case in point is how an app called Anonymous was used very successfully by many political parties in their attempts to reach young voters, get their attention and earn their admiration (Gekker,

2012). Noticing this potential, "the industry wants to create lifelong gamers: people who can balance their favorite games with full and active lives" (Mcgonigal, 2011, p.43). What is more, gamification can help targeted population to either learn a certain behavior or change a negative behavior or gain a certain skill by motivating them to continuously perform the desired behavior such as losing weight, socializing with friends and many more (Duggan and Shoup, 2013; Berengueres, et al, 2013; Schoech, et al., 2013; Prince, 2013; Liyakasa, 2012, Ahola, et al., 2013). Specifically in the field of education, gamification offers a huge potential (Mcgonigal, 2011) as gamification can lead learners to have higher motivation towards the school activities and earn certain practical skills (Domínguez, et al., 2013). The application of gamification and its possible effects will be discussed in the below section on *Gamification in Education*.

Despite its potential advantages, gamification has also been criticized for several reasons elaborated in the next section.

2.4.2   Limitations of Gamification

The opponents of gamification concept criticize it for just be composed of some elements of games and for ignoring the critical game design that motivates and engages people (Bogost, 2011). In agreement with this opinion, Margaret Robertson (2010) adds that the current term of gamification, should be called *pointsification* as it mainly is about adding points and giving badges to people/players. She further claims that teachers have been using this structure for decades which was not called gamification. Bogost (2011) claims that gamification lacks the core of the gaming, provides little rewards and tries to build a fun element on a broken system. These criticisms seem to be emerging from the lack of a gamification design model whose effectiveness has been proved. It may take some time to accept the virtues of gamification design by older generations who have raised today's parents and teachers with the belief that games and gamification are just free-time activities and therefore a waste of time (Bogost, 2011). As the discussions on the definition and effects of gamification are not conclusive there is an aura of frustration about gamification. In order to resolve this pointisification and vagueness there is definitely a need for further research on the gamification design models, definition of gamification and its effects in different contexts.

Another problem is related with integrating points, rewards and badges into almost everything which may lead to *overjustification*, in which intrinsic motivation may turn into extrinsic motivation (Lepper, et al., 1973). A good example of this limitation is raised by Zicharmann and Cunningham (2011) who says that if a child who loves to play piano gets into competitions, then, she will start playing for competition rather than pure enjoyment. This is another problem that requires further research and elaboration.

Moreover, Kelly (2011) criticizes gamification for not necessarily being able to lead people to enjoy the gamified context and with this main purpose of people using the gamified context can be reduced to simply receiving an award. He vehemently insists that gamification neither engages nor motivates people, rather, it inflicts upon them a reward addictiveness. He claims that this is due to gamification being solely based on extrinsic motivation. However, though Kelly (2011) has a point but it must be realized that not all rewards need to be external, there can be some rewards that satisfy people internally. It is possible that people can be awarded with an external reward in the first instance, then afterwards they can enjoy the experience.

Competition element is another reason why gamification is criticized for (Haque, 2010). In such a system, there are winner and loser. Yet, there is also win-to-win state in gamification, in other words it all depends on how one designs it.

Zichermann (2010) "games are the only force in the known universe that can get people to take actions against their self-interest, in a predictable way, without using force". This is a similar statement to the notion of vision developed by Schell (2010) who calls it *Vision of the Gamepocalype* and claims every second of our lives could be gamified. This can cause a great amount of privacy problems (Groh, 2012) stemming from the way people apply and use gamification. Conscious use would serve a solution to these problems.

The limitations of gamification highlighted by the opponents are mainly due to how people perceive it and how they use it. If more studies are conducted on design models, and their effectiveness are proven, most of the problems probably would be eliminated.

2.4.3 Who is on Gamification: Samples

As the gamification gets more attention, more sectors have started to use it. The following section dwells on some of the businesses involved in gamification and some well-known examples of gamification developed by them within each industry.

2.4.3.1 Politics

In order to reach young generation, some politicians have started gamified campaigns. For example, a campaign website to support Barack Obama started a competition among the visitors. Those who donated most received a prize in the form of a dinner with the president and the first lady. Another example is from the North Carolina Governor Beverly Perdue who started a website called *Balance the Budget Challenge* in which visitors needed to attempt to balance educational, social service, job, public safety and other expenses in order to decrease the state's deficit to zero (Duggan and Shoup, 2013).

2.4.3.2 Healthcare

One of the fields that uses gamification mostly is healthcare. They basically aim to make fitness more fun, trying to change the behaviors of the target and motivate them to do more fitness exercises. One of the most popular and famous one is Nike +. It is an application enabling people tracking their sport activities, getting fitness tricks and tips from coaches, setting goals and improving their performances. Similarly, an iPhone app called Fitocracy was developed in order to record their performance in workouts, get points, earn badges and socialize with friends (Duggan and Shoup, 2013).

2.4.3.3 Retail and E-commerce

Retail and e-commerce are other industries that mostly develop and apply gamified interfaces (Duggan and Shoup, 2013). One of the biggest retail website, Amazon is one of those popular examples that has adapted gamification. A program called *Amazon's Top Reviewers* was developed, and in this program, Amazon asked the customers to write qualified reviews for their products. For each review, on the basis of its quality reviewers receive some points. These points, then, are listed in a

leaderboard (Boer, 2013). Another popular retail website that adapted gamification is E-bay. It provides points, rewards, badges and leaderboards for its customers (Bozkurt and Genc-Kumtepe, 2014). Final example is Samsung Notion. It is an app designed to enable user to get points, pass levels and earn a place in leaderboards (Bozkurt and Genc-Kumtepe, 2014).

2.4.3.4   Human Resources (HR)

Human resources in companies also started to use gamification in order to motivate current employees and recruit the new ones. LinkedIn is website to search for jobs and possible employees. For that, people need a full profile with lots of information about them. In order to motivate them to fill that profile, LinkedIn gives its users badges such as *Expert* and *All-star* (Boer, 2013). Another example is from Deloitte who developed a program called *Deloitte Leadership Academy,* in which senior executives are supposed to finish a leadership development program, and while doing so, they earn points, badges and awards (Duggan and Shoup, 2013).

2.4.3.5   Social Network

Probably the most popular gamified system is Foursquare. It is an application that people use to check-in a particular place and see other people who checked-in the place. With the gamification adaption, users and places can earn points and badges on the basis of their check-ins. The top users and places are listed. Users can also see the points, badges and check-ins of their friends who have played the game.

Finally, the last industry with gamification adaption that I would like to mention is education which is elaborated in the *Gamification in Education* section.

2.4.4   Gamification in Education

As the gamification examples demonstrate, gamification has already earned its place in several sectors such as politics, health and well-being, and marketing (MacMillan, 2011). Nonetheless, the potential of gamification seems to be mainly in the areas of supporting well-being activities or directing customers toward a particular marketing strategy. It is known that players spend enormous times in playing games, and thus enhancing their problem solving skills either intentionally or unintentionally (Gee, 2005). In the game environment, players find opportunities to repeat a particular

activity, and through these repetitions, they enhance their creativities, endurances and flexibilities (McGonigal, 2011). As discussed in the section entitled *Game,* games offer several opportunities to develop various additional skills. Gamification has inherited this motivative characteristics of games and applies it in daily life activities in order to solve authentic problems. This study attempts to use the motivative characteristic of games to discover the changing needs of learners, their characteristics and the motivational problems of traditional education.

Gamification has become a hot topic in education (Domínguez, et al., 2013) by the virtue of having the potential to motivate and engage learners for a better learning process and of generating better outcomes (Kapp, 2012). Considering this, gamification has been applied in several different kinds of educational contexts and topics to enhance the learning experience with the aim of developing different attitudes, behaviors and skills such as self-regulated learning, collaboration and creativity (Caponetto, et al., 2014). However, before discussing its effectiveness in education, first, it is better to discuss what gamification means from an educational perspective. Kapp (2012, p. 13) defines gamification in education as "a serious approach to accelerating the experience curve of learning, teaching complex subjects, and systems thinking" and as "a careful and considered application of game thinking to solving problems and encouraging learning using all the elements of games that are appropriate" (p.12).

Applying gamification techniques in traditional education may indeed provide an enormous potential for resolving the problems of the lack of student motivation and the inability of the instructors to engage learners in the learning process (de-Marcos, et al., 2014). It can be a way of making schools more attractive (Lee and Hammer, 2011). Gamification may also have something to offer to resolve the e-learning problems such as the existence of an external media between the instructor and learner communication, lack of instructor presence for a first-hand knowledge transmission and absence of eye-contact (Flores-Morador, 2013 cited in de-Marcos et al., 2014; Dreyfus and Dreyfus, 1986). Here are some successful examples gamification in education that could be used to highlight its potential.

✓ Khan Academy

The online educational resource, Khan Academy consists of videos of lectures in many fields including history, mathematics and science. This intelligently set website aims to find out whether a user is able to understand the material through some questions and problems. Having discovered some problems by analyzing a user's inputs via the use of tools and metrics the user is given feedbacks and advice about the next topics and videos to be used. The fact that organizations like the Bill and Melinda Gates and Google have been donating millions of dollars to Khan Academy is a good indication of the high potential of this new approach for education. The most significant aspect of Khan Academy is eliminating the classroom and offering a well-designed content outside the classroom. What is emphasized here is that class time is used for resolving problems and offering personalized teaching. That was the main point of integrating interface. Students can get the content through online platform, and in the classroom, more problem solving and personalized teaching on the basis of the students' questions and feedbacks could have done. The first of the three main learning principles that Khan Academy has adopted is about mastering certain concepts and ideas first and only then any advanced content should be attempted. Khan Academy calls this mastery-based learning which leads to their second core learning principle: personalized learning. Here teaching is of adaptive nature as feedbacks would guide the course of teaching. The third core principle gives high priority to interaction and exploration. Here the main aim is to increase user's engagement in a dynamic way that they would apply the materials they learn during the problem solving process. Khan Academy has recently included levels, badges and leaderboards in their new site and continuously revising it to make it increasingly game-like. As individual users are important in their teaching principles the Academy emphasizes interaction and adaptability. Interactivity and adaptability of users are is very clear in the fact that testing and experimenting by users is given high priority and they are allowed to code the lectures during the lectures which are programmed to include code scripts as well as the audio (Yust, 2014).

✓ Quest to Learn

Some schools in the United States, such as Quest to Learn public school, have adapted 'game-like learning' in their attempt to ensure empowerment and higher

engagements of their students. In contrast to traditional schools Quest to Learn school has the characteristic of having its program of education being designed in accordance with the gamified approach by computer users. In this school students complete their tasks rather than doing homework, and instead of receiving marks they are categorized as inexperienced, novice, apprentice, experienced or master. In Q2L the aim is to make the learners as winners within a program that contain learners' strategies. In this school classes are like a fun story full of quests, games and adventure.QL2 has a main target of meeting the current needs of contemporary generations and furnishing them with skills that they may need in the future. By creating a situated learning environment Q2L aims to ensure high level student participation, motivation, and student ownership of their individual learning processes. The core aim of the program is based on knowing and doing. Gamification and game based learning are the preferred new learning approach to achieve this (Bozkurt and Genc-Kumtepe, 2014; Simões, et al., 2013).

Apart from those mostly known examples, other examples can be found in a variety of subjects including science (Rouse, 2013), foreign languages (Danowska-Florczyk and Mostowski, 2012), health (Gabarron, et al., 2012), maths (Goehle, 2013), and computer science (Li, et al., 2013).

Furthermore some applied courses found in the literature such as gardening (Watson, Hancock, and Mandryk, 2013) and graphic arts (Villagrasa and Duran, 2013) are using the gamification techniques. Studies show that gamification allows the engagement of learners (Browne, et al., 2014; Koivisto and Hamari, 2014), collaboration (Glover, 2013), and the motivation of learners (Hakulinen, et al., 2013). Similar to the previous expectations that if you socialize a system people will participate or once the system is built people automatically will come and learn (Zemsky and Massy, 2004), the contention that once education is gamified students will automatically be motivated is highly problematic as it does not take into consideration that there is a need for a sound pedagogy (de-Marcos, et al., 2014). Also, studies conducted on the effectiveness of gamification in education have generated contrasting results (Hakulinen, et al., 2013; Domínguez, et al., 2013; Attali and Arieli-Attali, 2015). As Hamari and his collegues think (2014), the effects heavily depend on the context and the learners. Therefore, as Aaron M. Cohen (2011,

p.17) says, "Gamified learning is in the early experimental stage. The jury is still out on whether game mechanics may be more effective than linear presentations of educational content with intermittent quizzes. The only thing that can be said with almost certainty is that the number of such experiments is poised to increase." That is why in order to identify its benefits, limitations and application in education for certain results, there is a pressing need for further studies. The studies carried out on gamification in education so far, as Karatas (2014) puts forward in his literature review, are mostly about gamification effects on academic success and performance, motivational models, and the effects of points and badges. Compared with these fields of study, there is a dearth of studies on design factors consisting of a good gamified context and how the game elements should get together for a gamified context (Karatas, 2014; Caponetto, et al., 2014). Therefore, in the next section, design thinking and framework for gamification are discussed.

2.4.5 Design Thinking

As discussed in *Limitation of Gamification* section, gamification can fall into pointsification pit (Robertson, 2010) and thus the gamified system becomes mainly about points and rewards. What is more simply the conglomeration of the elements of the games does not necessarily mean a successful gamification application. It is rather important to consider how to combine them in a manner that the design fits perfectly with the goals of the system and motivates and engages players (Mcgonigal, 2011). Just like with the game-design, the only way for fun to work in gamification is building all the elements in a sound manner (Ferrara, 2012). Zichermann and Cunningham (2011) argue that one does not need to be a fully-fledged game designer for gamification and offer the *Mechanics, Dynamics and Aesthetics Framework (MDA)* in order to create a gamified system. It is one of the most widely used game-design framework.

According to MDA framework, game-designers produce the game and players consume it, and there is a continuous loop between players and game-designers as they see "artifact" (game) from different perspectives which is quite useful for designers as it is important for them to be aware of different perspectives (Hunicke, et al., 2004, p.2). It also gives high premium to iterative process in the designed system.

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Figure 6. Perspectives of Designer and Player (MDA)

In this process Mechanics are "the functioning components of the game", Dynamics are "the player's interaction with these mechanics" and Aesthetics are "how the game makes player feel during the interaction" (Zichermann and Cunningham, 2011, p.36). In order to design a game based on this framework, first, the designer need to think about what aesthetics (emotions) s/he wants from the target group. Then, s/he designs the game-mechanics and dynamics in order to reach that aesthetic(s). Then, iterations and developments on the basis of players' feedbacks are done (Hunicke, et al., 2004). Throughout this loop, there are few more elements (except the ones listed in *Game Elements* section) that need further consideration: onboarding, social engagement loop, tracking of the players and gaming the system (Zichermann and Cunningham, 2011).

Onboarding brings new players into the game-system. It is generally the first moment that a player lay his/her eyes on games when s/he decides that whether or not s/he will play. To ensure this gamification by design offers a guideline with four crucial rules. First, it is important to *order the experiences* the novice player face when s/he first starts to play. Consequently the first activities need to be simple and not requiring extra explanations. Then, it is important to provide something valuable to players so that they would be motivated to play. Finally, it should not ask the players to register anything at first. After *the order* it is crucial that novice players should not fail in the first game; they should be winners, and finally, throughout the first game, the system should be able to gather some information about the players. For this, asking some questions regarding their game-playing habits would be a good option (Zichermann and Cunningham, 2011).

Social Engagement loop aims to of bring players back to the system (re-engaging them). Placing a motivating emotion in a place where players leave the game is a significant strategy. This serves as a social call for action re-engaging the player. After this, players can be given a visible progress or reward. The following illustration in Figure 7 below shows how the Social Engagement Loop operates (Zichermann and Cunningham, 2011).
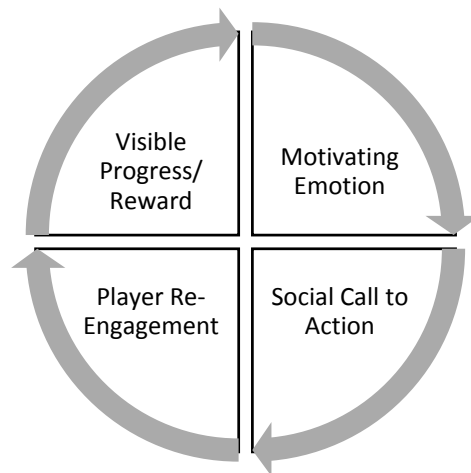
Figure 7. A Social Engagement Loop

Tracking of players is the tracking the activities of players through the choices and actions. This helps designers to get feedback about the system and develop it better. In order to manage this, designers can use pointing system which will be instrumental in identifying the least and the most used mechanics and the least and the most active players (Zichermann and Cunningham, 2011).

Gaming the system is the flaw that enable players to cheat on the system and exploit it. By taking into consideration the feedbacks received, designers need to close the security gaps even though it may not be possible to create an entirely secure game (Zichermann and Cunningham, 2011).

2.4.6 Gamification Design Framework

By gathering all the information about the games and gamification together, Werbach and Hunter (2012) build a gamification design framework to be used in businesses. The framework is called D6 as all the six steps in the model start with the

letter *D.* The following section discusses these steps in order to highlight their functions in gamification.

2.4.6.1 Define Business Objectives

Before starting to design a gamified system, first thing is to identify the business objectives and the goals intended to be achieved via this system. Throughout the design and development process the designer needs to go back to these goals/objectives in order to focus on them. For this, Werbach and Hunter (2012, p.89) offer four steps: "list objectives", "rank objectives (and trade off goals)", "delete mechanics (or the means to an end)" and "justify objectives".

2.4.6.2 Delineate Target Behaviors

After identifying what the gamified system will serve for, the designer must identify what s/he wants the target group to do and how these behaviors can be measured. The targeted behaviors need to be specified as clearly as possible. In order to measure the behaviors, they provide a few metrics: "win state", "virality", "points awarded" and "virtual goods purchased" (Werbach and Hunter, 2012, p. 91). Obviously the selection of the metrics would depend on the context of the gamified system.

2.4.6.3 Describe Your Players

As the gamified system will be used by the players it is important to get to know and define them in order to design a system of motivation. To ensure this designers must know what kinds of players will use the system. There are several player types that were specified in the previous section entitled the Player *Type* (Werbach and Hunter, 2012).

2.4.6.4 Devise Activity Cycles

In order to ensure the progress of the action and structure the main characteristics of gameplay activity loops are used in a gamified system. The logic behind the activity loops is the sequential provocation of actions in that one action provokes another one and the result in turn provokes another one. Engagement loops and progression loops are the two types of loops used in a gamified system. The purpose of the engagement

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loop is to define what the players should be doing, why they should be doing them and what the system's reaction would be to players' actions. Immediate and timely feedback to the user is quite vital in this as such feedback would motivate her/him to perform another action in response. The main thought behind this is to make sure that the user is aware of the fact that they will receive immediate confirmative feedback upon their good action. However giving immediate positive feedback is not sufficient as it will not be telling the user anything about their progress. Therefore it is vital to introduce progression loops for a heathy functioning of a gamified system. The main role of progression loops is to make the user feel that they have a continuous change of experience as they move along the game and the difficulty level in the game escalates. In a sense the difficulty of the challenges reflects the users' ability to overcome them (Werbach and Hunter, 2012).

2.4.6.5 Don't Forget the Fun

The main motto of games and gamification is to provide fun through gamification systems that would be conducive to engaging the users while ensuring that they enjoy it. The theoretical soundness of the system is not that important if it does not generate fun and engagement. In order to understand how well the theoretical design works it is imperative to test the system and to observe the overall experience. Thus in creating a system the easily forgettable fun element should be kept in mind as the main component (Werbach and Hunter, 2012). Lazzaro's (2004) For Keys to emotions are very useful in the creation of the system as they will enable the creator to decide on the most relevant forms of fun to be present and to ensure that the set targets are achieved by this.

2.4.6.6 Deploy the Appropriate Tools

In their five step guidance about how to create a system Werbach and Hunter (2012) suggest that in the light of these steps the most effective and relevant elements should be applied to the structure of the system. The right use of the elements amongst many in the system is vital for being able to generate a positive result. To make sure that the most suitable elements are selected to be the most appropriate for the goals, target behavior, player types, activity loops and fun the pyramid of game elements described in the section on *Game Elements* should be utilized.

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However this framework could not applied in this study which uses a learning environment that has traditional classroom setting aspect which does not allow strictly to follow the steps above. For instance, it is not possible to describe the players (in our case, students) before designing the gamified system as the instructor and the designer get to know them only when the semester starts. Also, in the *devise activity cycles* step, it is not possible to create an escalating level of challenges as the process was mostly linear (Werbach and Hunter, 2012). Moreover, this framework was built for business purposes. The process in education might differ significantly from it. Therefore, rather than applying this framework, an exploratory approach was followed to create the model.

2.5   Synthesis

The current study aims to develop a model in gamified environment. In order to do this it seems to be necessary to concentrate on pedagogy in digital age, games, theoretical approaches to motivation and gamification.

In reflecting the paradigmatic change the concept of pedagogy, this study has adopted a pedagogic approach of treating students as active constructors of knowledge. In order to justify our choice it was necessary to analyze how the concept of pedagogy had changed through time from the traditional perspective concentrating on teaching to modern one treating learners as active agent in learning (Brown, Collins, Duguids and Sealy, 2007; Mayer, 1992). It was attempted to show the interrelationship between these paradigmatic shifts and the changing nature of the technological and social contexts. This in turn produces a new type of learners: the Generation Z with their characteristics and needs shaped by the digital world which includes digital games that have been an influential part of their upbringing.

The fact that games have been around for centuries and their entertaining and fun nature has raised the idea of using them in education. Two of the most important features of games in education are their characteristics of motivating learners (Reigeluth and Squire, 1998; Prensky, 2001) and helping to develop critical thinking and problem solving skills (McFarlane, et al., 2002; Ritterfeld et al., 2004). In games' application to education it is vital to pay a serious attention to games elements and players' types.

In order to overcome the magical circle of the games and integrate them with the real life, gamification has been suggested by people like Deterding, et al., (2011) and McGonigal (2011). Gamification has a great potential to motivate and engage people in the process of solving real life problems and activating targeted behaviors (Deterding, et al., 2011; Zichermann and Cunningham, 2011). However, people also highlighted the shortcomings of gamifications such as ignoring the critical game design that motivate and engages people (Bogost, 2011). Pointsification and overestimation are other criticism directed at gamification.

Despite these negative aspects, gamification has been gradually entrenching in the field of education as it has shown qualities of motivating and engaging learners and potentially ensuring the enhancement of the learning experiences.

CHAPTER 3

METHODOLOGY

The purpose of this section is to highlight the research problem, raise the relevant research questions and to explain the rationale for the choice of research methods and techniques used in the research. In doing so, the process of research is explained carefully in detail by describing the way that the study was conducted; the data was collected and analyzed; the issues of the reliability and validity were tackled; the role of the researcher and the limitations of the research were handled.

3.1 Research Problem and Research Questions

The purpose of this study is to explore the phenomenon of gamification in an educational context. More precisely, the study aims to propose a gamification model to make a contribution for further studies of gamification integration in educational environments. Exploring the underlying components of the model and their relationships to gamify a learning environment, the study intends to find answers to the following research questions:

1) What are fundamental characteristics of gamification process in order to design a gamified learning environment?
2) What are the components of the instructional design model to design a gamified learning environment?
3) How can these components be effectively combined to compose an instructional design model for designing gamified learning environment?

3.2 Overall Design of the Study

The starting point of the research was to form an instructional design model that could be utilized as guidance throughout designing a gamified learning environment. The interest to develop a design model for instructional contexts stemmed from either the inadequacies of the existing literature or the absence of such literature. What Reigeluth and Frick (1999, p.633) call as "formative evaluation research" seemed to be the most appropriate research methodology for the development of such a model. The preference for this methodology is due to its qualitative nature, which is suitable for "developmental research or action research that is intended to improve design theory for designing instructional practices or processes" (Reigeluth and Frick, 1999, p.633).

Reigeluth and Frick's (1999) idea that formative research is the combination of formative evaluation and a case study informed the attempt to develop a model in this research. In this endeavor, it is vital to comprehend the structure of formative research and explore these two components: formative evaluation and case study. The formal evaluation used in the research is an evaluation process utilized to collect data within the aim of enhancing a program or a product throughout its development stage (Dick and Carey 1996). Flagg (1990) uses a similar definition and affirms that formative evaluation is an iterative process formed on the test-modify-retest-modify cycle, entailing data-collection procedures in the pursuit of instructional product design and development. One of the most common elements in several definitions of formative evaluation is the fact that the formative evaluation is important from the perspective of instructional design as it allows data collection in a systematic manner throughout design and development of an instructional product in order to improve and optimize it. Kim (1994) provides a good example of such definition, which lists the main characteristics of formative evaluation that form the basis of this study: 1. The instructional product (model in this study) needs to be present in the development stage, 2. Improvements need to be made, 3. Systematic evaluation including developers' self-evaluation, one-to-one testing, field testing and further testing need to be conducted, 4. Evaluation should be done by external or internal evaluators (In this study, evaluation was carried out by internal evaluators).

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The second constituent of formative research design is the case study. Reigeluth and Frick (1999) claim that formative research design is identical to the holistic single case design proposed by Yin (2003). According to Yin (2003), single case design is appropriate for 'how' and 'why' questions in focusing on contemporary events as these questions can be extended to consider 'how to develop or enhance an instructional design model'.

The gist of formative research methodology is, as discussed by Reigeluth (1999) that either a model based instance is created or an existing instance similar to that model (theory) is utilized. If the instance used represents the model (theory) perfectly, any problems, weaknesses or strength found in the instance can be regarded as those of the model's (theory's) itself. Consequently, any changes, advancements or iterations in the application process can be applied to model (theory) to optimize it. Of the three types of formative research design that contain similar steps, which are briefly described below, the first one was inclined to be used:

1. The designed case, where the researcher would design a case to improve an existing model or develop a new one. The evaluation would be carried out during the application.

2. *In vivo* naturalistic case, where the researcher would either examine an existing case in order to improve an existing model or develop a new one. Similar to the first type, the evaluation would be carried out during the application.

3. *Post facto* naturalistic case where the researcher would examine an existing case in order to improve an existing model or develop a new one. The evaluation for such cases is conducted after the application (Reigeluth and Frick, 1999).

Having clarified the nature of the formative research and showed its relevance for the present research, it is pertinent to elaborate on how the study is carried out. To begin with, an instance was designed in order to propose a model, and throughout the processes of data collection and analysis, improvements and iterations on the model were made in the light of the findings.

Specifically, the type of formative research applied in this study is a designed case to develop a new model. Reigeluth and Frick (1999) propose five steps of this methodology shown below in Figure 8.

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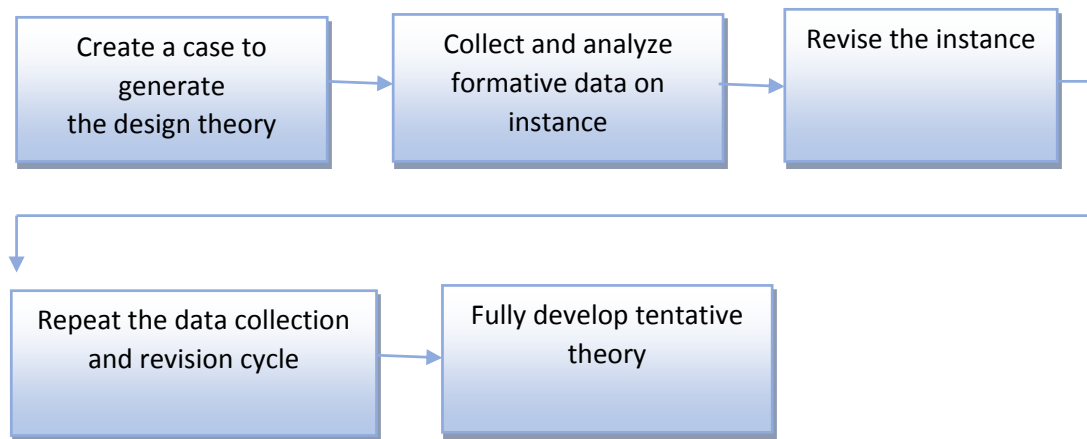
Figure 8. Reigeluth and Frick (1999)'s Designed Case Steps in Formative Research for a New Theory

The implementation of each step in this study is explained next.

    a.   Create a case to generate the design theory (model)

The case selected for the study was an undergraduate course entitled CEIT 319 Instructional Technology and Material Development offered by the Department of Computer Education and Instructional Technology to different departments in the Faculty of Education, in a large university in Turkey. This study endeavors to investigate application of game elements in this redesigned service course. The new course was built upon this previously existing course and for this purpose, the researcher redesigned it and its existing materials in an attempt to adapt it into situations to which the new design theory (model) would be applied. The main idea behind redesigning the materials and the course structure was to create a case to be instrumental in building a new model. The researcher designed the case on the basis of a comprehensive literature review in game elements, her own experiences and intuition, and expert opinions. Throughout the design process, the knowledge, experience, views, guidance and extensive feedbacks of the advisor, both as an expert in the field and as the instructor of the course were quite valuable in developing the case. In close cooperation with the advisor in regular meetings, the instance was designed before the implementation process. However, the details of the materials used in the instance were designed simultaneously with the implementation process. This combination proved to be helpful in the design of the basic structure of

the instance based on current literature, intuition, experience and expert's opinions, followed by the testing process utilized to design the details of the instance. Initially, the course was conducted as face-to-face meetings, and later on in order to gamify it, an online part was added. All the materials including the handouts, syllabus, quizzes and midterms were gamified and the terminology used in the course was changed based on a fantasy narrative. Data collection procedure was conducted with two separate groups of participants, which will be explained in detail in the following subsection. During the design, development and implementation procedure, based on observations, intuitions, experiences, background knowledge and expert's opinions, a tentative design model was formed.

b. Collect and analyze formative data on the instance

Formative evaluation of the instance constituted the second stage of the research, the main purpose of which was to scrutinize the strengths and weaknesses of the instance. Therefore, constitutive elements of the instance were evaluated. In the process, the required and counterproductive elements as well as necessary improvements were determined. The evaluations were carried out on the basis of the data collected utilizing the three main techniques in formative research designs as highlighted by Reigeluth and Frick (1999): observation, interviews and documents. In the process of implementation, both the formal class meetings and online exercises and activities were observed and the participants' activities were carefully registered in an observation form (see Appendix K).

In the designed instance, students were asked to carry out different types of assignments including weekly reflections, readings, quizzes and a final project. Students' all works were collected for the purpose of assessing the learning occurred via the designed instance. However, since this was out of the scope of the study, only students' comments about the instance and e-mail logs were used for the purpose of triangulation of the data.

The richest data, though, came from the interviews. In the first group, individual semi-structured interviews were conducted and recorded during the implementation of the instance to improve the instance and the model. All participant-researcher-instructor e-mail communications were also saved. The purpose was to collect data

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on how to improve the applied elements and to decide the necessary and sufficient elements that need to be added or eliminated. The important point was to get participants' comment on the instance and its components. Therefore, at the beginning of the implementation, the participants were reminded that the applied instance was a newly developed and evaluated case. During the implementation, this message was repeated to the participants as much as it is necessary. At the beginning of the interviews, applied game elements were reminded to the students, in order to avoid the problem that participants might fail to remember them as pointed out by Reigeluth and Frick (1999). At the end of the implementation stage, more semi-structured interviews were conducted.

The transcripts of the interviews, observation forms, e-mails between the participant-researcher-instructor, students' comments, and the questions asked by the participants were collected and analyzed in line with the three steps of data analysis procedure proposed by Miles and Huberman (1984): *data reduction*, *data display* and *conclusion drawing*.

c.   Revise the instance

In formative research, as continuous revisions need to be done throughout the stages of data collection and analysis, these revisions need to be documented to reflect the nature of the changes in the structure of the model the instance represents (Reigeluth and Frick, 1999). Being faithful to the spirit of formative research, repeated iterations were conducted in the instance with the first group of participants. The iterations were carried out on the basis of the observations, semi-structured interviews and students' activities throughout the semester. During the whole process all iterations were documented in order to increase the credibility of the data and improve the model's robustness.

d.   Repeat the data collection and revision cycle

Reigeluth and Frick (1999) suggest repeating cycle of systematic data collection, analysis and revision to confirm previous findings therefore to improve the external validity. This iteration also helps researcher to apply the same model in different situations and examine the possible differences in the results. Therefore, in this study, after the first round, a second round of data collection was performed with a

different group of people, and previously modified instance was applied to the group. The same data collection procedure (semi-structured one-to-one interviews, observations and documents) was conducted in the implementation process of the instance with an addition of group interviews conducted after the implementation process. Throughout the implementation process, a continuous data analysis was conducted and on the basis of the findings some iterations in the model were done.

    e. Fully develop your tentative theory (model)

Based on the formative evaluation and the tentative draft of the previously designed instance, and the data analysis conducted both during the 10-month long implementation process and after, a fully-fledged tentative model was formulated. The tentative model proposed in this study was formed in conjunction with the following questions: What elements are needed to be considered while gamifiying a course? How do these elements relate to each other? What guidelines need to be followed while applying those elements? What are the sub-elements of those elements? What guidelines need to be followed while applying those sub-elements?

3.3 Justification of the Methodology

As the main purpose of the research was to develop a tentative model, qualitative methodologies with their inductive nature would seem to be the best ones for the purpose (Merriam, 2009). Unlike quantitative studies that apply variables in a bounded environment and use statistical analysis in numerical form to examine the research questions or hypothesis (Creswell, 2012), qualitative research focuses on understanding the phenomenon itself (Merriam, 2009), which lies at the core of this study. Another criterion in the selection of qualitative research was the ultimate purpose of the study: to examine the integration of gamification in education and ultimately to develop a model that can be applied for other applications of gamification with the purpose of improving the model rather than making generalizations, which constitutes the main purpose of the quantitative research (Creswell, 2012). In short, as the purpose of this particular study is to understand a phenomenon, develop and improve a model based on that phenomenon, and not to prove its effectiveness, it is most pertinent to use the qualitative research methodologies.

As explained in some detail, in the previous section, the research methodology used in this study is the formative evaluation research, which combines the case study and formative evaluation. To justify the reason of selecting this methodology, it would be appropriate to clarify the rationale of the constituent methodologies. The case study design applied in this study follows the footsteps of Yin (2003, p.5) who points out three conditions playing a significant role in determining the research methodology: "type of research questions posed", "the extent of control an investigator has over actual behavioral events" and "the degree of focus on contemporary as opposed to historical events". In line with Yin (2003)'s conditions, the reason for selecting the case-study research design can be listed as follows: 1- "what" and "how" research questions raised in this study are exploratory in nature; seeking to explore the phenomenon applied, its main components and how these components are combined to create a model; 2- A set of events happened spontaneously following the design of the case without any interference by the researcher whose only interference was to document the events 3- the study is based on the state-of-the-art and a popular topic: gamification.

Based on the case study design, this study follows the formative evaluation procedure as explained in the previous section. The main virtue of the formative design is that it allows data collection in a systematic manner throughout the design and development of an instructional product and in the later processes of the product's improvement and optimization. Consequently, throughout the research, an instructional model was designed and with the help of continuous formal evaluation (test-modify-retest-modify cycle), this instructional model was aimed to be improved.

By combining these two methods, formative evaluation research provides the best methodology to be used in the exploration of gamification phenomenon in education and in formulating and developing a tentative model to be used in the integration of gamification in a learning environment. This methodology is a type of developmental or action research (Reigeluth and Frick, 1999), and aims to examine not only the design and development process of an instructional product but also to explore the underlying elements rather than to produce generalizable results and their confirmation (Merriam, 2009). Therefore, considering the overall purpose of this

study, formative evaluation methodology seemed to be an appropriate methodology to use.

3.4   Participants and Sampling of the Study

The case selected for the study was an undergraduate course entitled CEIT 319 Instructional Technology and Material Development offered by the Department of Computer Education and Instructional Technology to different departments in the Faculty of Education, which will be explained in detail in the following section to provide a fluent explanation of the current study's procedures. The students enrolled in this course constituted the potential participants for the study. As will be explained in detail in the following sections, the data collection consisted of two phases. Thus it has two separate groups of participants, one from the Department of Foreign Language Education and one from the Department of Early Childhood Education. The rationale behind repeating the cycles of data collection, analysis and revision with different group of participants is to enhance the external validity and figure out the variable results obtained from different groups of people. In the choice of this method, the works of Reigeluth and Frick (1999) has been a guide. In this method repeating the same instance within the same case involving different people help support the previously obtained data, fill the holes in the designed model and improve any possible weaknesses. Once these are achieved then it will be possible to improve the external validity of the model and provide the necessary rationale for the iterations.

By combining convenience sampling and purposeful sampling a two-stage sampling was utilized in the study (see Figure 9). In doing this, first of all, the first sample was chosen at the case level (the course), and then, in the case, a second sampling was done. Two parts of the data collection procedures (observation and documentation) were conducted the case-wide and, the interviews were carried out with a subset of the sample. Such two-stage of sampling is mostly required in qualitative case researches (Merriam, 2009). Data collection and analysis cycle was conducted with two separate groups of participants at different times. Therefore, sample selection within the case was repeated with different people at different times.

SINGLE CASE = CEIT 319 Instructional Technology and
Material Development Course (Convenience Sampling)

Sampling for First Interviews | Sampling for Second Interviews

14 | 3 | 5

Theory-Based Sampling
(Purposeful Sampling)

Repeating the Cycle

with Different People and at Different Times

Sampling for First Interviews | Sampling for Second Interviews

4 | 3 | 13

Theory-Based Sampling
(Purposeful Sampling)
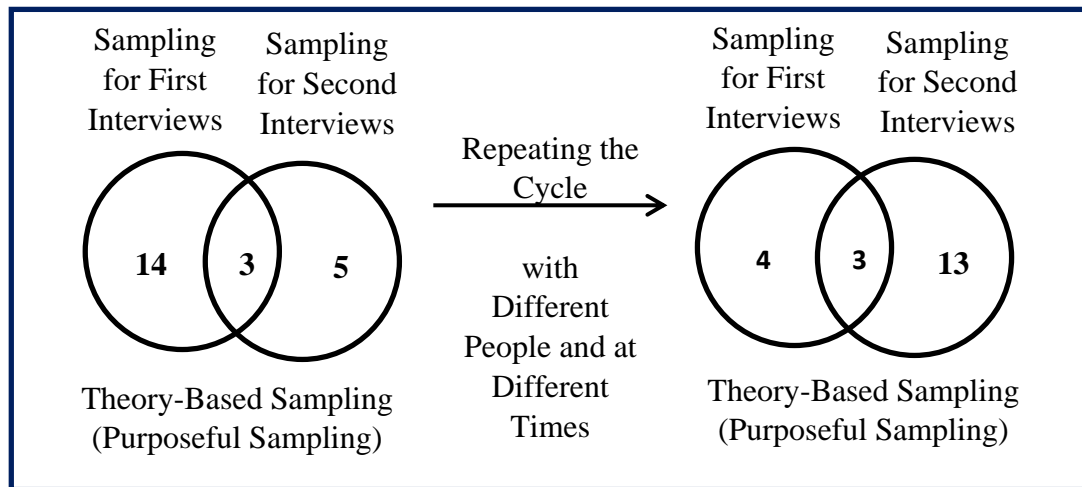
Figure 9. Sampling Procedure Applied in the Study

As the main purpose of this study is to examine a phenomenon rather than to generalize and discover general tendencies, the nonprobability sampling methodologies were used as it is the most suitable for qualitative research which does not intend to generalize from the findings (Merriam, 2009). Therefore, as an initial step in the sampling, a case (CEIT 319 course) was selected for the following reasons. Firstly, the instructor was willing to try a new and unattempted methodology for her course and allow me to redesign it. Secondly, the expertise of the course instructor in the educational games and simulations could provide valuable views and feedbacks about the elements of the gamification and how they have been integrated into the course. Thirdly, helpful and approachable nature of the instructor and her good rapport with the students would ease the process of the adaptation of the students to a methodology they never faced before. Lastly, the course was delivered to the students from different departments, which would help the researcher identify the 'situationalities' (Reigeluth and Frick, 1999, p.15) that refers to the fact that some elements might work in some situations but may not be suitable in other situations. For these reasons, it was quite convenient to choose this case, which is in line with the convenience sampling method as highlighted by Patton (2002) and Creswell (2012).

Once the case was selected, the data collection took place in two phases. The first phase of data collection took place in the Fall Semester and the second phase took place in the Spring Semester of the 2014-2015 academic year. There were 81 (68.6 % of the total volunteers) volunteer participants out of 112 students attending to the course in the first group and 37 (31.4 % of the total volunteers) volunteer participants out of 37 students attending to the course in the second group. Those who did not wish to participate in the study verbally expressed that they were either too busy due to their course-load or they do not want to participate in any kinds of researches.

Table 1 *Distribution of the Volunteer Participants in Both Groups (N=118)*

	Female		Male	
	n	*%*	*n*	*%*
First Group	66	55.9	15	12.7
Second Group	37	31.4	0	00.0

According to the demographic questionnaire distributed at the beginning of the semester and explained in the upcoming *Data Collection* section, in the first phase, the participants consisted of 6 (7.4 %) freshman, 51 (63 %) sophomore and 23 (28.4 %) junior students (*n*=80). The GPA of the participants ranged from 1.73 to 4.00 (*n*=72, *M*=3.12, *SD*=.53) and their ages were between 18 and 22 (*n*=81, *M*=19.38, *SD*=.60). Table 1 shows the distribution of the participants in the first phase by gender and by whether or not they had played games.

Table 2 *Distribution of Participants by Gender and Game Playing (Ns=81)*

Whether First Group Plays Games	Female		Male	
	n	*%*	*n*	*%*
Yes	40	49.4	13	16
No	26	32.1	2	2.5

The distribution of the reasons given by the participants for not playing the game in the first phase is shown in the Figure 10 (the participants were allowed to cite more than one option).
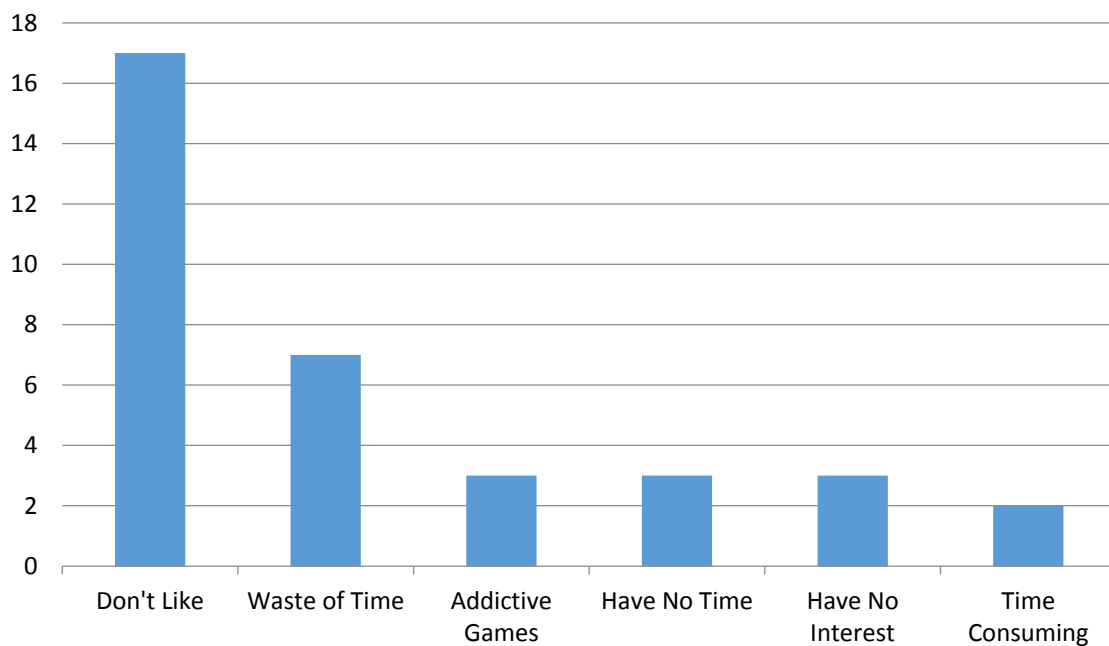
Figure 10. Distribution of the Reasons Given by Participants for Not Playing Games from the Demographics Survey presented in the Appendix J (n=28)

Table 3 and Table 4 summarize the game-playing habits of the participants who reported to have played games in the first phase and the time spent for playing games, respectively.

Table 3 *The Distribution of the of the Reasons for Playing Games and the Kinds of Games Played*

Characteristics		
Reasons for Playing Games	*Frequency**	*% ***
As a Leisure Time Activity	38	30.6
For the Excitement and Fun	35	28.2
To Relief Stress	31	25.0
To Escape Everyday Life	18	14.5
Other	2	1.6
Kinds of Games Played		
Adventure	25	22.7
Strategy	23	20.9
Action	19	17.3
Simulation	15	13.6
Sports	12	10.9
Role-Playing	11	10.0
Other Games	5	4.5

*Frequency= frequency of selection, options were selected more than once. (N =53)
** Percentage = Percentage of selection among all responses.

Table 4. *The Distribution of the Game Players by the Time Spent Playing and by the Duration of Game Playing*

Characteristics		
Time Spent For Playing Game	*n**	*%*
Less than 1 Hour	17	32.1
1-3 Hours	12	22.6
3-5 Hours	7	13.2
More than 5 Hours	9	17.0
Not Consistent	8	15.1
Duration of Game Playing		
Less than 5 Months	8	15.1
5 Months - 1 Year	7	13.2
1-3 Yeas	9	17.0
3-5 Years	4	7.6
More than 5 Years	24	45.3
Not Answered	1	1.9
Preference of Playing		
Alone	42	79.2
Within a Clan	11	20.8

**n* = number of participants who play game = 53. Each Option was selected once.

According to the demographic questionnaire distributed at the beginning of the semester and explained in the upcoming *Data Collection* section, the second group of participants consisted of 2 (5.4 %) sophomore, 31 (83.8 %) junior and 4 (10.8 %) was senior (*n*=37) students. In this group the GPA of the total 37 (100%) participants who were all females ranged from 2.10 to 3.74 (*n*=36, *M*=3.18, *SD*=.42) and their ages were from 20 to 25 (*n*=37, *M*=22.05, *SD*=1.15).

Table 5 shows the distribution of the participants in the second phase by whether they had played games or not.

Table 5. *Distribution of Second Group Participants by Whether Playing Games (n=37)*

Playing Games	*n*	*%*
Yes	18	65.4
No	19	34.6

Figure 11 demonstrates the distribution of the reasons cited for not playing games by the participants in the second phase (Respondents were allowed to indicate more than one option).
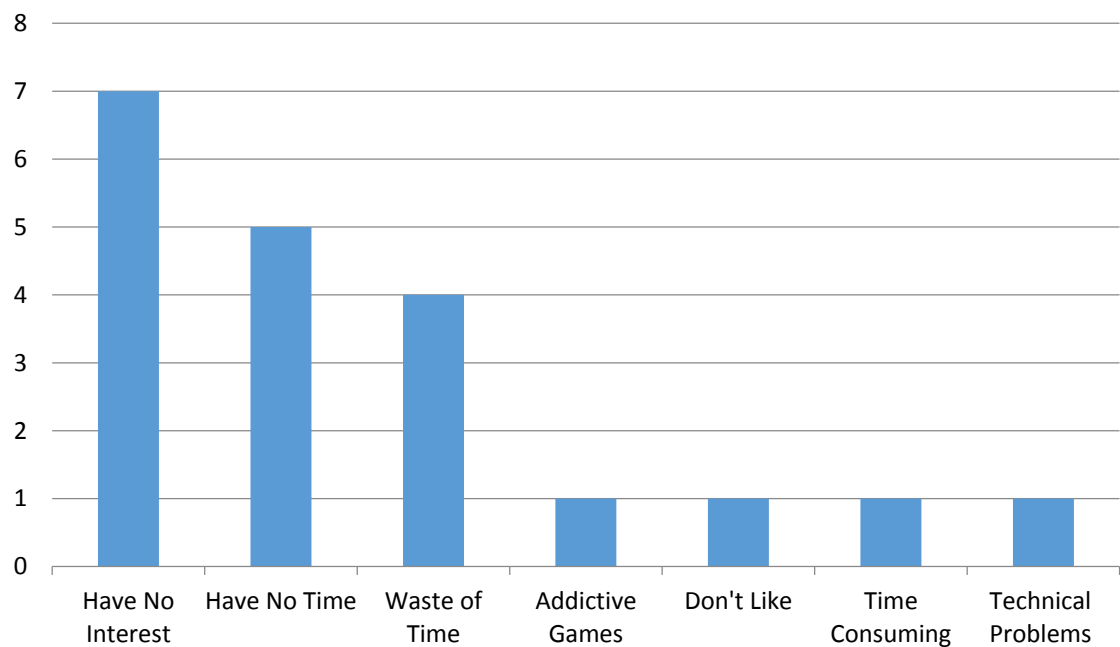
Figure 11. Distribution of Reasons for Not Playing Games from the Demographics Survey presented in the Appendix J (n=19)

Table 6 and Table 7 summarize the game-playing habits of the participants who reported to have played games in the second phase and the time spent for playing games, respectively.

Table 6. *The Distribution of the Reasons or Playing Games and of the Kinds of Games Played*

Characteristics	Frequency*	%**
Reasons for Playing Game		
As a Leisure Time Activity	14	32.6
For the Excitement and Fun	14	32.6
To Relief Stress	9	20.9
To Escape Everyday Life	6	13.9
Kinds of Games Played		
Strategy	13	27.7
Action	11	23.4
Adventure	11	23.4
Role-Playing	5	10.6
Simulation	4	8.5
Sports	3	6.4

*Frequency= frequency of selection, options were selected more than once. (n = number of participants who play game = 18)
** Percentage = Percentage of selection among all responses.

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Table 7. *The Distribution of the Game Players by the Time Spent Playing and by the Duration of Game Playing*

Characteristics	n*	%
Time Spent for Playing Game		
Less than 1 Hour	6	33.3
1-3 Hours	4	22.2
3-5 Hours	1	5.6
More than 5 Hours	5	27.8
Not Consistent	2	11.1
Duration of Game Playing		
Less than 5 Months	4	22.2
5 Months - 1 Year	3	16.7
1-3 Yeas	2	11.1
3-5 Years	3	16.7
More than 5 Years	6	33.3
Preference of Playing		
Alone	11	61.1
Within a Clan	6	33.3
Not answered	1	5.6

*n=number of participants who play game = 18. Each Option was selected once.

After the first stage of sampling, by utilizing purposeful sampling, interviewees among the volunteered participants from the sample case were selected. From the first group in the Fall Semester, 18 participants were selected among the 81 volunteers for the first set of semi-structured interviews. The researcher selected the *information-rich cases,* as suggested by Patton (2002), so as to elaborate the phenomenon under investigation in greater depth rather than making generalizations from the findings. At the end of the Fall semester, eight participants, including the previously selected ones in addition to a few new volunteers were selected for a final round of semi-structured interviews, considering the information-richnessof the data sources (interviewees). The reason for conducting the second set of interviews was to repeat the data collection-analysis cycle at different periods of time either with the same or different people after the revisions were made. It was believed that this step would help the researcher both to confirm the previous findings to enhance the external validity (Reigeluth and Frick, 1999) and to find any problems within the design and get as much information as possible until there was nothing else to gain. In both selections, information-rich cases were selected using a theory-based sampling. The logic behind this strategy was to select the sample for the purpose of generating a model or a theory. This required a specific sampling strategy in order to select the participants who might have the potential for contributing to the iterations and the construction process. The significant thing about this sampling strategy, popularized by Glaser and Strauss (2008), is that it is formed during the elements of the model or theory are applied and the newly emerging conditions generated by the iterations made as a result of the analysis carried out. Therefore, in this study, in order to select the participants with the highest potential of contributing to a model-generation, in-class and online observations were recorded and analyzed. The best part of using this strategy is that it enables a comparison between different elements to form the model.

17 participants were selected for the first interviews among the 81 volunteers. The GPA of the participants ranged from 1.73 to 3.90 ($n=15$, $M=3.15$, $SD=.66$) and their ages were from 19 to 22 ($n=17$, $M=19.65$, $SD=.79$). Furthermore, eight participants were selected for the second interviews. The GPA of the participants ranged from

2.21 to 4.00 (*n*=7, *M*=3.20, *SD*=.65) and their ages were between 19 and 20 (*n*=17, *M*=19.25, *SD*=.45). The Table 8 and Table 9 summarize the basic characteristics of the interviewees.

Table 8. *The Distribution of the First Group Participants by Gender and Game Playing (First Interviews)*

Whether First Group Plays Game	Female		Male	
	n	*%*	*n*	*%*
Yes	9	52.9	3	17.6
No	5	29.4	0	0

Table 9. *The Distribution of the First Group Participants by Gender and Game Playing (Second Interviews)*

Whether First Group Plays Game	Female		Male	
	n	*%*	*n*	*%*
Yes	2	25.0	3	37.5
No	3	37.5	0	0

The sampling in the second group in the Spring Semester was completed following the same procedure elaborated above. The first interviews in the second group were carried out with 7 people and the second interviews were conducted with 4 groups with 4 participants in each. The Table 10 and Table 11 summarize the basic characteristics of the interviewees.

Table 10. *The Distribution of the Second Group Participants by Gender and Game Playing (First Interviews)*

Whether First Group Plays Game	Female	
	n	*%*
Yes	2	28.6
No	5	71.4

Table 11. *The Distribution of the Second Group Participants by Game Playing (Second Interviews)*

Whether First Group Plays Game	Female	
	n	*%*
Yes	6	37.5
No	10	62.5

3.5   The Procedure of the Study

To enable a better view of the research, this section provides a detailed description of the case selected, the design of the instance, the gamication procedure, the experiences with the first group, the iterations made on the basis of the findings obtained from the first group and the experiences with the second group.

3.5.1   Course Description

The case selected for the study was an undergraduate course entitled CEIT 319 Instructional Technology and Material Development offered by the Department of Computer Education and Instructional Technology to different departments in the Faculty of Education. There was not any prerequisite to take the course, thus as such it was open to groups of student with different features. In other words, the target groups could be sophomore in one semester and junior in another semester. The aims of the course as specified by the instructor in the syllabus were:

- *Demonstrating the knowledge and skills about major developments in the field of learning and teaching so as to understand the function of instructional technology in the learning process*
- *Explaining learning theories that form a basis in selecting instructional media and materials for a given context*
- *Preparing and using a wide range of instructional materials for a given content and grade level.*
- *Distinguishing basic advantages and disadvantages of the main instructional media and materials.*
- *Exhibiting examples of effective preparation and use of instructional materials in a final challenge.*

As the aims specified, the course was mainly about teaching how to integrate the technology in education process and to prepare materials using the technology. In accordance with these two different aspects, the course had both laboratory (for hands-on practices) and in-class sessions (for lectures). The in-class sessions were delivered by the instructor and the students were supposed to come to class and participate in Q-A sessions. As for the laboratory sessions, they were delivered by teaching assistants and the students were supposed to practice by using Web 2.0 tools following an activity sheet for each lab session and submit short reflections about them. Apart from these activities, there were other assignments consisting of mid-term exams, which were eliminated during the redesign of the course to create weekly quizzes and one final project. The newly designed gamified course was a highly demanding course aiming to keep the students in the flow by motivating them to learn more and more and helping them using the technology as much as possible in a natural sequence. In order to achieve these, the whole structure of the course was changed within a year as it is explained in more detail.

3.5.2 Gamifying the Course

In order to gamify the course (*design the instance*), a comprehensive literature review in gamification, games, gamification/games in education was conducted, and several meetings with the advisor were held. Since the advisor had been delivering the same course for a few years and she was eager to try new methods to ensure to combine students' learning with having fun, the gamification process of the course was completed smoothly and easily.

At the beginning of this adventure, there appeared to be a need to find a narrative to base the instance design on, and this was found in the inspiration provided by the *Harry Potter* series, which had been coloring the popular culture. Consequently magical world has been created, in which there is a school for apprentices to learn magical spells and potions. After that, all the material used in the course (i.e. syllabus, assignments and etc.), the course structure and the jargon used in the course by the students and the instructor were redesigned. Finally a crest for the imagined school was designed by combining the emblems of the *houses* (see Figure 12 below).

Figure 12. The Crest of the School Created

In order to gamify the course, in-class sessions were selected and an online aspect was added to it with the purpose of creating a learning environment. The main reason of adding an online aspect was to help students follow their progress and badges easily, to clearly see leaderboards, to read the content before the class so as to discuss them in the class (demand of the instructor), to create a community in which students could share, communicate, collaborate and have an identity belonging to a group. Laboratory sessions were out of the scope of this study as that would take too much time and effort to handle and would be hard for a single researcher to cover.

In order to turn the instance in a learning environment, an online tool (i.e. a learning management system) was needed. The school had already adapted a Moodle system; however, that system did not meet my needs as the services provided were limited. Consequently, different systems that would both support the game elements and serve as a learning management interface to convey the necessary documents to the students were examined. Throughout this quest, the best interface that could be

applied in the designed instance was aimed to be found; for that, different systems were tried. First, the researcher communicated with the *Badgeville* Company that specializes in the production of personalized gamification interfaces in different fields, ranging from media to education. She examined their products and figured out that they could have produced an appropriate interface for the instance. However, after a few e-mail correspondences, she learnt that it would take so much time for them to produce the suitable interface and would cost a fortune. Therefore, the search continued for a *free* system. Then, *Schoology,* a free learning management interface supporting game elements such as badges, progress and avatar was tried. Here, the system seemed to cover most of the needs of my study as it enabled to share sources, to give badges, to monitor progress, to add new activities for participants to build a community and to share their knowledge and experiences. However, the system was not capable of showing how to present the content of the course in a gamified manner. Another option considered was to set up a Moodle on a server and integrate all the game elements provided by Moodle into this private learning management system. However, since this would have required extra technical services such as a 24 hour open and online server, setting up the interface and the provision of admin services all the time, and this would not have been possible due to the financial and time limitations, this option was eliminated. Another tool tried was *ClassDojo.* The system provided a joyful environment in which teachers can give badges to the students and see their progress; however, sharing the content was not possible through this system. Finally, after a long search a classroom management tool, *Edmodo*, in which it was possible to integrate game elements and present the content in a gamified manner using the apps integrated in the system was found. The detailed information about *Edmodo* and gamified content is given below in the *Edmodo* subheading.

Having selected an appropriate interface that could be applied to the case, the course materials were redesigned on the basis of the game elements within the narrative selected.

- ✓ Syllabus: The original syllabus was requested from the instructor and separated into two different documents; one of which was named as *The Way of Apprentice* and the other one was entitled as the *Virtues of Apprenticeship.*

In the first document, a map was prepared in which, weekly activities (both in-class and laboratory) and the course schedule were placed in a chronological order, and for each week, depending on the content, different badges were placed in the map. A snippet of the map can be examined on the Figure 13 below. For full view please refer to the Appendix A.
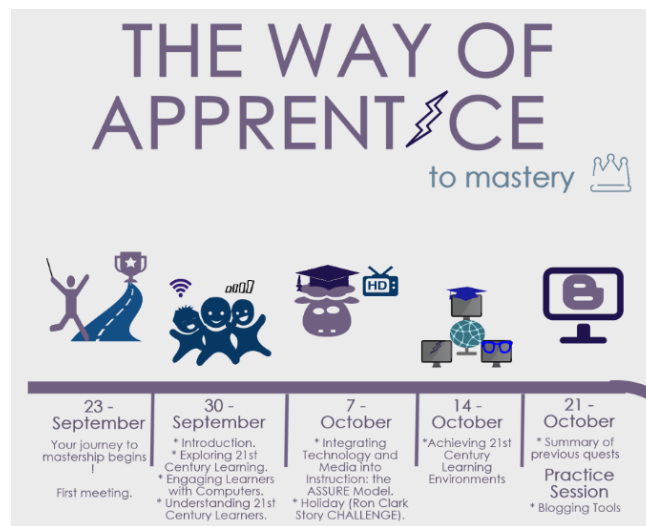
Figure 13. A Snippet from *the Way of Apprentice*

The second document explained the grading system, course policy, assignments and what was expected from the students throughout the course. For this, all expectations from the students such as presence in the class, participation in the course and the lab assignments etc. were assigned to different virtues. Following this, the explanations of each virtue and their grading were added to the document. A snippet from the 'Virtues of Apprentice' document can be seen in Figure 14. There were five virtues the apprentices needed to be armored with throughout the course. For more information about the virtues, their meanings and grading policy, please see the Appendix B.
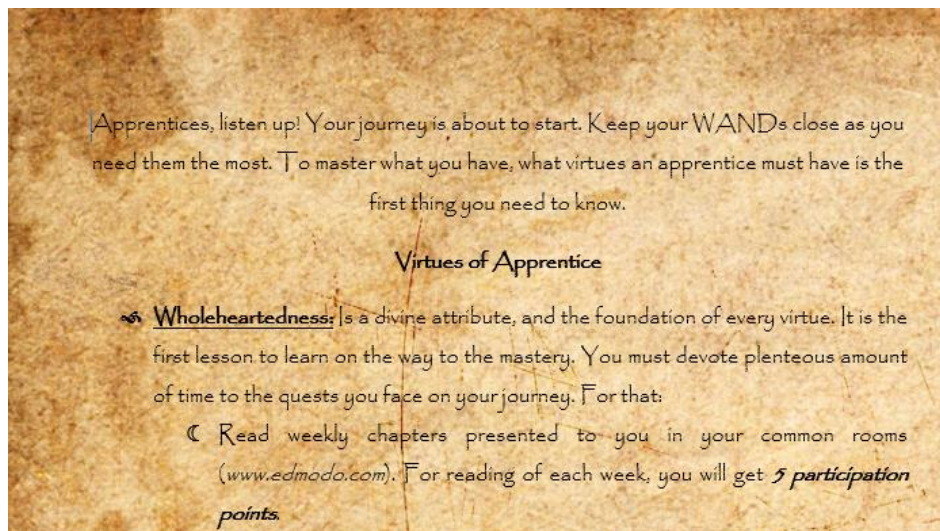
Figure 14. A Snippet from the Virtues of Apprenticeship

✓ Presentations Used by Instructor: The weekly presentations were redesigned using the structure of the online courses provided by the Khan Academy. Namely, the information was delivered through different kinds of media (video, text and picture) and in some parts of the presentations; surprise assignments were integrated into it. In these assignments, students were supposed to either answer a multiple-choice question (past midterm and final exam questions were used) or write a short reflection about what they had read. All of the activities completed by the students were graded in separate categories. In some parts of the presentations, some funny videos, pictures or '*Do you know'* phrases were embedded for mental breaks. Also, the students were allowed to comment on the course content and see each other's comments and answers. For this, an app called *Blendspace* in *Edmodo* was utilized. A picture from a sample presentation can be seen below in Figure 15.
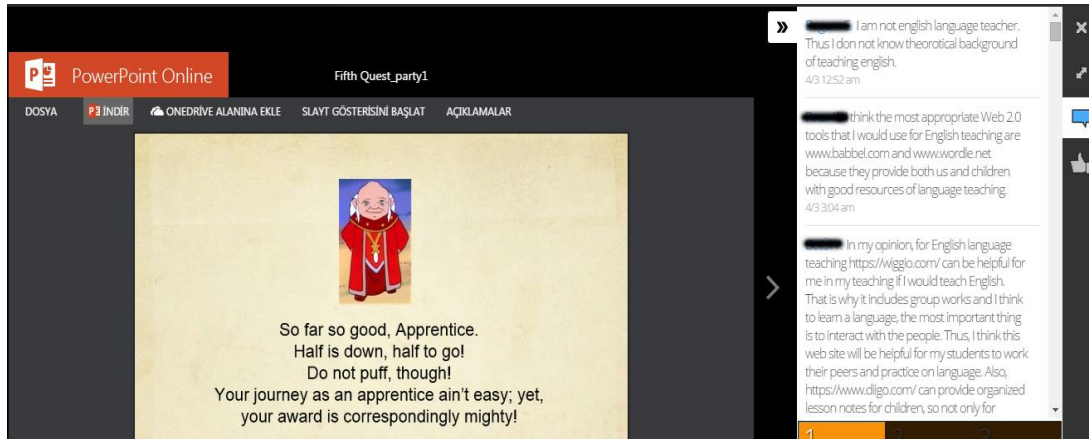
Figure 15. A Sample Picture from the Presentations in Blendspace

✓ Jargon of the Course: The jargon used in the course was changed. For example, the students became apprentices and instructor became the master. Assignments were named as either reflective challenges (short reflections in presentations) or mushroom challenges (multiple-choice questions). Department names were changed as well. Presentations became *Quests*, and the whole course became a journey. For full list, please see *Almighty Dictionary* in the Appendix C.

Apart from those, new materials were also added to the course.

✓ Acceptance Letter: Before the beginning of the semester, an acceptance letter was sent to each student in order to create curiosity and inform them that the course would be different from all other courses they had experienced so far. In the letter, a brief information about the course was given in a narrative way. The letter is presented in the Appendix D.

✓ Four Houses: Another aspect inspired by the *Harry Potter* genre is the '*houses*.' They are used for dividing the students into four groups of player types offered by Bartle (1996), on *Edmodo*. For that, students were asked to take Bartle's Player Type test, and on the basis of the results they were registered into a relevant group in *Edmodo*. Four *houses* were created on *Edmodo*: *Centaurs*, *Leocampuses*, *Salamanders* and *Sphinxes*. These are all

fantastic creatures that have specific type of characteristics. Based on these characteristics, they were associated with the player types offered by Bartle.

- o *Centaurs*: These creatures are the explorers of the universe, watch the sky and discover the unknown. Therefore, they are associated with Explorer player type.
- o *Leocampuses*: Half lion and half fish creature in Greek and Roman mythology. No specific characteristics; yet, they combine different kinds of networks (sea and land). Therefore, they are associated with Socializers.
- o *Salamanders*: *Salamanders* represent people who can go through the fires of passion and the fire nature of the creature can represent the desire. Therefore, they are associated with Killers.
- o *Sphinxes*: They are smart creatures and ask riddles to people they face. Therefore, this intelligence and power of wisdom reminded me the characteristics of Achievers.

Other game elements were integrated into the online platforms used (*Edmodo* and *Weebly*) and into the in-class activities, which will be explained next in more detail.

3.5.2.1 Edmodo

Edmodo is a Facebook-alike learning management tool with useful functions such as gradebook, notifications, assignments, file uploading and giving badges. Also, it enables sending message to groups, specific individuals or a particular group. This was quite handy attribute, as I wanted all the participants from different *houses* see their works in some situations and comment on them. Moreover, there are some apps integrated into the system, which serve for different purposes. One of them, *Blendspace*, was specifically useful for me to use. After creating the four *houses,* a welcome message with a special emblem for each house was added to them, and additionally the following poem was specifically written and added to the system by the instructor for the purpose of extending a warm welcome and giving hints about the course.

A mysterious box, full of tricks and treats,
With a screen full of many colors of various pleats,
But you need to know how to treat it

If you learn, apply and practice,
It plays nice and makes you wise,
Alas, if you huff, puff and give up
It becomes a battle you can fight but not triumph

So, the apprentice, listen up!
Read, Study, and Work hard!
You might suffer but never give up!!

The two documents, *The Way of Apprentice* and *Virtues of Apprenticeship*, were added to each *house*. Codes to enable the students to register to a specific *house* based on the Bartle test results mentioned above were sent to them and they were asked to create an avatar for themselves. *Edmodo* offers two options for this, either of which allows uploading a photograph or creating an avatar using the avatar creator that *Edmodo* provides.

Weekly presentations were prepared and put into the *Blendspace*, and an informative e-mail was sent to all students. Although *Edmodo* sent notifications to every student, still a reminder was sent to them additionally. The students were asked to check the *quests* and complete the activities until the given deadline. Students were also asked to use *Edmodo* to communicate with each other and with the instructor and me, to help each other by using a particular *virtue* created for this purpose.

After the deadline, on the basis of the students' performance in *quests,* the extent of help they provided to each other, in-class performances, performances on *Weebly* and completion of the laboratory assignments, were converted into points and entered in the gradebook in *Edmodo*. The badges awarded either to individuals or to a *house* were given according to the points accumulated. In other words, their performance affected both their own prestige and their *house's* prestige. Four badges for personal performances and four badges for the performance of *house* based on either the

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theme of the weekly presentations or the theme of the week was created for each week. In all, supportive and amusing messages were attached. Sample personal badges and *house* badges and their explanations are presented in Figure 16 and Figure 17 below:

Ghost

Apprentice, you have not been around for a while. Halloween is coming. I suppose you pick to be a ghost. Come back soon! Quests are impatient.

Zombie

Apprentice, you walk but a bit slowly like a zombie. Is this what you picked for coming Halloween? You can do way better in the next quest...

Cool Pumpkin

Apprentice, you do great! Cool enough to put in the yard. However, you need to do a bit more to scare the hell out of people in Halloween...

Blood-sucker

Apprentice, you are a spooky blood sucker in Halloween. You are both scary and smart. Good work for this quest. You are the best! Keep going!

Figure 16. Sample Personal Badges and Their Explanations

Clubber

You seem to have so many parties lately. Your house is the last in house-winning contest in this quest. Yet, next quest will be your shot!

Confused Magician

You are doing great, though a bit confused. Your house is the third in house-cup contest in this quest. Though, in next quest, you will rock!

Ready-to-be Champ

You have done great. Your house is the second in house cup contest in this quest. Yet, I see you are ready to be champ in the next one

House Cup Winner

Awesome work. Your house wins the house cup in this quest! You deserved this... Great work, indeed. Your way to mastery looks bright...

Figure 17. The Descriptions of the Sample House Badges

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Along with the badges, based on weekly performance, a leaderboard was designed with top ten or nine students. A sample leaderboard can be found in Appendix E. The students deserved to be in the list for three times were given the choice of four privileges from which to choose only one. For more information about the privileges, please refer to the *Virtues of Apprenticeship* in the Appendix B.

3.5.2.2 Weebly

Another online platform used throughout the study was a website created by using a web 2.0 tool, *Weebly*. the website was applied when the laboratory sessions started, approximately three to four weeks after the in-class and *Edmodo* activities started. In the laboratory, students created instructional materials using different kinds of web 2.0 tools, including the *Weebly* to write a short reflection based on their experiences and answering three questions.However, these reflections submitted on Weebly webpage were not used in this study since they were not about the evaluation of the gamified course.

In the website (see technologiainnlearning.weebly.com) named as *Quillery,* specific pages for welcoming contact information and weekly reflections by each *house* were created. The welcome page contained short information about *Quillery* and a progression bar for reflections (see the Figure 18 below).

Figure 18. A Snippet from the Welcome Page

On the other hand the contact page (*Send Owl)*, consisted of the instructor's contact and a form to send e-mails (See the Figure 19 below).

Figure 19. A Snippet from Contact Page

The remaining pages had the weekly reflection questions.

Figure 20. A Sample Snippet from the Reflection Pages

For the 9-week-long reflections, different badges were created such as the *writer, topographer, infographer, riddler, supervisor, quaker, oscar winner, DJ, director etc* associated with the web 2.0 tool used in laboratory. Students were asked to submit their reflections under the respective badges under their *houses.*

3.5.2.3 In-class

Students were asked to finish their *quests* before in-class meetings, the participation was not mandatory but there was a *virtue* for participation and students earned participation points to deserve this *virtue.* In the class, the instructor basically talked about the content and from time to time directing questions to the students. Those who answered the questions earned a participation point and a pearl, and at the end of the lesson, those who earned the highest point were awarded with small gifts. Those points also played a crucial role in the badges and the leaderboards. The structure just described above was followed in the first group, yet the structure of the second group was changed by introducing some iterations on the basis of the data collected and analyzed. These changes are elaborated in below in the section entitled *Study with the Second Group*.

3.5.2.4   Ethical Concerns

In order to ensure student honesty throughout the study, they were asked to read carefully and sign a contract prepared beforehand, highlighting what is meant by plagiarism, its various forms and the intolerance to plagiarism by the course team which would not hesitate to exclude anyone who did not comply with this binding honesty contract. The jargon used in the contract, named as *Declaration of Honesty* (see the Appendix F) was created following the selected narrative.

3.5.3   Study with the First Group

First meeting with the first group was an informal meeting held outside of the class due to the ongoing construction in the building, which prevented the interesting and originally planned introduction session with the wands and the capes. In this short first meeting, which provided general information about the course and the designed instance, the students were asked to take Bartle's test and register to Edmodo via e-mail. Unfortunately following the initial meeting, only seven in-class sessions were delivered due to the elongated construction works. However, weekly online activities were held from the very begnning. The first group was a crowded one, and due to the lack of the face-to-face meetings, at first, great amounts of e-mail exchanges took place in order to help students to get settled in the course. When in-class meetings started, two small classrooms were insufficient for the number of people   in the group. Even though there were two sections, applying the pre-determined plans were quite hard (i.e. distributing pearls to those answering questions correctly. At the end of the semester, a final *Apprentice Leaderboard* was designed and posted on *Edmodo.* In this leaderboard, champions of each *virtues* and champion *houses* were listed (see Appendix G). Also, an award ceremony was held in which champions received different types of awards. Moreover, a certificate of mastership was prepared and distributed to all students (see Appendix H).

3.5.4   Iterations

After the completion of the study with the first group, simultaneous collection and analysis of the data revealed the need for another round of data collection-analysis cycle. Therefore, in an attempt to reach to saturation of data, the cycle was repeated

with another group of participants from a different department. Before the repeatition of the cycle, some iterations were made on the basis of the already analyzed data.

3.5.4.1 Iterations in In-Class Activities

A different strategy decided to be used in the classes with the second group. This involved asking the students to submit, for each quest during five weeks, six questions related to the content they studied in the respective quest. Then, students were asked to come together with their *housemates,* and those questions were repeated to the full house. They were asked to discuss the answer with *housemates,* and if they answer the questions correctly, the *house* earned a point. Those whose questions were asked earned another point, and these points were included in the calculation for leaderboard and badges. Winner *house* earned three privileges (skipping a question and earning point, asking the instructor and earning the point, and asking other *houses* and earning a point), and was asked to pick one.

Another iteration was the classroom used: bigger classroom was found and students were sat in a U-position. Also, more mental breaks were added into the *quests* in *Edmodo.* More detailed documents were prepared for grading policy (see Appendix I) and explanations of the terms (see *Almighty Dictionary* in Appendix C) used due to the selected narrative.

3.5.5 Study with the Second Group

The study with the second group started with the same technical problem with as the first group, the size of the classroom. Luckily the problem was resolved in the second week as a bigger classroom was found. In the first meeting, an interesting entrance was done with the poem mentioned above. Students were informed about the course and the documents used were explained. Students were asked to take Bartle's test which was explained in *Literature Review* section and based on their results, they were separated into groups.

During the remaining weeks both in-class and online sessions went on as planned. During these sessions the questions asked by the students in *quests* were in turn asked to people in *houses* one by one. After two weeks, the question-asking process was changed, and students were asked to select representatives from each *house.*

These representatives were supposed to tell the question or the answer to their *housemates* in form of a silent movie game. After 5 weeks, Q-A sessions were ended, and instead more specific in-class activities were held (i.e. in distance education topic, the instructor connected to class from a different place and asked students to answer some questions based on the experiences they were having at that moment). At the end of the semester, final leaderboards were designed and award ceremony was held, and just like the one with the first group, certificates were distributed.

3.6 Data Collection

For the evaluation of the integration of gamification into the course, which involved locating and eliminating the problematic parts, enhancing (improving) the necessary elements and identifying the working elements for a model formation, some data was collected within a single case for nine months. The implementation and data collection processes were carried out twice with two separate participant groups at different times. Normally in formative evaluation research method, the instance is designed and developed either before or during the implementation and data collection processes. However as a third option, researcher can use a mixed method by designing some parts of the instance beforehand and continuing the design and the development processes during the implementation and data collection   (Reigeluth and Frick, 1999). By using the last option as a first step the case was designed, taking into consideration the relevant literature on gamification integration in various fields and combining this with my own experience and intuition, and the feedbacks received from my advisor. Following this, the details of the materials used in the instance were designed simultaneously with the implementation process on the basis of the collected and analyzed data. Since the research design adopted a qualitative approach, as elaborated by people like Reigeluth and Frick (1999) and Merriam (2009), three techniques were used in data collection for the triangulation purpose: observations, interviews and documents. This section provided some information on the nature of the design and the implementation as well as the rationale for data collection instruments.

3.6.1 Instruments

Reigeluth and Frick (1999) emphasize the absence of rigorousness in case studies and suggest some methodological solutions to overcome the problem. These issues were examined in some detail in the section entitled the *Quality of Research: Reliability and Validity.This* section concentrated on the question of *triangulation* in conjunction with the justification of the data collection instruments. Triangulation is a technique required to improve the *credibility* of the data and involves data collection from multiple sources and cross-validating those sources (Reigeluth and Frick, 1999). Considering this requirement, data were collected from different participants by using observations, interviews and documents (i.e. students' comments and questions). Observations are considered to help researchers to examine the phenomenon in its natural context to obtain first-hand information (Merriam, 2009). As a specific methodology, as Reigeluth and Frick (1999) state, it also helps to justify the principal components of the model. That is why observation was used throughout the whole process. The second element in triangulation is the documents, which help researchers to evaluate the instance and its constitutive elements (Reigeluth and Frick, 1999). Considering this, we collected as many relevant works of the students as possible, such as e-mail logs and students' comments. Final and the most fruitful source was the interviews. As Reigeluth and Frick (1999) emphasize, they enable researchers to gain in-depth information about the participants' opinions and reactions to the elements of the model. These instruments along with a demographic questionnaire are examined in detail below.

3.6.1.1 Questionnaire

 A demographic questionnaire was used to obtain some information about the students and their game-playing habits. The purpose of this questionnaire was to gather as much information as possible about the target group in order be able to make the necessary adjustments in the course structure on the basis of the data collected.

Even though most of the design works were completed before meeting the participants, getting to know the participants helped the researcher evaluate some of the iterations based on the characteristics of the participants. The questionnaire

(attached as Appendix J) intended to collect data on age and gender, characteristics of participants as students (such as year, GPA, department and ID), and their game-playing habits. In the questionnaire, students were asked 2 open-ended, 1 dichotomous (0=No, 1=Yes) and 5 multiple-choice questions to allow them to state the name of their *house*, whether they play game, if not why, if played, how long, how many hours and what kinds of game they played, the reasons for their game-playing habits and their preference for playing in a group or alone (0=Alone, 1=Within a Group). The questionnaire was examined by an expert and a PhD student in Computer Education and Instructional Technology Department. The students were given the well-known *Bartle's Player Type Test* in the formation of the four houses. As the reliability and validity of this online test have not been verified it was used only as a fantastic element (*sorting hat*) in this study and no conclusion was drawn from the test results. The participants were divided into the following *houses (common room) Sphinxes, Salamanders, Leocampuses and Centaurs*.

3.6.1.2 Observation Protocol

In-class and online observations conducted during the research were of unstructured nature aiming to collect as much descriptive and reflective data as possible along the lines suggested by Creswell (2012). The main purpose of the observation was to decide on what technical, organizational and process-related components should be included and, positive and negative aspects of the course as perceived by the participants during the course interactions. Observations were not only instrumental in gauging participants' behaviors, actions, and attitudes towards the course but also valuable in seeing their body language in a context-related manner; and understanding how the design elements influenced the course progress in detail. Having obtained the author's permission an observation protocol was adopted for in-class observations (Akilli, 2004) (see Appendix K), with some alterations to parts of the protocol on the basis of the research questions, which was re-checked by an expert. In the selection of the protocol, the following features were considered:

1.   Creswell's (2012) one of the steps of how to conduct observations were used, namely the preliminary "gatekeepers" in defining the target group and instance and when and how long the observation is to be held. Thus the selected protocol included the necessary descriptive information categories

such as duration, time, date, class and instructor to be used in the observation.

2.   It is critical that while observing the instance, the observer needs to define what to observe in order to be able to address the research problems/questions or the theoretical framework adopted (Merriam, 2009). In order not to record irrelevant factors observed and to remind the researcher the scope of the observations, it was necessary to put the research questions and aim of the study on the observation protocol, as it is in the adopted protocol.

3.   As suggested by Creswell (2012), both descriptive and reflective notes need to be taken during the observation process. Descriptive notes are description of the occurrences, participants and activities in the observed context; reflective notes are researchers' reflection on the factors aforementioned in the previous sentence. This protocol requires the observer to record her observations the forms of both descriptive and reflective notes.

Throughout the in-class and online observations carried out for six months with two separate groups, the researcher had the role of a participant observer as well as a participant in the activities as a research assistant. The participants were aware of my dual role as the research assistant and an observer. For the recording of in-class observations, the above-mentioned observation protocol was used. As for the online observations, the students' online activities on Web 2.0 platforms *Edmodo* and *Weebly* and their e-mail correspondences were saved. Hence, the online observations were considered as documents to be analyzed.

The in-class observations were used for their quality of being instrumental in the collection of precious information about the design, the pedagogical, technical and organizational problems, participants' reflexive reactions to the elements applied and their opinions about them, and the participants' solutions to problems encountered. Also, this experience enabled the researcher to interfere and solve the problems as they arise. Moreover, the interaction between the students and the instructor provided some valuable comments, feedbacks and insights about observation as a method which also enabled the researcher to take into consideration some of these

spontaneous and reflexive reactions and feedbacks that may have been forgotten by respondents during the interviews.

3.6.1.3 Interviews

Interviews are the instruments providing the richest data (Merriam, 2009; Reigeluth and Frick, 1999), and for instructional design theory (model) formation studies, interviews need to be repeated with different sets of questions "in varying situations (types of people and conditions)" (Reigeluth and Frick, 1999, p.13). Considering this advice from the developers of the formative evaluation methodology, two sets of interviews were conducted with two different groups of participants. One set of semi-structured interview was conducted during the implementation of designed instance and the other set of semi-structured interview was conducted at the end of the implementation process in both groups. In the first group of participants, both interviews were in the form of one-to-one interviews because it is the most-data rich interview technique, which is recommended by Reigeluth and Frick (1999) to start with. In the second group of participants, first set of interviews was also one-to-one semi-structured interviews; yet, the final interviews conducted after the implementation were focus-group interviews. The rationale behind focus-group selection was to confirm the previously obtained results through more representative techniques (Reigeluth and Frick, 1999). Also, it made it possible to enable the participants in the groups to add or criticize other's opinions in order to gain cumulative feedback. For that, four participants from each *house (Salamanders, Sphinxes, Leocampuses and Centaurs)* were selected (information-rich cases among the volunteers). The reason of selecting *houses* as focus groups was that throughout a semester they were requested to work cooperatively and the researcher wanted to gain in-depth insight about this synergy.

In case studies, the interviews conducted in a manner of conversation are quite valuable in that not only will they allow the researchers to find out the participants' opinions about the applied instance but also to gain a deeper understanding that may be conducive to opening new venues of investigation. The realization that semi-structured interviews with open-ended and less structured questions could serve our purpose well and taking into consideration Yin's (1996) suggestion that researchers need to follow a guide with probes were applied. Two different interview guides

were prepared. The first one was applied during the implementation in order to determine: the weak and the robust elements used in the instance; how to improve the weak ones; what other elements need to be considered: and how they should be applied. The purpose of the questions were to evaluate the applied elements, to discover new ones and to define the specific guideline to apply them in order to form a model. The second interviews were applied after the implementation in order to give the participants a chance to reflect on the designed instance, their evaluations about the elements and how they were applied.

The purpose of the study was to create and implement a gamified educational design; hence, the interview questions were developed by paying specific attention to these three aspects and the research questions. A fairly comprehensive literature review on game elements, gamification, the expert opinions from the instructor of the course and the researcher's experiences and intuition have been the underlying factors in the process. Furthermore having examined a similar study (Akilli, 2007), the questions for the first set of interviews was formulated. The second set of interviews was formed on the basis of the observations in the classes throughout the semester, literature review and the questions of the first interviews.

After the development of first interview guide, the views of two experts were obtained about the appropriateness of the questions for the research questions, about their comprehensibility and clarity. On the basis of the feedbacks some revisions of the structure of the questions were made following this a pilot study was done with two participants from the first group in order to clarify any vagueness. As there was no major revision the data collected from the pilot was included in the study. For the second set of interviews, the same procedure was repeated with two experts and two students. Likewise, the pilot study data were included in the study.

The first interview guide is composed of three parts: introduction, interview questions and conclusion (see Appendix L). In the introduction, the following information was included: the date, duration, time and place of the interview, interviewee, the purpose of the study, the privacy of the interviewees, and the existence of voice recorder. In the interview questions section, there are 20 semi-structured questions whose purpose were stated above. In the conclusion section, the researcher thanked the participants. The second set of the guide is composed of three

sections: introduction, interview questions and conclusion (see Appendix M). The structure was the same as the first one except the fact that interview questions section includes 44 semi-structured questions. In this research, interviews were the richest data sources.

3.6.1.4 Documents

Triangulation as one of the three main principles of data collection (Yin 1996); requires data collection from several sources to overcome some possible problems due to the construct validity. For this reason in addition to observations and interviews which are considered to be data-rich sources a third data collection methodology was integrated into the process: documents. This necessitated the collection of students' comments and questions throughout 6 months in order to either support the findings from other data collection instruments or to add new elements that were not thought about previously to the already existing ones.

The course was, as emphasized before, a composite one consisting of in-class and online activities. In the class, students were not expected to produce any tangible works; therefore, observations records were used for in-class activities (As mentioned before, laboratory sessions were out of the scope of this study; therefore, they were not examined). On the other hand, students were required to do a considerable amount of online work via two Web 2.0 platforms: Edmodo and Weebly. Consequently their online comments as well as e-mail logs (interaction between students and the researcher) were recorded and analyzed.

From Edmodo, their selected comments about the instance, interactions on website, and e-mail logs were collected. The comments, e-mails and interactions were collected only those who were willing to participate in the study.

3.6.2 Procedure

Before the data collection process, an application to Middle East Technical University Human Subjects Ethical Committee for ethical permissions were completed. The approval obtained from the committee is included as Appendix N. Since the instructor of the redesigned courses is the researcher's thesis supervisor, no

additional permission was needed to redesign the course. As previously emphasized, data collection procedure was done twice with different group of participants.

3.6.2.1 The First Group

The first group of participants who took the CEIT 319 course in Fall Semester of 2014-2015 Academic Year were students from the Department of Foreign Language Education. The data collection with this group started in September 2014 with the online observations until the end of December 2014. The first meetings with the two group took place on 23rd and 24th September respectively. In the first meetings the participants were informed that they would be participating in a project testing a new method and therefore, the course they were taking would not be a regular one. The students were asked not to hesitate to comment on any problems they might see in the design as their feedbacks would be extremely valuable. In the first meetings, the instructor not only created a warm and relaxed environment for the students and but also helped the researcher to build a rapport with the students. The participants were informed by the instructor about their rights concerning privacy, physiological and physical protection. Then the students were asked to read carefully and sign a consent form on a voluntary basis. (See Appendix F). The consent form included detailed information about the study, the researcher, the advisor and the data types to be collected from the participants, and students' rights of privacy, leaving the study in any time they want, not giving data in any time if they did not want to. Along the with consent form, the participants were requested to fill in a questionnaire form.

Online observations started from the moment students registered to Edmodo. Since there was no class to show to students how to do in the first meeting, a detailed e-mail was sent to all about how to take Bartle's Player Type test, and how to register to Edmodo based on their results from the test. Therefore, online observations and document collection started on September 30th; yet, in-class observations did not start until October 21st for unforeseen factors. Until that time, online communication, the students interactions in Edmodo and their' reflections and questions were recorded to be analyzed at the end of the semester in late December. In-class observations started on October 21st /22nd with the first face-to-face meetings. However, due to some holiday plans and the participants' heavy workload, some of the in-class meetings were cancelled. This explains why in-class observations were conducted in the first

group for only seven weeks. Table 12 below shows the dates of the in-class observations conducted.

Table 12. *Dates of In-Class Observations in First Group*

	In-Class Observation Sessions						
Section 1	21st October	11th November	18th November	25th November	2nd December	9th December	23rd December
Section 2	22nd October	12th November	19th November	26th November	3rd December	10th December	24th December

Observations were made in two different locations: First in a small classroom in the Department of Computer Education and Instructional Technology and the second in a larger classroom in the Faculty of Education. The small sized first class with sufficient lighting but insufficient seats for the first section participants made proper observation process fairly difficult. Despite the attempt to sit next to a student in order to observe the instance it was virtually impossible to see all students; therefore, after one observation session, the researcher started to sit on instructor's seat. In the second section, the class was big enough for all students, and sitting arrangement was appropriate for the researcher to observe. She sat on the instructor's seat from the very beginning.

Documents were collected throughout the online observations. Students were requested to register to *Edmodo*, and during seven weeks *quests were* uploaded to the system for students to read and write reflections to *reflective challenges.* The entire course materials were uploaded to the system and students' interaction with each other and with the material (comments, reaction smileys) were saved. Comments related to the instance were selected for the analysis. Moreover, participants were encouraged to ask me (as the teaching assistant of the course) and the course instructor any question via e-mail. All e-mail logs were saved for a semester. Students were supposed to do these *quests* in any time they want until the deadline. Therefore, in their comfort zone, the participants generated the documents. Schedule of the documents collection from *Edmodo* is presented in the Table 13 below.

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Table 13. *Document Collection Schedule via Edmodo*

Edmodo
3 October 2014
10 October 2014
19 October 2014
29 October 2014
23 November 2014
12 December 2014
21 December 2014

Note: The dates refer to the time the assignments were given.

As emphasized before, interviews were conducted by the researcher both during and after the implementation phase.

After three-week in-class and four-week online observations, the first set of interviews was held with 18 participants. Since each interview lasted around 25 – 30 minutes, some interviews were done on different days. The second set of interviews was held on different days as well with 9 participants. Detailed schedule and the duration of the first and the second sets of interviews is presented in Table 14 below.

Table 14. *Detailed Schedule and the Duration of the First and Second Set of Interviews*

	First Set of Interviews		Second Set of Interviews	
	Dates	Duration (m)	Dates	Duration (m)
1. Participant	24.11.2014	19.48	06.01.2015	17.42
2. Participant	24.11.2014	30.42	06.01.2015	22.15
3. Participant	24.11.2014	29.56	07.01.2015	13.28
4. Participant	25.11.2014	26.41	07.01.2015	21.46
5. Participant	26.11.2014	26.07	07.01.2015	16.07
6. Participant	26.11.2014	23.23	08.01.2015	35.18
7. Participant	26.11.2014	39.45	08.01.2015	17.59
8. Participant	26.11.2014	34.38	09.01.2015	23.12
9. Participant	27.11.2014	28.19	09.01.2015	18.15
10. Participant	27.11.2014	25.38		
11. Participant	28.11.2014	26.49		
12. Participant	28.11.2014	28.26		
13. Participant	01.12.2014	30.15		
14. Participant	01.12.2014	35.33		
15. Participant	01.12.2014	38.32		
16. Participant	02.12.2014	21.27		
17. Participant	02.12.2014	19.52		
18. Participant	02.12.2014	31.50		

Note: Participant numbers do not refer to the same participants in different set of interviews.

Both sets of interviews were held in two different locations: an empty classroom in the Department of Computer Education and Instructional Technology and the sound studio in the building of GISAM (*Visual and Audial Systems Research and Application Center*). The first place was quite enough but sometimes voices of the students passing by outside of the class could be heard. The second place was deadly quite since the room was sound-proof. Both places were well illuminated. The first place was a warmer place for the participants as they were familiar with the place. On the other hand, the second place was a totally different place for them and a bit cold. For both interviews, small gifts were presented to the interviewees as the token of researcher's appreciation.

In both interviews, the researcher first greeted the interviewees with warm and sincere welcome. She thanked the participants, and assured that the interviews were voluntary and the participants could leave any moment they wanted. Then, she detailed out the purposes of the interviews, she presented a copy of the interview questions to participants, she assured the confidentiality of the participant and informed them about the contact address if they wanted to learn about the result of the study. Then, she asked for the permission of the participants for the interviews and to record the interviews with a voice recorder. After that, in the first interview, she presented their gifts, which made them happy. Also, throughout the interviews, she kept reminding them not to consider lab sessions while answering the interview questions.

During the interviews, the researcher had a friendly, sincere and attentive manner. In order to ensure sincere and honest answers, the participants were given insurances about the confidentiality of their answers and negative feedbacks. Throughout the interviews, there was a relaxed, friendly, funny and sincere atmosphere. The rapport established between the students and me was vital in obtaining any positive or negative feedbacks from the participants. Also, the researcher kept her eye-contact with the participants all the time so that the participants would realize the importance of their views and comments for the research. This relaxed atmosphere let the participants drift away from the topic from time to time, however, my timely interventions brought them back to the point of interest. Despite the existence of an interview guide to follow, the researcher needed to ask some spontaneous questions

related to the answers given by participants from time to time and obtained more information. In some cases, probes previously defined were asked. Also, some participants forgot about the details of the elements, the researcher told small anecdotes to remind them. After the interviews were completed, she thanked the participants. Throughout the process, she used a voice recorder to record the whole conversation.

3.6.2.2 Second Group

As most of the procedure explained in depth above was the same for the second group of people, for the sake of not repeating all steps, only the differences will be explained in this section.

The second participants were students from the Department of Early Childhood Education, and they took the CEIT 319 course in the Spring Semester of 2014-2015 Academic Year. Therefore, data collection procedure with them started on 17 February 2015. There was one section. The first meeting was the same with the first group with an addition of asking the students to take Bartle's Player Type Test in the class. For those, who had mobile devices, completed it via their devices, and those who did not, were given devices by the instructor and the researcher. Also, students were informed about all the course materials used in the course in the first meeting and asked if they had any questions. Based on the observations from the first group, it was a necessary approach. The online observations and documents collection started on February 18th 2015, and in-class observation started on February 17th 2015. In the first in-class meeting, the classroom was so small that students could not fit in. Therefore, another classroom was searched for, and finally for February 24th 2015, a larger classroom in Department of Business Administration building was arranged. In class observations were held from February 17th to May 22nd 2015 each week with the exception of May 19th due to national holiday. In class observations were made in two different locations. To be more specific, the first observation was held in a different location than the other observations. This was a small classroom in the Department of Computer Education and Instructional Technology. The first classroom was pretty small with insufficient seats for the first section participants. There was no problem with lighting but there was not enough space for the seats for all participants, which made observing the activities and reaching to each student

quite hard. The researcher stood up at the back of instructor's desk in order to observe the whole class better and support the instructor with the materials. The second classroom was a lot larger; and in this one, as a change, students were requested to sit in groups according to their *houses.* The researcher observed the class, standing at the back of the instructor's desk and provided support for the whole semester.

Documents were collected in the same way with the first group. Schedule of the document collection from Edmodo is presented in the Table 15 below.

Table 15. *The Schedule of the Document* Collection via Edmodo

Edmodo
18 February 2015
25 February 2015
4 March 2015
11 March 2015
18 March 2015
8 April 2015
15 April 2015
22 April 2015
29 April 2015
6 May 2015
13 May 2015
20 May 2015

Note: The dates represent the time of the assignments given.

The interviews were conducted twice with the second group as well. After five-week in-class and four-week online observation, first set of interviews were held with 7 participants. Since each interview lasted around 25 – 30 minutes, some interviews were done on different days. The second set of interviews was held on different days with focus groups composing of four people from different *houses* (*Salamenders, Sphinxes, Leocampuses and Centaurs)*. Detailed schedule and the duration of the first and the second sets of interviews can be seen in the Table 16 and Table 17.

Table 16. *Detailed Schedule and the Duration of the First Set of Interviews*

	First Set of Interviews	
	Dates	Duration (m)
1. Participant	13.04.2015	36.05
2. Participant	18.04.2015	22.16
3. Participant	18.04.2015	31.16
4. Participant	19.04.2015	20.20
5. Participant	20.04.2015	19.46
6. Participant	21.04.2015	19.22
7. Participant	28.04.2015	33.12

Table 17. *Detailed Schedule and the Duration of the Second Set of Interviews*

	First Set of Interviews	
	Dates	Duration (m)
1. Group	26.05.2015	49.49
2. Group	28.05.2015	46.53
3. Group	01.06.2015	44.13
4. Group	02.06.2015	36.08

Both sets of interviews were held in one location: the sound studio in the building of GISAM. The place was deadly quite since the room was sound-proof and well illuminated. The interview processes for both sets occurred in the same way with the first group of participants. Unlike with the first group, in the second group, the second set of interviews were conducted with focused groups composing of four people from each *house (Salamanders, Sphinxes, Leocampuses and Centaurs).* For those interviews, participants were asked to say their names before each time they speak. Throughout the interviews, they were asked to share their opinions honestly and contribute (criticize or favor) to other house-mates opinions if they have any.

3.6.3   Summary of Data Collection

Figure 21 clarifies the data collection methodologies used in this study.

First Group of Participants (Two Sections)

Second Group of Participants (One Section)

During the implementation	After the implementation	During the implementation
• Online Observations (i.e. (Students assignments, comments, reflections and e-mail logs) (9 Weeks) • In-Class Observations (7 Weeks) • One-to-one semi-structured interviews (5th Week)	• One-to-one semi-structured interviews	• Online Observations (i.e. (Students assignments, comments, reflections and e-mail logs) (9 Weeks) • In-Class Observations (7 Weeks) • Two sets of semi-structured interviews, one is one-to-one and the other one is focus group. (6th Week and 12th week)

Figure 21. Summary of Data Collection

3.7 Data Analysis

Due to iterative nature of the formative evaluation research, data collection and analysis procedures were conducted continuously and simultaneously as Reigeluth and Frick (1999) suggested. There was not any leading model or theory for gamified learning environments in the literature; hence an inductive analysis aiming to find out categories, subcategories and themes based on the data transcribed was followed. For this, data analysis method elaborated by Miles and Humberman (1994) was used. This necessitated a three step data: data reduction, data display and conclusion drawing and verification. It seems necessary to give a brief account of these steps.

3.7.1 Data Reduction

Data reduction is "the process of selecting, focusing, simplifying, abstracting and transforming the data that appear in written-up field notes or transcripts" (Miles and Huberman, 1994, pp.10). This first step helps researchers to condensate data collected in a way to allow some conclusions to bedrawn from it. Therefore, throughout the data collection procedure, data collected from observations, interviews and documents were transcribed simultaneously.

3.7.1.1 Interviews

Interviews were transcribed by three undergraduate CEIT students and one postgraduate Computer Science student due to time constraint faced by the researcher. The people selected to be the transcribers did not have any idea about the contents and scope of the study yet two of them knew how to transcribe interviews the third person did not have any idea about it. In order to ensure parity in transcriptions the transcribers were given a briefing as to how to transcribe the data using the same structure provided beforehand. They were asked to use the Word program and record everything they heard into a classified form ensuring a distinction between what the interviewer and the respondents said. They were also asked to specify the date, duration and the place of the interviews (see Figure 22 below).

Interviewer: What do you think of the class process?

Interviewee: On the whole I am happy about the class process. This gamified process is very amusing for me as I like playing games. I suppose the challenges, badges and the rewards and pearls were quite stimulating for me. Thus from this point of view it is nice, but also the slides on the web allow us to see them before the class and comment on them and receive feedback. They are nice for me for these. Furthermore during the class the videos we see are conducive to interactive learning. Also the lessons are enriched by pictures, location of web sites, additional sources. They all make the classes quite interactive, they contribute to both learning and teaching processes.

Figure 22. Sample Interview Transcript

After the completion of the transcripts, every single interview record was crosschecked in order to eliminate any mistake before the coding process. Afterwards, the transcripts were copied on a single word document in a chronological order and then the transcripts were read several times in order to have a general sense about the participants' thoughts. Next, using the research questions as a guide, codes, categories and sub-categories were constructed through a comparison of the answers given in by the each respondent. Open coding (Merriam, 2009) was employed, and categories, sub-categories and codes were labeled in congruence with the research questions, the purpose and the scope of the study, and the all codes, categories and sub-categories were listed. This coding procedure reduced the great amount of interview data, eliminated the irrelevant information to some extent and prepared the data for the next stage.

3.7.1.2 Observations

Observations protocols were gathered and typed on a Word document. On the upper-center of the document, the aim of the study and the research questions were specified in order to keep them in-sight while coding. At the beginning of the each observation protocol, the information on various things like the length, the date, the department and the section were filled and then, observation notes were recorded under three headings (descriptive notes, reflective notes and physical environment), (See Figure 23 below).

Figure 23. Template for Observation Transcripts

Similar to the analysis of the interviews, the notes taken were read several times in order to have general idea about the observations to produce a new set of coding by reviewing the codes, categories and sub-categories obtained from interviews. Apart from these general coding, each week, observations notes were saved to the specifically created word document, the notes were carefully scrutinized; however, coding was completed after the interviews. The obtained data from the observations were used to support the interviews as no new codes were obtained from them.

3.7.1.3 Documents

In order to strengthen the data and triangulation process the relevant e-mail logs among the instructor, the researcher and the participants, the interactions of the participants on *Edmodo*, the relevant comments shared by the participants on *Edmodo* were collected and copied on a Word document. The relevant data was selected and inserted into a Word document specifying the date of the e-mail/comments, the department of the participant who has asked questions or made /comments and whether the document is in the form of an email or a comment. Yet again the final document was read several times, and last set of coding was completed. The obtained data from the documents were used to support the interviews as no new codes were obtained from them.

With the purpose of obtaining a better sense of participants' ideas and problems about the designed case throughout the study the documents were weekly gathered and read thoroughly.

By employing open coding with data obtained from interviews, observations and documents; themes, categories and sub-categories were formed.

3.7.2 Data Display

Data display is "organizing the information in immediately accessible, compact form so that analysis can see what is happening and either drew justified conclusions or move on the next step of analysis the display suggests may be useful" (Miles and Huberman, 1994, pp.11). Data display can be in the form of graphs, charts and matrices. Therefore, following the coding (data reduction) process, the next step is to display the data in way that the researcher can draw conclusions. The process in this step is also summarized under three data collection methods. Before going any further, abbreviations were created for using them in display tables (see Table 17 below).

Table 18. *Codes Used for Data Display*

Codes	Meaning
//	First theme/code is affected by the second theme/code.
X	First theme/code is opposite of the second theme/code.
~	First theme/code is similar to the second theme/code.
+	A positive attitude/feeling toward this theme/code.
-	A negative attitude/feeling toward this theme/code.
|	Either the first or the second theme/code (or)
and	Both the first and the second theme/code (and).
!	Neutral theme/code (not affecting).
I21	Interview data from first participant in the second group
O1	Observation data from the classroom sessions in first group
DE2	Document data from the e-mail logs in second group
DO1	Document data from online activities in first group

All the codes found were placed on an Excel sheet with four coloumns: Data Source, Analysis, Comments and Frequency. For a sample snapshot, please see Figure 24 below.

Figure 24. Excel sheet prepared for the codes

3.7.3 Conclusion Drawing and Verification

The last stage of the data analysis procedure proposed by Miles and Huberman (1994) is to draw conclusion from the findings from the previous stage and to verify the findings. For that, an expert conducted open coding with the transcriptions while I conducted coding with the codes that have previously emerged. Both codes were compared and after a few discussion sessions, the final form of the codes were prepared. Later, the codes were checked by a colleague (PhD student). Separate discussion sessions were held with two contributors in order to come to a consensus on the codes/categories/subcategories obtained. In the case of any disagreement amongst the participants the code/category/subcategory was changed and voted on until a consensus was reached

Final forms of code books obtained through interviews, observations and documents and edited through discussions with two experts can be seen in the Appendix P.

On the basis of findings, the codes/categories/subcategories obtained through different methods were compared, the relationships between the codes/categories/subcategories were defined, the model and the principles were formed. The reliability and validity issues are discussed in the following chapter in detail.

3.8 Quality of Research: Reliability and Validity

Merriam (2009) considers trustworthiness and rigor as the most significant two criteria in judging the quality of qualitative research. In her usage these two concepts replace the two traditional terms used in quantitative studies: validity and reliability used. In quantitative studies, there are strict rules to follow in the investigation of variables and the statistical analysis based on them (Merriam, 2009). Therefore, in quantitative methodology measuring the quality of the design, data collection and data via validity and reliability terminologies is well structured. However, in qualitative studies, as the main source of data collection and analysis is human beings, it is not possible to reach an objective reality; however, it is possible to reach the "interpretations of reality" (Merriam, 2009, p.214) in a valid and reliable manner. For this purpose a few criteria can be utilized such as the ones specified by Yin (2003): construct validity, internal validity, external validity and reliability.

Likewise, Reigeluth and Frick (1999) suggest four methodical issues needed to be addressed in qualitative studies: construct validity, thoroughness (completeness), credibility (accuracy or internal validity) and generalizability (external validity).

Construct validity, as Yin (2003, p.34) defines, is "establishing correct operational measures for the concepts being studied". He further asserts that there are three tactics to measure the construct validity in case studies: using multiple sources of evidence, keeping the chain of evidence and having key informants' review of the draft case study report. In the study in line with Yin's tactics, in-class observations, online observations (documents and artifacts) and interviews were recorded and analyzed in order to cross-validate the data sources (triangulation *of sources* (Patton, 2002)). As well as using different data collection methods for triangulation, Patton (2002) and Reigeluth and Frick (1999) emphasize the importance of the repetition of the same procedure with different participants at different times. Considering this and the iterative structure of the formative evaluation researches, a second round of data collection and analysis process was conducted with a different group of participants at a different time. Secondly, in order to establish the chain of the events, every single case was recorded from the very beginning of the design process, was documented and presented for the readers to master each step as if they were the direct observers of the case. Reigeluth and Frick (1999) expand Yin's (2003) last tactic and suggest that preferability of the design should be evaluated by the experts in the field. Yıldırım and Simsek (2013) explain two types of expert review: in the first one , the researcher transfers the methods, procedure, each steps of the instance, all data collected, roughly analyzed data, and his/her perspective and comments on the data to an expert, in order to evaluate them jointly. From the beginning of this study, she worked with an expert in the instructional design and development procedures and in the qualitative studies, and throughout regular meetings; she made the necessary iterations in the light of the feedbacks given by participants. The second one involves sending all the documents and raw data to an expert for reviewing and giving feedback. In this study, after a rough classification of the data collected all documents and the results were sent to an expert who have had extensive experiences in qualitative studies for a review and feedback comments, in the light of which the necessary changes were made.

Internal validity or credibility is about how the research results represent the reality. As mentioned in the previous paragraph, in qualitative research, the bridge between the reality and the reader is the researcher; hence, the reality as well as the internal validity is quite relative depending on the context and the research purposes (Merriam, 2009). Merriam (2009) proposes six tactics to increase the credibility: triangulation, member check, engagement in data collection, peer examination, explanation of researcher's position and the search for negative findings. On the other hand, Yin (2003) presents three tactics, which differ from those of Merriam: pattern-matching, explanation building and time-series analysis. Triangulation and member check were explained in the previous paragraph. My standing (i.e. assumptions, biases and characteristics) are explained in the *Researcher's Assumptions* section below. For engagement in data collection, we spent a great amount of time with the participants in-class, online environment and outside the class. We collected the entire data single-handedly. For peer examination, a PhD student from the Department of Computer Education and Instructional Technology was asked to review the raw data after the data collection process was completed. Since the main purpose was to design an instance, explore it and form a model to apply in it, both negative and positive data throughout the implementation were collected. For the pattern-matching tactic, the elements discovered through the instance were compared with the ones the researcher intuitively had settled.

External validity refers to *transferability* of findings of a study to other cases. In other words, it deals with the issue of how generable the results of a study is (Merriam, 2009). However, the term generalizability as used in quantitative studies are quite different from its meaning in qualitative studies. As the main purpose is not generalizing the findings but instead exploring a phenomenon, generalization can be done up to a limited level. In case studies, especially in single cases as it is in this study, it is not convenient to overgeneralize the findings for different settings. Instead, it can be possible to *transfer* the results to a similar context, which is also applicable for this study. Even then, there is the possibility of overgeneralization, which was aimed to be avoided by providing *rich thick description* (Ryle, 1949 as cited in Merriam, 2009, p.227) of the settings of the instance and the results of the study. That is why each section in this study is explained in some detailed. This, as Merriam (2009) emphasizes, is a technique to increase the transferability of the

results. Additional strategies offered by Reigeluth and Frick (1999) are *situationality* and *replication.* Throughout the implementation process, different situations (e.g. uploading the *quests* before the in-class meetings for students to have access to or not uploading them) were tried, instance was manipulated and the differences between spontaneously occurred situations and the designed and implemented ones were clarified and recorded in order to propose hypothetic situationalities. Also, the instance was repeated with a different group of participants in order to gain as much information as until a saturation point. However, two repetitions could not bring saturation; therefore, more replication needed to be done which is also specified in the *Future Studies* section.

Reliability is about whether the same findings can be reached when repeating the research again and again (Merriam, 2009). However, considering the fact that qualitative studies are subjective and the findings are reflections of the reality from the researcher's perspective, exactly the same results may not be reached. Therefore, reliability can be referred as "whether the results are consistent with data collected" (Merriam, 2009, p.221). Therefore, in order to enhance the *consistency* in this research, triangulation, peer examination, investigator's position (explained before) and audit trail are offered. Audit trail means recording every decision, reflection and question based on a timetable (Merriam, 2009). Therefore, a log book of events and decisions made throughout the design and implementation process and explained every procedure in the study in detail in it was held.

An additional criteria is offered by Reigeluth and Frick (1999): thoroughness of data for which, they state five strategies. First, the participants were prepared at the beginning of the study by emphasizing the fact that they were going to try something new which might possibly contain many weaknesses to fix. They were informed any problem faced during the process were not going to be due to their learning deficiencies but due to the weaknesses of the instance. Also, the researcher built a good rapport with the students by spending considerable amount of time with them online, in-class and outside of the class. Second, data-collection process was *emergent*. In other words, the researcher first started to collect every data possible through interactions, observations, documents and interviews and continued with more goal-directed data collection style (e.g. asking more specific question in

interviews). Third, data collection and analysis cycle was repeated to reach saturation; yet, the researcher felt that more rounds of the cycle were required. Fourth, all kinds of data reflecting both the strengths and the weaknesses of the instance were collected. Finally, in the first group, the researcher had an interventionist role to begin with, but gradually towards the end of the implementation, she became more *obtrusive.*

Apart from reliability and validity issues in qualitative researches addressed above, Reigeluth and Frick (1999) consider another major methodological concern: preferability in design theory (model) studies, namely, how much better the designed model is than any other similar models. For that, they offer three factors to take into account: effectiveness, efficiency and appeal. However, they are no applicable to this study as there is no similar model to the model proposed.

Finally, Merriam (2009) emphasizes the importance of the ethics of the study in the judgment of the research quality and puts forward that there are two perspectives to discuss about ethical issues: from the perspectives of the participants and of the researcher. Considering the former one, students were informed about each step of the instance throughout the study and their freedom and right to quit study anytime. Before data collection, the researcher obtained their permissions, and before the interviews, additional verbal permissions were taken from them. Throughout the study, the participants knew the role of the researcher. While asking for permission to use the data collected from the participants before the implementation, no award (i.e. bonus points) was offered to students. Their willingness was the most important virtue for the researcher. For the former perspective, the role and assumptions of the researcher play significant role; hence, in the next sections, these two issues are going to be elaborated upon.

3.9 Researcher's Role

The researcher had an insider's role in this study. She designed the instance from the very beginning of the study with the help of an expert (her advisor) in the field, implemented each elements of the instance, provided assistance to the instructor of the course, collected data from the participants, and made some iterations in the light

of the data analysis. Despite the fact that she was an unofficial teaching assistant for the CEIT 319 course, she had extensive responsibilities as listed below:

1. Redesigning the instance at the beginning of the semester with the help of an expert in the field.
2. Selecting an online platform for integrating into the course.
3. Redesigning all course materials based on a fantasy narrative.
4. Uploading the redesigned materials to the online platform at appropriate times.
5. Collecting students' weekly works.
6. Grading students' online and in-class activities.
7. Providing guidance to the students.
8. Answering students' questions either face-to-face or via e-mails.
9. Making the necessary announcements to the students via e-mail.
10. Observing the students and the instructor in-class and online activities of.
11. Continuous analysis of the data collected.
12. Making necessary iterations in the course structure and materials used in the light of the analysis.
13. Implementing the altered conditions in the course structure (online and in-class).
14. Coordinating the online activities.
15. Providing assistance to the instructor throughout the course application.

Being involved in the design and implementation process in such an extensive manner helped me to interact with the participants closely and examine the instance and the implementation in some depth. As the researcher was the key individual in data collection and analysis and in the implementation of the changes punctually, this created a "responsive and adaptive" environment, which is a desirable context for qualitative studies (Merriam, 2009, p.15). Another advantage of being an insider as a researcher was that it was possible to intervene if the students faced any problems with the newly designed instance. Likewise, interacting with the students quite closely helped the researcher to gain a deep understanding of such questions: "*what does work?*", "*what does not work?*", "*how to make it work?*", "*what are students' opinions?*"

Interacting with the students and getting their honest opinions about the instance was not an easy task for the researcher; for that, she needed to build a rapport with them both at the beginning and throughout the process. Involving students in the evaluation-and-redesigned cycle was a vital and essential component (Reigeluth and Frick, 1999). Therefore, another responsibility needs to be added to the list above: Interacting with students outside of course-context and make small conversations.

In short, the researcher was highly involved in the instance design and implementation, spending great amounts of time with the participants and repeatedly collecting data and analyzing them throughout the process.

3.10 Researcher's Assumptions

My assumptions throughout the study can be summarized as follow:

1.   The instance was an accurate representation of the model generated. As Reigeluth and Frick (1999) emphasize the importance of accurate application of the model, the researcher did her best to accurately apply the instance and form a model this instance represents.

2.   Since the findings mostly rely on the feedbacks of the participants, the researcher assumes that they answered the questions honestly and correctly.

3.   All contents can be gamified. The researcher came to this assumption on the basis of a variety of a sample gamified applications ranging from the field of health (e.g. *Wellvolution*) to sports (e.g. *Nike+*) and from communication (e.g. *Foursquare*) to education (e.g. *Khan Academy*), and more.

Apart from those assumptions listed above, the qualifications, knowledge, skills and the background of the researcher are important elements affecting the results of this study. As mentioned above, researcher is the main agent in data collection and analysis; therefore, she believes that she has the vital characteristics that Yin (2009, p.59) emphasizes to be existent in a researcher in case studies. They are listed below along with my justifications as to how I fit in them.

1. "A person should *be unbiased by preconceived notions,* including those derived from theory. Thus, a person should be sensitive and responsive to

contradictory evidence." The researcher is novice not only in qualitative research but also in case studies, which decreases the level of being biased. Also, throughout the study, she tried to collect all kinds of data including supportive and contradictive of the elements applied. She was open to all possibilities without certain biases. This helped her to get as much information as possible from the participants in forming something new instead of trying to find ways to prove something anticipated to be true. Trying to be open to all kinds of information lead to another characteristic.

2. "A good case study investigator should be able to *ask good questions* – and interpret the answers". The researcher tried to look at the events with as a wide perspective as possible in order not to miss any valuable data. Therefore, she is convinced that she has asked the most appropriate questions to get any information she could get from the participants. Additionally, her background in education, her wide experiences in adult and child training sessions, and the knowledge the literature on how to communicate with people put her in the right spot. Being able to ask good questions should be the first step following the listening to the answers given by participants, which leads to the third characteristics.

3. "An investigator should *be a good listener* and not be trapped by his or her own ideologies or preconceptions." For that, the researcher tried to build rapport with the participants and tried to speak with them any time they were available about their problems with or ideas about the instance. Negative feedbacks were appreciated just like the positive ones. Actually, in some cases, participants were asked to talk about especially the negative opinions. The researcher had a limited research experience; thus she preferred to listen to them in an appropriate manner. Being a novice researcher brought about some advantages as explained in the next section.

4. "An investigator should be *adaptive and flexible*, so that newly encountered situations can be seen as opportunities, not threats." Due to the nature of the methodology applied, continuous iterations were needed and for that the researcher knew she had to be adaptive and flexible in order to discover the needs and make necessary changes. Therefore, her adaptive nature and flexibility throughout the study enabled her to make many iterations.

5. "An investigator must *have a firm grasp of the issues being studied,* whether this is a theoretical or policy orientation, even if in the exploratory mode. Such a grasp reduces the relevant events and information to be sought to manageable proportions." The researcher took some graduate courses about the issues studied: gamification, games, design and human computer interaction. Also, her background in undergraduate education and instructional technology helped her throughout the study. Moreover, she grew up with reading and watching good variety examples of the fantasy genre (especially, *Harry Potter*).

Along with these characteristics personally the researcher enjoy exploring and trying new practices as well as taking risks, and during the research she assumed that everybody would feel the same as her. Consequently at the beginning of the study, it has been assumed that all the participants would love exploring the new instance that she created and playing games.

Therefore those assumption listed above would be on the basis of the current study and on assessment of findings and their elaborations.

3.11 Limitations and Delimitations

Needless to say that despite all the efforts to eliminate the limitations and delimitations inevitably some still continues to remain. Therefore, it seems necessary to take them into consideration along with the results:

1. As clarified above, in formative evaluation research, repetition of data collection and analysis cycle with different participants at different times is needed until the saturation is met. However, due to time constraint, only two repetitions were carried out, leaving further studies for saturation as desirable.

2. The differences in the characteristics of the two separate groups were not taken into consideration since the main purpose was to build a model that is applicable for the learners in a learning environment. By studying with two separate groups, the main purpose was to create situationalities as Reigeluth and Frick's (1999) advised as neccassary step in an evaluation research methodology.

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3. Due to the nature of case studies and qualitative studies, the findings cannot be generalized, and thus requiring the use of different cases and heterogeneous participants in further studies.

4. Convenient sampling was applied in the selection of the cases; a particular care was shown to select different cases from different departments, different schools and different nationalities as much as possible.

5. As emphasized before, the people are the main elements in data collection and analysis in qualitative studies. Therefore, sound data collection and analysis requires researcher to take special trainings (Merriam, 2009). However, the researcher has not had such training formally, instead in order to fill this gap a wide ranging literature on data collection and analysis including the topics such as observation, interviews and document collection was carried out. Furthermore regular meetings with the advisor and her feedbacks were valuable in overcoming this gap.

6. Similarly, regular meetings with the advisor were held in order to minimize inevitable biases during data collection and analysis that emanate from the nature of the qualitative studies. However, further studies are needed in order to confirm the findings.

7. Data collection heavily relies on the honesty and sincerity of the participants.

8. Theselected participants may not represent the whole group in an appropriate manner.

9. Some signification data may have been missed during the data collection and analysis processes. Thus regular meetings with the advisor were held in order to eliminate this delimitation. .

10. During the first data collection-analysis cycle, several in-class observations could not be held due to the cancellation of some of the   face-to-face meetings.

11. During the first data collection-analysis cycle, in some weeks, some elements (leaderboards, badges and etc.) could not be applied due to the fact that lab practice points could not be obtained, as the respective research assistants did not send them.

12. The study was carried out from the perspective of the learners. Therefore, further might be needed for a model from either the perspective of the instructor alone or both.

13. Even though it was assumed that laboratory activities do not have major effect on the results of the study, they may have. The researcher tried to eliminate their effects by particularly emphazing on that those activites were not included in the study throughout the interviews, and they were elimated from the observations (both in-class and online) and e-mail logs.

CHAPTER 4

RESULTS

This chapter provides the results of the study seeking to answer the research questions formulated in Chapter 1 and Chapter 3. The results are presented deductively under the following five subheadings:

- ✓ Gamification Related General Issues and Perceptions
- ✓ Gamified Course Related General Issues and Perceptions
- ✓ People Related Issues
- ✓ Design-Related Issues
- ✓ Game Elements

These five subheadings were produced on the basis of the data collected and analyzed during the research. The logic behind this was to elaborate the findings which were almost impossible to be classified into separate themes found in the existing literature by the virtue of the fact that they were inter-relational and case-specific. By producing such didactic categories the main aim was to build a model in which characteristics of a gamified learning environment, the elements that play significant roles in such an environment and how they could be combined together could be figured out. For all of the themes and sub-themes, please see Appendix P.

Before going any further, three important points need to be clarified about this section. First of all, the main data source was the interviews. The analysis obtained from the other sources were used only if applicable. The second point is that the interview data was in Turkish, the data from online activities were in English and some e-mails were in Turkish while some were in English. Therefore, the ones in English were directly quoted while the ones in Turkish were translated. Translations were done by a bi-lingual native speaker. Turkish version of the data has not been

included in this section in order not to extend the section. For the comments in Turkish please see the Appendix R.

Throughout this section, the participants will be specified with the codes in the Table 19 below.

Table 19 *Codes for Participants*

I1-2	Interview data from first the participant in the second group
E1-2	Data from the e-mail logs with the first participant in the second group
OC1-1	Data from the online activities with the first participant in the first group
nO	Number of participants from online activities
nE	Number of participants from e-mail logs

4.1 Gamification Related General Issues and Perceptions

In this part of the section, the general issues and perceptions of the participants about the gamification are reported.

Almost all of the participants (n=40, 95.2 %) in the interviews stated that they have a positive *attitude* towards gamification process. They also listed the general issues and their perceptions about a gamified learning environment. These issues raised were *motivation*, *fun*, *immersion*, *interactivity*, *relax learning environment, freedom to fail*, *balance, spill-over effect, collaboration, content-free, age-free, level 0, adaptation, coherence, interchangeability of game elements, cheating and technology integration.* As increasing student motivation was one of the main aims of the gamification of the course it is pertinent to see the perceptions of the particiapants about the motivational features of the gamification. Likewise it was aimed that the gamification of the course should provide some fun elements which would immerse the students in the course. Thus the following few sections will be looking at the perceptions of the students about the motivational nature of the gamified course, the amount of fun elements it has created and the extent to which it has generated immersion.

4.1.1 Motivation

Most of the participants (*n*=31, 73.8 %) in interviews emphasized the motivational nature of the gamification. On this characteristic, one participant said that:

"The environment that we created on the web, particularly the ones with link with Harry Potter were very nice, simply because loads of people from our cohort are Harry Potter fun. This pleased me. The competitive games were also nice. There were like stimulating us. When education is in this form it enables us to monitor our own progress. As such they are not very abstract and the badges and everything else motivate us and help us to progress". [I1-11]

Similarly, another participant stated that:

"As I said right at the beginning, I thought it was going to be like the CEIT class we had at first but when I realized that it was gamification like this I became more motivated. I wanted to listen to it more, it is more fun. I think that gamification should be definitely applied". [I2-8]

4.1.2 Fun

Another characteristics of gamification that the most of the participants (*n*=33, 78.6 %) in interviews stated is fun. Supporting this opinion, one participant stated that:

"I am really sorry that why our other professors do not entertain us like this instead of making homework compulsory, I like this kind of class." [I1-5]

Similarly, another participant said that:

"I think gamification should be used as it makes the class clearer and more fun for students." [I2-13]

4.1.3 Immersion

Immersion is another characteristic that some of the participants (*n*=15, 35.7 %) in interviews specified. They stated that gamification is an immersive process through which education becomes the byproduct of this process. One participant pointed out this issue by saying that:

"My professor, I sent you an e-mail instead, the fact that we are saying that we sent you an owl indicates that we have been immersed in this course in my opinion, I mean that it made us to be one of the heroes in the story told there." [I1-5]

Another participant brought another perspective to this issue and said that:

"In my opinion to keep the grades a little bit in the background was very successful, because I am the kind of person who would think and calculate how much we got from what and where out of 30. This is the only course that I did make this, if really this is the one of the aims of the course, I think it is definitely successful." [I2-6]

Similarly, another student said that:

"I thought it was a difficult course and the like, but through applications and gaming it shows its difficulty, what shall I say, more easier." [I1-4]

On the other hand, some of the participants (n=20, 47.6 %) in interviews stated that this gamified experience could not put them in a state of immersion. The following view raised by one of the participants exemplifies this very well:

"[In the first interview] four of us in the garden in a hurry did that thing, I mean for instance if it was in a class environment in a theoretical course could have been better. Afterwards I got drifted away a little bit, I mean I missed the beginning little bit like that, it would have been better if it was in a classroom as a group altogether." [I1-4]

The gamification of the course also aimed to get as much student involvement as possible in this process by incorporating elements conducive to interactivity in a relaxed environment, thus the following two sections scrutinizes the students' views about the interactivity in the process and the extent of relaxed learning environment.

4.1.4 Interactivity

Interactivity is another issue that all participants in the interviews wanted to be in a gamification process. For that, they expressed their appreciation of interactivity in this process. One of them commented on this issue as:

"Things like this [gamified online and in-class processes] I suppose make the course an interactive one". [I1-3]

One the other hand, a few participants (*n*=5, 11.9 %) in interviews criticized the lack of interactivity between the group members, between all learners, between the challenge and learners. For the first one. i.e. the lack of interactivity, one participant stated that:

"The lack of interaction between the group members further reduced [the success]." [I2-6]

For the second one, one participant commented on the problem of sitting position in the class:

"We sit in a U shape in the class but we sit in much more comfortable atmosphere in drama classes and for instance become more interactive. Perhaps we can have such a seating arrangement here." [I2-3]

Another one commented on the problem related to the online system:

"For instance there was not much of an interaction, if such thing existed among the students, I mean in the group etc. it could have been [better]." [I1-6]

For the last one, one participant pointed to a design issue by expressing that:

"I could have made the slides more interactive." [I1-11]

This issue was also observed in the class activities. When the interaction occured, the students started to seemed as they were having fun; yet, when the instructor began to transfer the information, they seemed bored, and some of them were sleeping.

4.1.5   Relax Learning Environment

Majority of learners (n=40, 95.2 %) in interviews emphasized on the need for a relaxed learning environment for the gamified experience. One participant pointed out that:

"Like this we are not stiffly sitting up in the classroom, like this we are not worried. We are not uncomfortable and I mean these are important for me. In fact very influential factors, I mean people I mean when the environment is not comfortable, how can people learn when they are nor psychologically and physically comfortable?" [I2-1]

Another participant stated that:

"Really, I mean there is no stress, I am relaxed and I can say or ask whatever I want to." [I1-9]

On the other hand, one learner expressed her discomfort with the existence of an excessively relaxed environment.

She said that that:

"Sometimes I think that the course is too relaxed. For instance I can easily can turn it into a chatty atmosphere, I would have preferred to concentrate more on the class instead." [I1-7]

While our gamified course wanted to ensure interactivity in a relaxed learning environment it also wanted to encourage students not to be afraid of trying new things and learning from their mistakes, which could be summarized as 'freedom to fail'

4.1.6 Freedom to Fail

Another virtue of the gamified experience, some participants (n=20, 47.6 %) in interviews expressed, is the freedom to fail. This means that learners were not afraid to make mistakes throughout this process. They stated that this can be due to the game elements, relax environment and the characteristics of the instructors.

One participant expressed an opinion about the instructors' characteristics:

"She tolerated the mistakes we made occasionally, and this really relaxes the students and allows them to treat the course with tolerance." [I1-11]

Another participant referred to the relaxed learning environment as follows:

"I love this course very much, I mean we are very relaxed, we can say whatever we wish to, and we can participate in it in the way we wish to. In other classes we are slightly reserved." [I1-3]

Another student expressed the following view with respect to the game elements:

'The fact that the course was dispersed throughout the process tired me less than sitting up a night for a mid-term or sitting up one night for the final exam

preparations. One more thing, it was less stressful, if I don't do it this week, I can compensate for it next week." [11-5]

In previous sections we highlighted the fun nature of gamified learning environment. However, while ensuring the the fun elements the course never ignored the fact that the main aim was to teach new knowledge and create certain skills for the students. Thus there was an awareness of reaching a happy balance between the fun and serious aspects of the course. The following section provides some of the views of the students about the balance issue.

4.1.7 Balance

Even though most of the learners (n=40, 95.2 %) in the interviews emphasized their appreciation of a relaxed environment and freedom, they also wanted a balance between the fun and seriousness. This issue was expressed by (n=20, 47.6 %) participants, and the comments three participants made are below:

"It is necessary to find a balance between gamification and the academic part." [I2-8]

"A balance should be achieved as gamifying the course entirely may distort the education from its intended aims." [I1-11]

"Calling it game gives it a bit non-serious tone, but it does not mean to violate the borders." [I2-11]

One of the aims of gamified teaching is to have an as wide impact as possible. The following section looks at the views of the particiapants on the spill-over effect.

4.1.8 Spill-over Effect

Three participants (7.1 %) agreed that a gamified experience needs to have a spill-over effect. In other words as far as this study is concerned either the experience itself or the materials used here need to become widespread and be shared or used by the participants in their experiences in other occasions. On this one student said that:

"We are doing certain things on the internet and sending whatever we find to each other, for this reason, I mean the fact that we may be talking among us about the gaming bit of a course in different courses is an indicate on of the effectiveness and the strength of that course. How did you do it? Did you see it or there was the child,

playing child video you sent. We circulated it a lot in the group I mean in the Facebook, everywhere." [I1-5]

A similar comment from another student is:

"I have often thought in other classes, I wish we could adapt this course like this and hold classes like this." [I2-3]

The gamified learning environment created for the course aimed to generate high levels of collaboration and coopration among the members of teams formed in the process. Here are some views of the students about the extent to which such cooperation and collaboration took place.

4.1.9 Collaboration

All of the participants in the interviews declared the existence of the collaboration and cooperation between both the teammates and other classmates. According to the statements of the participants within the first group ($n=22$, 52.4 %), collaboration occurred between the classmates. Two statements exemplify this situation:

"We have a group in WhatsApp; we helped each other by asking questions like how did you do that thing, how did you do this thing, how are we going to do it? I find it friendlier." [I1-5]

'There are occasions that I write even to people I don't know at all. We cooperate. I find it friendlier." [I1-4]

In the first group, in order to boost the cooperation between learners, a virtue (different kinds of point) was defined and announced to the learners. This virtue depended on the declaration of the students: a form was prepared for learners to declare whether they help any other classmate, and those who helped got 2 *help points* while the one who got helped got *1 help point*. However, this system did not work as all the students preferred to give names in order to get points. Therefore, this system was not applied after three weeks. A criticism about this system came from a student via an e-mail saying that:

"As both I am not a regular student I the section I have no friends in the section and in general the instructions prepared provide the necessary information sufficiently,

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there is no need, apart from this 'you write my name and I will write yours' situation arises naturally. What would be the right thing to do in this situation?" [E1-1]

Without a point system, as all the participants in the interviews declared, a significant amount of collaboration between the learners occurred throughout the course.

In the second group, in-class activities with the four groups were held. Through these activities, all participants confirmed the existence of some collaboration between them; and one of the learners commented on this issue as:

"You work with different people or discuss something with them, and this leads to a conclusion, it is nice." [I2-3]

Observation notes confirm the collaboration between the teammates in-class activities.

On the other hand, three students (7.1 %) emphasized the lack of collaboration between all participants in a group. One of them criticized the situation as follow:

"As we are a group, those who work hard and those who know better resolve the issues. It feels sometimes as if we are getting the points by piggybacking on them." [I2-3]

This situation was also confirmed within the observation notes. Some team members preferred not to join in collaborative conversations.

Overall, as indicated in the examples above all participants emphasized the need of collaboration between students.

4.1.10 Content-free

Another issue analyzed from the interview data is whether or not the gamification is content-bound. On this issue some participants (n=20, 47.6 %) stated that all content/courses can be gamified while relatively fewer participants (n=16, 38.1 %) said that only some content/courses can be gamified. For the first opinion two participants declared that:

"I think that all courses could be gamified." [I2-5]

"In my opinion all courses can be gamified. I mean even if they may be in different formats I am sure certainly a structure will emerge." [I2-1]

On the other hand, two participants among those who opposed this idea stated that:

"I am not convinced that every course could be gamified. I think about how you could gamify memorizing but I cannot find an answer to it. In fact to be honest I don't think so." [I2-6]

"I cannot think of any other courses than this one (to be gamified). Perhaps this is because I only take this one." [I2-6]

4.1.11 Age-free

Another controversial issue among the participants is whether gamification is appropriate for all ages. The interview data showed that some of the participants (n=15, 35.7 %) think that gamification is an age-free process; namely, it is appropriate for all ages. One student stated her idea about this issue by saying that:

"We can apply [the gamification method) to any age group we wish to." [I2-3]

"In every age such a thing (gamification) should exist." [I2-8]

On the other hand, some students (n= 18, 42.9 %) stated that gamification is for younger-age groups by stating that:

"The age group of the students should be paid some attention. In my opinion it could be better if it addressed a younger age group." [I1-2]

4.1.12 Level 0

Most of the participants (n=34, 81.0 %) in the interview stated that level 0 is an important element that should be in gamified experience. By level 0, it mean the first activity that brings the novice learners into a gamified experience. According to the participants, the level 0 should be easy, short unevaluated and under the control of the instructor. For these characteristics, the comments of the participants are as follow:

"In fact that e-mail arrived at first. Go there, solve that test. Your common rooms will be determined accordingly. I said if this is like this now. I am struggling very

hard even to register. The process could be easier, in my opinion. I mean there were 30 questions. I say that this has no end to it." [I1-8]

"The first quest was considered to be an experimental one, I had a very big mistake, and few friends also had some mistakes. Good job it was not evaluated, because it was only a warming up process, it was an introduction. Consequently we were pleased." [11-1]

"Right at the beginning we filled in an online questionnaire in order to choose a house. Here I came across some people who had done it without filling out the questionnaire, me for instance. I mean he enters a house directly, haphazardly." [11-1]

4.1.13 Adaptation

According to the data analysis from the interviews, learners need an adaptation time to gamification process. Although the duration of this time span varies for different people most of the participants (n=35, 83.3 %) stated that they adapted to the process in a few weeks. The views of two participants seem to be relevant here

"I tried hard to identify myself with the Virtue of Apprenticeship and the like. When the names of evaluation was changed I faced a difficulty. Apart from the name changes, or I do not know emails becoming owl or the names of everything were changed, that got a bit confusing. You get used to it within a week or two, you stop looking at the guidance. You say I have got this form this, but the adaptation process at the beginning was a bit difficult." [I2-15]

"I am scared so much because somethings settled somehow, a number of weeks passed I know what to do and how to do things." [I2-1]

Through the adaptation span, several participants (n=20, 47.6 %) emphasized on the support of the instructor and guidance.

4.1.14 Coherence

Coherence is another issue raised by (n=20, 47.6 %) students in interviews that needs to be paid attention in the gamification process. They stated that all the elements

need to be coherent and complementary. Two students commented on this characteristic as follow:

"I think that they are minute details but when they come together they catch us form somewhere." [12-1]

"At first we were given a story. Afterwards everything followed this story's sequence. The fact that it generated coherence in the course ensured that each of us became a character in the story." [11-5]

4.1.15 Interchangeability of game elements

Most of the participants (n=38, 90.5 %) in interviews come to a consensus about the need of the interchangeability of the game elements in a gamified experience. This term, in this study, refers to the fact that game elements such as narrative, privileges, scoreboards and rewards need to be turned into real-life objects or activities. About this issue, two participants expressed that:

"If there was a leader (in the Leaderboard) in the class that person could have directed us on that day. I mean if you are a leader OK, let us see how you come over here and direct us." [12-5]

"The place could have been changed accordingly (to the story), could have been designed that way." [12-5]

"The pearl incidence could be developed, a chart could be drawn on the board." [11-6]

4.1.16 Cheating

According to some participants (n=15, 35.7 %) in interviews, the current gamified experience enabled them to cheat on the process. Some of them (n=10, 23.8 %) stated that they did not read the online gamified content as some challenges did not require them to read the whole content. About this issue, one participant declared that:

"At the end of the quests certainly everyone gets an idea about the reflective's, and everyone write something. But this does not show that we have read it. I mean sometimes I can go to the end of the slides and comment on them or there are cases I

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intended to comment on the slides but closed them without a comment. There are occasions that I skipped 3-4 slides." [11-8]

Some students (*n*=32, 76.2 %) claimed the opposite situation and expressed that they all needed to read the online content because of the challenges. A participant commented on this issue as:

"We were forced to read in order to be able to do the mushroom challenges and the like." [11-21]

Another cheating with the system is that some participants (*n*=6, 14.3 %) stated that it is possible not to collaborate with the teammates and participate in-class activities and get points anyway due to the efforts of the teammates. A participant emphasized this issue by saying that:

"As we are a group, those who work hard and those who know better resolve the issues. It feels sometimes as if we are getting the points by piggybacking on them." [I2-3]

Having highlighted the perceptions of the participants in the gamificaition of the course on the the issues of cheating, interchangibility and coherence of game elements, adaptation etc. it is now time to dwell on some general issues that arised during our gamified course.

4.2   Gamified Course Related General Issues and Perceptions

In this section, general issues and perceptions about a gamified course and the characteristics of a gamified course are discussed. According to the interview data analysis, even though all students criticized the course for some reasons, overall attitude of the majority (*n*=38, 90.5 %) was positive. To rationalize their attitude (either negative or positive), they evaluated the current system, emphasizing what should be changed/added/removed. According to their statements, 26 main issues related with this gamified course arose: *Emotions, Originality, Goals, Active Learning, Step-by-Step Learning, Repetition, Meaningful Learning, Reflective Thinking and Comprehension, Retention, Flexibility, Mental Break, Social Appraise, Progression, Self-Efficacy, Course/Information Load, Guidance, Feedback, Face-to-face vs Online, Classroom Settings, Learners Population, Technology Integration,*

Customization and Management. We will take these issues one by one in order to highlight the perceptions of the students.

4.2.1 Emotions

All of the participants interviewed expressed the view that they lived through different states of emotions throughout this gamified course. These emotional states of participants were also confirmed by the data online activities data. Five main emotions were expressed by the participants during this process: *Curiosity, Fear, Disappointment, Boredom, Stress* and *Joy*.

Some participants (*n*=23, 54.8 %) stated that they felt curious when they were sent the narrated teaser (see Appendix D: Acceptance Letter), some others stated that they felt curious when weekly feedbacks were sent to them, two participants (4.8 %) stated that they felt curious when they took the game-based assessment that classified them into four groups, one participant stated that she felt curious while waiting for the leaderboards and about whether her questions would be asked in-class activities.

The relevant selected comments are as follow:

'Curiosity was the foremost feeling I had. I was really curious about what was going to happen, what kinds of homes were going to be, what kind of game was going to be and what we would be doing etc'. [I2-1]

'We were sending questions from below and she was selecting from those questions for instance, that was making it more exciting, because we were curious whether or not our questions were going to appear'. [I2-1]

'I am really waiting curiously I mean your feedbacks'. [I2-1]

'You know we create tables (leaderboard) and the like, to be in the first nine etc. Me for instance I was twice in there, I mean I am waiting with curiosity for the third one'. [I2-1]

'Explorer ect. Categorization has been made in accordance with personal traits. I wonder if they differentiate it according to the methods that would attract our attention, would they make our learning any easier this way, would we get to know ourselves, I was courios to know what I would be coming across'. [I2-7]

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Another emotion expressed by the participants in the interviews is fear. Students listed some reasons as to why they felt fearful. The reasons and the relevant selected comments are as follow:

- ✓ Technology-based course (*n=39, 92.9 %*)

'I was scared as I am not familiar with computers and everything about them, I mean about whether I could do this course I could manage it'. [I1-5]

- ✓ Lack of clear guidance (*n=40, 95.2 %*)

'You made an introduction but did not make sense I mean nothing got settled in peoples' heads. This made us frightened'. [I2-1]

- ✓ Too relaxed environment (*n=7, 16.7 %*)

'I thought it was different and thought it was going to a bit free and got scared a bit about what would determine the line'. [I2-6]

- ✓ Unfamiliar narrative (*n=20, 47.6 %*)

'This is something made with an inspiration from Harry Potter, is it not? As this is the kind of thing that does not interest me much in films etc phantasy I was scared first' [I2-13]

- ✓ Time Schedule of Challenges (*n=40, 95.2 %*)

'I was scared just about not to be able to finish it on time'. [I2-20]

Another common emotion expressed by the participants is disappointment. This emotions as participants in interviews said is due to the:

- ✓ Problems in evaluation (*n=23, 54.8 %*)

'I cannot get the result (from marking) I want to, that makes me slightly disappointed'. [I1-4]

- ✓ Lack of real-life games in the process (*n=3, 7.1 %*)

'To be honest it was a bit disappointing as it was not like a game'. [I2-2]

Another mostly emphasized emotion is boredom. According to the interview and online activities analysis, all of the students emphasized that they felt boredom at

some points of the gamified course. Participants in interviews and online activities listed a few reasons of this feeling.

✓ Lack of immersion ($n=20$, 47.6 %)

'Good, nice but there was not anything that would keep me occupied continuously. Even to be known as apprentice all the time is nice. However when I got bored it was not like a game that I could do when I am bored, I mean I had to do it when I remembered it that it was compulsory'. [I1-19]

✓ Frequency of challenges ($nO=50$, 42.4 %) ($n=30$, 71.4 %)

"I feel bored because of the frequency of quests." [OC1-1]

✓ Repetitive challenges ($nO=55$, 46.6 %) ($n=15$, 35.7 %)

'Time and time again comment, as I do not like doing the same thing repetadly. To a write a reflection every week a bit was a bit boring task for me'. [I1-3]

"We have to comment on these quests again and again so this makes them boring." [OC1-2]

✓ Design of the materials (long) ($nO=20$, 17.0 %) ($n=10$, 23.8 %)

'When it is longish it becomes boring for instance in the last quest may be there were 40 odds I mean I did it with boredom'. [I1-9]

✓ Information-load ($nO=60$, 50.9 %) ($n=39$, 92.9 %)

"Because of the workload, I sometimes feel bored and stressed." [OC1-3]

Another emotion expressed to be felt by the participants through the gamified course is stress. The reasons the participants stated are as follow:

✓ Time schedule of challenges ($nO=35$, 29.7 %) ($n=40$, 95.2 %)

'The deadlines caused a considerable stress'. [I1-6]

"Due to their deadline, they made us stressful from time to time." [OC1-4]

✓ Not being on leaderboard ($n=10$, 23.8 %)

'Will I be able enter it or not, the leaderboard causes stress." [I1-13]

✓ Originality of the course (*n*=3, 7.1 %)

'I never came across a course like this before, I was bewildered very much and very stressed'. [I1-17]

✓ Lack of clear guidance (*n*=40, 95.2 %)

'The existence of a very big uncertainty was the cause of my stressfulness. For instance I said that I just understood the marking system but I realized later on that I had not understood' [I1-3]

The last emotion expressed by some of the participants (*n*=26, 61.9 %) (*nO*=25, 21.2 %) in interviews and online activities was joy. All of the participants expressed that they felt joyful in some parts of the gamified course. Their reasons for making such statement varied and numerous. In this part instead of listing them all we will share a few very representative comments to give an idea of what the participants had thought.

'In reflection comments generally I amuse myself when writing down my own ideas'. [I1-8]

'You know the rewards and the like you send, I like them very much. We get entertained'. [I1-8]

"I enjoyed being a part of such a different experiment." [OC1-5]

4.2.2. Originality

Almost all of the students (*n*=39, 92.9 %) (*nO*= 70, 59.3 %) in both interviews and online activities expressed the original characteristic of the gamified course and the materials used throughout. This characteristic, as they state should-be characteristic even though some of them in interviews (*n*=3, 7.1 %) stated that they felt stressed because of the originality. Some of the students in the interviews and online activities (*n*=15, 35.7 %) (*nO*=25, 21.2 %) emphasized the fact that the gamified course need to keep its originality throughout the semester.

Relevant selected comments from the participants in both interviews and online activities are as follow:

"It could be better, much more enjoyable and attention catching if it had not lost its originality through the semester." [OC1-6]

'I realized that it was not going to be a standard course environment thus I was impressed positively'. [I1-3]

I would have preferred it not to be the same all the time. I mean even if it is going to remain like this, I would have wanted all courses not to have similar structures, a bit changes'. [I2-3]

4.2.2 Goals

Goals of the course need to be explicitly expressed to the learners in the first meeting. This is an assertion made by most of the learners ($n=33$, 78.6 %) in the interviews. Moreover, some interviewees stated that the main goal of the course should be fun and learning rather than the grades. Throughout this gamified course, some of the participants ($n=10$, 23.8 %) stated that the instructor ensured them about this goal. On this issue, one student said that:

'Our professor is tries hard for us (to learn), (say that) we will give you the marks anyway, here are the marks take it. These motivate us very much. It would have been much worse if they tried to pressurize us limit us or put us in a stressfull situation about marks.' [I2-1]

Another student expressed that:

The overall purpose is both to have fun and learn. You have fun and you learn and this is exactly what happened in this course too'. [I2-15]

Also, one student stated that:

'I struggled at first. What is the aim of the course, what kind of course is this course, what does she want from me in this course and the like but afterwards here is guidelines etc I could understand'. [I1-6]

4.2.3 Active Learning

All of the participants in the interviews proposed active learning as another must issue that a gamified course should be equipped with. Some of them ($n=15$, 35.7 %)

mentioned the necessity of hands-on practices, some of them (n=20, 47.6 %) focused on the authentic examples aspect, some of them (n=22, 52.4 %) emphasized on the self-regulation and some of them (n=15, 35.7 %) adds the balance between the active and passive role of the learners within this active learning category. The comments of selected participants from the interviews are:

'For instance we prepare the questions and think about them, wow was this my question. For this reason it attracts our attention for instance it is not possible to drift away from the lesson'. [I2-3]

'As it is something that we are actively involved I think that this is something that I really learn myself or do myself, I mean this is a course I like'. [I2-3]

'I would like to go to a center or I would want to see the examples of what people have done using these'. [I2-3]

'I do not think that I can do the technology directly myself without getting any help'. [I1-1]

'Our comments would have been more fruitful if the professor had explained things first and we had repeated them before attempting to write them'. [I2-4]

4.2.4 Step-by-Step Learning

Another issue with the gamified course which most of the interviewees (n=32, 76.2 %) stated a gamified course was its conduciveness to enable step-by-step learning. The steps were mostly linear which as most of the learners (n=32, 72.2 %) stated, apparently bored them. However, giving the content and the challenges in small chunks periodically was appreciated by the majority of the learners (n=35, 83.3 %). Selected assertions from the interviewees about this issue are:

 'In fact these reflections could be written easily in a segmented form'. [I2-111]

'The fact that it progressed step by step was impressive.'[I1-6]

4.2.5 Repetition

In the first group of participants, learners were asked to read the online content first, then, in the class, the instructor summarized the content. This repetition of the

content was appreciated by some learners (n=25, 59.5 %) (nO=35, 29.7 %), and criticized by some others (n=15, 35.7 %) (nO=38, 32.2 %) and led them question the need for either the online or in-class part of the course.

Considering this criticism, another method was applied in the class: students were asked to submit their questions related with the content beforehand, and a competition was held between the teams. This kind of repetition was appreciated by the majority of the learners in the second group (n=19, 45.2 %). A few of them (n=4, 9.5 %) stated that a short session for summarization from the instructor would serve well.

'We read and come here. We write the quests and come. Thus in a sense we repeat the in the class. This is useful sometimes as we repeat it and sometimes you get a feeling of something like in fact I had read about this'. [I1-3]

'Many things remain in your mind when you do it online but when a thing that might have escaped your attention is repeated in the class it could occur to you that ah there was something like this '. [I2-5]

4.2.6 Meaningful Learning

The interview analysis also revealed the fact that all of the participants attach great importance to the meaning of learning. Namely, they think that everything within in a gamified course should be meaningful for learners. Also, they are of the opinion that the outcomes of the learning should be used in other parts of the learners' academic or professional lives. Three comments from the participants exemplify very well this characteristic:

'I had thought that it would not be beneficial for me but afterwards as a candidate teacher I realized that I benefitted a great deal from it'. [I1-5]

'I have recently realized that the course contents are the things that we use and come across in everyday life'. [I1-4]

'From now on I can present a questionnaire on the internet. For instance we are going to have a course on research, I can easily present this there. It is going to be useful'. [I1-3]

4.2.7 Reflective Thinking and Comprehension

Throughout this gamified course, learners were asked to answer two-three reflective questions at the end of the each weekly-online-content. They were also asked to answer three questions about the lab activities. Interestingly enough these reflective questions are supported by some learners (n=20, 47.6 %) and objected by some others (n=25, 59.5 %). The supporters of these reflective assignments emphasized on their necessity. One of them said that:

'You know the reflections were writing, in those how we can write haw we can use them. When answering those questions each time certain things were sinking in a little bit more'. [I2-11]

On the other hand, the opponents mostly criticized them for frequency, timing and repetitiveness which will be presented in the Challenge category within the Game Elements section.

4.2.8 Retention

All of the participants in the interviews said that this gamified course increased the retention of the content somehow. This indicates an important characteristic of a gamified course. Two of the students commented as follow:

'As we learn and be active (in the learning process) in a sense the unforgettable knowledge becomes entrenched (permanent) in general'. [I2-3]

'I think that thanks to the quests I mean thanks to making comments and asking questions we have learnt. I think everything has remained in my memory'. [I2-1]

4.2.9 Flexibility

According to the major interviewees (n=35, 83.3 %), flexibility is another aspect that should be in a gamified course. This term covers both the flexibility of the instructor and the flexibility of the system for the learners. One of the participants expressed her opinion about this issue:

'There are four sections in the quests. Instead of doing them one after another in the class. I do it like that, I do my first quest, go and get some tea and continue'. [I1-5]

4.2.10 Mental Break

Throughout this gamified course, mental breaks are used in both the classroom and the online system. According to the notes taken during the observations in the class, the instructor either told a funny story or personal anecdotes when she noticed the students in the class got disengaged. After the anecdotes or the stories, the learners seemed to start to pay attention to what the instructor talked about. On the online system, some funny or 'did you know' videos, narrated characters and pictures were placed in some parts of the content. According to data analyzed from interviews and online activities, the learners ($n=13$, 31.0 %) ($nO=24$, 20.3 %) said that mental break was an important element that enabled them to re-engage with the content. Two students summarized this thought perfectly:

'The moment I said I was bored there is a link there when we open it an incongruous video appears. Even we had found a song there and memorized it'. [I2-4]

'Surprises like this from time to time is good, ok you get bored doing and doing it, a video appears you pull yourself together'. [I1-3]

4.2.11 Social Appraise

Social appraise, aka peers' approval or social statue is another issue that some participants ($n=19$, 45.2 %) emphasized on. About this issue, one learner stated that:

'Too crowded run away, we are more than 80 people and to be able to get into a list of 10 people from there really engages one. [I1-5]

A similar comment about a different material used is:

'It attracts my friends' attention when doing the quests in the room or when re-looking at the things we had done in the lab. They ask me if I am in the Facebook when I share some things in Edmondo. Those motivated me a lot, to be honest'. [I1-5]

4.2.12 Progression

Participants stated at both in the interviews, the online activities and through the emails that they wanted to see their progress clearly throughout this process. All participants in the interviews and the online activities emphasized this element and

from the emails received. It was also clear from the observation notes that the issue of progression was valuable for the participants as one of questions asked very frequently (nE=25) was about the individual progression in the course. They wanted to see their personal and team progression, and their peers' progression all the time. In relationship to this a progression bar both in the in-class activities and on the online system was requested. Also all learners in interviews stated that they wanted to see a progression throughout the course. Two example comments from the participants focusing on this issue are:

'It could be shown who is where what they have done on a board (in the class). The progress can be shown. I mean which group, where, how many points have collected.'[I2-1]

'You see the progress of other people, if they could be shown on the screen, if we could do it that way it could be more interesting in my opinion'. [I2-9]

4.2.13 Self-Efficacy

Self-efficacy, as majority of the participants in the interviews (n=32, 76.2 %) stated, either enhanced automatically or the learners discovered that they had improved the self-efficacy through the course. Yet, the results show that they may need some time for this to happen. In either way, according to the interview data analysis, self-efficacy is an important issue in a gamified course. Two participants' comments about this issue are:

'Now when the tests arrive and carried out this way I become happy. I say to myself yes I could do it'. [I1-8]

'During the process of the course I noticed that I myself I am successful'. [I2-1]

4.2.14 Course/Information Load

Despite all the positive comments of the learners about the gamified course, there are criticisms as well, and one of the mostly criticized aspect of the gamified course is the course/information load. Learners were expected to do some weekly assignments such as reading online content, commenting on reflective challenges, solving pop-up challenges, sending 5 questions (for the second group), doing lab assignment, writing

a small reflection about the lab assignments and attending the class and participating in the class. Almost all participants in the interviews (n=39, 92.9 %) and in the online activities (nO=60, 50.8 %) complained about this course load. Therefore, in a gamified course, course/information load is another important issue. About this issue, one participant said that:

'I spent more time in this course than the time I spent in the others. Therefore I think a bit   negatively about the course'. [I1-6]

A similar comment is from another participant:

'To be honest think it is a bit condensed. I think the work load is a bit excessive', [I2-2]

4.2.15 Guidance

A guidance for all the narrative, point system, materials used, game elements, online system, assignments and the process of the course are needed by the participants throughout the course. All learners in both the interviews and the online system emphasized the guidance for everything throughout the course. Thus one of the most popular questions received from the participants via e-mail was about the guidance. This is also an issue observed in the classroom activities. Learners wanted to be guided clearly through. Having clear guidance in the first weeks, according to all the participants interviewed was an important point. According to interview analysis, some learners preferred the scaffolding until they clarified everything. Two statements from the interviewees can exemplify the importance of the guidance for the participants:

'I wish you told us especially at the beginning what we were supposed to be doing, I mean you should have told us you need to do this and this'. [I2-6]

'If some information was sent for people who has had not entirely been adapted to these, how I mean we will send an owl or information about what this means'. [I1-3]

4.2.16 Feedback

Feedback for all activities were requested by the participants in our gamified learning environment. All participants both in the interviews and the online activities strongly

emphasized this issue. Also, several e-mails (nE=28) were received from the participants requesting feedbacks or clarification of feedbacks about the activities. Three students commented on this issue by saying that:

'It would definitely be very good for our results to be announced one by one. In the form of you have made a mistake in this, you have something missing in this'. [I1-3]

"Instructor should give feedbacks more frequently." [OC1-7]

'The fact of receiving feedback impresses me a lot about this course'. [I2-1]

4.2.17 Face-to-face vs Online

One controversial issue about the gamified course among the learners was the preference of the face-to-face sessions or online sessions. Most of the participants (n=28, 66.7 %) in the interviews stated that using both would be better as both complement each other and is an appropriate option for this gamified course. A participant stated the necessity of both elements in a gamified course by saying that:

'Both (face to face and online) should be there. Because the internet environment I think is more useful. We come to classes, professor rounds up the issues. We ask our questions, we see each other face to face'. [I2-1]

They also emphasized on the balance between the online and in-class activities.

Some other participant (n=5, 11.9%) stated that they would prefer online learning as they preferred to learn on their own which does not have the distractions one faces in the classroom. Another reason for preferring the on line learning is that offers flexibility and self-paced learning opportunity. One of the proponent of the online learning asserts that:

'The atmosphere is relaxed and you work as you please, there is no time constraint. You choose the best time yourself'. [I2-1]

The remaining participants (n=8, 19.0 %) stated that they would prefer the face-to-face sessions due to the fun in the class, presence of the instructor, direct interaction with the instructor, learners' background, design of the online materials, lack of self-regulation and lack of online community building. A proponent of the face-to-face sessions expressed that:

'In my opinion the class environment is more superior. I enter in the online environment. I read myself. I mean as much as I can. No one teaches me'. [I1-5]

Another important issue with the face-to-face and in-class sessions was which one should be done first. While some of the students ($n=10$, 23.8 %) ($nO=2$, 1.7 %) asserted that online sessions should be done first, while some other students ($n=12$, 28.6 %) ($nO=5$, 11.9 %) stated that face to face sessions should be done first.

4.2.18 Classroom Settings

Considering the face-to-face learning, a few material issues such as classroom settings and learners' size were analyzed from the interview data. Importance of these two issues were also observed in class activities.

Majority of the participants ($n=28$, 66.7 %) emphasized on the importance of the classroom settings. Mostly, they focused on the size of the classroom and the seating arrangement. Classroom settings as the participants expressed are important for collaboration with the teammates and tracking the other peers. All of the participants emphasizing on seating arrangement stated that they preferred a U shaped seating arrangement. In the second group, all participants expressed that sitting with the teammates was necessary for collaboration. Some example comments about this issue are:

'It is necessary (to sit together) in order to be able to fight as a house (team) and not to tease each other. If we had sat in haphazardly we could not catch the aura', [I2-1]

'We had our first lesson in a small classroom. We had continued with this we could not have seen each other and this would have had a negative impact on me. I could not have followed my friends. I mean it is better that we moved to an amphytheatre'. [I2-2]

In the first group, the class was small and participants had to sit in a squashed manner. This situation, according to the observation notes, send the learners at the back of the classroom to fell slept during the class. In order to solve this problem, in the second group, a bigger lecture hall was selected, and all the participants were asked to sit together with their teammates. This was inapplicable within the first group due to the size of the classroom.

4.2.19 Learner Population

The other material issue with the face to face sessions was the learners' size. In the first group, the number of learners were too many to fit in small classes in the CEIT department. Therefore, this problem was mostly emphasized by the participants in the first group. According to majority of the learners in the first group (n=18, 42.9 %), the big size of the learners in the class affects the interactivity and learners' participation. Two statements from the interviewees can be given as examples to this criticism:

'It could have been better to reduce the numbers in order to have a better interaction'. [I1-4]

'I think the class is unnecessarily crowded. Pull a chair etc. The crowdedness is no good'. [I1-2]

4.2.20 Technology Integration

Another issue about the gamified course that participants in the interviews stated is the integration of technology in the course. All of the participants emphasized on the importance of this issue. One participant commented on this as follow:

'I liked Edmodo. I mean we are in a technological era we all know this, I like it that it is used this way in education. In fact at the beginning of the class when this was mentioned I got quite excited.'[I2-2]

4.2.21 Customization

The final issue with the gamified learning environment is customization. All participants in the interviews emphasized this aspect by asking for customization in every single issue faced such as the narrative, the challenge, the feedback, the classroom settings and so on. The learners underlined the fact that designing a gamified course according to their needs and interests were very important. They also wanted to be given different options through which they could make customization on their own. Two participants stressed this issue by saying that:

'Perhaps it could have been game based related to our department. I guess we could have been adapted more easily'. [I2-5]

'You know when the groups are separated, their sitting places could have been designed in sa specific way for instance it could have been designed as a castle. Or for instance in order to adopt a character we could have done something to reflect our own house'. [I2-19]

4.2.22 Management

Final issue with the gamified course is management. Some participants ($n=14$, 33.3 %) in the interviews criticized the course about management issues. They underlined the importance of neat management by the instructor or the designer without which they said they would feel fearful and stressed. Also, one student highlighted the issue that when a technical problem was faced in the process, which led to disappointment. In such a case, they said that their attitude towards the course changed from positive to negative. The observation notes also revealed that such a case was lived in the first group.There was a discrepancy between the information given by two different teaching assistants as one ne teaching assistant told the students that the lab sessions would be held every other week while the other research assistant said otherwise. This sample occasion raised a huge verbal criticisms from the students. Several similar experiences were lived with the first group; therefore, a more strict management was held within the second group.

A comment about the management issue can exemplify the importance of the situation:

'I entered the leaderboard once but dropped. That was very disappointing for us. Apparently there was confusion one week, I was there before, I realized I was not there. That was a considerable disappointment for me'. [I1-3]

In addition to the 26 course related general issues that came out during the gamified course there emerged some people related issues in the process. The following section looks at the nature of these issues.

4.3 People Related Issues

The analysis of the interview, observation, online activities and e-mail logs data revealed that throughout the study both the characteristics of the instructor and the learners throughout the study were important issues in a gamified course. Therefore,

both of these characteristics and their sub-themes were combined under the subtitle of the people related issues. Within this section two themes, i.e. *learner related issues* and *instructor related issues* and their subthemes *learner characteristics, learner background*, *self-efficacy, control, participation, peer tracking and game-based assessment* under the learner related issues; *open-minded, flexibility, fun, communication, presence of instructor, tracking, support* under the instructor related issues are reported. These issues will be taken one by one in the following sections.

4.3.1 Learner Related Issues

In this sub-category, learners related issues are analyzed and reported from the data collected. Within this section six themes and if applicable sub-themes will be presented. The main themes included here are the *learner characteristic s, control, participation, peer tracking, communication and classification.*

4.3.1.1 *Learner Characteristics*

It became clear from the analysis the interviews and online activities data, learner's characteristics do play an important role in a gamified course. All of the participants stated in both data types that the characteristics of the target learners should be considered before the course design and during the course delivery. Participants in the interviews emphasized on four main issues in terms of the learner characteristics: learners' background, learning style, learners' (perceived) technology competence and learners' interests.

Leaners' background, as all of the interviewees and all participants in online activities stated is must point that the instructor need to consider while designing the gamified course. This, as some of the participants in the interviews (n=15, 35.7 %) said, affects the adaptation span, the emotions and the attitude towards the gamified course. Two comments specifically seem to be pertinent on this issue:

'When we were put into groups at first having answered the questions I learnt the name of the group and passed. Afterwards when we are looking at it at home with my elder brother he asked if these were the characters in Dot. Suddenly he started to explain from there. If I had been playing that game during the first week of the classes I would have been more excited about the course'. [I1-5]

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'It took a long time for us to get used to the story. We even talked amongst friends about what an apprentice was'. [I1-8]

Similarly, learning style is another element that should be paid attention in a gamified course as all participants in both the online activities and the interviews emphasized. Some students ($n=10$, 23.8 %) ($nO=10$, 8.5 %) presented their learning styles in order to oppose the online sessions. Similarly, some students ($n=12$, 28.6 %) presented their learning styles in order to oppose to the in-class sessions. One example statement from each opinion is presented below:

'I can take notes when the teacher explains it. I t becomes more effective when the teacher explains it'. [I1-8]

'When on my own (in online) I learn it better. When I am in the center I think I will learn better'. [I2-2]

All of the participants in the interviews stated that they learn better when the content addresses their emotions.

Learners' (perceived) technology competence is another point that all participants in the interviews emphasized. According to the interview analysis, this issue affects learners' attitude towards a gamified course, immersion and emotion. The majority of the participants ($n=39$, 92.9 %) stated that they were not good in using the computer thus were scared of the gamified course at first. However, most of those learners ($n=32$, 76.2 %) expressed that their competence with the technology got better throughout the course and they said that they gained self-efficacy. About this issue, two of the participants commented that:

'I was not in good terms with technology. Thus at first it had scared me a lot. However during the course of the course I realized that I think I am successful'. [I2-1]

'At the beginning I had some negative thoughts because I had no ideas about the computers. This changed during the lessons'. [I2-12]

The last learner characteristic of the participants in both interviews and online activities is the learners' interests. All learners in both the online activities and the

interviews emphasized the learners' interest issue in a gamified course. One student in the interviews stated that:

"Magic thing should change because there may be some students who do not like this kind of thing. Although, changing this whole class into a magical journey seems to be fun, these students do not enjoy that and may lose their interests in this lesson." [OC1-7]

'I am not interested in the issue of Harry Potter. If a questionnaire and the like was used about this, I am guessing if there is three months it should be carried out every week according to the interest of different individuals. In my opinion it would be nice to understand students' interests and shape it accordingly'. [I2-13]

4.3.1.2 Control

The analysis of the interviews and the online activities data shows that the majority of the learners (n=34, 81.0 %) (nO=28, 23.7 %) prefers to have the control in a gamified course. What is meant by control is the possibility of being able to choose from a variety of options from which the participants can select the ones they want to. One student commented on this issue as follows:

'One comes across with two doors in the quests. When the student chooses one of the learning ideas, s/he would answer a different question accordingly' [I-2-8]

Volunteerism was the main focus of those participants emphasizing on the control issue. All of them stated that all challenges and participation in classes need be on voluntary basis. One student from the online activities stated that:

"Commenting should be done voluntary." [OC1-8]

'Those who did not write (questions) could have not written at all. There are ten questions but it could have been said that you did not have to write ten questions'. [I2-10]

4.3.1.3 Peer Tracking

Peer tracking is one of the mostly emphasized issue in the interviews. All learners stated that they wanted to track their peers both in the class and online. For that, the learner cohort in the class, seating arrangement, size of the classroom and the

visibility of peers' online works were the main features focused onby the participants. About this issue, one comment in particular seems to be highly relevant:

'Previously we had our first lesson in a very small classroom. If we had continued to have the classes there we could not have seen each other and this would have affected me negatively. I could not have followed my friends. I mean it is a good job that we moved to the amphitheater'. [I2-2]

4.3.1.4   Communication

Similar to the tracking issue, some participants ($n=18$, 42.9 %) in the interviews also stated that they would want to build a good communication between their classmates and teammates in the classroom and online. They emphasized that their communication was the main factor through which everyone mutually influenced each other which in turn determined he success levels of the team and the collaboration. Two relevant comments are:

'I mean we are not very intimate pals but despite this we were close friends. This may have been (a factor in our success)'. [I2-1]

'Other goups were able to communicate and prepare for presentations and the like, but we were not able to communicate amongst ourselves, thus as could be seen we always came last'. [I2-6]

4.3.1.5   Classification

The last issue concerning the learners is classification. During the course, at the beginning of each semester in order to classify the learners into four groups they were given the Bartle's Player Type test In the first group, the learners were asked to solve the test on their own as the ongoing refurbishment of the building we were in made it impossible to have a face-to-face meeting; Consequently a few students in the first group ($n=8$, 19.0 %) in the interviews said that they found it hard to do the test as it was too long. In the second group, the test was held in the class and the majority of the participants ($n=32$, 76.2 %) in the interviews said that they liked the personal questions in the test. In the class with the second group it was observed that learners had fun while solving the test but after a point they started to get bored as there were around 30 questions to answer.

Many learners (*n*=32, 76.2 %) stated that they liked solving the test used for classification. One student commented on this issue by saying that:

'They (the groups) were determined haphazardly. Which room we were going to be, were determined after a quiz was held '. [I-16]

Another student commented on the test by saying that:

'Remember our grouping was done in the form of a test at the beginning. This is nice. People did not end up with their best friends or with people they were forced to be with, it became a mixed group'. [I2-3]

On the other hand, one student said that she would prefer randomly selected classification and another student stated that she would want to take the test with a pen and pencil.

4.3.2 Instructor Related Issues

Within this section, instructor related issues that were analyzed from the data collected are presented. There are five main themes obtained from the analysis: *instructor characteristics, communication, presence of instructor, tracking and support.*

4.3.2.1 *Instructor Characteristics*

According to the analysis of the interview data, all of the students emphasized the instructor characteristics in a gamified course. They stated that the instructor in such an environment should be funny, flexible and open-minded. Some comments about this issue are:

'The fact that Professor Göknur open to new thing is entrenched in her character. Humorous and progressive, in my opinion it fits well with the method'. [I1-3]

'Professor Göknur had an entertaining side and in my opinion that was very important'. [I1-22]

'I like the professor, she is an easygoing professor. Her character is goes well with the method'. [I1-21]

4.3.2.2 Communication

Communication between the learners and the instructor is another point that the most of the participants (*n*=29, 69.0 %) in the interviews highlighted. As they emphasized face-to-face communication with the instructor is essential in a course. Some of them (*n*=9, 21.4 %) criticized the online system for the lack of the face-to-face communication aspect and being restricted to communicate with the instructor via the e-mails only (in first groups for the first a few weeks). Two comments about the issue are:

'If I cannot communicate with the teacher I cannot develop an interest in that course'. [I2-4]

'There is an interaction with the professor here. We talk face to face share our feelings and ideas in a relaxed way'. [I1-6]

4.3.2.3 Presence of Instructor

All of the participants in the interviews emphasized the presence of the instructor both in the class and online. One student highlighted this need by stating that:

'We are better in a classroom, at least I can feel the authority of the teacher'. [I1-4]

'The professor was ever present be it via (e) mail or in the classroom. At the end of the day definitely she had an impact'. [I1-3]

4.3.2.4 Tracking

All of the learners in both the interviews and online activities stated that they prefer instructor to track their works instead of self-tracking. They stated that instructors should track their progress all the time both in the class and online, and give continuous feedbacks. Also, some of the students (*n*=15, 35.7 %) emphasized the fact that some of their peers cheated in the gamified course and hence, instructors' tracking might help solving the cheating problems. A comment on this issue is:

At the beginning we filled an online questionnaire to choose a house. I came across people here doing this without filling in. I mean s/he enters a house directly haphazardly. For this reason it would have been better if it had been done here'. [I1-12]

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4.3.2.5 Support

Final issue with the instructor is the support. All of the participants both in the online activities and in the interviews considered the necessity of a continuous instructor support throughout a gamified course. According to the e-mail logs, most of the support requested subjects were the challenges and the schedules of challenges (nE=25), the technical problems (nE=28) and the the evaluation and feedback (nE=30) issues. One participant stressed the importance of the instructor support by stating that:

I was relaxed because I knew that I would get the necessary support and the help I needed them'. [I2-11]

A similar comment was asserted by another students:

'We were getting help from the teacher in every possible way about the topic and in my opinion this was very nice'. [I12-6]

4.4 Design Related Issues

This category covers three themes in terms of the design issue in a gamified course: *interface design, material design and feedback design*. The analysis of the data collected from four sources, indicated the importance of these three themes in our gamified learning environment.

4.4.1 Interface Design

For the online part of the course, all of the participants in the interviews made references to the interface design issue. Ten sub-themes emerged from the analysis of their statements: *technical problems and technical support, visibility of peers' works, novelty, usability, appeal, ubiquitousness, narrative-based design, chat and push notifications*.

4.4.1.1 *Technical Problems and Technical Support*

Some of the participants (n=15, 35.7 %) expressed that they experienced technical problems with the interfaces used and the process itself. Several e-mails (nE=28) about the technical problems faced throughout the course were received. The

technical problems expressed were mainly about the accessibility of interface, loss of login information and the technical problems with the process. When the students could not reach the interface due to some technical problems with one of the interfaces, they panicked; and sent several e-mails (nE=15). Also, one student mentioned tt that when they faced a technical problem in the process, they became disappointed. Therefore, they stated that in such an occasion, continuous and direct technical support need to be delivered. Selected comments from two students are as follow:

"I have been trying for two days to reach to the site 'technologiainlearning.weebly' but the page is not available. The link on the slide doesn't work. I asked to my other friends and they couldn't open the page too. I think there is a problem with the site. Can you please help?" [E1-2]

'I entered the leaderboard once and fell. That was a disappointment for us. Apparently there was one confusion one week, I was there before then I looked at it I was not'That way a considerable disappointment for me'. [1-13]

4.4.1.2 *Visibility of Peers' Works*

Another issue with the interface design was the visibility of peers' works. All of the participants in the interviews stated that they liked seeing their peers' comments on the interface; this as they expressed help them build a collective intelligence and experience peer to peer learning and self-assessment. One student commented about this issue in the following

'First I look at carefully the comments written by my friends too about how I should write it'. [1-5]

'We interpret it together, I can see the views of people. They may have taught about something very different than that I may have not taught about and this takes me to a different place, for this reason I like this course very much. I learn many things, I can see the views of different people in the same place'. [I2-1]

4.4.1.3 Novelty

The novelty of the interface is another issue some interviewees (*n*=15, 35.7 %) and one participant in the online activities expressed. According to their statements, novelty of the interface can either bear a positive attitude towards the course or increase the adaptation span to the gamified learning environment. Two respective comments were:

'As Edmoda is stranger to us it makes things hard for us' [I2-9]

"Edmodo is fun because it is new thing for me." [OC1-9]

4.4.1.4 Usability

Majority of the participants (*n*=27, 64.3 %) in the interviews stressed the usability characteristic of the interface that is to be applied in a gamified learning environment. According to their statements, their communication on the interface and their attitudes towards the gamified course were affected by the easy-to-use-feature of the interface. For example, a students affirmed that she could not communicate with her classmates through Edmodo as she did not know how to do it. The interface, according to her, was not intuitive-to-use (Observation notes-2.group). Another student stated that:

'You know there were parts in the quests for instance there were twelve parts in the first week. Some have clicked on one par and had only the first slide but I mean there were parts from one to nine, he had not seen this. This frightened us a bit'. [I2-11]

4.4.1.5 Appeal

Appeal is another feature that should be considered while designing the interface. This necessity was raised by some of the students (*n*=9, 21.4 %) in the interviews. They stated that designing an interface similar to the social media interfaces might work well. Two comments about the appeal were as follows:

'We use Facebook and the like too, we think were freer there. I mean I think we are freer in these kinds of sites, in my opinion'. [I2-3]

'For instance that place we write comments could be more effective'. [I2-9]

4.4.1.6 *Ubiquitousness*

Majority of the participants (*n*=33, 78.6 %) in the interviews and two participants in the online activities emphasized the ubiquitousness of the interface. They stated that they wanted to reach the interface and the materials wherever they are and whenever they want to. Some of the students (*n*=6, 14.3 %) also stressed on the idea of mobility, in other words they wanted to reach the interface and the materials through the use of mobile devices. One participant commented on the mobility by saying that:

'I cannot open Edmodo in mobile application. I would be nice if I could do my Edmodo quests on the phone as well'. [I1-10]

Another student commented on the ubiquitousness issue in general by saying that:

'You can do your quests from wherever you wish to. From this point of view I think it addresses many people'. [I2-1]

4.4.1.7 *Narrative-Based Design*

A participant in the interview stated that the applied interface needs to have a narrative-based design. She emphasized that such an interface would create a game-like experience. This is what she said:

'If it was a different site etc. specifically for the class other than Edmodo we would have felt as if we were entirely in a world of game'. [I2-5]

Similarly, some participants (*n*=7, 16.7 %) emphasized on the need for a narrative-based progression bar for individuals and teams, and for a scoreboard in the interface. One participant's view about this issue was:

'The groups could have collected points separately and each group could have had their separate leaders. I am making it up, it could have been shown in the form of you are at the door or we have even entered Everest long time ago'. [I2-9]

4.4.1.8 *Chat*

A few students (*n*=6, 14.3 %) in the interviews underlined the requirement for a chat functionality for the interface. This, as they stated, would have helped to increase

collaboration, peer-to-peer learning and to build an online community. About this issue, one participant commented that:

'If there was a place for social network in Edmodo site, and those who enter it should be seen online, like the face for instance, as like you talk there and ask directly what did you do with this and that and wait for an answer, in my opinion we can ask someone who is online and likewise we can ensure similar interaction mutual help. In my opinion something like this which would enable us to talk online directly is necessary'. [I2-19]

4.4.1.9   *Push Notification*

The last issue with the interface design obtained from the interview data is the push notifications. Several students (n=19, 45.2 %) emphasized the need of such a functionality in the interface. They stated that they liked the notifications, and asked for more notifications as remindesr of the challenges. Two participants commented on this issue by stating that:

'I was about to forget the quests in Edmodo. There could have been something that would have prevented everyone from forgetting and enabling them to remember'. [I2-15]

'You know the notifications, they pleased me'. [1-8]

4.4.2   Material Design

The design of the materials used throughout the gamified learning experience is another design issue that all of the participants in the interviews and students in the online activities stressed. Regarding this issue, they underlined eight points: *conciseness, clarity, multimedia use, interactive, tangible and 3D, game-based, level-unlocking* and *popular culture*.

4.4.2.1   *Conciseness*

Most of the participants (n=36, 85.7 %) in the interviews and several ones (nO=26, 22.3 %) in the online activities emphasized the conciseness of the material used in the course. Especially, they talked about the conciseness of the online content; the majority (n=25, 59.5 %) (nO=10, 8.5 %) were convinced that the current length was

appropriate while some others (*n*=11, 26.2 %) (*nO*=16, 13.6 %) from those bringing this issue to the fore said that they were too long, should be shortened. Two relevant statements about this were:

'In my opinion we should not have been drowned in this much detail'. [I1-2]

'I like that aspect of the quests, being in a summary form'. [I1-7]

Additionally some of the participants (*n*=8, 2.6 %) also commented on the conciseness of the e-mails from the instructor and feedbacks.

4.4.2.2 *Clarity*

According to all participants in the interviews a similar characteristic that all the materials should have is clarity. The statement of one participant exemplifies this contention quite well:

'I did not understand the letter, it remained in the air like this. It did not seem to be clear to me. The only thing I understood was that I had to bring an apparatus and the girls said, like, it would be sufficient if you would understand this. The letter did not mean much to me, to be honest. Even if you had told me to come with a mobile device, perhaps it would have the same impact on me'. [I2-1]

4.4.2.3 *Multimedia Use*

All of the participants in the interviews indicated that they preferred materials with multimedia integration. Some participants (*nO*=28, 23.7 %) in the online activities drew attention to this point as well. They underlined the fact that the online content was mostly text-based, which bored them. On the other hand, they enjoyed the video and the pictures sections. The students in the interviews also said that multimedia should be used within the challenges as well. Two participants emphasized the multimedia use issue by saying that:

'[If I had designed it] I would have put the videos in the quests, they are amusing', [1-2]

"I find 'challenge me', 'watch me' parts enjoyable; 'read me' part is boring." [OC1-10]

The second comment also refers to the next point analyzed from the data: interactivity.

4.4.2.4 *Interactive*

All of the participants in the interviews and some participants in the online activities stated that the materials used in the course should have beeen interactive. A participant underlined this issue with the following statement:

'I would have made the quests more interactive like that like memorizing like reading the information and answering it'. [1-6]

4.4.2.5 *Tangible and 3D*

Some of the participants in the interviews (n=25, 59.5 %) stated that they would prefer tangible versions of the materials as well. This included content, syllabus, rewards, badges and avatars. Two students (4.8 %) also stated that they would have preferred tangible narrative in the classroom. By tangible narrative what they meant was that the classroom settings and the clothes needed to be designed according to the narrative; namely, they said they wanted to experience the narrative in 3D. The comments of two students exemplify these desires:

'There can be handouts summarizing the topic. Though we have the online at hand, one way at another we take notes but there could be handouts providing brief summaries'. [I2-1]

'It could have been concrete for instance abstract medallion does not make any gains. For instance it can be a present'. [I1-6]

4.4.2.6 *Game-based*

Some participants (n=6, 14.3 %) in the interviews affirmed that the materials should be design based on a real game-like structure. They also said that when gamification term was used, they had thought about a real game; therefore, that is what they expected the materials would be design-based. One comment about the issue was:

'Mario comes to my mind. For instance you should come across mushrooms, question should appear from within, you should answer them there, I mean they [the quests] can be like the game you know'. [I2-2]

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4.4.2.7 Level Unlocking

Level unlocking is a game-element which requires students to finish a level in order to be able to see the next level. Some learners (*n*=7, 16.7 %) in the interviews specified that they would prefer that the online contents should be designed in such a way to enable level unlocking. Two respective assertions from the participants are below:

'When having finished that topic, completed that section there should be an opportunity to go elsewhere so that we can learn one more thing there'. [I2-8]

'When the process is completed there should be a different that stage. Now it is time for this, like you cannot go to the next stage without passing that'. [I2-5]

4.4.2.8 Popular Culture

The last point to be present in the material design issue is the popular culture. Several participants (*n*=17, 40.5 %) indicated that using some figures in the online content (quest) from the popular culture and making references to popular culture in the materials would be attractive for them. One students emphasized this issue and said that:

'The Barney Stinson detail in the "mushroom challleng" was very sweet'. It was really sweet, I felt like doing it'. [I2-15]

4.4.3 Feedback Design

The feedback needs of the students were presented before in the section on *Gamified Course Related General Issues and Perceptions*. Here in this sub-theme, in the light of the analysis of the data collected the design of the feedbacks is described. The results of the data analysis revealed eight main characteristics of feedbacks: *immediate, clear, direct, progressive, personal, narrated, audio-based* and *peer-to-peer*.

4.4.3.1 *Immediate*

Immediate or very quick feedback was considered to be an important feature by all participants in the interviews and in the online Two comments that highlight this desire are as follows:

'The points used to come one or two weeks later. I could not understand from where I got what, I was bewildered about the marks, about whether I had done anything like that. A confusion like that occurred for that reason I did not know exactly what I got from what. Feedback should be given immediately in my opinion'. [I1—6]

"Instructor should give feedbacks in a short time because we were confused which grade belongs to which quests or challenges." [OC1-9]

4.4.3.2 *Clear*

Another issue with the feedbacks was the issue of clarity. All participants in the interviews and the online system stressed the necessity of feedbacks to be clear. Two students stated that:

"Feedbacks should be clearer." [OC1-11]

'At the beginning I could not understand this point matter at all. It drops or some points from somewhere therefore I became stressed'. [I2-4]

4.4.3.3 *Direct and Progressive*

Likewise, all of the participants in the interviews and in the online activities agreed on the tact that the feedbacks should be direct and progressive. That means that feedbacks should directly show what is good, what is bad and what is missing in students' works, it should give them guidance as to how to improve their work and inform the learners about their progress. One participant underlined the importance of this issue by stating that:

'We get feedback to the effect that you have done well, could do better, you have done it very well, it goes well, and you can work better. When I see these I can say yes I have done this'. [I1-3]

4.4.3.4 Personal

Similarly, all of the participants in the interviews and online activities stated that the feedbacks should be personal. Two comments from the participants can exemplify this:

'Your comments made me happy, the comments you made on our comments'. [I2-2]

'You are in this way, in this position in the classroom, I would have been nice to receive feedbacks in the form of personal saying'. [I1-4]

4.4.3.5 Narrated

Some of the learners ($n=6$, 14.3 %) in the interviews stated that feedbacks should be narrated as well. An example comment about the issue is:

'To say it in the form of apprentice! It has been o long time that you are not around is definitely much better than saying that you did not come to the classes. [I2-5]

4.4.3.6 Audio

Some of the participants ($n=8$, 19.0 %) in the interviews said that they would prefer aural feedbacks. One participant commented on this issue by saying that:

'I wish we could get aural feedbacks [in the quests]'. [I2-19]

4.4.3.7 Peer-to-Peer

Majority of the participants ($n=23$, 54.8 %) in the interviews emphasized that the design of the feedback mechanism should also include peer-to-peer feedbacks. For this, according to the data, the visibility of the peers' works is needed. One participant commented on this issue by saying that:

'I could have asked them to comment on each other's talk by uploading it onto Edmodo. I could have used things like what do you think about this topic or is there is something wrong here in your friend's thinking, object to this or I do not know make a contribution'. [I1-3]

4.5   Game Elements

This category covers the game elements that should be in a gamified learning environment according to the data analyzed. From the interviews, online activities, e-mail logs and in-class observations, 10 themes were obtained: *challenge, narrative, leaderboard, reward, badge, common room, point, win-state, evaluation* and *goal*.

4.5.1   Challenge

In some parts of the online content, some challenges (small quiz-like and reflective) were placed. Also, in the second group, teams were required to solve challenges that were composed of the learners' questions in the class. All of the participants both in the interviews and in the online activities expressed that challenges were necessary in a gamified learning environment. They have positive *attitude* towards the challenge experience; however, they have criticized how challenges were applied. In this section, the data from the interviews, the online activities, the e-mail logs and thein-class observations were analyzed, and the issues related to the challenges are presented. The data are presented under the following categories: *emotion*, *distracting, engagement, team skills, competitive collaboration, collective intelligence, feedback, self-assessment, reinforcement, challenge type, timing, frequency* and *repetitiveness*.

4.5.1.1   *Distracting*

As aforementioned, in some parts of the online content, some quiz-like challenges, which were called mushroom challsenges were placed. One student in the interviews stated that those challenges were distracting them from the main content. On the contrary, some students (*n*=20, 47.6 %) stated that they were helpful in a re-engaging manner. The comment of the student who found the challenges as distracting is:

'The mushroom challenges distract attentions in my opinion'. [I1-2]

On the other hand, one of the students presented an opposite opinion by saying that:

'While reading in slide you lose your interest like this in a place. When a challenge appears there you get straight there'. [I2-1]

The second opinion presented by the participants takes us to the second issue related to the challenges: engagement.

4.5.1.2 *Engagement*

Some students (*n*=20, 47.6 %) in the interviews stated that quiz-like challenges were useful in re-engaging the learners with the content. However, according to the statements of the some of the students (*n*=15,35.7 %) (*nO*=55, 46.6 %), the challenges that required learners to write reflections were not engaging. On the contrary, they stated that they got bored and stressed because of the characteristics of the reflective challenges: repetitiveness, obligatory, reflective thinking, frequency and timing. Two participants commented on this issue by saying that:

'If I lose concentration in the quests suddenly I can be directed (towards the challenges) [I1-3]

"They require both interpretation and combination information together. Thus, sometimes they really become trouble for us due to responsibility for doing every week." [OC1-12]

4.5.1.3 *Team Skills*

Some participants (*n*=15, 35.7 %) in the interviews expressed their disapproval for being within the team with some peers as this decreased the success of the team with the challenges in the class. On the other hand, some learners (*n*=18, 42.9 %) stated that they were happy with their teammates as they were successful in the challenges for the teams in the class. Two participants (4.8 %) underlined the fact that classification was not fair because of two reasons: one was that the sizes of the teams were not equal and the other one was that since the classification was based on the Bartle's Player Types and each team was based on different player types the characteristics which made some groups more ambitious than others.

The first opinion was from a student in the first group; therefore, in the second group, the number of the teams were equalized as much as possible. For this, a test for classification was applied in the classroom.

Two relevant comments are:

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'I do not think there is equality between the groups. Even I do not know which groups exist, I had a friend whom I thought to be a bit relaxed and he was saying that we were sociable people do not expect these things from us'. [I2-6]

'Not 60 out of 60 people do the challenges thus a bit problematic. Perhaps if there were more houses. If a solution is found for that it would be better'. [I1-2]

4.5.1.4   Competitive Collaboration

The majority of the participants ($n=27$, 64.3 %) in the interviews stated that challenges created a competitive collaboration; which means that they both support the competition and collaboration. Two comments from students examplify this issue:

'There was something like a competition atmosphere but we were helpful I mean it was good'. [I2-2]

'Having competitions and cooperation etc. was very entertaining really I liked it'. [I2-20]

Some students ($n=10$, 23.8 %) stated that they did not like the competition side of this issue and asserted that collaboration should be boosted more. A student commented on this contention by saying that:

'The things that I would not use would have been mostly the competitive games. Because personally I do not like competition very much'. [I1-11]

On the contrary, most students ($n=31$, 73.8 %) stated that they liked the competition part of the challenges. In the first group, the instructor transmitted the information and asked some questions in some part of the lesson; some students ($n=12$, 28.6 %) in the first group asserted that they would prefer to have competitive challenges between the teams in which they can collaborate with the teammates. Therefore, in the second group, teammates were asked to sit together and in-class competitive challenges were held in which teammates collaborated.

4.5.1.5   Collective Intelligence

Another issue with the challenges as majority of the interviewees ($n=30$, 71.4 %) and some participants ($nO=15$, 12.7 %) on the online system asserted, is collective

intelligence. That means that learners can share their opinions in a common environment and see/hear peers' opinions as well. By doing so, they build a common collective intelligence pool. Participants said that this was due to the visibility of the peers' comments on the interface and teammates sitting together in the classroom. One comment previously given in the Visibility of Peers' Works section summaries this opinion:

'We make comments together, I can see peoples' views. They can think of something very different that I had not thought about and this takes me elsewhere and thus I like this course very much'. [I2-1]

4.5.1.6 *Feedback*

Feedback as all the participant in the interviews and in the online activities stressed is an important issue with the challenges. After each challenge, all participants required immediate, clear, direct and progressive feedbacks. There were several e-mails received (nE=30) from the participants about the feedbacks on the challenges. Two participants commented on this issue:

"Feedback on our comments and mushroom challenges should be given." [OC1-13]

'The fact that you gave us immediate feedback on our challenges for instance especially that used to please me'. [I2-1]

In the first group, giving immediate feedbacks for each challenge was not possible as the number of the students was big and there was no an automatic feedback mechanism. In the second group, the number was small and feedbacks were given immediately or within a short time period.

4.5.1.7 *Self-Assessment*

Another issue with the challenges was self-assessment. Majority of the participants (n=34, 81.0 %) in the interviews and some participants in the online activities mentioned that these challenges helped them to self-assess themselves. On this issue, two learners stated that:

'In the assessment we interpret things in fact in a way I end up measuring what I know. While commenting there I end up giving a reflection, in a way my evaluation ends up being included there, thus it is good'. [I2-11]

'When I write comments or in the classroom I saw this in myself: I had done this there, what the teacher said was this and the like, in my opinion there is similarity with some in my mind, these occurred to me a lot, these were quite similar to a self-assessment '. [2-5]

4.5.1.8 *Reinforcement*

According to the majority of the students (n=25, 59.5 %) (nO=62, 52.5 %) in the interviews and on the online system, the challenges were reinforcement for reading the online content and exploring more information on the internet. Without them, some students (n=10, 23.8 %) in the interviews confessed that they would not read the online content. One participant underlined this issue and expressed that:

'Remember the small challenges that came in between. I cannot find the answers to them in the slides anyway. There have been times that I searched the internet'. [I2-1]

4.5.1.9 *Challenge Type*

Another issue with the challenges all participant in the interviews and in the online activities commented on is the challenge type. On the online system, there were two types of challenges as aforementioned: reflective writing and quiz-like questions. In the classroom, in the first group, the instructor asked some questions in some parts of the lessons. Majority of the participants interviewed (n=17, 40.5 %) in the first group requested game-based in-class challenges. Therefore, in the second group, different techniques such as team-based charades were applied. According to the participants in the interviews and in the online activities four types of challenges should be used in a gamified learning environment: *content-based, role-playing, point-and-click* and *game-based*.

Content-based and point-and-click challenges were asked for the online challenges, and role-playing and game-based challenges were asked for both in-class and online challenges. Two sample statements from the participants are:

'I thought that we see our own characters and go somewhere like a battle field for instance. There for instance if a question is posed when we enter the door and I answered it, I mean I need to answer it before coming out of there, you get out but you see your progress, other people's too…. They should also appear on the screen, if we had done it that way it would have been much more interesting' [I2-19]

'We could have role-played between the groups about a topic for instance. We could have staged a play in order to enliven that topic'. [I2-10]

4.5.1.10 Timing

A mostly criticized issue related with the challenges is timing as almost all of the students (n=40, 95.2 %) in the interviews and all students in the online activities emphasized. In the first group, the deadline for the online challenges were around 2-3 days. This raised lots of criticism from the students. Several e-mails (nE=15) were received to this effect asking for extention. Considering these feedbacks, in the half part of the semester with the first and the second group, the deadline was extended to around 4-5 days. According to the participants (n=40, 95.2%) (nO=35, 29.7 %), timing schedule of the challenges caused fear and stress. One student from the first group criticized the situation as:

'To be honest sometimes these challenges can frustrate me because we need to complete the challenges within two days' [I1-5]

On the other hand, one student from the second group said that:

'You assign the quests and give a considerable amount of time. From that angle there was no problem, thus I did not feel as if I was restricted'. [I2-2]

On the other hand, a few students (n=3, 7.1 %) in the interviews stated that no matter how long the deadline was, they would do them at the last day anyway.

4.5.1.11 Frequency

Another mostly criticized issue with the challenges was the frequency of the challenges. In the first group, online challenges were not delivered in a weekly manner due to the some management issues. Due to the criticism received, in the second group, online challenges were delivered weekly. This frequency was also

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criticized. All participants in both the interviews and the online activities mentioned about the importance of the frequency. One participant said that the online challenges should be given at two-three weeks intervals. Two selected comments about the frequency of the challenges were:

It is important to reflect upon but I think that I would not say to have this many reflecions [1-2]

"I think the frequency of quests must be changed." [OC1-7]

4.5.1.12 Repetitiveness

The last issue with the challenges are the repetitiveness of the challenges. The participants in both the online system and the interviews stated that some challenges were repetitive; which means that they were in the same structure and static. That made them bored. Therefore, in their opinion instead of repetitive challenges, the types of the challenges should be changed. One participant underlined this issue by saying that:

'Writing comments over and over again, as I do not like to do the same thing repeatedly. Writing reflections every week a bit of a boring task for me'. [I1-3]

4.5.2 Narrative

Narrative is the story the gamified experience was based on. In this experience, the narrative was a Harry Potter-alike Wizarding School in which students became apprentices and the instructor became the master. Some of the students ($n=16$, 38.1 %) ($nO=8$, 19.0 %) in the interviews and online experiences stated that they liked the story while some of them ($n=23$, 54.8 %) ($nO=10$, 23.8 %) expressed that they either did not like or understand the narrative. In the first group, participants were not given a documental dictionary for the narrated terms. Therefore, they requested such a guidance. In the second group, a dictionary was uploaded in the online system. In this part, narrative-related issues are analyzed are presented in the light of the data: relevant, communication and character.

4.5.2.1 *Relevant*

According to some participants (*n*=23, 54.8 %) (*nO*=10, 8.5 %) in the interviews and online activities, the narrative should be designed or selected in terms of the relevance to the majority's interests and background. Otherwise, they stated that they could or would not want to follow the narrative. This as they said, made it hard for them to get into the immersion and change the attitude towards gamification.

On the other hand, some participants (*n*=9, 21.4 %) expressed that they liked the narrative even though they had never been into fantastic stories before.

Two selected comments from the participants about relevance of the narrative are:

"I did like the Harry Potter concept." [OC1-14]

'I did feel much as if I was in a game. As for the reason, it could be because I could not see the whole of the story'. [I1-3]

4.5.2.2 *Communication*

Throuhgout the gamified course, communication between the instructors and the students were based on a narrative. In all e-mails, narrated terms were used such as apprentice, potion, butterbeer and more. All participants in the interviews and some participants in the online activities (*nO*=15, 12.7 %) said that the narrated communication fitted well in the gamified experience; however, the relevance and the guidance about the narrative were needed. A few students (*nO*=7, 5.9 %) in the online activities expressed that they found the narrated communication inappropriate and unnecessary. Two sample comments about the narrated communication are:

'The email received was not written formally. That gets one's attention, and motivates'. [I1-3]

"I love to be called apprentice and I love using enchanted and magical terms." [OC1-5]

4.5.2.3 *Character*

Some participants (*n*=9, 21.4 %) in the interviews stated that they liked the narrated characters such as wizards and Alice (Wonderland) used in the online content. They

also stated that there should be more characters in the online content that give *guidance* to them. Additionally, some participants (*n*=5, 11.9 %) expressed that *tangible* characters should be in-class as well in order to put them into immersion. This, as they contended, can be managed by wearing narrative-based clothes and decorating the classroom settings according to the narrative. Another issue with the narrated characters, as a few students (*n*=3, 7.1 %) in the interviews underlined, is *character development*. They stated that they liked starting as an apprentice and ending up with being the master and getting mastership certificate at the end of the semester.

Two selected comments about the narrated characters are:

'There is a process here. We can reach the position of a teacher, we can be the masters. There is a good scenario, there is a good story'. [I1-9]

'What were you calling us, apprentice. This is very nice. You could have called us students. This may be a necessity of the game but even this form of addressing becomes effective somehow'. [I2-1]

4.5.3 Leaderboard

Throughout the gamified course, weekly points of the participants were summed up in order to determine the top 10 students for leaderboards. The number of the students varied according to the total points. Also, in the second group, a leaderboard for the teams were prepared for each week. Majority of the participants (*n*=30, 71.4 %) stated that they had a positive attitude towards the leaderboard while some of them (*n*=11, 26.2 %) stated that they had a bad attitude. According to them, that was mainly due to the fact that their names were not listed on the leaderboard and that made them sad. Here, in this section, the issues related to the leaderboards obtained from the data analysis are presented: *participation, competition, reputation* and *teams*.

4.5.3.1 *Participation*

Majority of the participants (*n*=30, 71.4 %) stated that leaderboards affected their participation. Some of them (*n*=30, 71.4 %) expressed that being on the leaderboard intended to motivate them to participate both in the class and online activities. One

participant said that being on the leaderboard made her team relaxed and, consequently, decreased their participation. According to the observation notes, the team in which this student was a member was in the first place at the beginnings; later, they started to lose their rank and finally ended up with being the last team on the list. Two relevant comments from the participants are:

'I think the way one could become the first relaxed us very much. Suddenly we felt that we could do it somehow etc.' [I2-10]

'I had entered the leaderboard once and in the aftermath I had done somethings in order to be able to enter it again'. [I1-8]

4.5.3.2 Competition

According to the majority of the participants ($n=34$, 81.0 %) in the interviews, another issue with the leaderboards was competition. They said that leaderboards led to a competitive environment. Most of the students ($n=31$, 73.8 %) expressed their consent for such a competitive environment leaderboards led while some ($n=10$, 23.8 %) expressed that they did not like the competition. Two selected comments from the participants are:

'The leaderboard makes us competitors in the classroom atmosphere. We help each other but at a point the task becomes competitive like this'. [1-4]

'I did not like the leaderboards very much. Because the competitive atmosphere is not very nice in my opinion'. [I1-2]

4.5.3.3 Reputation

Another issue some participants ($n=12$, 28.6 %) in the interviews emphasized in relationship to the leaderboards is reputation. In the gamified course, for those individuals who managed to be listed on the leaderboard for three times, there were four types of rewards they could choose. Some participants ($n=12$, 28.6 %) said that those rewards were not effective in their desire to be listed on the leaderboard; instead they said that they wanted to be on the list because of the reputation they may get. One student underlined the issue with the following statement:

'As of now I have managed to enter the leaderboard twice and am waiting curiously for the third one. I want to be placed there. I may or may not use the rewards we are coming to the classes anyway. This encourages me, I like this very much'. [I2-1]

4.5.3.4 Teams

The final issue with the leaderboards is the teams. Some participants (n=15, 35.7 %) said that the leaderboards for the team success were not appropriate as they did not want to be responsible for their teammates' works. On the other hands, more students (n=20, 47.6 %) said that the leaderboards for teams' achievements in both in class activities and online activities should be designed and shared with the students. In the first group, the ranking could only be shown via the badges due to the management issues and learners size; however, in the second group, text-based leaderboards and badges were prepared for the team-ranking along with the personal leaderboards each week. Two learners commented on this issue by stating that:

'The groups could have collected points separately and could have had separate leaders'. [I2-9]

As a house we come third in general now came fourth. There are 60 people in our house and to be honest I cannot see that all 60 had made comments. Not everybody does. As for me I cannot push everyone'. [I1-12]

4.5.4 Reward

In the gamified course, rewards were given to the students in variety of forms. In the first group, for those who participated in the classroom Q-A's, earned a pearl and one participation point. However, due to the some organizational issues, only pearls could be distributed to all students who participated in the class after a while. Also, those who winners of the most pearls were given a reward. In the second group, pearls were removed; instead, the teams were observed and those answered the questions correctly got one participation point. Teams getting the highest participation points received the reward. All students in the team got the same participation point. Additionally some rewards were distributed to students on the basis of their performances in-class and online activities. Concerning this rewarding system the majority of the participants (n=38, 90.5 %) said that they had a positive

attitude towards the reward. On the other hand, a few students said that they had a negative feeling attitude towards them because of some organizational problems. In this section reward related issues analyzed through interview and observation data are reported: *participation, privilege, grading, narrated, tangible* and *continuous and systematic*.

4.5.4.1   *Participation*

Majority of the participants (*n*=31, 73.8 %) in the interviews stated that the rewards increased their participation in the online and in-class activities. The observation notes on ithe first group revealed that those people who did not seem to be paying attention to the in-class Q-As started to be interested in following them and joined in in the aftermath of pearl reward distribution by the instructor to the ones who participated in the in-class Q-As One participant who commented on the participation issue concerning the rewards stated that:

'The professor asked a question, everyone is quite, who will know it, not like that I do not know, I hope she will not look at me, but like I should know it and get a pearl kind of atmosphere existed'. [I1-5]

4.5.4.2   *Privilege*

In the gamified course, as previously mentioned, those who got listed on the leaderboard for three times were offered four kinds of privileges as a reward from whichhey were asked to pick one. In the second group teams who got the highest participation points earned three privileges from which they were asked to select one weekly. The majority of the participants (*n*=28, 66.7 %) stated that they liked earning privileges as a reward. One student commented on this issue as:

"As you know you could have received bonus points, I do not know, as a result the leaderboards, or it was OK if we did not turn up for classes. These pleased me". [I1-3]

On the other hand, while in the first group, those privileges were observed to be popular, in the second group some champions preferred not to claim their privileges.

4.5.4.3 *Tangible*

Another issue with the reward was the tangibility. Some participants (*n*=9, 21.4 %) stated that receiving tangible rewards was a necessary act in the gamified course. Two participants commented on this issue by saying that:

'It could have been concrete for instance, abstract medallion does not earn you anything. It can be a present for instance'. [I1-6]

'I suppose we will earn something at the end. Certificates and rewards. I would have directly expected something like that'. [I2-1]

4.5.4.4 *Continuous and Systematic*

Some participants (*n*=15, 35.7 %) emphasized the continuous and systematic feature of the rewards. They underlined that all rewards should be delivered continuously and systematically. This issue was also observed in the class activities within the first group. When the instructor gave the pearls to the deserved ones continuously and systematically, the participation rate was higher. On the other hand, when she started to give the pearls irregularly or forgot to give the pearls, the participation level dropped.

One student commented on this issue in the following way:

'The distribution of the pearls were going fine at first. Afterwards when the professor started to give it to anyone it lost its significance'. [I1-19]

4.5.4.5 *Narrated*

Some rewards were text-based narrated rewards used during the communication between the learners and the instructor. One student stated that he liked the narrated rewards by saying that:

'I like that in the emails, here take a butterbeer'. [I1-2]

4.5.5 Badges

Students' weekly points consisted of four levels: bad, average, good and best. Commensurate with these rankings four different badges were designed and delivered weekly via the online system. Similarly on the basis of the teams' points

four badges were designed for the teams and delivered weekly via the online system. Some students (*n=20, 47.6 %*) said that they had a positive attitude towards the badges while some (*n=22, 52.4 %*) indicated that they were neither aware of nor interested in the badges. According to the interview data analysis, there were five issues related to the badges: *fun, confidence-booster, feedback, self-assessment* and *continuous and systematic.*

4.5.5.1 *Fun*

Some participants (*n=20, 47.6 %*) stated that they had fun with the messages and the pictures on the badges. A participant commented on this characteristics by pointing out that:

'The badges can stay as they are entertaining, they make one lough'. [I1-2]

4.5.5.2 *Confidence-Booster*

Another issue with the badges was their confidence-boosting feature as some of the participants (*n=11, 26.2 %*) underlined. They said that supportive messages in the badges helped them to boost their confidence. A participants stressed this issue as:

'Once the Iron Man (of the badges) was given to me, I went oo, apparently I could do it. It stimulated me'. [I2-5]

Similarly, another student stated that:

'The badges give me confidence like that' [I1-4]

4.5.5.3 *Feedback*

A similar item to the badges was pointed out by several participants (*n=20, 47.6 %*) feedback. They expressed that badges gave them feedback about their performance and progress. Two participants' contentions can exemplify this common opinion:

'The badges generated a feedback'. [I1-3]

'The badges also indicate how much we have progressed in this process'. [I1-4]

4.5.5.4   Self-Assessment

On the basis of the feedbacks badges provided, some of the participants ($n=18$, 42.9 %) stated they self-assessed their performance and progress. One student commented on this issue by saying that:

'Receiving medallions is a reward for our works. We see ourselves, .which areas we are strong or week. They were good as they allowed me to evaluate myself'. [I1-6]

Likewise, another student stated that:

'Regardless of how good I think my comments are the badges indicate something to the effect that you can do a little bit better consequently I can try to correct the things I lack'. I1-3]

4.5.5.5   Continuous and Systematic

A few of the participants ($n=5$, 11.9 %) stated that the badges should be sent continuously and systematically. One comment from the students about this issue is:

'One wants to see that one wins that badge continuously' [I2-6]

4.5.6   Teams

All of the participants in the interviews stated that they have a positive attitude towards being separated into teams; however, they all criticized the teams for some reasons. In this part, some of the issue related to the teams including the reasons for the criticisms by the participants are presented: *community building.*

4.5.6.1   Community Building

Some participants ($n=19$, 45.2 %) emphasized the issue of community building in the teams. They criticized the teams for their inability to develop a community spirit. This, according to them affected their achievements. Despite the fact that some groups failed to develop a community spirit some participants ($n=15$, 35.7 %) found the communities built by the instructor interesting. Two different opinions about this issue are:

'Even in the classroom atmosphere not all group members were participating in answering the questions. I think we were not like a full group'. [I2-2]

'Is it called anime? I mean as you know the groups had their symbols at the beginning that is interesting. The names that were given, like Centaurs, these are interesting things'. [I2-3]

Some participants (n=15, 35.7 %) while stated the importance of community that they admitted that they could not build a community with their teammates in the class or online.

In order to build a community both in the online system and in the class they underlined two issues: the *relationship* and *interaction* between the teammates. One student in a particular team in the second group stated that they were close friends before the course, and this tight relationship was reflected on the achievement of the team. On the other hand, another student in a team in the second group emphasized that she was in the team with the members she could get along well, and this decreased the interaction between the teammates. Another student stated that interaction between different people in the team led them to build a relationship. One comment from a student is:

'There were occasions that I talked to the people I had not talked much'. [I2-7]

Some participants (n=13, 31.0 %) stated that seating arrangement in the class affected their interaction and hence community building. They said they would prefer to sit closer in a U-shape sitting position.

Some other participants (n=3, 7.1 %) stated the *size* of the team affected their community building. In the first group, each group consisted of a large number of people. This, as they asserted, affected their community building. Therefore, they stated that they would prefer teams with smaller sizes.

4.5.7 Evaluation

Another mostly mentioned issue in the gamified learning environment is evaluation. Evaluation of the students were done on the basis of the points collected by the students. This situation both caused criticism and support from the participants. In

this section, the issues related to the evaluation are analyzed using the data collected: *distributed-points, fairness, clarity, visibility, self-assessment* and *grading.*

4.5.7.1 *Distributed - Points*

Throughout the gamified course, participants collected points for every kind of activity. These points, later, were combined on the basis of a percentage and became learners' overall grade. This kind of distributed evaluation both raised criticism and support from the participants. The majority of the participants (*n=28, 66.7 %*) in the interviews stated that giving each activity a value and collecting points from each should be applied in the gamified learning environment. On the other hand, some students (*n=5, 11.9 %*) in the interviews underlined that grading the points collected was not appropriate and instead of this, they would prefer the traditional exams. Two participants commented on this issue by saying that:

'It is nice to get points from different things. Because in my opinion everything we did was important, even our class attendance is important. Therefore certain things should not appear to be more important than the others'. [I1-2]

'I am against the examination system. Exam depends on the moment. We take a one hour long exam everything is possible: we could have not studied the night before. However getting points from different things like this allows people who could have not been able to make comments there or within the class people who could not speak at all when quests are posed to collect points from there. Someone with a bad handwriting could be good with the technology thus can collect points from the lab. The fact that everyone was able to collect points from different things, in my opinion there were thing suitable for everyone's development area. As I said it works for individual. Remember for instance you said that you cannot work that individually but I work better individually instead of listening to the people in a group I understand better when I read something that is put in front of me'. [I2-1]

4.5.7.2 *Fairness*

Most of the participants (*n=32, 76.2 %*) (*nO=40, 33.9 %*) in both the interviews and online activities underlined the fact that evaluation should be fair. Some participants (*n=21, 50 %*) (*nO=6, 5.1 %*) criticized the current evaluation for not being fair due

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to the reasons related to *teams classification, free loaders* and *stemming from instructor.*

As mentioned before, teams were formed on the basis of the results of the Bartle Player Test. This according to some participants ($n=4$, 9.5 %) was not fair as a team formed can be consisting of ambitious people while another team can be consisting of relatively relaxed people.

As for the free-loading question, some participants ($n=15$, 35.7 %) expressed the inconvenience caused by team members who preferred not to work or collaborate with the rest of the team members yet, still got points as a result of the efforts of other hard-working teammates.

For the last fairness issue, some participants ($n=2$, 4.8 %) ($nO=6$, 5.1 %) stated that evaluation might not be fair due to the instructor-related issues.

Two comments from the participants are:

'There are very active people in the class. Those people who are not participating enough can also get the points. This disturbs me a lot'. [I2-4]

"I think grading system should be more frank." [OC1-15]

4.5.7.3 *Clarity*

Another issue and probably the most criticized one about the evaluation is clarity. All participants both in the interviews and online activities stated that all evaluation systems should be chrystal clear. In the first group, the Virtue of Apprenticeship document was uploaded on to the online system. The point structure was specified in detail in the document. However, showing the document to the students and explaining each term and the point system was not possible due to the ongoing construction in the building where the classes were held; therefore, the students were asked to read the document on their own. After a while, a large number of e-mails ($nE=15$) were received from the participants about the evaluation. On the basis of the criticism received in the interviews and on the online system, another document was prepared for the second group. The new and specific document prepared and uploaded to the system not only showed the percentages of each category in the Virtue of Apprenticeship document but also included a dictionary explaining the

terms contained in the document. Furthermore these terms were explained to the students in some detail in the first meeting. As a result the e-mails about the clarity of the evaluation stopped. However the analysis of the interviews indicate that some more clarifications were needed. One comment about this issue is:

"Grading system should be improved because it's not clear which point is for what." [OC1-16]

Also, according to the observation notes, one of the most frequently asked questions in the class was about the number of days the students could be absent. After telling the students that participation in the class was not mandatory but they would get points if they came in the first group, most of the participants preferred not to come to the classes.

4.5.7.4 *Visibility and Accessibility*

According to all participants in the interviews, another important issue about the evaluation was the visibility and the accessibility of the evaluation criteria. Despite the fact that all documents were uploaded onto the system some participants ($n=20$, 47.6 %) still claimed that they could not find them.

4.5.7.5 *Self-Assessment*

Last issue with the evaluation was that some participants ($n=11$, 26.2 %) in the interviews expressed that the points helped them to self-assess themselves. One participant stated that:

'I suspect that I had enough knowledge on this, I evaluate the points I received this way'. [I1-4]

4.5.8 Win-State

Some participants ($n=7$, 16.7 %) in the interviews stated that they liked winning throughout the gamified course. One participant commented on this issue by saying that:

'The situation of winning made me extremely happy'. [I2-1]

4.5.9   Constraints

Some participants (*n*=5, 11.9 %) in the interviews stated that the gamified experience should have some limits that learners could not exceed. In other words, they stated that there should be a standard structure that the course should follow. One student said the following about this:

'In a class other than the knowledge competition we had something like a silent cinema. We were entertained there as well yet remained within format. These kinds of different applications could be added'. [I2-17]

4.6   Summary

This thesis aims to answer three research questions: fundamental characteristics of gamification process in order to design a gamified learning environment, the components of the gamification model to design a gamified learning environment, and how these components can be combined effectively to compose a gamification model for designing gamified learning environment.

For the first question, the results show that characteristics of the gamification process can be classified under 5 overlapping and intertwined categories (from general to the specific): gamification related issues and perceptions, gamified course related general issues and perceptions, people related issues, design related issues and game elements. The findings of the study related to the characteristics of the gamification process are presented in Table 20 below:

Table 20 *Characteristics of the Gamification Process (From General to the Specific)*

Categories	Sub-categories	Characteristics (Existing in Current Literature)	Characteristics (Original Finding)
Gamification Related Issues and Perceptions		Age-Bounded	
		Contenet-Bounded	
		Motivating	
			Relax
		Immersive	
		Interactive	
		Funs	
		Collaborative	
Gamified Course Related General Issues and Perceptions			Original
			Increasing retention
		Flexible	
		Progressive	
		Step-by-Step	
		Customized	
			Combined of face-to-face and online activities
People Related Issues	Instructor Related Issues		Open-minded instructor
			Flexible instructor
			Fun instructor
Design Related Issues	Interface Design		Novelty
		Usability	
		Appealing	
		Accessibility	
			Mobility
			Narrative-Based
			Visibility of peers' works
	Material Design	Concise	
		Clear	
		Interactive	
			Tangible
			Game-based
		Multimedia-integrated	
	Feedback Design	Immediate	
		Clear	
		Direct	
		Progressive	
		Personal	
			Audial
			Narrated
		Peer-to-peer and from-instructor	

Table 20 *(Continued)*

Categories	Sub-categories	Characteristics (Existing in Current Literature)	Characteristics (Original Finding)
Game Elements	Challenges	Engaging	
			Originality
			Frequency and Timing
			Content-based
			Competitive Collaboration
		Role-based	
			Point and Click
			Self-assesment
		As feedback	
		Game-based	
		Reinforcement	
	Narrative	Relevant	
	Leaderboard		Team
		Participation	
		Competition	
		Reputation	
	Reward	Continous and systematic	
			Tangible
			Narrated
			Privilege
		Increasing participation	
	Badges	Fun	
			Confidence-booster
			As Feedback
			Self-assessment
		Continuous and Systematic	
	Evaluation	Visibility and Accessibility	
		Clarity	
			Self-assessment
			Distributed - Points
		Fairness	

Likewise, for the second research question, the results show that the components of the gamification model to design a gamified learning environment can be classified under 5 overlapping and intertwined categories (from general to the specific) (See Table 21 below).

Table 21 *Components of the Gamification Process (From General to the Specific)*

Categories	Sub-categories	Components(Existing in Current Literature)	Co(Original Finding)
Gamification Related Issues and Perceptions		Freedom to fail	
			Balance between fun and seriousness
			Spill-over effecct
		Level 0	
		Adaptation	
		Coherence	
			Interchangeability of game elements
		Cheating	
Gamified Course Related General Issues and Perceptions		Emotional state	
		Active Learning	
		Meaningful Learning	
		Guidance	
		Feedback	
		Course-load	
		Goals of the course: #1 Learning #2 Fun (or vice versa)	
		Building learners' self-efficacy	
		Classroom settings	
		Numbers of learners	
		Technology integration	
		Reflective thinking	
		Repetition of the content	
			Mental breaks
		Social appraise	

Table 21 *(Continued)*

Categories	Sub-categories	Components(Existing in Current Literature)	Co(Original Finding)
People Related Issues	Learners Related Issues	Learner Characteristics	
		Classification	
		Control	
		Peer Tracking	
		Communication	
	Instructor Related Issues	Presence of instructor	
		Face-to-face communication	
		Tracking	
		Support	
Design Related Issues	Interface Design	Technical Problems and Technical Support	
		Chat	
		Push notifications	
	Material Design	Level unlocking	
			Popular culture references
Game Elements	Challenges	Team Skills	
		Collective Intelligence	
	Narrative	Communication	
		Character	
	Teams	Community Building	
		Win-state	
		Constraints	

For the last research question, the model is presented in the Discussion section below.

CHAPTER 5

DISCUSSIONS AND CONCLUSIONS

In this last chapter, an instructional design model for a gamified learning environment is formed on the basis of the results of the study. Throughout this chapter, a general overview is presented. This is followed by the model, its characteristics, elements and limitations as obtained from the study are presented and elaborated in conjunction with the relevant literature. Then, an elaboration of the principles obtained from the proposed model is presented. Finally the chapter ends with some suggestions for future studies that might fill the gap that exist in the current literature.

5.1 General Overview

In order to fully elaborate the findings of the study and discuss them on the basis of the current literature review, a few points need to be clarified to shed light on further discussions and conclusions. That is why, in this section some general findings from the study which may have an impact on the results are discussed.

To begin with, it is necessary to make it clear that the model formed on the basis of the findings is not a procedural one. Thus instead of describing the procedures followed in the study, the elements that should be in such an environment and the characteristics that environment should have are discussed on the basis of the findings, and in the discussions it is shown that by combining all the elements a model was formed. In the model developed it was not possible to separate the categories from each other as the lines between them were fuzzy, and they were all connected to each other directly or indirectly on the basis of the findings. Therefore, rather than creating certain separate categories under which the elements could be placed, overlapping categories were formed. The model is explained in detail in the upcoming sections.

Another point to mention is that for this model, an instance was designed and students were asked to evaluate the current system, and on the basis of their playing habits/experiences, they were asked to add what else should be in the process. However, as it was presented in the methodology section, almost half of the participants were not digital game players; therefore it was thought that repeating the study with the groups of people with who play games might be needed to enhance the model.

Moreover, it must be indicated that although the attitude amongst the participants towards gamification and the gamified instance was generally positive, a considerable amount of criticisms was directed at them. According to the results of the data collected the main reason for these criticisms were related to the ways they were designed and applied. Therefore, it would not be inappropriate to claim that gamification and the gamified instance might reach their goals of motivating learners in educational context if they were designed appropriately.

Another interesting finding obtained from the study is a by-product of the study which also affected the attitude of the participants towards gamified course. According to the statements of the majority of the students, they were afraid of the technology and were not familiar with computer usage as much as it had been expected of them. According to the existing literature they were a generation born in the era of network technology, and supposed to be called the digital natives who had been using technology since from their early ages yet surprisingly they were rather shy of the technology (Prensky, 2001). This was clear from the statements of the majority of the students who indicated that they did not feel comfortable with the technology even though they were born in and after the 1990s. This supports Leh's (2002) study in which she supported that it would not be appropriate to assume that all of the digital natives to be confident with the technology; in fact, some people may show the opposite symptoms and feel anxious while using it. This peculiar situation was definitely the case within our study as most of the participants expressed their discomfort with technology usage due to their previous inexperience with technology. This raised the question of whether it was appropriate to assume that the generation Z is radically different from the former generations in terms of technology use and attitudes towards technology. This question was also raised by

some researchers such as Helsper and Enyon (2011) and Bennet, et al. (2008). Therefore, it was thought that while designing a gamified learning environment, assuming that all the 'digital native' students are technology-geek might not be a good stand point to start with.

Consequently, on the basis of the findings, a model called "GELD" was formed. It is an acronym that stands for "**G**amified **E**nvironment and **L**earning **D**esign".

5.2 The GELD Model

In this section, the model, the characteristics of the model, its essential elements and the limitations are elaborated on the basis of the findings and the current literature. Since the model is not composed of distinctive categories and the elements are intertwined, the lines between the categories have fuzzy borders. The model does not provide procedural and linear phases; rather, it provides a dynamic structure on the basis of which a gamified learning experience can be designed. The model has also adopted a broader perception of the gamification phenomenon in education contexts as the findings of the research has revealed a strong mutual influence between the gamified learning experience and this broader context. Therefore, the lines between the contexts are fuzzy and the interaction between them makes it impossible to eliminate the broader context. That is why a name that may represent a broader context of a gamified experience would serve well for this instructional model. In the lights of the findings, the model is named as Gamified Environment and Learning Design, aka GELD.

The model has a dynamic character in that iterations in any element may cause a difference in any element in another category. Therefore, rather than building the model with separate circles and squares with arrows showing the relationships, overlapping shapes are used and the lines are drawn as dashes to show the fuzziness of the borders between them. From a large perspective, the model is shown as below in Figure 25.

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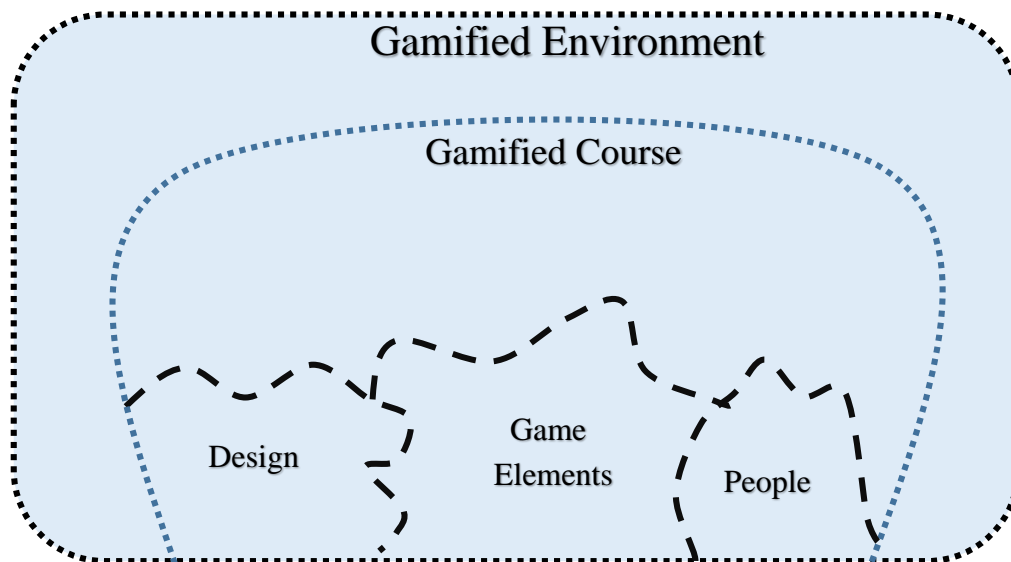
Figure 25. GELD Model overall.

The figure above represents an overall appearance of the model. This model was designed on the basis of the analysis of the data collected throughout the study. Each part of the model will be elaborated under different subtitles in the sections below. As seen above in the model, the big circle outlying the whole model is the gamified environment. Findings have shown that there are some gamification related issues that might not be necessarily be in a gamified learning environment but it might be affecting it. Therefore, this outlying circle was needed to cover them all. Within the gamified environment, there is the gamified course in which there are gamified course related elements and the characteristics which consists of three subcategories namely people, design and game elements. For the three sub-categories, rather than a straight lines wavy lines have been preferred as some elements of different categories are intertwined. Below each category is elaborated on the basis of the findings and the literature review.

5.2.1 Gamified Environment

This context was added as a result of the comments made by the participants on the gamified-environment characteristics and the elements that should be included in the context.

To begin with, according to the results, the number of the participants who said that gamification is an age-free process is lower than the number of the participants who claimed the opposite. Even though the numbers are close to each other, it does not seem to be appropriate to conclude that gamification is an age-free process. Therefore, according to the majority of the participants, the age of the target group is an element to consider while designing a gamified environment. Another similar controversial issue among the participants was the content. Some participants claimed that some contents cannot be gamified, while a slightly larger number of participants claimed the reverse, saying that the format needs to be changed according to the content. These opinions might be due to the design of the applied gamified course; and as some of the participants emphasized this was the first gamified course that they had come across. Therefore, their experiences shaped their conclusion. Considering this limitation and the statements of the participants, it would be safe to conclude that gamification is an **age-bounded** and **content-bounded** process. The findings of the current study cannot support that every content can be gamified for all people from all ages. Sims (2014), the chief design officer and founder of Behavior Lab, supports the opposite view by claiming that age is not a determining factor in gamification as all people use game-mechanics in their lives somehow, and he continues to say that putting the right game mechanics for the age group does matter for a better gamified experience. Another study conducted by Koivisto and Hamari (2014) showed that age does not have a direct effect on the perceived benefits of the gamification. They supported the idea that different age groups drive benefits from different mechanics. Similarly, according to Kapp (2012) gamification can be used for all kinds of contents and fields; yet, it is important how it is designed. These researchers support our conclusions that participants' opinions on the content-bound and age-bound characteristics of the gamification might be due to the current context.

Beside the age and content debate, almost all participants had a positive attitude towards gamification as they thought it to be a fun activity. Even before applying the gamified course, participants said that they thought of **fun** element when they heard the name of the gamification. Considering this, it can be concluded that fun is another element that should be in a gamified environment. Actually, the current literature on gamification supports this contention by claiming that the basic aim of the gamification procedure is to make the serious activities fun (Deterding, et al 2011, Zicherman and Cunningham 2011; Zicherman and Linder, 2010; Werbach and Hunter, 2012). Along with the fun, according to the findings, a relax environment in which participants are free to share their opinions, and free to fail and try again is appreciated in a gamified environment. Therefore, on the basis of the findings it can safely be said that a gamified environment should be **relax** and target group should be given the freedom to fail without getting punished. This element, the **freedom to fail**, is actually a crucial game element according to Stott and Neustaedter (2013). Kapp (2011) also emphasized that freedom to fail in a gamified environment is important element to consider, and all games enable this element by giving the players multiple opportunities to try repeatedly until mastery. No matter how the relax environment and fun attracted the participants, a balance between the fun and seriousness was emphasized by many participants. It is quite interesting to find out that the participants immediately thought about fun and fun all the time when they heard the term gamification. This opinion bothered some participants as they stated that courses should be serious act and relaxed environment may affect their learning of the course content. Therefore, a balance needs to be established in a gamified environment. Kapp (2014) also mentions the necessity of the balance between the fun that the gamification features bring and seriousness in a gamified Learning Management System. Therefore, it would not be inappropriate to conclude that a gamified environment should bring **serious fun.**

Along with the fun element, the majority of the participants underlined the **motivational** characteristic of the gamification. Motivating the target group in non-game contexts or in undesirable activities is the ultimate purpose of the gamification (Deterding, et al., 2011). Another characteristic of the gamification, on the basis of the findings, is the immersive nature. According to the statements of some participants, gamified environment can put the target group in an **immersive** state

only if it is designed well. Immersion of the target group in the gamified experience is an idealized situation for gamification designers (Kapp, 2012).

Moreover, the results suggest that a gamified environment should be **collaborative** and **interactive**. Participants of the study emphasized on the interaction between the learners and between the learner and the instructors in a gamified environment. Also, they assured the collaborative nature of the gamified environment, and asked for more collaboration. The fact that these two elements as the participants thought to be valuable and essential to be in a gamified environment can easily be interpreted that involving such social features as interaction and collaboration might intensify the gamification experience. Therefore, these two elements should be present in a gamified environment. A similar finding was provided by Koivisto and Hamari (2014) who maintained that integrating social features can create an engaging gamified experience. Likewise, Kapp (2012) supports the existence of interaction and collaboration as valuable components for an engaging gamification experience. In fact, he listed the interaction between the players and between the system and the players as a must element in a game-environment. Therefore the fact that the findings of this research are in accord with the findings of the contemporary research is not very surprising.

Another metric of an engaging experience, as Zichermann and Cunningham (2011) state, is **virality.** Correspondingly, three participants in the study stated that the gamified experience should cause a spill-over effect, aka virality; and the current gamified environment certainly contained that element. Virality is also used as a metric to evaluate the success of a gamified environment; in a study (Osipov, et al., n.d.) conducted to evaluate the success of a gamified educational platform, virality was used as a metric. Therefore, spill-over effect (aka virality) can be used to evaluate the gamified experience.

What is more, the analysis of the data shows that there should be a level 0 in a gamified environment. It is a level where novice players are introduced to the gamified environment. The research results revealed that this level should be easy, short, unevaluated and done under control of the person in charge. This level is called as free-play, and in this level, players were asked to play the game without any guidance in order to learn the experience by hands-on experience (Kapp, 2012). Yet,

as opposed to free-play, the learners in our study preferred to be guided. The process including this level is called **onboarding** in the literature (Zichermann and Cunningham, 2011; Chou, n.d.), which suggest that at this stage the players in the gamified experience should be guided step-by-step (Chou, n.d.; Zichermann and Cunningham, 2011) and the task should be made as easy as possible. The onboarding stage should also be designed on the basis of eliminating the possibilities of failure and requiring minimum reading-information to be able to proceed (Zichermann and Cunningham, 2011). These characteristics of the stage support the findings of our study. Creating such an easy experience might ease the adaptation span that the majority of the participants stated that they needed time to adapt to the gamified environment. In order to shorten this span, scaffolding and continuous guiding by the instructor are needed according the findings. Therefore, it can be concluded that in order to ease the adaptation span of the participants in a gamified environment, the onboarding stage should be short, easy and unevaluated, and guidance should be given continuously up to players/learners' mastery.

According to the interviews, in order to create an immersive experience coherence of the elements is essential in a gamified environment. For that, according to a participant, small details are important as they come together and build a coherent whole, and the narrative, according to another one, is the game element that would ensure this coherence. Therefore, in the lights of these findings, it can be said that the **coherence of the game elements around the narrative** should be an element in a gamified environment. This is consistent with the finding of the recent literature (Zichermann and Cunningham, 2011; Kapp, 2012; Werbach and Hunter, 2012), and according to Werbach and Hunter (2012) this coherence can connect up to a narrative.

Speaking of game elements, virtual or verbal game elements seem to be not enough for the participants as the majority demanded the **interchangeability of the game elements with the real-life objects**; namely, they wanted the game elements to be tangible and touchable. This includes all game elements such as rewards, narrative and privileges. An interesting demand came from a participants saying that those leaders listed in the leaderboards should be given tangible responsibilities in the name of their leaderships. This might suggest that participants prefer to have tangible

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or *real* environment rather than digital context. Considering the participants, this might be due to the characteristics of the participants.

Final issue to discuss about a gamified environment is cheating. According to the interview results, participants found it possible to cheat in the gamified environment. Zichermann and Cunningham (2011) name this situations as gaming the system and assure that all players try to exploit the system; however it is possible to limit cheating by having proper control mechanisms or policies introduced by the administrators. In the current study, control by the instructor to ensure whether the participants read the online content was not possible due to the inability of the interface and the inability of the researcher to control all the students. Therefore, in gamified environment, **gaming the system** is an element even though it is not particularly demanded.

Taken together, according to the findings, a gamified environment is an:

- ✓ age-and-content-bounded,
- ✓ motivating
- ✓ relax,
- ✓ collaborative,
- ✓ interactive and
- ✓ immersive environment containing the elements of :
    - o serious fun,
    - o freedom to fail,
    - o spill-over effect,
    - o onboarding,
    - o coherence of the game elements around narrative,
    - o interchangeability of the game elements with the real-life objects and
    - o gaming the system (see Figure 26 below).
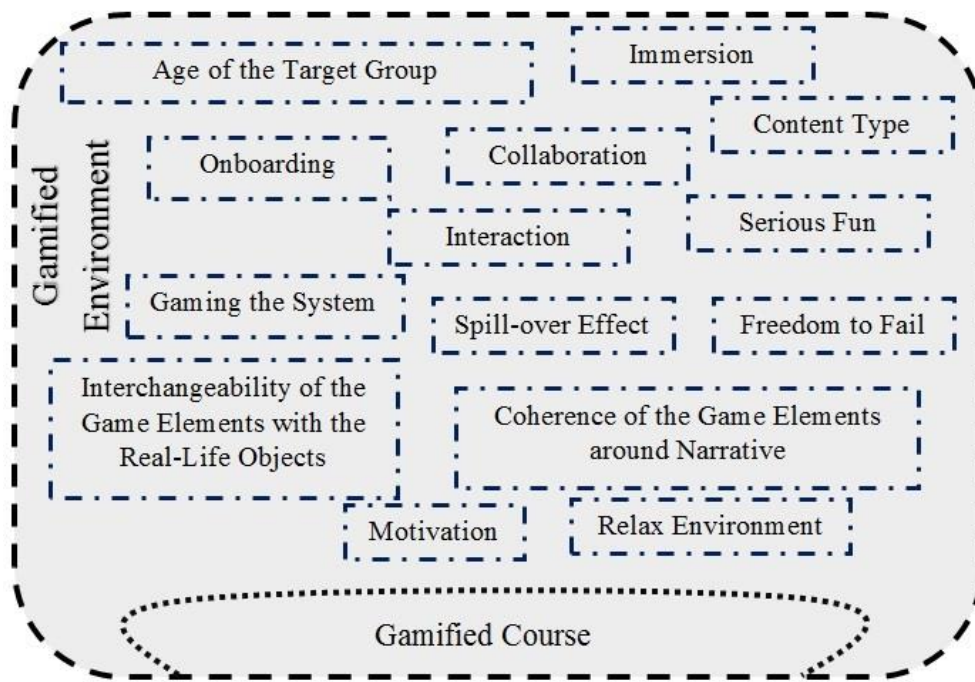
Figure 26. Visualization of the Gamified Environment Category of GELD Model

5.2.2 Gamified Course

The results of the study indicates that the overall attitude towards our gamified course is positive yet, in tandem with the emotional changes the participants might go through, this attitude might change along the positive-negative line. Therefore, it is clear that the **emotional state** is an important element that should be considered while designing a gamified course. On the basis of the emotions such as boredom, stress, joy, disappointment, fear and curiosity that the participants said they felt during the course, it can be possible to evaluate the game elements or the gamified experience. Emotional states are emphasized in the MDA model as well. The letter A in the acronym of MDA stands for Aesthetics that means the emotional responses received from the players while playing game, and according to Hunicke, et al. (2004), games should be designed on the basis of the desirable emotional responses from the players. However, most of the emotional responses the participants showed were not the desired ones, and they were mainly because of the management issues, the guidance, and the inner categories of design, the people and the game elements. Curiosity was a desired emotional response at the beginning of the course; for that, a

narrated acceptance letter was sent to the participants. Several students stated that this narrated teaser made them curious about the course in a positive way. **Building curiosity** at the beginning of a gamified experience would give the target group a reason to try the experience. This idea is supported by Chou (2015) who presents curiosity as one of the 8 core drives for desirable actions in a gamified environment. Chou (2015) also contends that building curiosity would be the first step in the discovery phase in a gamified experience. Before the onboarding phase, according to his book, discovery phase should take place. His findings support our results which shows the need for the creation of curiosity. This step is also emphasized by Keller (2010) in his well-known ARCS motivational model.

On the other hand, some participants were uncomfortable with the narrated teaser as they did not understand it at all. Therefore, it might be better to get to know the learners first, and then attempt to design a curiosity building method based on their interests and background information. After all, as Keller (2010) emphasized, creating curiosity by ambiguous channels for the learners might not work well.

For the negative emotional states that the participants experienced throughout the gamified course, most of them underlined the necessity of **continuous guidance and scaffolding**. The results of the study highlighted that the participants did not like very much ambiguous points in any stage of the gamified course. They want to be informed about all the procedures and the elements used. This has been one of the most commented issues throughout this study. The participants seem to be especially in need of guidance as the course was different from what they had previously experienced. Therefore, strict scaffolding until they adapted to the course is found to be needed. The participants also emphasized on the presence of the instructor throughout the course. This element will be discussed under the People category below. The presence of the instructor and the face-to-face interaction with her is an essential element in the provision of scaffolding. Yet, it will not be presented in our gamified course category as a separate element, as the people category is already within the gamified course. Therefore, it is essential that through an onboarding stage, clear guidance for a gamified course, the principles and the elements used in the course should be presented to the participants by an instructor in a face-to-face environment. Until the participants earn their mastery of the process, a face-to-face

scaffolding should be provided by the instructor; and throughout the process the guidance should continue. The term scaffolding was coined by Vygotsky (1978) in his famous *Zone of Proximal Development* idea, and refers to the support provided to learners at the beginning of a certain activity which might be harder than learners' capabilities. He suggests that, the amount of the support should be gradually reduced as learners develop in the activities with practices. Kapp (2012) also reiterates that scaffolding is a must element in a games therefore in gamified experiences.

Another mostly demanded element according to the findings is feedbacks. How feedbacks should be designed will be elaborated within the Design section, yet, it is necessary just to mention it here succinctly that the results of this research indicates that continuous, immediate, direct, progressive and personal **feedback** is a critical element in a gamified course. The works of Kapp (2012), McGonigal (2011), Werbach and Hunter (2012) and Ferrara (2012) are supportive of our research as they also raise the importance of feedback by saying that feedback is an essential element in a game or game-like environment. The problem with the feedbacks in the study was that the size of the participants was big, and the number of the activities they were supposed to do was too many; therefore, giving continuous and immediate feedback were not always possible. For this, it was thought that an interface which could produce and give automatic feedbacks on the basis of the instructors' input might be a solution.

This gamified course was implemented in a learning environment in which in-class and online sessions were held. According to the majority of the participants, both in-class and online sessions were needed for a gamified course. They stated that using both the online and face-to-face sessions can lead the learners to different learning styles which might provide the following features:, flexibility, ubiquities of the materials, self-paced learning along with the fun in the class, presence of the instructor and direct interaction with the instructor. The participants who opposed such an environment either criticized the face-to-face sessions for not enabling individual learning styles and for generating distractions in the class or criticized the online learning for design of the online materials, the lack of self-regulation and the lack of online community building. Considering these findings, **integrating online sessions into in-class sessions** for a gamified course might be a necessary element.

With its existence one could have a new applied method which would make it easier to give the learners flexibility and provide different learning styles through the face-to-face interactions with the instructor through the scaffolding and guiding process. Anderson (2001) supports this conclusion by saying that using online and face-to-face sessions can offer the best of both the face-to-face learning and the online learning. Similarly, Hopper (2003) and Willett (2002) advocate that face-to-face side of this learning environment can help learners to get immediate feedback, build social relationships, clear the puzzling situations. Likewise Hartman, (2002), Dzuiban, Hartman, and Moskal (2004), Bauer (2001), Martyn (2003) and King (2002) contentions, which accords with our research results, are quite instructive. They maintain that online side of the environment can provide several advantages which might be a good base for the gamified course. Integrating online sessions into in-class sessions can offer a good advantage that class time can be used for resolving problems and offering personalized teaching. So, students can get the content through online platform, and in the classroom, more problem solving and personalized teaching can be done on the basis of the students' questions and feedbacks.

Another issue with this learning environment is the **turn and the balance between the face-to-face and the online sides** according to the findings. For these issues, some participants wanted to take the face-to-face session first, then, the online session in order to understand the content more easily. On the other hand, more participants stated they would prefer the online session to be first in order to prepare for the class. The first opinion might be due to the lack of self-regulation of the participants. For the balance issue, some participants wanted less online activities while few others preferred less face-to-face meetings. Since the number of the participants demanding different balance is close, it is not possible to come to a certain conclusion. Therefore, it would be a better idea to find out the opinions of the participants about their preferences at the beginning of the semester.

Another issue with the course structure, as the findings indicate, is the course/information load. Gamifying the course might probably be the most criticized aspect of the course. That is because learners were supposed to read the online gamified content and solve the challenges as an addition to the already demanding

course requirements. This, according to the participants, caused some negative emotions such as stress and boredom; and affected the attitude of the participants towards the gamified course. Therefore, while designing a gamified course, one should consider a **balanced course load** for the participants. For that, making the weekly challenges in a frequency of a once in two weeks might be a good start.

Throughout the gamified course, contents were distributed in small chunks, gamified and uploaded on the online system. Such a step-by-step approach, according to the majority of the participants is a required element in a gamified course. Kapp (2012) provides the concept of progressive disclosure for such an approach. According to him, for a progressive disclosure, the chunk of the information or the difficulty of the level should increase as the players become more experienced with the content. However, the size of the content or the difficulty of the levels in the study was linear. This, according to the participants, led them feel bored. Therefore, according to the findings, **step-by-step approach with progression** should be followed. Progression is another important game element that gives players the feeling of development and growth (Werbach and Hunter, 2012). Also, it is an important element in the engagement loop (Zichermann and Cunningham, 2011; Ferrara, 2012) Therefore, reaching the need for progression conclusion was not a surprise. In tandem with the progression demand of the participants, all of them also wanted to receive feedbacks showing their progressions. Data analysis show that participants want to see their progression, their teams' progression and peers' progression through a visible progression bars (any other shape can be applicable as well). Therefore, progression bars showing all personal, teams' and peers' progression visible both in the class and online should be used in a gamified course in order for the learners to keep the **track of the progression**. Tracking the progress in a game or game-like environment is another important element according to the current literature (Kapp, 2012; McGonigal, 2011; Ferrara, 2012).

Findings also show that the participants appreciated to learn the goals of the course in the first meeting, and some of them emphasized that the goal of the course should be fun and learning rather than grading. Therefore, throughout this process, the instructor need to ensure them about these goals. Unfortunately, it was a rather hard task to do so since the participants were in a grade-oriented educational system. No

matter how many times the instructor ensured them to learn and have fun rather than thinking about the grade, most of them could not manage it and kept asking about the grades. Resistance to changes at first was a pre-considered situation; therefore, only solution to this situation might be instructors' instance of ensuring the main **goal of the course is fun and learning.** This is a current problem of serious games as well: learners prefer not to play the games if the main goal is to teach a content (Zichermann and Cunningham, 2011). Therefore, it would be better to put the fun in the first line and the learning in the second one in the goals list.

Findings show that the participants in the gamified course prefer active role in which they can do **hands-on practices** on the basis of **authentic examples**. However, a considerable number of the participants were not comfortable with the extensive active role assigned to them as and they justified their discomfort by emphasizing their lack of self-regulation and lack of competence in technology. For that, a balance between the active and the passive role of the participants can be proposed. This could be achieved by gradually **decreasing the level of instructor control.** For learners to adapt to such as an environment and gain self-efficacy, a more strict control can be provided by the instructor, and the as the participants gain their self-efficacy, the control can be decreased. Because the majority of the participants stated that they develop self-efficacy after a while; and until that time, control of the instructor is needed. This is a parallel finding to the scaffolding process in the onboarding stage of the gamification. Also, learners' self-efficacy is an element that definitely should be built in order for them confidently to try to do the tasks/challenges given. A participant especially emphasized on this issue and stated that she skipped the first few challenges as she thought she could not do it. Therefore, **building learners' self-efficacy** is an important element. Kapp (2012) supports this conclusion by saying that if the players' self-efficacy is not high enough that s/he believes s/he succeeds, s/he may not even try to do the task.

Originality is another element that a gamified course should possess according to the findings of the study. Even though some participants expressed their fear about the originality, most of them seemed to be pleased with it. In fact, some of them asked for each week to be different from each. For this, different weekly design were proposed by the participants. Therefore, it would not be inappropriate to assert that a

gamified course should be **creatively and originally designed.** For those who expressed that they felt fearful because of the originality it may be necessary to provide guidance and scaffolding.

A similar element obtained from the data analyses is **customization.** All of the participants emphasized the importance of the customization of the gamified course and the all elements used in it. Customization meant personalization of the gamified experience, the context and the elements used in terms of the learners' characteristics. Throughout this course, giving the learner of customizing their experience was not possible due to the lack of such an interface and the traditional classroom environment. However, they suggested that customization can be done by the instructor as well for the majority of the students. This is a similar conclusion to the ones found in the current literature. For instance McGonigall (2011), Kapp (2012) and Werbach and Hunter (2012) emphasize the importance of customization in a game or game-like environments. However, they propose individual customization and giving customization option to the players. On the basis of this, an interface providing several designs- templates for delivering the content might be a solution. Learners can choose their templates and reach the content through this template. Also, the classroom can be decorated on the basis of the narrative. However, providing individual customization might not be applicable in all cases as the number of the learners and classroom settings may pose some impediments. While talking about the number of the learners and the classroom settings it is necessary to state that these two elements are the elements that should also be taking into consideration in a gamified course. In the face-to-face meetings, as the results indicate, the number of the learners affect the participation and interaction. They also affect the management of the gamified experience. Therefore, for the face-to-face sessions to produce better results it may be a good idea to operate with smaller r groups in a gamified experience. In the online sessions automatic feedback systems might work well. For the classroom settings, according to the findings, a larger classroom with a U shape seating arrangement in which participants can easily communicate and collaborate is preferable. Also, if collaboration between the teammates is the case in the classroom in a gamified course, sitting the teammates together is a preferable option. Since the gamification is an interactive experience, sitting in a shape supporting the interaction would be the best solution. The study

conducted by McCorskey and McVetta (1978) indicates an opposing situation by saying that seating arrangement has nothing to do with the learners-learners interaction and the learners-instructors interactions. If the learners want to interact they would do so regardless of the seating arrangements which does not have any impact on it. Also, they found that the learners need to be given the freedom of choosing their seats. However, in our study although the participants in the second group were asked to sit with the teammates no criticisms were received from them. Rather, the participants confirmed that sitting with their teammates increased their communication to such an extent that even some of them went as far as saying that they started to talk to the peers they had no close relationship before. In contrast to McCorskey and McVetta (1978), Harmer (2007) supports view that circle seating can generate a better collaborative learning environment. In rows and columns seating it is not possible to communicate face-to-face with the classmates. Therefore, for a collaborative gamified course, circle-shaped or U-shaped seating arrangement might work well. In short it is possible to conclude on the basis of the findings of the study that **seating arrangement, the size of the class and the number of the learners** are elements that play significant role in the generation of better collaboration and interaction in a gamified learning environment.

When the results of the study are examined, all of the participants underlined the value of **meaningful learning**. Throughout the course, they kept asking about the meanings of the content taught, the methodologies applied and challenges assigned. Therefore, the content, the methodologies and the challenges assigned should be meaningful for learners so that they should think that doing the challenges or learning the content is necessary for them, and they will use them as transferable skills in other parts of their lives. This conclusion is coherent with the studies of Kapp (2012), McGonigal (2011) and Ferrara (2012). An interesting finding about the meaningful learning is that the participants stated that **technology integration** in the course is very essential even though majority of them were afraid of the technology at the beginning of the course. They stated that they needed to learn technology as they will use it widely when they become teachers. This result clearly indicates that learners attach great importance to meaningfulness.

Another finding from the study shows that reflective thinking and comprehension are not preferred activities in a gamified course. However, participants assured that they increased retention. Both the in-class and the online activities required the learners to some reflective questions. Although the participants did not particularly write reflections on the online system they tended to participate in the in-class discussions. According to their statements, **reflective thinking and comprehension activities** should be present in a gamified course; yet, there should be some arrangements in their designs. Those will be discussed in some detail in the Game Elements section. Another element they said that would increase the retention is the **repetition of the content**. Results show that uploading the content on the online system, and asking learners to read it to overcome the challenges, and then asking them to participate in the in-class competitions on the basis of their readings helped them to repeat the content, according to their statements, certainly increased the retention rate. This is a rather promising finding, which suggests that a gamified learning environment may increase **retention.**

The results show that participants appreciate a **flexible environment**, **mental breaks** and **social appraise** in the gamified learning environment. For the flexible environment, the participants emphasized the flexibility of the online system and the flexibility of the instructor. The issue of flexibility is also supported by Endres, et al (2009) who found that learners would become dissatisfied if the instructors do not create a flexible environment. For the mental breaks, both in the class and on the online system, small mental breaks were used. In the class, anecdotes and on the online system, some irrelevant and funny or do you know types of videos and picture were placed. These mental breaks, according to the participants, helped them to re-engage in the content. Therefore, mental breaks should be used in the gamified learning environments. For the social appraise, participants underlined that the approval of the peers' or having a high social statue among the peers is rather important for them. Considering this, game elements addressing the social statue such as leaderboards should be used in the gamified learning environment. The participants' demands to see peers' progress as discussed above might be due to be in a position to identify their own social status among the peers. Social status is considered as an extrinsic motivator by the researcher, and as a characteristic of an extrinsic motivator it can be limited (Werbach and Hunter, 2012). However,

according to the data analyzed, the participants seemed to enjoy being given social appraise/status as they liked being on the leaderboard. Yet, about the continuity of the motivator, the findings show parallelism with the literature as in both the participants wanted to be listed on leaderboard all the time ()

Moreover, the results indicate that the whole process needs to be managed meticulously as participants may tend to build negative feelings as soon as they face a **management**-related problem. Therefore, the management of the gamified experience should be carried out meticulously.

These elements and characteristics elaborated above are within the gamified-course context and mutually affecting both the elements in the gamified environment context and the elements in the sub-categories of design, people and game elements. That is why dashes were preferred to illustrate the zoom-in model of the gamified-course context (see Figure 27 below). Size of the fields in the figure do not have any relationship to the impact of the elements or the categories. The shapes were enlarged only for the purpose of zooming out the context to fit in with all the elements.
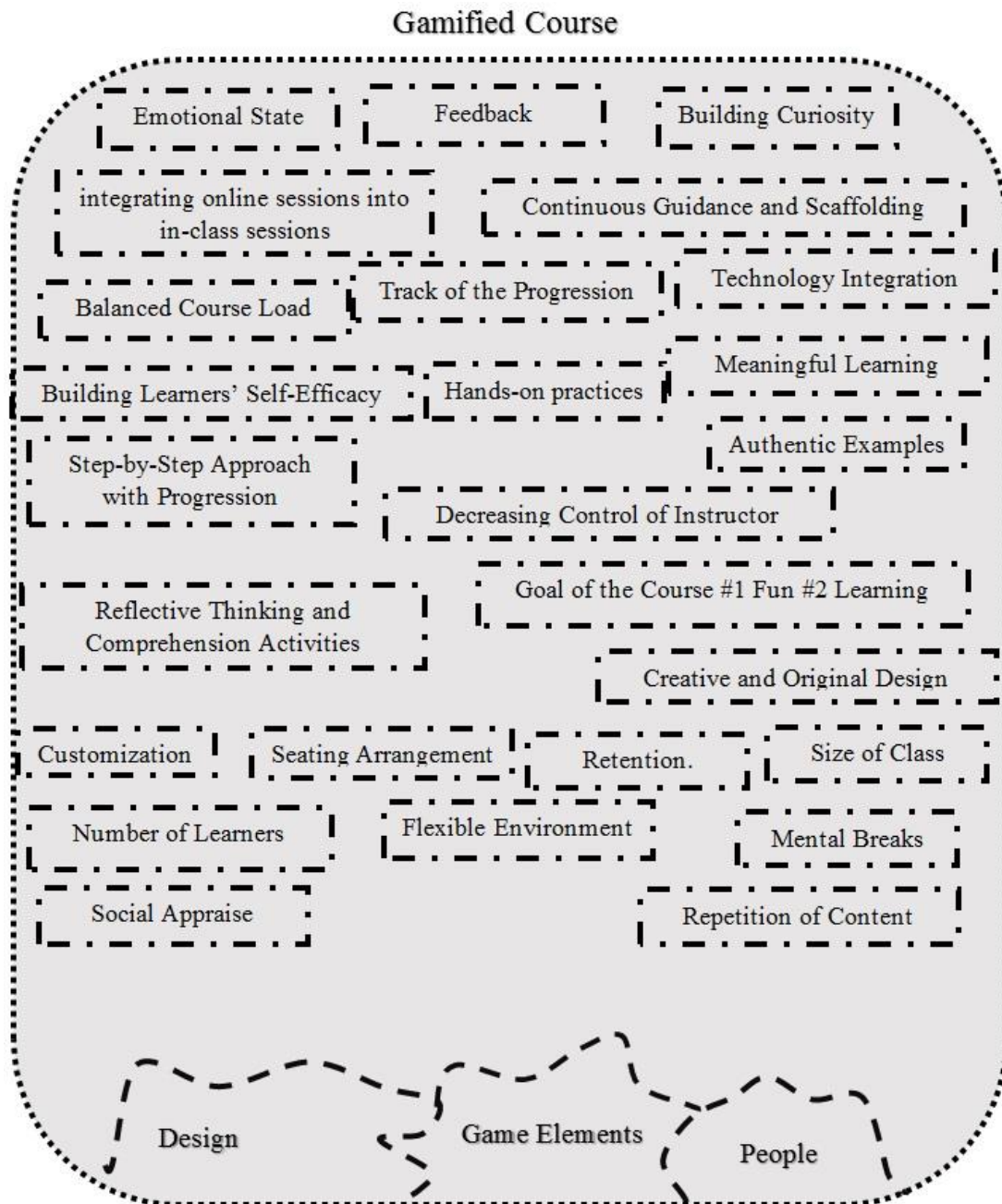
Figure 27. The Visualization of the Gamified Course Context of the GELD Model.

5.2.3 People

The findings of the study necessitated the creation of a sub-category named as people. The main reason for this is that both the instructor and the learners have an impact in the process of designing a gamified learning environment. This subcategory both influences and gets influenced by the elements and the characteristics of the gamified environment, the gamified course, the sub category of design and the subcategory of game-elements. Since the subcategory of people has common elements with the game-elements and the design subcategories. The data analysis revealed the existence of many overlapping points and strong interactions between these categories, the lines between them are fairly fuzzy and zig-zagged.

For learners:

According the results of the data analysis, it is rather important to scrutinize the learners both before and during the design processes of the gamified learning environment. It was not surprising to discover this as all instructional design models such ADDIE and ASSURE, and gamification models such as 6D emphasize the need for analyzing the target group. According to the findings, participants specifically emphasize the learning styles, their background, competence in technology and interest. A questionnaire was conducted at the beginning of the study in order to find out the basic game-playing habits of the participants. However despite this most of the course structure was designed before meeting the participants. This caused some problems concerning the learners' attitudes towards the gamified course, the adaptation process, the immersion state and the emotions as the majority of the participants were not hard players who would spend long hours playing games. On the contrary, in the first group, from the total of 81 people, only 28 said that they did not play any games at all; and the most frequent reasons cited for not playing were the dislike of the games, considering them as a waste of time, being addictive and having a very limited spare time. Also, it became clear that the female participants in the first group had lower game playing habits than the male participants. Although this raised the gender issue in game-playing habits this is not the place to tackle this interesting issue which is not within the scope of this study. In the second group, from the total of 37 people, 18 people said that they play game, and most of those who did not play games said that they had no interest in games, or had limited time

to spare for games or found games waste of time. The gender of the second group was female, therefore no comparative conclusion could be drawn about the game-playing habits of different sexes. It was also clear that the majority of the participants considered game-playing as a leisure time activity. Therefore, combining a leisure time activity, which was considered as a waste of time or uninteresting by a significant number of people, with a formal course in which they wanted to get good grades seemed to have caused some fear amongst the participants at the beginning. This fear increased with the technology integration as the majority of them specifically emphasized their incompetence in technology. Yet, as some of the participants underlined, this fear could be overcome with some strict scaffolding and guidance. In order to prevent the development of the habit of spoon-feeding, the scaffolding and guidance can be gradually reduced as the learners gain self-efficacy.

Another issue with the learners' characteristics is interest. The designed narrative was appreciated by some participants; yet, the majority expressed the view that a familiar narrative which could address the learners' interests might have worked better. There was also an indication that the learning styles of the participants should be considered while designing a gamified learning environment. This learning environment can meet this need, however, the tangibility of the materials was a popular request from the students as some of them preferred to read from a printed source. With this request in mind it may be useful to find out learners' preferences so that additional iterations and additions can be introduced. In short the data revealed that as far as the learners' characteristics are concerned analyzing the **learners' background, interests, learning styles** and **perceived technology competence** is a *sine qua non* step in customizing the gamified learning environment for the target group, in addressing their needs and in creating a more meaningful learning experience. This is not a surprising result as it is in agreement with the existing literature on the design process which emphasize the necessity to analyze the target groups (Werbach and Hunter, 2012; Forest, 2014; Heinich, et al., 1999; Reigeluth and Stein, 1983).In the study in order to classify the learners into the teams, Bartle's Player Test was used. Since the reliability and the validity of the test had not been done by the researchers, it was not possible to draw a conclusion from the learners' results. Furthermore, in the first group, some participants were reported to have joined a team of friends without actually doing the test. Considering this ethical

limitation of the classification, the participants were asked to take the test in the class in the second group. The participants stated that they liked the personal questions in the test; however they also stated that placing similar types of participants in the same group was not a good idea as this created unfairness between the teams. Therefore, building heterogeneous teams can be a better option than having homogenous teams. For the future applications, a different test can be used to differentiate the player types and on the basis of these types, heterogonous teams can be built, and in-class activities can be built on the basis of   the learners' playing habits. Therefore, the **player types and their characteristics** should be given the due consideration in a gamified learning environment. Considering this, several researchers have tried identify different player types and their characteristics (Bartle, 1996; Marczewski, n.d.; Klug and Schell, 2006; Yee, 2006; Bartle, 2005) in order to design games or game-alike environments for them.

Another issue with the leaners is control. The majority of the participants wanted to be given the right to choose from different options. This included the option of doing or not doing a challenge. In other words, they preferred that all activities in the gamified learning environment should be of **voluntary nature.** Obligation, according to them, contradicts with what they know about the games and spoils the fun. A contradictory statement was made by some participants who maintained that if the activities were voluntary, many would not have done them.   Maybe a compromise could be made by the introduction of rewards in the forms of social status, points etc. while making the activities as voluntary activities. This way it may be possible to increase the numbers of learners to participate in the activities. Giving the players a **sense of control** is an important element in a game environment (McGonigal, 2011; Kapp, 2012; Zichermann and Cunningham, 2011). Desire to control the game or game-alike environment is a strong motivator (Zichermann and Cunningham, 2011). As Huizinga (1955) and Caillois (1962) emphasized, the games are voluntary acts and should be done with free-will. As expecting obligations to work in a game-alike environment would not be appropriate volunteerism has been considered ass an important element in the gamified learning environment.

Along with the personal issues, the results show that social issues such as peer tracking and the communication between the peers are other should-be-considered

elements in a gamified learning environment. The data showed a rather interesting result in that those participants did not want to track their own progress and instead wanted the instructor to monitor their progress ironically wanted to track the progress and the reactions of their peers. This might be due to the facts that they want to be appraised by their peers, and/or being able to have self-evaluation in order to discover their own status amongst the peers. By tracking the peers' works, some of them also expressed that they could self-evaluate their own works and get unintentional feedbacks. Likewise, the communication between the learners especially between the teammates was emphasized by the participants. The results show that the participants thought that the success of a team depended on the communication between the teammates. Previous relationships between the teammates, according to the participants in the second group, affected their success. On the other hand, some claimed that this gamified experience enhanced their communication skills. Therefore, **peer tracking** and the **peer communication** should be other two important elements to be supported in a gamified learning environment. In order to enhance communication and peer tracking, seating arrangement in the classroom can be designed in such a way that should enable the participants to see each other. Likewise an online interface should be introduced to ensure that the participants not only can see their peers' works and progress but also can easily communicate with each other.

For instructors:

All participants emphasized the importance of the presence of an instructor who would provide support and monitor student progress in a gamified learning environment. This is an ironic finding compared with the other findings discussed above where they gave high premium to things such as relax environment, own control and volunteerism yet here the same participants also wanted to be controlled and monitored by the instructor. This might be due to the learners' past experiences in which, as they assured, instructors had always been the authority figures while they had been the passive receivers of information. They had been accustomed to receiving readily-prepared information from the instructor. This can be interpreted in two ways: One is that as digital age learners, they wanted to have an active role in the learning process while they could not t break away from the traditional habits

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they have been used to. This is not a surprising conclusion considering that traditional face-to-face learning is still the most preponderant one (Meyer, 2007; Castle and McGuire, 2010). They also wanted to see the presence of the instructor in both the online and in-class. Mostly, they preferred face-to-face interaction with the instructor. Better communication with the instructor and receiving instructor support are two of the strong feature amongst many found in the face-to-face side of the this learning environment (Almala, 2006; Young, 2006, Shi, et al., 2011). In term of communication and support, participants demanded that their questions to be answered immediately. This might be due to the characteristic of digital gens who want to reach the information immediately when they need it (Jukes, 2008). Furthermore, the reason for the need for instructors' support, tracking and presence might be due to the fact that the applied method is a new method differing from the traditional ones they have been used to. Therefore, they may need some adaptation time to get used to the situation, and during this time, feeling the existence of an authority figure and communicating with him/her might make them relax. Overall, **instructor tracking, support, presence** and **face-to-face communication** are important elements in a gamified learning environment.

Another instructor-related-issue obtained from the results of the study is **instructors' characteristics**. According to the participants, instructor should be open-minded, flexible and funny in a gamified learning environment. It is not surprising that in a flexible, relaxed and funny environment as the participants described, a serious and disciplined authority figure may not go that well.

5.2.4 Design

From the analysis of the data there themes emerged within the design sub-category,: interface design, material design and feedback design for the gamified learning environment.

For interface design:

It has become clear from the analysis that there are some interface-issues that need to be considered while designing a gamified learning environment. The first most frequently referred one is related to technical problems and technical support. Throughout the study, several technical problems occurred with the use of interfaces.

Especially, the web page designed to collect students' reflections about the practical assignment they did in the lab sessions could not be reached from the campus network. This caused a great panic among the participants. At these times although an immediate **technical support** was needed the designer could not find a solution to the problem of access to information. It is clear that for such cases a back-up plan/option would be needed. Therefore, while designing the interface or adapting an interface, it is rather important to be able to support the leaners in the case of emerging technical problems. If not, **back-up options** should be offered to the learners.

One of the most appreciated side of the interfaces applied was the visibility of peers' works. According to the findings, participants prefer to see their peers' works on the interface for a variety of reasons including self-evaluation, learning from peers and building a common intelligence area in which they can learn from sharing different opinions and perspectives. Therefore, while designing or applying an interface in gamified learning environment, **visibility of peers' works** is a valuable feature that should be considered.

Novelty and usability are other important issues that were revealed by the findings of the research. According to the participants, the interfaces used were new to them and this novelty either increased the adaptation period to the gamified experience or attracted participants' interests in it. Although the adaptation issue was resolved within a short period of time the participants still asked for a small demonstration of how to use the interfaces at the beginning of the semester. Therefore, in the onboarding phase discussed above, it would be better to have a small demonstration session about the interfaces applied. Considering that the participants stated they learned the system after trying a few times one can safely assume that the interfaces used in the course have the learnability characteristic which Nielsen (1993) calls as a usability attribute. Also, beside the minor errors faced due to the novelty, the participants did not raise any major problem with the first interface while accessibility of the second interface applied constituted a major problem for the participants who were not able to access it from the University campus. Therefore it was not surprising to see that their opinions about the second interface was generally negative, and this in turn affected their attitudes towards the challenges done in this

interface. This finding is in accord with Nielsen's (1993) assertions about the usability in that he suggests that users may develop negative attitudes towards unfriendly interfaces In the light of all this we can conclude that, **novelty** and **usability** are two elements that should be considered carefully while designing or applying an interface in a gamified learning environment. Similarly, the appeal of the interface was emphasized by the participants. Designing or applying an interface similar to what learners use in their leisure time such as Facebook might be useful as one of the student emphasized it. This is not a surprising conclusion that studies conducted on efficient interfaces also conclude that the **appeal** along with the usability is an important feature (Idler, 2004). Hence, designing or applying an appealing interface in a gamified learning environment is a should-step. Similar to the appeal and usability, Idler (2004) mentions one more attribute of an attractive interface: Accessibility. This is also what our results suggested about an interface. According to the participants, the interface and the content uploaded to the interface must be ubiquitous, meaning that they should be **accessible** from anywhere at any time. This is also a finding which resembles to a main characteristics of the Generation Zes, who are eager to reach the information at will. (Jukes, 2008). Moreover, the results indicate that **mobility** of the interface hence the content is also a much demanded option. This is, according to the participants, related to their will to reach the information at any time via a portable device. Therefore, mobile application of the interface should exist.

According to the data analysis, **narrative-based design** is also a preferred design for the interface and the materials uploaded on to the interface. With narrative-based design, participants seem to see a more game-alike interface, designed on the basis of the narrative adapted in which there should be a **progression bar** and a **scoreboard** showing both personal progress and teams' progress. In such a way, they said they would feel more immersed in the gamified experience while seeing their personal, team and peers' progress. Hence, the interface can be designed with progression bar and scoreboard features which are not composed of pale tables and textures but composed of visual narrative components. This can be also considered as an appeal aspect. Kapp (2012) calls this kind of interfaces in which rather than plain text, a context and real-case pictures are used, as story-based interface, and supports that in a gamified interface, story-based design should be used so that people can encode

those rich data more easily and can remember them more easily. Similarly, our findings show that the narrative (fantastic context in our gamified experience) should be the basis for designing the interface.

Our results reveal that the last two elements that should exist in the interface applied or designed in a gamified learning environment are **chat** and **push notifications**. Participants want to communicate with peers in order to receive or provide help. Chat can be an important element for participants to collaborate, learn from peers and build a community on the online interface. Actually, this was one of most mentioned problems faced in the course: participants could not build an online community on the interface. As they stated, they used the system just to do the challenges but nothing else. Including a chat option might provide a small contribution to solve this problem. Mutli-player games adapted this chat feature, and the players who use it to collaborate express their emotions, plan together for the next actions r etc. (McGonigal, 2011; Kapp, 2012). Therefore, they might be indeed helpful tools for building an online community, collaboration and maybe increasing the immersion. The second feature that the participants asked for is push notifications. In one of the interface applied, there was push notification function in which participants received notification both as an e-mail and in the interface itself when they received a reward (badge) and a new content was uploaded to the system. According to the findings, notifications for new content and rewards are useful, and more notifications are needed as a reminder of the challenge. Notifications for rewards are considered as crucial elements in a game or game-alike environment according to Zichermann and Cunningham (2011). Therefore, the findings of the study does not contradict with the existing studies.

For material design:

A Scrutiny of the data collected through the interviews, the online observations and the e-mail log r, indicated that some material-design issues needed to be considered while designing a gamified learning environment.

The participants mainly emphasized that the materials used should have two important features, namely **conciseness** and **clarity**. The main message from the analysis was that the materials such as the online content should be designed to be

concise and clear. It is obvious that delivering important points in a clear manner would serve best for the participants. A significant suggestion made by the participants was that rather than using plain texts **multimedia** should be integrated in appropriate places in the content. Especially, videos, pictures and animations were the most popular items recommended by the participants. It was suggested by several participants that while adding multimedia to the content, materials from the **popular culture** should be used, simply because   the figures from popular cultures already used in the content attracted their interests and helped them to re-engage with the content. Also, it was clear from the results that participants do not just want to read or watch whatever is in the online content, they also want to have an active role and interact with the content. Therefore, the content should be designed to be as **interactive** as possible. These results can be helpful as a guide in designing the online content in a gamified learning environment. Thus in the light of these findings it would be safe to recommend that an online content should be designed be

- ✓ Concise
- ✓ Clear
- ✓ With multimedia integration
- ✓ referring to popular culture and,
- ✓ Interactive.

For interactivity, challenges can be integrated into some parts of the content. However the type of the challenge to be integrated is important as discussed in the Game Elements category. Khan Academy can be proposed as a good example for such a content (maybe without reference to popular culture). The content delivers through interactive methods with multimedia. Actually, interaction is the third principle that the Khan Academy adapted while delivering the online content (Yust, 2014). The first principle of the successful method Khan Academy use is to introduce certain concepts and ideas first and only then give any advanced content (Yust, 2014). A similar method in which players can reach new contents or places by accomplishing a certain task, is called content unlocking in the game and game-alike environments (Werbach and Hunter, 2012; Kapp, 2014; McGonigal, 2011). This is another issue driven from the results of the study. Some participants wanted to arrive at different levels of the content only after they had finished the easier levels.

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Therefore, rather than the term content unlocking, the term **level unlocking** can better serve to describe the demand of the participants. Therefore, while designing an online content in a gamified learning environment, one should design different levels moving from the easy ones to the hard ones, and structure them in such a way that the learners should not pass to the next level before finishing the level they are in. This structure from easy to hard may also give learners the feeling of progress, eliminating the linearity between the weekly contents. Our research findings on this are in resonance with the elaboration theory of Reigeluth and Stein (1983) which emphasizes the organization of the content from simple to hard.

Another issue with the material design is tangibility. Some participants emphasized that they would prefer tangible materials which they can keep and on which they can take notes. They do not prefer digital materials. This might be due to participants' past experiences with the technology or their perceived technology competence. This result can also be interpreted from a game-designer perspective, and it can be claimed that this might be due to the fact that participants want to possess all the materials and claim their ownership. This, according to Chou (2015), is one of the core drive of motivation. Therefore, either distributing the materials in printed forms to the students or giving a personal page in which they could have an inventory to collect all materials might be a solution to the problem. It must be said that the first option was proposed by the participants, the second solution is only a hypothesis which needs further study to confirm if it may work. Participants also wanted to have a tangible narrative, namely, they wanted to have a decoration and clothes style on the basis of narrative so that they could   feel immersed. However, due to a variety of factors including the traditional classroom settings, number of the participants, extra effort of the instructor or designer and funding problems, this might not be an applicable element to integrate   Still, **tangibility** and **3D** features need to be considered while designing a learning environment.

The issue of game-based materials is the last issue with the material designed that the results brought to the fore. Some participants thought that the term gamification as **game-based** learning and expected the online content to be designed as game-based. For that, small games can be integrated into online content in order to create interactivity or for mental break purposes.

For feedback design:

According to the results of the study, feedback element is one of the most cited elements in the gamified learning environment. This is not a surprising conclusion as both the game literature and the pedagogy literature place a strong emphasis on feedback (McGonigal, 2011; Kapp, 2012; Zichermann and Cunningham, 2011; Werbach and Hunter, 2012; Chou, 2015; Hopper, 2003; Willett, 2002; Reigeluth and Squire, 1998). Actually, it is considered as a must element in motivational approaches by people like Csikszentmihalyi, (1990), Lazarro, (2004), Deci and Ryan, (2000). The results of the study show similarities with the results of these literature in its contention that feedbacks should be **immediate, clear, direct and progressive**, and **personal.** The feedbacks should be given by both the instructor and the peers throughout the gamified course, according to the participants who see an online feedback mechanism between peers as a good option. Due to the visibility of the peers' works, as they asserted, they can have an intentional feedback from the peers. Along with this, they also wanted to have peers' comments about their works on the online system. Another request from some of the participants for the online system was audial feedback mechanism. As all the feedbacks were text-based they said that they would also want to hear some **audial** feedbacks. In addition, some stated that they would like to have **narrated** feedbacks. By narrated feedbacks, some students demanded to get feedbacks in the form of badges on the basis of narrative. These findings suggest that while designing a gamified learning environment, it is critical to give feedbacks to learners, and the feedbacks should be:

- ✓ Immediate
- ✓ Clear
- ✓ Direct and Progressive
- ✓ Personal
- ✓ Given by instructor and peers

In addition to the text-based feedbacks on the online system, audial feedbacks and narrated feedbacks should be used. Therefore, considering the applicable side of these findings, the interface should have an automatic interface mechanism in which instructor can enter possible feedbacks for the learners, and then the system can immediately give this feedback to the learners. This feedback should show the

progression of the learners and rather than being a generic one, it should be personalized and direct. The feedback mechanism should also support peer-to-peer, audial and narrative feedbacks.

5.2.5 Game Element

A conclusion drawn from the results of the interviews, online and in-class observations and e-mail logs is the certainty of including some game elements be in a gamified learning environment. The definition of the gamification is the integration of the game elements into a non-game environment as stated before (Deterding, et al., 2011). However, it may have been noticed that the issue of game elements is discussed as one of the last issues in the findings of the study. This might suggest that gamification is not just about adapting some game elements and applying them into a serious context. This is exactly whatBogost (2011) criticized those people who treat gamification as if it is only about applying some game elements and ignoring critical game design which makes the games fun. The current study has revealed the need for discussing many more elements while gamifying the context. This conclusion was also supported by Kapp (2014) who emphasizes that gamification is all about design. In this section, 9 game elements driven from the results of the study are discussed in the light of the existing literature: *challenges, narrative, leaderboards, rewards, badges, teams, evaluation, win-state* and *constraints*. However, here elements are not separated into certain sub-categories like dynamics, components, aesthetics or mechanics which we find in two game design models (6D and MDA discussed in the literature review section) which are generally applied in gamification context offer. As the classification of the game elements is not within the scope of this study this research has not concentrated on such a task as done in the literature.

For Challenges:

In the light of the fact that the participants have shown a positive attitude towards challenges, it can be said that challenges should be included in the gamified learning environment. Yet, considering the criticisms and some comments of the participants, the question how they are designed and applied needs to be given a serious

consideration. Even although one participant stated that the challenges were distracting elements in the content the majority emphasized the **re-engaging feature** of the challenges dispersed into some parts of the content. The integration of the challenges into the content was not done randomly. They were placed in different places aiming to separate the content as equally as possible in order not to bore the participants with continuous reading material. However, this distribution was not done on the basis of theoretical foundations; and this study does not provide any result about when the challenges should be integrated. According to the literature challenges are important elements in the game mechanics (Werbach and Hunter, 2012; Zichermann and Cunningham, 2011; Hunicke, et al., 2004; Chou, 2015; McGonigal, 2011; Kapp, 2012). According to Lazarro (2004), challenges also create fun which he specifically named as hard fun. However, in our research the majority of the participants criticized the challenges as they thought them to be repetitive. In other words, some challenges, according to the participants, had the same structure and easinesswhich was boring. This conclusion can be explained by the flow theory proposed by Csikszentmihalyi (1990). According to his challenge/ skill graph explained in the literature review section, if the skills of the participants increase but the level of the challenges stay still, instead of a flow state, people get into the state of boredom. That is exactly what happened with some challenges placed in the content. In order to eliminate this problem, the structure of the challenges can be changed in different contents. Therefore, rather than having repetitive challenges, an attempt should be made to offer challenges that have **originality with increasing difficulty.** Another criticism with some challenges was their types. According to the results, participants do not prefer to write in the challenges, instead they prefer point-and-click and game-based challenges in the online system and role-based and game-based challenges in the classroom. This result suggests that while designing the challenges, one should consider several **types** of challenges rather than just one type in order to evaluate which type her/his learners would be inclined to prefer more. In addition to this it is clear that less-effort requiring challenges such as point-and-click ones can be chosen for the online system and as for the class, role-based and game-based types can be preferred.

Another issues with the challenges obtained from the results are **timing** and **frequency**. Participants wanted to be given the flexibility of doing the challenges in

a reasonable time period and suggested that the frequency of the challenges should be every other week, offering one week rest in between. This situation is also emphasized by Boer (2013) who maintains that in a progression loop, some rest periods should be placed between the challenges. Considering the results, it can be suggested that the timing of the challenges should have sufficient intervals to give the learners some flexibility to do the challenges and the frequency of the challenges can be arranged in a manner that would give the learners a rest period.

The results of the study denote that the participants consider the challenges placed in the online content as a reinforcement to read the content and to assess themselves to see the extent to which they have understood the content. These results signify that the online challenges can function as tools for **reinforcement** and **self-assessment**. However, a few criticisms that emerged about the challenges show that the participants prefer content-based challenges which would allow them to find the answers in the content. Furthermore the participants suggested that **content-based challenges** can also reinforce the learners' needs to read the content in order to enhance their familiarity with it.

What is more, the visibility of the peers' works in the challenges is a feature desired by the participants as this, according to the results, creates a **collective intelligence** pool in which the participants share their opinions and learn about the opinions of the peers. Considering the characteristics of the Generation Zes, who prefer to learn by communicating and interacting (Jukes, 2008), this might be a good aspect of the challenges. With the help of this collective intelligence pool, the participants both collaborate and compete with each other. Competition aspect comes from the points and the leaderboards while the participants collaborate with each other through the collective intelligence pool and with the teammates due to the challenges that the teams in the classroom have to complete. Therefore, it would not be inappropriate to claim that the challenges create a **competitive collaborative** environment. The fact that in the in-class challenges the participants are responsible for their teammates' achievements in order to gain rewards and leadership as a team makes the team skill element an important element in a gamified environment. The comments of the participants on the unfairness of the team classification and the responsibility of

teammates show that **balancing the team skills** might be a better application in a gamified learning environment.

The last issue with the challenges is feedbacks. For each challenges, immediate feedbacks for personal and team progress should be given. The **feedback** issue was discussed above but it needs to be specifically mentioned here as it is an important element for the challenges.

For Narrative:

According to the results of the study, narrative is a 'should-be' (sine qua non) element in a gamified learning environment as the attitudes towards narrative is highly positive. Narrative is a dynamic element in a game-environment as it is quite helpful in combining different game elements in a coherent way to present a meaningful on-going story or context for the players (Werbach and Hunter, 2012). Therefore, our result was not a surprising one as they were in confirmation with the findings of contemporary writers like Werbach and Hunter (2012). However, according to the data analyzed, there are some issues about the narrative that need to be considered quite carefully. The first one is the issue of relevance. On the basis of the results, designing or selecting a relevant narrative for the learners is rather important for the immersion state in a gamified experience. This is a parallel conclusion to the one that is pinpointed by the ARCS motivation model proposed by Keller (2010) in which R stands for the **relevance** of the material to the learners' existing knowledge or interests. Considering that the possible number of target learners in a classroom can be many, a relevant narrative to the interests of the majority can be suggested.

Another issue with the narrative is the narrated characters. The participants stated that having seen the **characters** in the online content and they demanded to see more of them **with the guide role**. Therefore, while designing the online content, some narrated characters can be placed in the content in order to guide the learners through. Rather than giving plain texts to tell the learners what they are supposed to do, a **narrated character** can be used. Also, they wanted to see tangible narrated characters in the classroom. For that, they offered **role-playing** in which they could wear different clothes as if they were in the narrated world. Moreover, they wanted

their progress to reflect their **narrated character development**. For that, badges might be proposed showing their characters' development.

The last result obtained from the study about the narrative is **narrated communication**. While a few participants stated that narrated communication was unnecessary, several participants' statements show that narrative-based communication is a desirable application. To ensure this the e-mails instructor send can formulated to be narrative-based.

For Leaderboards:

Leaderboards are one of the game components, according to Werbach and Hunter (2012) that are one of the most frequently applied game elements in the gamification context. In the current study the majority of the participants expressed their positive feelings about the leaderboards used. On the basis of such a positive attitude by the respondents it can safely be claimed that using leaderboards in a gamified learning environment is an appropriate step forward. Despite the overall positive feelings about them, some participants seemed to be critical of their use by stating that it created a **competitive environment**. This feature of the leaderboards was also criticized by Haque (2010). However, the ironic situation here is that the majority of people like the leaderboards for the same reason, i.e. the existence of a competitive environment. Some participants' statements may shed light on this issue as they expressed that they did not like the leaderboard because personally they could not be on the list. In the interviews, when asked about the leaderboards, they kept questioning whether they were listed on the board or not. This might suggest that the leaderboards can be motivating elements for those who are listed on them while they can be de-motivational for those who cannot be listed. This is not an original assertion as Werbach and Hunter (2012) offer the same conclusion. In order to solve this problem, different kinds of leaderboards can be prepared but this will require extra effort on the part of the instructor or the designer.

According to the results of the study, leaderboards offered the participants a way to make reputation and thus increasing their **participation**. These two findings can be interpreted in such a way to suggest that the participants want to have a **reputation** made possible by the competitive environment created by leaderboards, and in turn

this reputation, acting as an extrinsic motivator, generates some kind of addiction to be more reputable by being listed on the leaderboard. Therefore, participants try to participate more in order to enhance their reputation. This situation can be explained by referring to the self-determination theory which contends that extrinsic motivators need to be continuous because people get addicted to them (Deci and Ryan, 2000). Fogg's Behavior Model could also be quite useful in the explanation of this situation. In this model Fogg (2009) talks about the existence of four types of fun in which the people factor as the last factor is quite significant. He maintains that people become motivated to do an action in order to interact with other people and such interaction includes competition. In a gamified environment the leaderboards have a function of creating a competitive environment in which people would try to participate more and more in order to have more fun.

The last issue with the leaderboards emerging from the results of the study is the teams. Some participants criticized the system for being responsible for teammates' activities while some others wanted to have the **leaderboards for team** performances as well. However, in such a case problems might emerge with the team leaderboards similar to the problems that emerged with the personal leaderboards. Despite these preparing different leaderboards might still be a solution for this as well.

For Rewards:

The findings of the study show that the majority of the participants have a positive attitude towards the tangible and digital rewards distributed during the course. This is not a surprising result as the rewards are extrinsic motivators (Deci and Ryan, 2000) and it is operant conditioning in its simplest state (Skinner, 1938). Participants stated that giving rewards increased their **participation** in the classroom and online activities. However, there were some criticisms and suggestions for the design and the application of the reward system. First, some participants requested rewards that are **tangible** rather than abstract points or privileges. For this purpose perhaps, some inexpensive objects that might have high sentimental values in the gamified environment can be used. Similarly, some participants emphasized the existence of continuous and systematic problems associated with the reward distribution. For them, if the rewards are not given **continuously and systematically** then they

suddenly lose their motivations to continue. . This is a similar finding to that of Deci and Ryan (2000) who in their self-regulation theory stress the need to have continuous external motivations to avoid disengagement with the activity on the part of the participants.

Another issue with the rewards was using **privileges as rewards**. Participants needed to collect three leaderboard nominations in order to gain a privilege that the other participants could not have. This created a competitive environment, and according to the results, the majority of the participants in the first group tried hard to do better in order to gain one privilege. However, in the second group, some of those who earned the privilege did not claim theirs. This might be due to the different characteristics of the participants but in the interview they were not asked for the reason for not claiming their privileges. Therefore, no certain conclusion can be provided here.

The last issue is the **narrated** rewards. As some participants liked the narrative-based rewards it can be safely said that the narrated reward can be applied both in the class and on the online system.

For Badges:

The badges were distributed to the participants from the interface on a weekly basis. Those who used the system only for reading the content and did not care about the rest stated that they did not see the badges or they were not interested in the badges. On the other hand, some participants had a positive attitude towards them for a variety of reasons. That is why they should be in a gamified learning environment. One of the reasons for the positive attitude towards the badges, according to the results of the study, was the **fun** derived from them. The messages and the icons used in the badges were found funny by the participants. The second reasons was that they were considered to be **confidence booster.** The messages written on the badges were feedbacks given on the basis of the weekly performances of the participants. The fact that they were supportive feedbacks made the participants to think about them as confidence booster. According to the participants, badges not only gave them feedbacks but also helped them to **self-assess** their weekly achievements. Therefore, according to the results of the study, badges are:

- ✓ Fun,
- ✓ Confidence-booster,
- ✓ Feedback,
- ✓ Self-assessment tool

Literature arrive at similar conclusions, suggesting that badges are important motivators (Werbach and Hunter, 2012; Kapp, 2012; Zichermann and Cunningham, 2011). However, similar to the rewards, the results show that, they need to be **systematic and continuous**.

For Teams:

Participants' views on the teams as a whole showed that they liked being separated into the teams but they had some reservations about some issues that need some consideration. These issues are listed under the title of community building simply because the criticism raised by the participants about the team problems were mainly related to the teammates' inability to build a community both in the class and on the online system. Therefore, while teams should be present in a gamified learning environment the **community building** by the participants should be supported. For such support, the participants listed a few elements such as relationships, **size**, interaction and the seating arrangement in the class. These can be interpreted as the learners' community building process is affected by the **interaction** and **relationship** between the teammates, implying that if they have good communication, the community is more easily built. Another implication is that the fewer people in a team, the easier to communicate therefore, and the teams should be in small sizes. However the study does not offer any suggestion concerning the number of individuals in a team. The last issue is the seating arrangement. Participants preferred to sit with the teammates in a U-shape **seating arrangement** in order to be able to communicate better with the teammates.

For Evaluation:

The evaluation sub-category has been included under the game-elements category for the reasons that first of all the evaluation was based on the points collected and secondly the data analyzed were about the point-based evaluation. Therefore, in order to categorize the point-based evaluation related issues, the name evaluation

seemed to be the most pertinent one. **Point-based evaluation** raised both support and criticisms from the participants. One of the most emphasized element with the evaluation is visibility and accessibility. All points collected by the learners and the progress of the learners should be **visible** and **accessible**. The problem with this issue in this study was related to the fact that the interface had a scoreboard functionality through which participants could check their grades. However, some of the participants stated that they could not find the points. This situation suggests that there is a necessity to place it in the main page that the participants see first when they open the interface. The second problem with the point-based evaluation which was emphasized was about **clarity**. The names of the points were narrated in such a way that each   was to represent different virtues of the apprentices. However, some participants stated that they found it pretty hard to understand it. To overcome this problem, a dictionary can be designed for the learners or more explanatory names can be found for the points. Likewise, according to some participants having immediate feedbacks with points can also contribute to the clarity of the point-based evaluation. The other problematic issue with the point-based evaluation according to the results is **fairness**. For the fairness characteristics, three issues arose: free-loaders in the teams, **team-classification** and fairness stemming from the instructor. Classification of the teams issue was discussed before. The participants thought that success of the team would depend on the classification made. Therefore in their opinion heterogeneous teams should be build. Also, participants expressed their discomfort with the teams' having good conscientious member who would work harder and participate more in the course. The rest of the team members would take advantage of this situation. The **free-loader** issue is a serious issue faced in group works (Hand, 2001). In order to solve this problem, the number of the team members can be limited and weekly team-member evaluation can be requested from the students. The last issue with the fairness is the one stemming from the instructor. According to the results the **instructor** should be **objective** while evaluation the learners' works.

Another issue that the results of the study suggest is the **self-assessment** of the participants. They stated that by looking at the points, the students can assess their own performance. Actually this result is a rather strange result. They do not seem to

have considered the **points** as grades; rather they seem to have thought of them **as feedbacks**. This issue might need some further study.

The last probably the most important finding obtained from the study about the evaluation is that majority of the participants liked the **distributed points**. That means that rather than mass evaluation techniques such as exams and projects, collecting small points from almost all kinds of activities done by the participants was appreciated. This kind of evaluation has the advantage of lowering the risk of losing huge amount of points in a particular time and can help support multiple intelligences which refers to the fact that learners can collect points from any practices they are good at. Surely, these are hypothetical statements: thus more research is needed to be carried out to examine the possible effects of the distributed points on these issues.

For Win-State:

Win-state, according to the results, is a good motivator for some participants. However, when there is a winner, there is also a loser which is exactly what Haque (2010) criticizes the gamification for. For this, **win-win state** can be offered in the way Zichermann and Cunningham (2011) offer where all participants can win in different contexts.

For Constraints:

The last element obtained from the results is constraints. It is a game dynamic that defines the rules of the games and the limitations (Werbach and Hunter, 2012). Participants support that the gamified learning environment should have some limitations and a structure which the learners cannot exceed. For this, for example, in-class sessions can be organized to be in a Question-Answering form. This can be one constraint. However, within this constraint, the activities can vary (actually should vary).

5.3   Principles of the GELD Model

On the basis of the discussions and the conclusion drawn from the study, some practical principles can be suggested to be used while applying GELD Model. As

pinpointed before, the model proposed in this work is not a procedural one and thus the principles listed below are not presented in any particular order.

- ✓ Analyze your learners in terms of their age, background, interests, learning styles and perceived technology competence.
- ✓ Consider your learners as players and analyze them in terms of their player types and the characteristics of these types.
- ✓ Build learner curiosity before you meet them. Since it may be not possible to analyze your learners' characteristics before meeting them, you can make popular culture references in your communications with them. For instance a short e-mail describing the course in a narrated way can be sent to them.
- ✓ Define and list what emotional responses you want from your learners throughout the course.
- ✓ Customize the content and the materials according to your learners' features.
- ✓ Be creative and original, do not repeat yourself.
- ✓ Create a relaxed and flexible environment for learners so they would not be scared of making mistakes and of failures. Actually, encourage them to fail and try again.
- ✓ Do not forget the fun element from the beginning to the end of the course. However, keep the fun and seriousness in balance.
- ✓ Assure the learners that the goals of the course are to have fun and learn at the same time, not grading the learners. Keep saying this throughout the semester.
- ✓ Define the constraints and/or the limits of the course. Build a structure and try not to exceed this structure.
- ✓ Create a collaborative and interactive environment.
- ✓ In the first meeting, provide a clear guidance on the content, course, structure, limits, narrative and the interface that will be applied.
- ✓ Design a level 0 challenge which is short, easy and unevaluated, and ask the learners to do it under your control and in your presence in order to prepare them for doing hands-on practices with the challenges they will face throughout the gamified course.
- ✓ Pick or design a relevant narrative and design all the materials on the basis of this narrative in order to create a coherent gamified experience.

- ✓ Provide face-to-face scaffolding at first, and as learners gain their self-efficacy, decrease the level of scaffolding.
- ✓ Control the learners' progress and decrease the control as they gain their mastery, and let them to take the control of their learning.
- ✓ Offer them different options (mostly for challenges) and give them the control of picking the best for themselves.
- ✓ Make challenges voluntary, and give reward to the ones who do them.
- ✓ Throughout the gamified experience, provide guidance, support and face to face communication.
- ✓ Provide immediate, clear, continuous, direct and progressive (related to the progress of the learners) feedbacks for individuals and teams. You can also use narrated feedbacks. Audial feedbacks options should be made available.
- ✓ Make the sequence of your content from easy and small chunks to hard and larger chunks. This way it can be ascertained the online content consists of different difficulty levels.
- ✓ For the online contents or the challenges on the online content, make a prerequisite of solving a challenge or finishing the level in order to pass to next levels or to see a new content.
- ✓ Design online content to be concise, clear, interactive with multimedia integration, and making references to popular culture.
- ✓ Balance the course-load.
- ✓ Design or adopt an interface that is usable, appealing, accessible from anywhere at any time with immediate feedback mechanisms, and contains a leaderboard, badges, a progression bar scoreboard and chat and push notifications functionalities. Some of the materials can be designed by the instructor, yet, this requires extra time for the instructor. Therefore, an interface with all these functionalities should be preferred.
- ✓ Prefer the interfaces with mobile applications.
- ✓ In case of a technical problem with the interface, provide immediate technical support. If the problem cannot be solved, plan back-up options.
- ✓ Provide tangible materials and game-elements (additional to digital ones).
- ✓ Place mental breaks in classroom activities and online content. In the class, authentic samples and funny activities such as watching video or telling an

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anecdote can be given. On the online content, irrelevant videos, pictures, 'did you know' information or narrated characters can be placed.

✓ Enable learners track their, their teams' and peers' progress. Separate progression bars for each of in class and on the online system can be used. Also, in class, seating arrangement should be made in such a way that the learners can track each other. Circle shape seating arrangement can be suggested. This can also be applicable to the collaboration and communication between teammates.

✓ Ensure that teammates sit together for collaboration in the competitive activities between the teams in the class.

✓ Use both online system and in-class sessions for learners to learn the content through one (on the basis of their learning style) and make repetition and solve problems in the other one, which according to the results of this study may increase the retention. The turn of the online and in-class session can be arranged according to learners' self-regulation.

✓ Place challenges that require learners to reflect their understanding; yet, keep the frequency of such challenges small. Be sure to give learners resting periods.

✓ For the online system, point-and-click and game-based challenges can be applied while in class, game-based and role-playing challenges can be preferred.

✓ Give learners plenty of time to finish the challenges.

✓ Prefer content-based challenges for learners to self-evaluate themselves and encourage them to read the content in order to do the challenges.

✓ Keep challenges original (not repetitive) with increasing difficulty.

✓ Give rewards and badges continuously and systematically.

✓ Be sure that the content, materials, and the methods are meaningful to learners making them to think that they will use them in the future.

✓ Create a common intelligence pool on the online system through which learners can share their ideas, see peers' ideas and learn from each other. For that, visibility of the peers' answers to the reflective challenges can be proposed.

- ✓ Create a collaborative competitive environment in which the learners both collaborate and compete with each other. For this, visibility of peers' works might work, as they provide unintentional guidance for others and in-class challenges in which team members collaborate in order to compete with other teams.

- ✓ Classify the teams with fairness. For that, player type test can be applied but be sure that each team is composed of different player types.

- ✓ Keep the number of team members small.

- ✓ In the badges, use supportive narrated feedbacks. Keep it short.

- ✓ Support the community building of the teams and all the learners in the class and on the online system. For that, their communication and interaction should be supported.

- ✓ Give learners in the leaderboards responsibilities along with the privileges.

- ✓ Create leaderboards for both individuals and teams.

- ✓ Use distributed evaluation in the form of giving points for every single activity learners do. By doing this, every learner with different learning styles and abilities can earn points. Therefore, rather than win-state, win-win state can be enabled for learners (every learners win with their own skills and learning styles).

- ✓ Make all the leaderboards, badges, progression bars and scoreboards clear, accessible and visible.

- ✓ Make sure that the learners' make-believe characters are created on the basis of the narrative develop along with the progression of the learners. Becoming a master from an apprenticeship can be given as an example.

- ✓ Communicate with learners using the make-believe characters.

- ✓ Be objective in evaluations.

- ✓ Pay attention to free-riders in the teams and encourage them to contribute.

- ✓ Keep an eye on the spill-over effect the content, materials used and the methods applied created. This can help to evaluate the system.

- ✓ Do not forget to assume a guiding role rather than being an authority figure.

- ✓ Manage all the process carefully. Major problems can cause learners' disengagement. In case of minor problems, provide immediate support.

5.4   Suggestions for Future Studies

Gamification in education is a brand new field about which there is a dearth of researches, thus there is a strong need for more scientific research in the field. As gamification offers possible advantages in terms of motivating and engaging target groups, business field has adapted it and started to use it widely. That is why few gamification design models have been proposed in this field. However, there does not exist a gamification design model in education to the researcher's knowledge. Therefore, this study might make a small contribution to the field as a pioneer. However, in order for the model to be used effectively further studies are needed in different contexts and with different participants, applying different game elements with different interfaces. Only this way the knowledge in the field can reach some maturity to enable the researcher to claim that the model can confidentially be used in designing a gamified learning environment. In the further studies, more iterations need to be done in order to examine the model in different contexts.

A new interface with the features demanded by the participants such as immediate feedback, chat, notification, leaderboard, badge and etc. can be designed for both desktop and mobile usages. The study can be repeated with the new interface that meets the demands of the the participants.

Also, the study was conducted on the basis of the learners' experience with the gamified learning environment designed. Different game elements should be integrated to enhance the model proposed. Also, since the study is a context-based study, there is a huge scope for doing similar studies in different contexts.

Another suggestion for further studies is developing a survey to determine what player types the learners are. Such a survey could be very valuable in classifying the learners into different player types based on their characteristics and playing habits. Furthermore additional validity and reliability studies can be conducted to confirm the findings of the survey. On n the basis of this survey, the teams can be classified. With a reliable and valid player type survey, it can be possible to examine the relationship between the player types and gamified experience.

The last suggestion for further studies can be that the current study does not provide a procedural model through which an instructor or a model can adapt it from the

beginning and use it until the very end. Instead, if offers elements and characteristics of a gamified learning environment to be taken into consideration in the process of designing a gamified learning environment. Therefore, for a future study, the model proposed can be repeated with the aim of producing a procedural model.

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APPENDIX A

THE WAY OF APRENTICE

THE WAY OF APPRENTICE
to mastery

23 - September
Your journey to mastership begins!
First meeting.

30 - September
* Introduction.
* Exploring 21st Century Learning.
* Engaging Learners with Computers.
* Understanding 21st Century Learners.

7 - October
* Integrating Technology and Media into Instruction: the ASSURE Model.
* Holiday (Ron Clark Story CHALLENGE).

14 - October
*Achieving 21st Century Learning Environments

21 - October
* Summary of previous quests
Practice Session
* Blogging Tools

28 - October
* No class meeting
Practice Session - Online
* Concept Mapping Tools

4 - November
* Connecting Learners Using Web 2.0 Tools
Practice Session
* Infographics

11 - November
* Final Challenge Info Session
Practice Session
* Quiz & Survey Tools

18 - November
* Connecting Learners at a Distance
Practice Session
* Learning Management system

25 - November
* Enhancing Learning with Visuals
Practice Session
* Visual Presentation Tools

2 - December
* Enhancing Learning with Audio and Video
Practice Session
* Video Production Tools

9 - December
* Enhancing Learning with Audio and
Practice Session
* Audio Production Tools

16 - December
* Using Multimedia to Engage Learners
Practice Session
* Multimedia Development Tools

23 - December
* Instructional Technologies and Material Design for Foreign Language Teaching
* Final Challenge Info Session
Practice Session
* Final Challenge

30 - December
* Final Challenge
Practice Session
* Final Challenge

13 - January
* Final Challenge Presentation

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APPENDIX B

THE VIRTUES OF APPRENTICESHIP

Note: Some parts of the documents were cropped in order to fit it in the page

Apprentices, listen up! Your journey is about to start. Keep your WANDs close as you need them the most. To master what you have, what virtues an apprentice must have is the first thing you need to know.

Virtues of Apprentice

- **Wholeheartedness:** Is a divine attribute, and the foundation of every virtue. It is the first lesson to learn on the way to the mastery. You must devote plenteous amount of time to the quests you face on your journey. For that:
  - Read weekly chapters presented to you in your common rooms (*www.edmodo.com*). For reading of each week, you will get *5 participation points*.
  - Answer the pop-up questions blended in chapters. For each correct answer, you will get *3 participation points*.
  - Partake in-class colloquies (i.e. discussions). You will collect coins throughout the class-session. In the end, based on the number of coins you collected, you will get a maximum of *3 participation points*. The one who collects the maximum number of coins will get additional prizes ☺.
  - Do the one-shot challenge (Ron Clark) to boost your participation points. Based on your performance, you will get a maximum of *10 participation points*.
  - Each week, based on your performance, you will be awarded with a *Medal of Honor*.
- **Endurance:** In the absence of this virtue, no person can perform his/her duty. Without any force, apprentice must have this virtue in his/her way to the mastery. You need to be present in class and practice sessions. For each presence, you will get *1 presence point*. At the end of your journey, based on your performance, you will be awarded with a *medal*☺.
- **Benevolence:** Each apprentice is responsible for the failure and the success of teammates. You need to contribute to each other's works so as to gain privileges for your house. For every challenge you face, your attempts for helping others or requesting help from others, will be awarded. You need to report from whom you get help for each challenge on the Philanthropist List (http://goo.gl/K5gxtZ).

You will be awarded *1 help point* for referencing someone and *2 help points* for being referenced. Based on your performance in assistance, you will earn a *medal* at the end of your journey.

- ❧ **Versatility:** Putting an acquired knowledge into practice is the ultimate way to the mastery. Therefore, this virtue has a great impact on your journey and on the end-point that you will reach. Throughout nine weeks, you will face with different challenges in practice sessions, and after completing each challenge, based on your performance, you will be awarded with a *medal* and a maximum of *100 practice points* for each week.

- ❧ **Wordsmith-ness:** Thinking critically and writing about what you practice is an important step in your way up to greatness. Therefore, throughout nine weeks, you are expected to write your reflections about practical sessions. Some questions will be directed to you, demanding your paragraphs on the common diary (http://goo.gl/NB39Lf). Based on your performance, you will be awarded with *100 reflective points* and a *medal.* At the end of your journey, based on your performance, you will be awarded with a final *medal*☺.

As you advance in these virtues, you will become a skillful technologist. However, there is one last challenge you need to overcome to earn your mastery. To unlock this final challenge, you need to have <u>at least 8 presence points</u> in practice sessions. Based on

Throughout the program, head-apprentice lists will be hung on the wall of your house (i.e. will be published on the web!). On those lists, you will be able to see the top 10 apprentices who get highest points from the exertions to gain the virtues explained above. For each four weeks, apprentices getting higher ratings of being in the top will be awarded with a privilege which s/he can select from the four options provided to them (invisibility cloak (ability to absent in class; yet, considered to be present), point-booster potion (bonus point), time-turner (to foresee a challenge from the next week) and immunity charm (for a-week-reflection).

Moreover, each week, exertion point of houses will be calculated and a head-house list will be hung on the walls of the houses. Top house will have the privilege of asking a reflection challenge to the members of other houses, and, getting the highest grade, they will be excused off the challenge.

APPENDIX C

ALMIGHTY DICTIONARY

Words used	Their Meanings
Wand (Wi-fi Accessible Nchantment Devices) :	Mobile device with internet connection
Enchanment Center of Educationary (ECE):	Early Childhood Education Department
Fantastique Lingua Educationary	Foreign Language Education
Apprentice:	Student
Master:	Instructor
Conjuring Enchantment and Imagination via Technologia (CEIT):	Computer Education and Instructional Technology Department
Houses or Common rooms:	Four groups, which students need to be separated into. At the beginning of the semester, all students are asked to take a test (sorting hat) to be selected into a group. There are four groups: Centaurs, Salamanders, Leocampuses and Sphinxes. Based on the test result: If it is Killers: student's group is Salamanders. If it is Socials: student's group is Leocampuses. If it is Achievers: student's group is Sphinxes. If it is Explorers: student's group is Centaurs
Quest:	Weekly readings uploaded into Edmodo. Each PowerPoint presentation will be called quests.
Challenge:	Every assignments throughout the course will be called challenge.
Mushroom Challenge:	Test or open-ended questions you will face in the PowerPoint presentation in Edmodo.
Reflective Challenge:	Reflective questions you will face in the PowerPoint presentation in Edmodo.
Practice Session:	Lab sessions.
Wholeheartedness Virtue:	One of the requirements of the course. Participation is required throughout the course. If you participate (have the

	wholeheartedness virtue), you will earn participation points (please see the document Virtues of Apprenticeship for details).
Endurance Virtue:	One of the requirements of the course. You need to be present in the class and in the lab. For each presence, you will earn presence points. <u>If you miss two lab sessions, you will fail the course</u> (please see the document Virtues of Apprenticeship for details).
Benevolence Virtue:	One of the requirements of the course. You need to help other group members throughout the assignments. For your help, you will earn help points (please see the document Virtues of Apprenticeship for details).
Versatility Virtue:	One of the requirements of the course. You need to complete lab assignments for 9 weeks. For each lab assignment, you will earn practice points (please see the document Virtues of Apprenticeship for details).
Final Boss Challenge:	Final Project you need to finish to complete the course.
Medal:	The badges you will earn based on your performance.
Owl:	E-mails

APPENDIX D

ACCEPTANCE LETTER

METU
Meta Educationary and Thaumaturgy University

Dear Fantastique Lingua Educationary (FLE) Apprentices,

We are pleased to inform you that you have been accepted to 'Instructional Technology and Material Development' Apprentice Program. Throughout this program, you will master the development of instructional materials and, in the end; you will all be awarded with mastership license.

At the beginning of the program, you will be separated into four houses: Salamanders, Sphinxes, Centaurs and Leocampuses, and throughout the program, you will experience different challenges at different levels. Each success will result in points, badges or privileges. Your activities will carry you and your house to another level. The term begins on September 22.

Therefore, let your WANDS be ready! Let the magic begin!

P.S. For the first lesson, make sure to bring your WANDs (Wi-fi Accessible Nchantment Devices) with you. If you do not have one, please inform us. We await your OWL (Omniscient Wi-fi Letters) by no later than September 22, 23:24.

Yours Sincerely,
Göknur Kaplan Akıllı
Deputy Headmistress
Conjuring Enchantment and Imagination via Technologia (CEIT)

A SAMPLE LEADERBOARD

APPENDIX F

DECLARATION OF HONESTY

Declaration of Honesty,

I am an apprentice in 'Instructional Technology and Material Development' Apprentice Program in Conjuring Enchantment and Imagination via Technologia (CEIT). I aim to master the development of instructional materials with the guidance of Deputy Headmistress, Mistress, Göknur Kaplan Akıllı. I am informed about my responsibilites, and I am aware of the consequences of my failure and my success of fulfulling these responsibilites.

My signature below certifies the following:

Based on my reading of this declaration of honesty, I understand that any of the following found in my written work, including reflective challenges, mushroom challenges, quillery reflections, boss challenges, practice sessions works, will constitute evidence of plagiarism.

- Presenting any other apprentice's works as if they were mine.
- 'Borrowing' some information from Internet and present it as if it was mine.
- Retyping other apprentices' opinions without giving any reference.
- Retyping information from Internet or any other resource without giving reference.

I understand 'Instructional Technology and Material Development' Apprentice Program' Policy about plagiarism and I accept the failure for the program in case of plagiarism.

Based on these, I declare my honesty and promise that I will not do any of the actions listed above.

Name and Surname:

Date:

Department:

Section:

Signature:

APPRENTICE LEADERBOARD (FINAL)

APPENDIX H

CERTIFICATE OF MASTERSHIP

APPENDIX I

POINT'ING SYSTEM
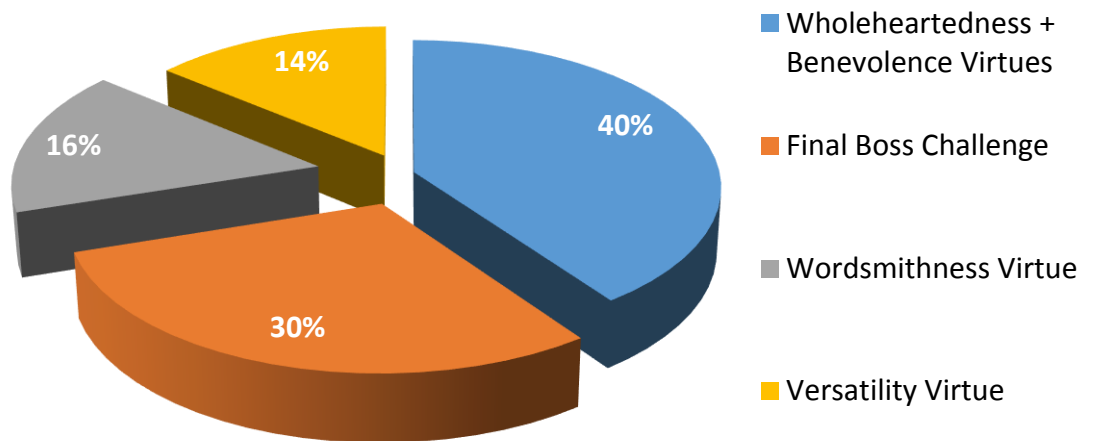
Percentile of Points
Total 100%

Legend:
- Wholeheartedness + Benevolence Virtues — 40%
- Final Boss Challenge — 30%
- Wordsmithness Virtue — 16%
- Versatility Virtue — 14%

Wholeheartedness and Benevolence Virtues:
In class participation + Online participation + Ron Clarke challenge + Help points
Wordsmithness Virtue:
Reflections submitted to Weebly (after lab sessions start)
Versatility Virtue:
Lab assignments
Final Boss Challenge:
Final project

P.S: Total point of the virtues listed above is not 100. They will be calculated based on the percentile presented in the graph. Total point may vary based on your performance; and your final grade depends on this total point that will be calculated at the end of the semester.
Good Luck, Apprentices!!

APPENDIX J

DEMOGRAPHIC SURVEY

Please, answer the following questions. Your participation in the study is entirely voluntary. Your answers will be kept strictly confidential and will be used for academic purposes.

Thank you very much for your cooperation.

Researcher: Res. Asst. Tuğçe ALDEMİR

taldemir@metu.edu.tr

CEIT-METU

1. Gender   □ Female   □ Male

2. ID _____

3. Age _____

4. Year □ 1st □ 2nd □ 3rd □ 4th

5. Grade Point Average (GPA)_____

6. Department _____

7. Name of Your House (Common Room) _____

8. Do you play game(s)? (*If no, please **answer only** the 9th question) (If yes, please **skip** the 9th question)*

   □ Yes   □ No

9. Why not?

_____

_____

_____

_____

_

10. How many hours **in a week** do you spend for playing?

   □ Less than 1 Hour   □ 1-3 Hours   □ 3-5 Hours   □ More than 5 Hours   □

   Not Consistent

11. How long have you been playing games?

   □ Less than 5 Months   □ 5 Months - 1 Year   □ 1-3 Years   □ 3-5 Years □

   More than 5 Years

12. What kinds of video games do you play?
    (You can select more than one item)

   □ Action   □ Strategy   □ Adventure   □ Role-playing   □ Sports   □

Simulation

   □ Other (Please specify) _____

13. Would you prefer to play alone or play within a group (clan, team, etc.)?

   □ Alone   □ Within a Group

14. Why do you play game(s)?
    (You can select more than one item)

   □ As a Leisure Time Activity   □ To Relief Stress   □ To Escape Everyday

   Life   □ For the Excitement and Fun   □ Other (Please specify)

   _____

   Danke, Thank you, Teşekkür ederim, ありがとう ☺

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APPENDIX K

IN-CLASS OBSERVATION PROTOCOL FOR A PROPOSAL OF AN INSTRUCTIONAL DESIGN MODEL FOR GAMİFİED LEARNİNG ENVIRONMENTS

Length of Observation: Date/Time:	Observed Section : (Instructor/T.A. of the course) :

Aim:
This observation aims to find out technical, organizational and process-related components, affordances and constraints within the flow of the course as articulated by the participants during the course interactions; participants' behaviors, actions, attitudes towards the course as well as their body language in a context-related manner; and how the design elements affect the course progress with as much detail as possible.

Research Questions:
- ✓ What are **fundamental characteristics** of gamification process in order to design a gamified learning environment
- ✓ What are the **components** of the gamification model to design a gamified learning environment?
- ✓ How can these components be **combined to compose a gamification model** for designing gamified learning environment?

Descriptive Notes:	Reflective Notes:

Physical Environment

Room: Light: Heat: Noise: Distracter:	Sketch of the Physical Environment:

APPENDIX L

THE FIRST SET OF INTERVIEWS PROTOCOL

Görüşme Protokolü ve Soruları

Görüşmenin Yapıldığı Tarih:

Saat :

Yer   :

Görüşme Yapılan Kişi:

Değerli Katılımcı,

İlk olarak görüşmeye katılmayı kabul ettiğiniz için teşekkür ederim. Katılımınız tamamıyla gönüllü olarak gerçekleşmektedir. Görüşmeyi istediğiniz noktada bitirmekte serbestsiniz.

Bu görüşmelerin amacı:

1) Uygulanan oyunlaştırılmış bir öğrenme ortamının dönem boyunca sürecini gözlemlemek,
2) Gerekli olması durumunda ilgili değişiklikleri ve düzenlemeleri yapmak
3) Bunlara bağlı olarak oyunlaştırılmış öğrenme ortamları için eğitsel bir tasarım modeli sunmaktır.

Dönem boyunca, bu görüşmeler tekrarlanabilir ve gerekli olması durumunda derste değişiklik yapılabilir ve dersin süreci hakkında fikirleriniz alınabilir. Görüşmeler öncesinde, soruların yazılı bir kopyası size sunulacaktır. Görüşme yaklaşık olarak 20 dk sürecektir.

Kişisel bilgileriniz kesinlikle gizli tutulacaktır ve sadece akademik amaçlarla kullanılacaktır. Çalışmaların sonucu hakkında bilgi sahibi olmak isterseniz, taldemir@metu.edu.tr e-posta adresiyle bana ulaşabilirsiniz.

Bu bilgiler ışığında, görüşme yapmayı ve görüşmelerin ses kayıt cihazıyla kaydedilip sonrasında çalışmamda kullanılmasını kabul ediyor musunuz?

Görüşme Soruları

1. Dersin süreci hakkında ne düşünüyorsunuz?
   a. Prompt: Dersin sürecinde beğendiğiniz noktalar var mı?
      i. Varsa, nedir? Neden?
   b. Prompt: Dersin sürecinde beğenmediğiniz noktalar var mı?
      i. Varsa, nedir? Neden?
2. Dersin tanıtımının yapıldığı ilk hafta ders hakkında ne düşündünüz ve ne hissettiniz?
   a. Prompt: İlk haftada (e-posta ile yapılan ilk duyuruda ve ilk buluşmada) derse karşı motive olmuş muydunuz?
      i. Evetse, neden?
      ii. Hayırsa, neden?
      iii. Sizce daha iyi bir hale getirmek için ne yapılabilirdi?
3. Süreç ilerledikçe, bu duygularınız ve düşünceleriniz değişti mi?
   a. Evetse, nasıl? Örnek verebilir misiniz?

b. Prompt: Ders hakkında şimdi ne düşünüyorsunuz?

　　　c. Prompt: Ders hakkında şimdi ne hissediyorsunuz?

4. Çevrimiçi ortamdaki ve sınıftaki ders süreçlerini karşılaştırabilir misiniz?

5. Şimdiye kadar olan süreçte, sınıfta şaşırtıcı veya eğlenceli veya heyecan verici anlar yaşadınız mı? Yaşadıysanız nedir veya nelerdir?

6. Şimdiye kadar olan süreçte çevrimiçi ortamda, şaşırtıcı veya eğlenceli veya heyecan verici anlar yaşadınız mı? Yaşadıysanız nedir veya nelerdir?

7. Şimdiye kadar olan süreçte sınıfta, stres oluşturan, rahatsız edici veya korkutan anlar yaşadınız mı? Yaşadıysanız nedir veya nelerdir?

8. Şimdiye kadar olan süreçte çevrimiçi ortamda, stres oluşturan, rahatsız edici veya korkutan anlar yaşadınız mı? Yaşadıysanız nedir veya nelerdir?

9. Bu dersi siz verecek olsaydınız, nasıl uygulardınız? Adım adım anlatabilir misiniz?

　　　a. Prompt: Bu şekilde bir ders tasarlamayı planlasanız, derste nelere dikkat ederdiniz?

　　　b. Prompt: Ne veya neler eklerdiniz?

　　　c. Prompt: Nasıl eklerdiniz?

　　　d. Prompt: Neyi veya neleri çıkarırdınız?

10. Oyunlaştırma sürecinde sınıfta öğrenmenizi etkileyen noktalar nelerdi? Bu noktalar sizi nasıl etkiledi? Örnek verebilir misiniz?

11. Yüzyüze dersleri daha etkili hale getirmek için neler yapılabilirdi?

12. Oyunlaştırma sürecinde çevrimiçi ortamda öğrenmenizi etkileyen noktalar nelerdi? Bu noktalar sizi nasıl etkiledi? Örnek verebilir misiniz?

13. Çevrimiçi ortamı daha etkili hale getirmek için neler yapılabilirdi?

14. Sizce bunlar oyunlaştırma sürecini nasıl etkiler? Örnek verebilir misiniz?

15. Öğreniminizi daha etkili hale getirmek için başka dikkat edilmesi gereken noktalar var mıydı? Varsa nelerdir?

16. Dersi tasarlarken dikkat edilmesi gereken noktalar nelerdir?

17. Bu dersin tasarımı sizce bu noktalara uygun mu?

　　　a. Değilse neden? Örnek verebilir misiniz?

　　　b. Evetse, neden? Örnek verebilir misiniz?

　　　c. Başka hangi noktalara dikkat edilmeliydi?

18. Kullanılan materyallerin tasarımı sizce uygun mu?

　　　a. Değilse neden? Örnek verebilir misiniz?

　　　b. Evetse, neden? Örnek verebilir misiniz?

19. Sizce oyunlaştırma sürecinde dikkat edilmesi gereken başka adımlar veya noktalar var mıdır?

　　　a. Varsa nedir veya nelerdir? Örnek verebilir misiniz?

20. Paylaşmak veya eklemek istediğiniz başka bir şey var mıdır?

Görüşmeye katıldığınız ve çalışmaya katkıda bulunduğunuz için teşekkür ederiz.

APPENDIX M

THE SECOND SET OF INTERVIEWS PROTOCOL

Görüşme Protokolü ve Soruları

Görüşmenin Yapıldığı Tarih:

Saat :

Yer   :

Görüşme Yapılan Kişi:

Değerli Katılımcı,

İlk olarak görüşmeye katılmayı kabul ettiğiniz için teşekkür ederim. Katılımınız tamamıyla gönüllü olarak gerçekleşmektedir. Görüşmeyi istediğiniz noktada bitirmekte serbestsiniz.

Bu görüşmelerin amacı:

4) Uygulanan oyunlaştırılmış bir öğrenme ortamının dönem boyunca sürecini gözlemlemek,
5) Gerekli olması durumunda ilgili değişiklikleri ve düzenlemeleri yapmak
6) Bunlara bağlı olarak oyunlaştırılmış öğrenme ortamları için eğitsel bir tasarım modeli sunmaktır.

Görüşmeler öncesinde, soruların yazılı bir kopyası size sunulacaktır. Görüşme yaklaşık olarak 30 dk sürecektir.

Kişisel bilgileriniz kesinlikle gizli tutulacaktır ve sadece akademik amaçlarla kullanılacaktır. Çalışmaların sonucu hakkında bilgi sahibi olmak isterseniz, taldemir@metu.edu.tr e-posta adresiyle bana ulaşabilirsiniz.

Bu bilgiler ışığında, görüşme yapmayı ve görüşmelerin ses kayıt cihazıyla kaydedilip sonrasında çalışmamda kullanılmasını kabul ediyor musunuz?

Görüşme Soruları

21. Dersi bir dönem boyu aldınız. Baştan sona düşündüğünüzde duygu ve düşüncelerinizi anlatır mısınız?
    a. Değişti mi? Değiştiyse nasıl? Örnek verir misiniz?
22. Sınıfta yürütülen derslerde eğlendiniz mi?
    a. Evetse, nasıl? Açıklayınız.
    b. Hayırsa, eğlenmenizi sağlamak adına ne yapılabilirdi?
23. Çevrimiçi ortamda yürütülen süreçte eğlendiniz mi?
    a. Evetse, nasıl? Açıklayınız.
    b. Hayırsa, eğlenmenizi sağlamak adına ne yapılabilirdi?
24. Sınıfta yürütülen derslerde öğrendiğinizi düşünüyor musunuz?
    a. Evetse, nasıl? Açıklayınız.
    b. Hayırsa, öğrenmenizi sağlamak adına ne yapılabilirdi?
25. Çevrimiçi ortamda yürütülen süreçte öğrendiğinizi düşünüyor musunuz?
    a. Evetse, nasıl? Açıklayınız.
    b. Hayırsa, öğrenmenizi sağlamak adına ne yapılabilirdi?

26. Sizce her ders oyunlaştırabilir mi? Nasıl? Örnek verebilir misiniz?
27. Sizce öğretmenin tutumu oyunlaştırma için uygun muydu?
     a. Evetse, nasıl? Örnek verebilir misiniz?
     b. Hayırsa, nasıl olmalıydı?
28. Sizce öğretmenin ders anlatma yöntemi oyunlaştırma için uygun muydu?
     a. Evetse, nasıl? Örnek verebilir misiniz?
     b. Hayırsa, nasıl olmalıydı?
29. Sınıf ortamındaki düzen oyunlaştırma için uygun muydu?
     a. Evetse, nasıl?
     b. Hayırsa, nasıl olmalıydı?
30. Oyunlaştırma yönteminin uygulandığı bu dersi ve uygulanmadığı başka bir dersi kıyasladığınızda, ders yükünde değişiklik oldu mu?
     a. Evetse, nasıl? Açıklayınız.
31. Oyunlaştırma yönteminin uygulandığı bu dersteki değerlendirme ile uygulanmadığı başka bir dersteki değerlendirmeyi karşılaştırabilir misiniz?
     a. Prompt: Avantajları nelerdir?
     b. Prompt: Dezavantajları nelerdir?
32. Sizce oyunlaştırma sürecinde dikkat edilmesi gereken başka hangi noktalar olabilir?
     a. Varsa, nasıl etkiler? Örnekle açıklayınız.
33. Bu dersi siz verecek olsaydınız, nasıl tasarlardınız?
     a. Prompt: Bu şekilde bir ders tasarlamayı planlasanız, derste nelere dikkat etmeniz gerekir?
34. Sınıf ortamında yapılan derslerde oyunlaştırma olmalı mı? Neden?
35. Çevrimiçin ortamdaki süreçte oyunlaştırma kullanılmalı mı? Neden?
36. Badge'ler hakkında ne düşünüyorsunuz? Nasıl tasarlanmalılar?
37. Leaderboard'lar hakkında ne düşünüyorsunuz? Nasıl tasarlanmalılar?
38. Puanlar konusunda ne düşünüyorsunuz? Nasıl tasarlanmalılar?
39. Hikaye hakkında ne düşünüyorsunuz? Nasıl tasarlanmalılar?
40. Challenge'ler hakkında ne düşünüyorsunuz? Nasıl tasarlanmalılar?
41. Quest'ler hakkında ne düşünüyorsunuz? Nasıl tasarlanmalılar?
42. Sınıftaki pearl dağıtımı hakkında ne düşünüyorsunuz?
43. Başka dikkat edilmesi gereken noktalar var mıdır?
     a. Eklenmesini istediğiniz başka bir şey var mıdır? Varsa nedir ve nasıl eklenmeli?
     b. Çıkarılmasını istediğiniz bir şey var mıdır? Varsa nedir ve neden?
44. Paylaşmak veya eklemek istediğiniz başka bir şey var mı?

Görüşmeye katıldığınız ve çalışmaya katkıda bulunduğunuz için teşekkür ederiz.

APPENDIX N

ETHIC PERMISSON APPROVAL FROM MIDDLE EAST TECHNICAL UNIVERSITY HUMAN SUBJECTS ETHICAL COMMITTEE (IN TURKISH)

APPENDIX O

INFORMED CONSENT FORM

This study is a MS Thesis conducted by Research Assistant Tuğçe Aldemir from the Department of Computer Education and Instructional Technology (CEIT). The study aims to examine and explore the process of gamification in a departmental service course offered to Foreign Language Education (FLE) students. Based on the findings, a proposal for an instructional design model will be created. Throughout the study, data will be collected through in-class observations, observations of the online activities (out-of-class activities), semi-structured interviews on a regular basis during the semester as well as at the end of the semester, a **Demographic Information Survey (to collect basic information such as age, gender, etc. about the participants)** and artifacts (submitted reports, assignments and materials) during the course of the semester. Participation in the study is entirely on a voluntary basis; the answers and information provided by the participants will be kept strictly confidential and evaluated only by the researcher. Obtained data will be used only for scientific purposes and the analyses will be presented anonymously.

The study does not contain questions or procedures that may cause discomfort in the participants. However, during participation, for any reason, if you feel uncomfortable, you are free to quit at any time. In such a case, it will be sufficient to inform the researcher.

If you have any question related to the study or the data collection procedures, please do not hesitate to contact the researcher. We would like to thank you in advance for your participation in this study. For further information about the study, you can contact Research Assistant Tuğçe Aldemir from the Department of Computer Education and Instructional Technology (Instructional Technology Support Office, GISAM; Tel: 210 3571; E-mail: taldemir@metu.edu.tr) or Dr. Göknur Kaplan Akıllı (Department of Computer Education and Instructional Technology, Room: Z18; Tel: 210 3673; E-mail: akilli@metu.edu.tr).

I am participating in this study totally on my own will and am aware that I can quit participating at any time I want/ I give my consent for the use of the information I provide for scientific purposes. (Please return this form to the data collector after you have filled it in and signed it).

Course: CEIT 319   Section:
Name Lastname: Date   ----/----
/-----
E-mail Address (optional):   Signature

FINAL FORM OF CODEBOOK

Gamification Related General Issues and Perceptions		Attitude	
		Fun	
		Motivation	
		Immersion	
		Interactivity	
		Relax learning environment	
		Freedom to fail	
		Balance	Fun vs seriousness
		Spill-over effect	
		Collaboration	
		Content-free	
		Age-free	
		Level 0	
		Adaptation	
		Coherence	
		Interchangeability of game elements	
		Cheating	
Course Related Issues and Perceptions		Attitude	
		Emotions	Fear
			Disappointment
			Joy
			Curiosity
			Boredom
			Stress
		Originality	
		Active Learning	Hands-on practice
			Authentic examples
			Self-regulation
			Balance
		Step-by-step Learning	
		Meaningful Learning	Transfer of Learning
		Repetition	
		Reflective Thinking and Comprehension	

		Retention	
		Self-Efficacy	
		Mental Break	
		Course/Information Load	
		Guidance	Scaffolding
		Face-to-face vs Online	Balance
			Turn
		Flexibility	
		Progression	Progression Bar
		Classroom Settings	Seating Arrangement
			Size of the classroom
		Learner Population	
		Social Appraise	
		Goals	
		Technology Integration	
		Customization	
		Feedbacks	
		Management	
People Related Issues	Learner Related Issues	Learner Characteristics	Learning Style
			Background
			(Perceived) Technology Competence
			Interest
		Classification	
		Control	Volunteerism
		Peer Tracking	
		Communication	
	Instructor Related Issues	Presence of Instructor	
		Tracking	
		Support	
		Instructor Characteristic	Open-minded
			Flexibility
			Fun
		Communication	Face-to-face
Design-Related Issues	Interface Design	Technical Problems and Technical Support	
		Visibility of Peers' Works	
		Novelty	
		Usability	
		Appeal	
		Ubiquitousness	Mobility
		Narrative-based Design	Progression bar
			Scoreboard
		Chat	
		Push notifications	
		Conciseness	
		Clarity	

		Multimedia Use	
		Interactive	
	Material Design	Tangible and 3D	
		Game-Based	
		Level Unlocking	
		Popular Culture	
		Immediate	
		Clear	
	Feedback	Direct and Progressive	
		Personal	
		Peer to Peer	
		Narrated	
		Audio	
Game Elements	Challenge	Attitude	
		Distracting	
		Team Skills	
		Competitive Collaboration	
		Collective Intelligence	
		Feedback	
		Reinforcement	
		Type	Content-based
			Role-based
			Point and Click
			Game-based
		Timing	
		Engagement	
		Frequency	
		Self-assessment	
		Repetitiveness	
	Narrative	Attitude	
		Communication	
		Relevant	
		Character	Tangible
			Character Development
			Guidance
	Leaderboard	Attitude	
		Participation	
		Competition	
		Reputation	
		Teams	
	Reward	Attitude	
		Participation	
		Privilege	
		Narrated	
		Tangible	
		Continuous and Systematic	
		Attitude	
		Fun	
		Confidence-booster	

	Badges	As Feedback	
		Self-assessment	
		Continuous and Systematic	
	Teams	Attitude	
		Community Building	Interacting
			Population
			Relationship
	Evaluation	Self-assessment	
		Visibility and Accessibility	
		Distributed - Points	
		Fairness	Free Loader
			Team-classification
			Stemming from Instructor
		Clarity	
	Win-State		
	Constraints		

APPENDIX Q

TURKISH COMMENTS AND E-MAILS (IN THE ORDER AS THEY APPEAR IN RESULT SECTION)

"Weebly'de oluşturduğumuz ortam çok güzeldi ve özellikle Harry Potter'la olan bağlantılar da çok güzeldi, çünkü bizim dönemimizde birçok kişi Harry Potter hayranı. O benim çok hoşuma gitti. Rekabet oyunları da güzeldi. Onlar bir stimulus gibiydi bize. Ve gerçekten bu şekil, öğretim bu şekilde olunca biz progress'imizi takip edebiliyoruz. O kadar abstract değil badgeler ve her şey bizi motive ediyor ve ilerlememize sebep oluyor." [I1-11]

"Ben ilk başta da dediğim gibi hocam ilk baştaki CEIT dersi gibi olacak zannetmiştim ama böyle oyunlaştırma olduğunu öğrenince daha bir motive oldum. Daha bir dinlemek istiyordum, daha bir eğlenceli oluyor. Bence kesinlikle uygulanmalı bu oyunlaştırma." [I2-8]

"Diğer hocalarım bizi neden bu şekilde eğlendirmeyip klasik ödevlere tabi zorunlu tuttuğuyla ilgili gerçekten üzüldüm ya dersin bu şeklini çok seviyorum." [I1-5]

"Oyunlaştırma bence kullanılmalı çünkü dersi daha açık ve eğlenceli hale getiriyor öğrenciler için." [I2-13]

"Size öyle bir mail attım yerine hocam ben size bir owl gönderdim falan diye konuşuyor olmamız bu dersin içine adapte olmamızı gösteriyor bence yani orda ki hikayenin içinde birer karakter olmamızı sağladı." [I1-5]

"Notları biraz geri planda tutmak bence bu konuda çok başarılı oldu çünkü kesinlikle nerede ne var kaç puan aldık kaç kaybettim 30 üstünden şöyle ise şu üstünden ne olur diye hesaplayan biriydim. Yapmadığım tek ders bu ders eğer gerçekten bu amaçlarından biri ise bu konu da kesinlikle başarılı olduğunu düşünüyorum." [I2-6]

"Zor bir ders falan diye düşünmüştüm ama o zorluğunu da uygulamalarla oyunlaştırmayla birlikte daha da öğrenciye ne diyeyim kolay gösteriyor ." [I1-4]

"[İlk görüşmede] biz sadece 4 kişi bahçede şey yapabildik bir ayak üstü hani mesela bir sınıf ortamında teorik derste yaptığımız gibi olsaydı daha iyi olabilirdi. Sonrasında biraz ben koptum başını biraz öyle kaçırdım yani hani sınıfta böyle bir toplu şekilde olsaydı daha iyi olurdu." [I1-4]

"[Gamified online and in-class processes] bu gibi şeyler baya hani dersi hem interaktif hale getiriyor" [I1-3]

"Grubun arasında bir interaction olmaması biraz daha [başarıyı] düşürdü" [I2-6]

"Böyle U şeklinde oturuyoruz ama mesela biz dramada daha rahat bir ortamda böyle direk daire şeklinde oturuyoruz mesela daha interaktif oluyoruz. Mesela öyle bir oturma düzeni olabilir." [I2-3]

"Çok interaction yoktu mesela şeyde hani öğrencilerin arasında öyle bir şey olsaydı gurupta falan daha şey [iyi] olabilirdi." [I1-6]

"Slaytları da interaktif şekle getirebilirdim." [I1-11]

"Böyle sınıfta kasılıp oturmuyoruz böyle işte hani tedirgin değiliz. Rahatsız değiliz ve hani bunlar bence önemli. Zaten çok etkileyen faktörler insanlar hani çevresi rahat olmayınca insan psikoloik ve fiziksel olarak rahat olmayınca zaten nasıl öğrenebilsin." [I2-1]

"Cidden hani gerginlik yok rahatım istediğim herşeyi söylüyorum sorabiliyorum." [I1-9]

"Bazen fazla rahat olduğunu düşünüyorum dersi. Ben orada muhabbet çevirebilirim çok rahat mesela onun yerine daha çok hani derse oadaklanmayı isterdim." [I1-7]

"Yaptığımız hatalar olsa da çok hoşgörülü karşıladı ki bu gerçekten öğrencileri çok rahatlatıyor ve derse hoşgörülü bakmalarına izin veriyor." [I1-11]

"Çok seviyorum bu dersi çok rahatız yani hani şey istediğimizi söyleyebiliyoruz istediğimiz şekilde katılabiliyoruz diğer derlete biraz çekinme oluyor." [I1-3]

"Sürece yayılması bir gece de oturup midterm ya da bir gece oturup final çalışmaktan daha az yordu beni. Birde stresi çok çok daha azdı bu hafta yapamazsam haftaya telafi ederim." [I1-15]

"Oyunlaştırma ile akademik kısmını dengede tutabilmek lazım." [I2-8]

"Bir denge kurulmalı tamamen oyunlaştırmak biraz eğitimi amacından uzaklaştırabilir." [I1-11]

"Oyun demek ciddiyetten biraz uzaklaşıyor ama sınırları ihlal ediyor anlamına gelmiyor" [I2-11]

"İnternette bir şeyleri yapıyoruz o bulduğumuz siteleri birbirimize atıyoruz o yüzden yani bir dersin o oyun kısmının bizim aramızda başka derslerde konuşulması bile o dersin etkiliğini ve güçlüğünü gösterir. Sen nasıl yaptın, onu gördün mü ya da sizin attığınız çoçuk oynayan çoçuk videosu vardı. Biz onu baya gurupta işte Facebook'ta her yerde dolaştırdık." [I1-5]

"Diğer derslere girdiğim zaman hep keşke bunuda şu şekilde uyarlasak da işlesek diye çok düşünmüşümdür." [I2-3]

"Whatsapp'ta bir gurubumuz var; onu nasıl yaptın bunu nasıl yaptın nasıl yapacaz şeklinde yardımlaştık". [I1-5]

"Facebook'tan bile yazdığım oluyor hiç tanımadığım insanlara. Yardımlaşma oluyor. Daha samimi buluyorum." [I1-14]

"Hem section'ın düzenli öğrencisi olmamamdan section'da arkadaşım pek yok ve de genel de hazırlanan instruction'lar gerekli bilgiyi yeterince sağladığı için pek gerek kalmıyor, onun dışında "sen benim adımı yaz ben de seninkini yazayım" gibi bi durum oluyor doğal olarak. Sizce bu durumda ne yapmak daha doğru olur?" [E1-1]

"Farklı insanlarla çalışıyorsun ya da birşeyi tartışıyorsun mesela birlikte bir sonuca ulaşıyorsun bu güzel." [I2-3]

"Grup olduğumuz için sınıfta çok çalışan, gerçekten iyi bilenler çıkıp yapıyorlar. Biz de onların üzerinden sanki puan alıyormuşuz gibi geldiği oluyor."[I2-3]

"Ben bütün derslerin oyunlaştırılabileceğini düşünüyorum." [I2-5]

"Bütün dersler bence oyunlaştırılabilir. Yani farklı şekillerde olsa bile hani muhakkak bir düzen oturur." [I2-1]

"Her dersin oyunlaştırılabileceğini pek sanmıyorum. Ezberi nasıl oyunlaştırabiliriz diye düşünüyorum pek bulamıyorum. Pek ama pek açıkcası sanmıyorum." [I2-6]

"Ben bu ders dışında hiçbirşeyi [oyunlaştırılmış olarak] düşünemiyorum. Galiba bunu sadece gördüğüm için." [I2-7]

"[Oyunlaştırma yöntemini] uygulayabiliriz istediğimiz yaş grubuna" [I2-3]

"İnsanın her yaşında böyle bir şey [oyunlaştırma] olması gerekiyor." [I2-8]

"Biraz dikkat edilmeli öğrencinin yaş grubuna. Genel olarak daha küçük bir yaş gurubuna hitap etsede daha iyi olabilir bence." [I1-2]

"İlk başta geldi o e-mail zaten. Suraya gidin, şu testi çözün. Ona göre sizin common room'larınız belli olacak. Dedim ki bu şimdi böyleyse. Ben daha kayıt yaptırmak için bu kadar uğraşıyorum. Süreç biraz daha kolay olabilirdi bence. Yani 30 soru vardı. Diyorum ki bunun sonu gelmiyecek." [I1-8]

"İlk quest'te o deneme quest'i sayılmıştı, çok büyük bir yanlışım olmuştu birkaç arkadaşın daha olmuştu. Değerlendirilmemesi iyi oldu, çünkü zaten ısınma aşamasıydı, girişti. O yüzden sevindik." [I1-1]

"En başta ev seçmek için bir anket doldurduk online sistemde. Burada insanlar kimisi doldurmadan yapanlara da rastladım ben mesela. Yani direkt rastgele bir eve giriyor." [I1-12]

"Ben Virtue of Apprenticeship'i falan özümsemek için çok baktım. İsimleri değişince o notlandırmanın bende çok sıkıntı oldu. Onun dışında isim değişmesi ya da ne bileyim emaillerin owl olması ya da her şeyin ismi değişti o biraz karışıktı. Bir iki hafta sonra alışıyorsun, rehbere bakmayı bırakıyorsun. Buradan bunu almışım diyorsun ama başlangıçtaki o adaptation process biraz zor oldu." [I2-15]

"O kadar korkmuyorum çünkü hani bir şekilde bir şeyler oturdu haliyle kaç hafta geçti neyi nasıl yapacağımı biliyorum." [I2-1]

"Ufak ufak ayrıntılar ama birleşince bizi bir yerden yakalıyor diye düşünüyorum." [I2-1]

"İlk baştan bize bir hikaye verilmişti. Daha sonra da her şey o hikayenin sırasında gitti. Dersin içinde uyum yaratmış olması hikayenin içinde birer karakter olmamızı sağladı." [I1-5]

"Leader olan birisi varsa [Leaderboard'da] o gün derste o kişi yönlendirebilirdi. Madem hani leader'sın tamam o zaman sen gel o zaman sen yönlendir bakalım." [I2-5]

"Mekan [hikayaye] göre değişebilirdi o şekilde tasarlanabilirdi." [I2-5]

"İnci olayı gelistirelebilir tahtaya çizelge çizilebilir şeklinde." [I1-6]

"Online da questlerin sonuna gelince reflective'ler [hakkında] herkesin mutlaka bir düşüncesi oluyor ve herkes bir şey yazıyor. Ama [bu durum] okumuş olduğumu göstermiyor. Yani bazen ben de slaytların sonuna gelip yorum yapabilirim ya da yapıyım dediğim olup yorum yapıp kapattığım oluyor. 3-4 tane slaytı skip ettiğim oluyor." [I1-8]

"Mushroom challenge'ları falan yapmak için okumak zorunda kalıyorduk." [I1-21]

"Grup olduğumuz için sınıfta çok çalışan, gerçekten iyi bilenler çıkıp yapıyorlar. Biz de onların üzerinden sanki puan alıyormuşuz gibi geldiği oluyor." [I2-3]

"En çok hissettiğim duygu meraktı. Gerçekten merak ettim ne olacak, nasıl evler olacak, nasıl böyle bir oyun olacak, oyunda ne yapcaz falan." [I2-1]

"Soru gönderiyorduk alttan o sorular arasından seçiyordu mesela oda ayrı bir heyecan katıyordu çünkü hani sorularımız çıkacak mı acaba diye merak ediyorduk." [I2-1]

"Ben gerçekten merakla bekliyorum hani feedbackler'inizi." [I2-1]

"Table (leaderboard) falan yapıyoruz ya ilk dokuza girme falan. Ben mesela şuan iki kere girdim hani üçüncüyü merakla bekliyorum."[I2-1]

"Explorer falan, kişisel özelliklerine göre bir sınıflandırmaya gidilmiş. Acaba ilgimizi çekecek yöntemlere göre mi ayırıyorlar, bu şekilde öğrenmemizi daha mı kolaylaştıracaklar, kendimizi mi tanıyıcaz merak ettim ne ile karşılaşıcağımı." [I1-7]

"Bilgisayarla çok haşır neşir her şeyini bilen bir insan olmadığım için korkmuştum hani ben bu dersi yapabilecekmiyim başarabilecekmiyim diye." [I1-5]

"Bir giriş yaptınız ama oturmadı yani hiç kimsenin kafasında bir şey oturmadı. Bu bizim korkmamıza sebep oldu." [I2-1]

"Farklı olduğunu düşündüm ve biraz serbest olacağını düşündüm ve biraz korktum acaba çizgiyi ne belirleyecek" [I2-16]

"Harry Potter'dan esinlenerek oluşturulmuş bir şey, değil mi? Benim filmlerde falan çok ilgi duymadığım şey olduğu için fantezi korkmuştum ilk." [I2-13]

"Yetiştiremem diye sadece ondan korktum." [I1-20]

"[Notlandırmadan] istediğim verimi alamıyorum o biraz hayal kırıklığına uğratıyor." [I1-4]

"Oyun gibi olmadığı için açıkcası biraz hayal kırıklığı gibi oldu." [I2-2]

"İyi hoş ama sürekli beni tutacak bir şey yoktu. Hep apprentice şeklinde tanınmak bile güzel. Ama sıkıldığımda oyun şeklinde olduğunda sıkılıp yapabileceğim bir şey değildi yani aklıma geldi diye zorunlu olduğum için yaptım çoğu zaman." [I1-19]

"Tekrar tekrar yorum yazmak, ben aynı şeyi tekrar yapmayı sevmediğimden dolayı. Her hafta bir reflection yazmak biraz benim için biraz sıkıcı bir iş." [I1-3]

"We have to comment on these quests again and again so this makes them boring." [OC1-2]

"Uzun olunca sıkıcı oluyor mesela son questte de 40 tane mı ne vardı galiba yani biraz sıkıla sıkıla yaptım" [I1-9]

"Because of the workload, I sometimes feel bored and stressed." [OC1-3]

"Deadline'lar bayağa strese soktu." [I1-6]

"Girecek miyim giremeyecek miyim stres yaratıyor leaderboard." [I1-13]

"Hiç böyle bir dersle karşılaşmadığım için daha önce, çok şaşırdım ve çok strese düştüm." [I1-17]

"Beni strese sokan şey çok büyük bir belirsizlik vardı. Mesela notlandırma sistemini tam anladım dedim sonra anlamamışım. Bu deadline tamam biliyorum anladım böyle olması gerekiyor dedim ona göre davrandım ama o da farklıymış." [I1-3]

"Ödüller falan gönderiyorsunuz ya ben onları çok seviyorum. Eğleniyoruz." [I1-14]

"Reflection'larda genelde eğleniyorum kendi düşüncelerimi yazarken." [I1-8]

"I enjoyed being a part of such a different experiment." [OC1-5]

"It could be better, much more enjoyable and attention catching if it had not lost its originality through the semester." [OC1-6]

"Klasik bir ders ortamı olmayacağını anladım o yüzden beni iyi yönde etkiledi." [I1-3]

"Hep aynı olmamasını isterdim. Hani bu şekilde olacaksa bile, bütün derslerimin aynı düzen olmamasını isterdim biraz değişiklikler" [I2-3]

"Hocamız biz öğrenelim [diye uğraşıyor] puan zaten veririz işte puan alın sizin olsun. Bunlar bizi çok motive ediyor. Daha çok işte bizi böyle kısmaya çalışsa kısıtlamaya çalışsa ya da puan açısından strese soksa çok daha kötü olurdu." [I2-1]

"Genel amaç hem eğlenip hem öğrenmek. Eğleniyorsun ve öğreniyorsun bu derste de aynı şekilde oldu." [I2-15]

"İlk başta böyle çok bocaladım. Dersin amacı ne, bu nasıl bir ders, bu derste ne yapmamızı istiyor benden falan ama sonra işte guidelinlar'la filan anlayabildim". [I1-6]

"Soruları mesela biz hazırlıyoruz aa bu bizim soru muydu, benim soru muydu diye düşünüyoruz. O yüzden dikkatimizi çekiyor mesela dersten kopmamız mümkün değil" [I2-3]

"Aktif olduğumuz bir şey olduğu için gerçekten benim öğrendiğim ya da bir şey yaptığımı düşündüğüm için hani sevdiğim bir ders" [I2-3]

"Bir center'a gidip ya da insanlar bunları kullanarak neler yapmış o örnekleri görüp incelemeyi isterim." [I2-3]

"Yardım almayınca teknolijiyi çokda kendim direk yapabildiğimi zannetmiyorum" [I1-1]

"Önce hoca bize anlatsaydı sonra biz onları tekrar edip yazsaydık yorumlarımızı daha verimli olurdu" [I2-4]

"Bu reflectionların aslında bölünmüş ve çok rahat şekilde yazılabilir. Çok akademik anlamda düşünmeye zorlamıyor ama aslında aynı sonucu veren bir süreç oldu." [I2-111]

"Aşama aşama gidilmesi etkiliydi" [I1-6]

"Okuyup geliyoruz. Quest'lerı yapıp geliyoruz. Bu yüzden sınıfta onun bir tekrarını yapmış oluyoruz. Bu bazen hem iyi oluyor tekrar etmiş oluyorsun bazen de aslında ben bunu okumuştum gibisinden birşeyler olabiliyor." [I1-3]

"Online olarak yaptığımız zaman birçok şey aklınızda kalabiliyor ama sizin aklınızda kalmayıp dikkatinizi çekmeyen bir nokta sınıfta tekrar edildiği zaman böyle de bir şey vardı diye düşünebilirsunuz." [I2-5]

"Benim için çok bir getirisi olmaz diye düşünmüştüm ama ondan sonra bir öğretmen adayı olarak iyi bana iyi [getiriler] getirdiğini gördüm" [I1-5]

"Ders içeriği olarak aslında günlük hayatta çok fazla kullandığımız bizim karşılaştığımız şeylermiş ben de yeni fark ediyorum." [I1-4]

"Internette bir anket sunabilirim artık. Mesela reasearch dersimiz olacak bunu çok rahat sunabileceğim. Her zaman bir işimize yarıyacak yani bir geri dönüş alacaz". [I1-3]

"Reflection yazıyorduk ya onlarda her yazdığımda hani nasıl kullanabiliriz nasıl entegre edebiliriz diye. O soruları her cevapladığımda birazcık daha oturuyordu bir şeyler." [I2-11]

"Biz öğrendiğimiz için aktif olduğumuz için hani unutulmayacak bilgiler kalıcı oluyor genelde." [I2-3]

"Questler sayesinde yani yorum yapmamız soru sormamız sayesinde öğrendiğimi düşünüyorum. Hepsinin aklımda kaldığını düşünüyorum." [I2-1]

"Quest'lerde 4 tane bölüm var. Bunları arka arkaya bir derste yapmaktansa. Ben yaparken öyle yapıyorum ilk bir questimi yapıyorum, bir çay alıyorum geliyorum devam ediyorum." [I1-5]

"Ben çok sıkıldım dediğim anda orada bir link var açıyoruz ve saçma sapan bir video çıkıyor. Hatta biz bir şarkıyı bulup ezberlemiştik. Çok eğlenceliydi. Kendimi çok sıktığım zaman bunu izleyip neyse ya falan olduğum zamanlar oldu o yüzden rahatlatıcıydı." [I2-14]

"Arada böyle süprizler olası iyi oluyor tamam sıkılıyorsun yapıyorsun yapıyorsun bir video geliyor geri toparlanıyorsun." [I1-3]

"Çok kalabalık kaç 100 kişiden fazlayız ve oradan 10 kişilik bir liste içerisine girmek gerçekten insanı engage ediyor." [I1-5]

"Odada questleri yaparken ya da labta yaptığımız şeylere tekrar bakarken arkadaşlarımın dikkatini çok çekiyor. Edmodo'da bir şeyler paylaşırken Facebook'ta mısın diye soruyorlar. Onlar beni çok motive etti açıkçası." [I1-5]

"Progress tahtada yansıtılarak kim nerede ne yapmış diye gösterilebilir. Bir taraftan ilerleyişi hani hangi grup nerede kaç puan toplamış [gösterilebilir]." [I2-1]

"İlerleyişini görüyorsun diğer insanların [ilerleyişi] da...onlar da ekranda görünse öyle yapsak bence çok daha ilgi çekici olabilirdi." [I2-19]

"Artık testler gelince de böyle yapınca mutlu oluyorum. Yapabiliyormuşum yani diyorum." [I1-8]

"Dersin sürecinde gördüm ki, kendim olarak başarılı olduğumu düşünüyorum." [I2-1]

"Açıkcası biraz yoğun olduğunu düşünüyorum. İş yükünün biraz fazla olduğunu düşünüyorum." [I2-2]

"Diğer derslere harcadığımdan daha çok vakit harcıyorum. O yüzden biraz olumsuz düşünüyorum dersle ilgili". [I1-6]

"Ne yapacağımızı özellikle ilk başlarda ne yapacağımızı söyleseydiniz hani bunu bunu yapmanız gerekiyor deseydiniz." [I2-6]

"Bunlara tam adapte olamamış ya da daha önceden bilgisi olmayanlar için nasıl ya owl göndereceğiz bu ne demek gibi bilgi verilseydi." [I1-3]

"Puanlarımızın tek tek açıklanması kesinlikle çok iyi olur. Şunu yanlış yapmışsın, şunda eksikliklerin var şeklinde." [I1-3]

"Feedback alma olmayı beni çok etkiliyor bu derse dair. Çünkü yaptığım her şeyden feedback alabiliyorum." [I2-1]

"İkisi de [yüzyüze ve çevrimiçi] yapılmalı. Çünkü internet ortamı, ben onun bana daha faydalı olduğunu düşünüyorum. Derse geliyoruz hoca konuları topluyor. Sorularımızı soruyoruz, yüzyüze görüşüyoruz." [I2-1]

"Ortam rahat oluyor istediğin gibi çalışıyorsun, zaman kısıtlaman olmuyor. En iyi zamanı kendin seçiyorsun." [I2-1]

"Sınıf ortamımız daha üstün bence. Online ortamda ben kendim giriyorum. Kendim okuyorum. Yani yapabildiğim kadar. Biri bana öğretmiyor." [I1-15]

"Bizim fiziksel olarak evce [takımca] mücadele etmemiz, birbirimize laf atmamız için [birlikte oturmak] gerekli. Böyle karışık otursak havaya giremezdik." [I2-1]

"İlk dersimizi çok küçük bir sınıfta yapmıştık. Orda yapmaya devam etseydik birbirimizi göremeyecektik ve bu beni kötü etkilerdi. Arkadaşlarımı takip edemezdim. Yani amfiye geçmemiz iyi oldu." [I2-2]

"Etkileşimin fazla olması için sayıyı düşürmemiz daha iyi olabilir." [I1-4]

"Kalabalık oluyor sınıf bence gereğinden fazla. Sandelye çek falan. Kalabalık olması iyi değil."[I1-2]

"Edmodoyu da sevdim. Teknoloji çağındayız yani hepimiz bunu biliyoruz, eğitimde bu şekilde kullanılması çok hoşuma gitti. Zaten dersin en başında, ilk derste böyle bir uygulamadan bahsedince ben çok heyecanlanmıştım." [I2-2]

"Bizim bölümle ilişkili oyun bazında olabilirdi belki. Oyunda değiştirilebilirdi. O zaman daha kolay adapte olabilirdik sanırım." [I2-5]

"Gruplar ayrılıyor ya, oturdukları yerler belli bir şekilde tasarlanmış olabilirdi mesela kale gibi tasarlanmış olabilirdi. Ya da mesela bir karaktere bürünmemiz için kendi housemuzu yansıtan bir şey giyebilirdik." [I2-19]

"Leaderboard'a bir kere girdim düştüm. O çok hayal kırıklığıydı bizim için. Bir hafta bir karışıklık olmuş, önce vardım sonra bir baktım yokum. O epeyce hayal kırıklığıydı benim için." [I1-13]

"İlk başta biz guruplara ayrıldığımızda soruları cevaplayıp gurubun adını öğrendim geçtim. Daha sonra evde abimle bakarken bunlar Dot'taki karakterler değil mi dedi. Birden oradan anlatamaya başladı. O oyunu oynuyor olsaydım dersin ilk haftasında derse karşı daha da heyecanlanırdım." [I1-5]

"Hikayeye alışmamız biraz uzun sürdü. Hatta arkadaşlar arasında konuştuk apprentice ne ya falan diye." [I1-8]

"Hoca anlatınca not alabilirim. Hoca anlatınca daha etkili oluyor." [I1-8]

"Kendi kendime kalınca [çevrimiçi ortamda] daha iyi öğreniyorum. Ben merkezde olunca daha iyi öğrendiğimi düşünüyorum." [I2-2]

"Teknolojiyle barışık bir insan değildim. O yüzden beni çok korkutmuştu ilk başta ders. Ama dersin sürecinde gördüm ki başarılı olduğumu düşünüyorum." [I2-1]

"İlk başta biraz olumsuz düşüncelerim vardı çünkü bilgisayardan hiç anlamıyordum. Dersler boyunca değişti." [I2-12]

"Magic thing should change because there may be some students who do not like this kind of thing. Although, changing this whole class into a magical journey seems to be fun, these students do not enjoy that and may lose their interests in this lesson." [OC1-7]

"Ben Harry Poter konusunda çok ilgili değilim. Bunun için bir anket falan yapılıp atıyorum üç ay varsa her bir hafta başka birinin ilgisine ilgisine göre yapılmalı. Öğrencilerin ilgilerini anlayıp ona göre şekillendirmek güzel olur bence." [I2-13]

"Questlerde iki kapı ile karşılaşır. Öğrenci öğrenme fikirlerinden birini seçtiğinde ona göre başka bir soruyu cevaplayacaktır." [I2-8]

"Commenting should be done voluntary." [OC1-8]

"[Soru] yazmayanlar hiç yazmayabilirdi. On soru ama on soru yazmak zorunda değilsiniz denilebilirdi." [I2-10]

"Daha önce ilk dersimizi çok küçük bir sınıfta yapmıştık. Orda yapmaya devam etseydik birbirimizi göremeyecektik ve bu beni kötü etkilerdi. Arkadaşlarımı takip edemezdim. Yani amfiye geçmemiz iyi oldu." [I2-2]

"Çok böyle hani sıkı fıkı değiliz ama gene de biz hani yakın arkadaşlardık. Belki olmuş olabilir [başarımızda]." [I2-1]

"Diğer gruplar kendi aralarında haberleşip sunumlara felan çalışabiliyorlardı ama biz kendi aramızda hiç bir şekilde haberleşemiyorduk ki görüldüğü gibi de hep sonuncu oluyorduk." [I2-6]

"Çok böyle hani sıkı fıkı değiliz ama gene de biz hani yakın arkadaşlardık. Belki olmuş olabilir [başarımızda]." [I2-1]

"(Gruplar) rastgele belirlenmedi. Hangi room'da olacağım, bir quiz yapıldı ona göre belirlendi. O yüzden iyiydi. " [I1-6]

"Gruplandırılmamız ilk başta test şeklinde oldu ya. Bu güzel. Herkes yakın arkadaşıyla ya da mecbur kaldığı kişilerle olmadı, karışık bir grup oldu." [I2-3]

"Göknur Hoca yeniliğe açık bir insan olduğu için onun karekterine de oturmuş. Espirili ve yenilikçi, bence yönteme uygun." [I1-3]

"Göknur Hoca'nin eğlendirici bir tarafı vardı bence o çok önemliydi." [I1-22]

"Hocayı seviyorum, çok rahat hoca. Karakteri yönteme uygun." [I1-21]

"Hocayla iletişime geçemezsem o derse ilgi duyamıyorum." [I2-4]

"Burada bir etkileşim var hocayla. Yüzyüze konuşuyoruz duygu düşüncülerimizi rahat rahat paylaşabiliyoruz." [I1-6]

"Sınıf içerisinde daha iyiyiz, en azından hocanın otoritesini ben hissedebiliyorum." [I1-4]

"Mail yoluyla ya da sınıfta hep hoca vardı. Snuçta bir etkinliği kesinlikle vardı." [I1-3]

"En başta ev seçmek için bir anket doldurduk online sistemde. Burada doldurmadan yapanlara da rastladım ben. Yani direkt rastgele bir eve giriyor. Bu nedenle sınıfta yapılsaydı iyi olurdu." [I1-12]

"Rahattım, çünkü ihtiyacım olduğu zaman destekleneceğimi ve yardım alacağımı biliyordum." [I2-11]

"Her şekilde hocadan yardım alıyorduk konuyla ilgili bu da bence çok güzel bir şeydi." [I2-16]

"Leaderboard'a bir kere girdim düştüm. O çok hayal kırıklığıydı bizim için. Bir hafta bir karışıklık olmuş, önce vardım sonra bir baktım yokum. O epeyce hayal kırıklığıydı benim için." [I1-13]

"Önce arkadaşlarımın yazdığı diğer yorumları da inceliyorum nasıl yazmam gerekiyor diye." [I1-5]

"Beraber yorum yapıyoruz, insanların düşüncelerini görebiliyorum. Benim düşünmediğim çok farklı bir şey düşünmüş olabiliyorlar ve bu beni başka bir yere götürüyor bu yüzden de bu dersi çok seviyorum. Bir çok şey öğreniyorum farklı insanların düşüncelerini aynı yerde görebiliyorum."[I2-1]

"Edmoda bize biraz yabancı olduğu için uğraştırıyor." [I2-19]

"Quest'te part'lar vardı ya mesela ilk hafta 12 part vardı. Bazıları bir part'ı tıklayıp sadece ilk slaytı görmüş ama altta hani 1 den 9'a kadar part oluyor, bunu görmemiş. Bu korkuttu biraz." [I2-11]

"Facebook filan da kullanıyoruz orada daha özgür olduğumuzu düşünüyoruz. Hani bu tarz sitelerde de daha özgür olduğumuzu düşünüyorum bence." [I2-3]

"Mesela o yorum yazdığımız yer daha renkli olabilir." [I2-9]

"Edmoda'yu telefon uygulamasında açamıyorum. Edmodo questlerini telefonda da yapabilsem çok güzel olur." [I1-10]

"Questleri istediğin şekilde istediğin yerden yapabiliyorsun. Bu açıdan birçok insana hitap ettiğini düşünüyorum." [I2-1]

"Edmodo'dan ziyade ders için specific başka bir site falan olursa tamamen oyun dünyasındaymışız gibi hissederdik." [I2-5]

"Gruplar ayrı şekilde puan toplayıp grupların da ayrı liderleri olabilirdi. Atıyorum, siz kapıdasınız ya da biz Evereste girdik bile çoktan şeklinde gösterilebilirdi Edmodo'da." [I2-9]

"Edmodo sitesinde sosyal ağ yeri olsa girenler online olarak gözükse face gibi mesela oradan da konuşup şunu ne yaptın bunu ne yaptın direk soru sorup cevap gelmesini bekliyorsun ya orada online olan birine sorup yine böyle etkileşim yardımlaşmayı sağlayabiliriz bence. Böyle online direk konuşabilmemizi sağlayan bir şey gerekli bence." [I2-19]

"Edmodo'daki questleri unutuyordum. Orada, herkesin unutmamasını sağlayacak, hatırlatacak bir şey olabilirdi." [I2-15]

"Bildirimler var ya onlar hoşuma gitti." [I1-8]

"Questlerde bu kadar ayrıntıya bogulmamalıydık bence." [I1-2]

"Questlerın o yönünü seviyorum, özet şeklinde olmalarını." [I1-7]

"Mektubu anlamadım, çok böyle havada kaldı. Çok clear gelmedi. Anladığım tek şey cihaz getirmem gerektiği ve kızlarda dediki hani bunu anlasan yeter. Mektup bana çok bir şey ifade etmedi açıkcası. Mobil cihazla gelin deseniz de bende aynı etkiyi yaratırdı heralde." [I2-1]

"[Ben tasarlamış olsam] videoları koyardım Quest'e onlar eğlenceli." [I1-2]

"Questleri daha interaktif hale getirirdim böyle şey gibi ezber gibi bilgiyi okuyup cevap vermek gibi." [I1-6]

"Handoutlar olabilir konuyu özetleyen. Online da var elimizde bir şekilde not alıyoruz ama sanki handout olabilir konuyu kısacık özetleyen." [I2-1]

"Somut olabilirdi mesela soyut madalya bir şey kazandırmıyor. Mesela bir hediye olabilir." [I1-6]

"Mario geliyor aklıma. Karşına mantarlar falan çıkacak mesela, onun içinde soru çıkacak orada cevaplayacaksın yani bildiğin oyun gibi olabilir [questler]." [I2-2]

"O konuyu tamamlayınca o bölümü tamamlayınca başka bir yere gitme fırsatı bulsun bir de orada başka bir şey öğrenelim." [I2-8]

"Süreç tamamlandığında daha farklı bir şu aşamayı olsaydı. Şimdi sıra bunda, onu geçemeden diğer aşamaya giremiyorsun gibi." [I2-15]

"Mashroom challenge'lerdaki Barney Stinson detayı çok tatlıydı. Gerçekten çok tatlıydı, yapacağım tutuyordu." [I2-15]

"Bir iki hafta sonra geliyordu puanlar. Neyden ne aldığımı anlamıyordum, şaşırıyordum bu neyin puanı, ben böyle bir şey yapmış mıydım diye. Böyle bir karışıklık oldu o yüzden neyden ne aldığımı tam olarak bilmiyorum. Hemen feedback verilmeli bence." [I1-6]

"İlk başlarda bu puan meselesini hiç anlamadım. O yüzden, düşüyor ya bir yerlerden puanlar bir strese girdim. Daha açık olmalıydı." [I2-4]

"Feedback alıyoruz, iyi yaptın biraz daha iyi yapabilirsin çok iyi yapmışsın iyi gidiyor ya da bu sefer kötü yapmışsın daha iyi çabalayabilirsin gibisinden. Bunları gördüğüm zaman evet işte ben bunu yapmışım diyebiliyorum." [I1-3]

"Sınıfta şu şekilde şu pozisyonda bulunuyorsun, bireysel olarak şöylesin diye dönütler alsak iyi olurdu." [I1-4]

"Sizin yorumlarınız beni mutlu etti, yorumlarımıza yaptığınız yorumlarınız." [I2-2]

"Uzun zamandır buralarda yoksun çırak diye söylennmesi derse gelmedin denmesinden kesinlikle iyi." [I2-5]

"[Questlerde] sesli feedback alabilsek." [I2-19]

"Edmodo'ya yükleyip mesela birbirlerinin konuşmalarına yorum yapmalarını isteyebilirdim. Bu konu hakkında siz ne düşünüyorsunuz veya işte arkadaşınızın düşündüğü yanlış bir şey var mı, buna itiraz edin ya da ne bileyim katkıda bulunun gibi şeyler kullanabilirdim." [I1-3]

"Mushroom challenge'lar bence biraz distract ediyor gibi." [I1-2]

"Slayt'ta okurken bir yerde böyle ilgin kayboluyor. Orada bir challenge çıkınca böyle bir doğruluyorsun." [I2-1]

"Quest'lerde dikkatim dağılıyorsa bir anda yönelebiliyorum [challenge'larla]." [I1-3]

"Bir eşitlik olduğunu düşünmüyorum gruplar arasında. Hatta hangi grup olduğunu bilmiyorum, benim biraz rahat olduğunu düşündüğüm arkadaşım vardı ve biz sosyal adamlarız bizden bunu beklemeyin artık diyordu." [I2-16]

"60 kişinin 60'ı da yapmıyor challenge'i o yönden biraz sıkıntılı. Belki daha fazla ev olsa. Ona bir çözüm bulunsa daha iyi olur." [I1-12]

"Bir yarışma ortamı gibi bir şey vardı ama aynı zamanda yardımcı da oluyorduk yani iyiydi." [I2-2]

"Yarışmalar, iş birliği yapmamız falan çok eğlenceliydi gerçekten onu sevdim." [I2-20]

"Kullanmayacağım şeyler daha fazla rekabet oyunları olurdu. Çünkü ben kendim rekabeti çok fazla sevmiyorum." [I1-11]

"Beraber yorum yapıyoruz, insanların düşüncelerini görebiliyorum. Benim düşünmediğim çok farklı bir şey düşünmüş olabiliyorlar ve bu beni başka bir yere götürüyor bu yüzden de bu dersi çok seviyorum. Bir çok şey öğreniyorum farklı insanların düşüncelerini aynı yerde görebiliyorum." [I2-1]

"Challenge'larımızda hemen böyle bize feedback vermeniz mesela özellikle o çok hoşuma gidiyordu." [I2-1]

"Değerlendirmede biz yorum yapıyoruz aslında bir şekilde ben neyi bildiğimi ölçmüş oluyorum. Orada yorum yaparken de bir reflection vermiş oluyorum bu benim değerlendirmem oraya katılmış oluyor onun içinde iyi oluyor." [I2-11]

"Ben yorum yazarken de sınıftayken de şunu çok gördüm kendimde: ben şurada bunu yazmıştım hocanın dediği şey şuydu falan diye bence birbiri ile çok uyuntu var benim kafamda bunlar çok fazla geçti self assessment 'a çok fazla yatkındı." [I2-5]

"Küçük challengelar geliyor ya arada hani. Onların cevaplarını slaytlarda ben bazen bulamıyorum. İnternetten araştırdığım zamanlar oluyor." [I2-1]

"Kendi karakterimizi görüp, bir yere giriyoruz savaş alanı mesela diye düşündüm. Orada mesela bir kapıdan girince direk soru gelse onu cevaplasam, hani oradan çıkmadan onu cevaplaman lazım, çıkıyorsun ama ilerleyişini görüyorsun diğer insanların da… onlar da ekranda görünse öyle yapsak bence çok daha ilgi çekici olabilirdi." [I2-19]

"Canlandırma yapılabilirdi gruplar arasında mesela bir konu hakkında. O konuyu canlandırma amaçlı tiyatro yapılabilirdi." [I2-10]

"Questleri koyuyorsunuz, baya süre veriyorsunuz. O açıdan bir sıkıntı yoktu, o yüzden kendimi kısıtlanmış hissetmedim." [I2-2]

"Açıkcası bazen beni gerebiliyor bu challenge olayları çünkü iki gün içerisinde challenge'I bitirmemiz gerekiyor." [I1-1]

"Reflection yapmak önemli ama bu kadar her questen sonra reflection yapın demezdim diye düşünüyorum." [I1-2]

"Tekrar tekrar yorum yazmak, ben aynı şeyi tekrar yapmayı sevmediğimden dolayı. Her hafta bir reflection yazmak biraz benim için biraz sıkıcı bir iş." [I1-3]

"Ben oyundaymışım gibi hissedemedim çok fazla. Sebebine gelince, hikayenin tamamı çok net göremediğim için olabilir." [I1-3]

"Gelen eposta normal resmi şekilde yazılmamıştı. O insanın dikkatini çekiyor motive ediyor." [I1-3]

"Burada bir süreç var. Biz de öğreten kişi durumuna ulaşabiliriz, master olabiliriz. İyi bir senaryo var, iyi bir kurgu var." [I1-9]

"Bize ne diyordunuz, apprentice. Bu çok hoş. Bize students da diyebilirdiniz. Bu oyunun gerektirdiği bir şey belki ama bu hitap şekliniz bile bence bir şekilde etkiliyor." [I2-1]

"Sanırım bu birinci olma şekli bizi çok rahatlattı. Birden biz böyle nasılsa yapıyoruz falan tarzında olduk." [I2-10]

"Ben bir kere girmiştim leaderboard'a ve onun devamında daha fazla girebilmek için bir şeyler yapmaya çalışmıştım." [I1-8]

"Lider tahtası rakip olmayı sağlıyor birbirimize sınıf ortamında. Yardımlaşıyoruz ama biryerde iş böyle artık yarışa giriyor." [I1-4]

"Liderboarlardan da pek hoşlanmadım. Çünkü rekabet ortamı pek hoş değil bence." [I1-2]

"Ben şu an iki kere girdim leaderboard'a üçüncüyü merakla bekliyorum. Ben orda yer almak istiyorum. Ödülü kullanırım kullanmam derslere zaten geliyoruz da. Bu beni teşvik ediyor, bunu çok beğeniyorum." [I2-1]

"Gruplar ayrı şekilde puan toplayıp gruplarında ayrı liderleri olabilirdi." [I2-9]

"Bizim ev hep üçüncü oluyoruz genelde şimdi dördüncü olduk. Bizim evde 60 kişi var ve 60 kişinin de yorum yaptığını göremiyorum açıkçası. Herkes yapmıyor. Ben de herkese push yapamam." [I1-12]

"Hoca bir soru sordu, herkes sessizlik içinde, kim bilecek ben bilmiyorum inşallah bana bakmaz falan değil de hani ben de bileyim bir tane inci alayım gibi bir ortam vardı." [I1-5]

"Leaderboard'ların sonucunda işte ne biliyim bonus pointler gelebiliyordu ya da dersten derse gelmesek de oluyordu. Bunlar benim hoşuma gitti." [I1-3]

"Somut olabilirdi mesela soyut madalya bir şey kazandırmıyor. Mesela bir hediye olabilir." [I1-6]

"En sonda bir şey kazanacağız heralde. Sertifika ve ödüller. Öyle bir şey beklerdim direk." [I2-1]

"Pearl dağıtımları ilk başta güzel gidiyordu. Ondan sonra hoca önüne gelene verdiği için pek önemli olmadı." [I1-19]

"Ben şunu beğeniyorum e-maillerde, işte alsana bir butterbeer." [I1-2]

"Badgeler kalabilir çünkü badgeler eğlenceli, insanı güldürüyor." [I1-2]

"Bir kere bana Iron Man düştü [badgelerde] oo dedim, yapabiliyormuşum. Bir gaz verdi." [I2-5]

"Rozetler bana böyle güven veriyor." [I1-4]

"Badgeler bir geri dönüt kazandırdı." [I1-3]

"Badgeler de o süreçte ne kadar ilerlediğimizi gösteriyor."[I1-4]

"Madalya almamız çalışmalarımızın karşılığında. Kendimizi görüyoruz hangi alanda iyi, hangi alanda kötü olduğumuzu. Onlar iyiydi kendimi değerlendirmemi sağladı." [I1-6]

"Yorumlarım iyi olduğunu düşünsem bile badgelerde biraz daha iyi yapabilirsin gibi şeyler olduğu için demek ki bir şeyde eksiğim var diye düzeltmeye çalışabilirim." [I1-3]

"İnsan sürekli o rozeti kazandığını görmek istiyor." [I1-10]

"Sınıf ortamında bile bütün grup üyeleri katılmıyordu cevap verirken. Yani tam bir grup gibi değildik sanırım." [I2-2]

"Anime mi denir yani en başta hani grupların simgesi var ya o ilgi çekici. Verilen isimler de mesela Centaurs filan bunlar dikkat çekici şeyler." [I2-3]

"Çok konuşmadığım insanlarla bile konuştuğum olmuştu." [I2-7]

"Farklı yerleden puan almak çok güzel. Çünkü yaptığımız her şey önemli bence, derse katılmamız bile önemli bir şey. O yüzden bu daha önemlidir gibisinden olmamalı." [I1-2]

"Sınav sistemine karşı bir insanım. Anlık bir şeye bağlı sınav. Bir saatlik sınava giriyoruz her şey olabilir: önceki gece çalışamamış olabiliriz. Ama bu şekilde farklı farklı puan almamız oraya hani yorum yapamayan bir kişi ya da hani sınıfça toplum içinde konuşamayan quest sorusu sorulur ya da oradan puan toplar. Yazısı iyi değildir ama teknoloji ile arası iyidir labtan puan toplar. Herkesin farklı farklı puan toplaması bence her gelişim alanına yönelik şeyler vardı. Dediğim gibi hem bireysel çalışması mesela sen dedin ya hani benim bireysel çalışmam iyi değil falan diye ama ben daha rahat çalışıyorum mesela orada toplum içinde dinlemekten çok önüme gelen şeyi okuyarak daha rahat anlayabiliyorum." [I2-1]

"Sınıfta çok iyi olanlar var. Onların olduğu gruptaki kişi kötü de olsa o puanı alıyor, mesela bu beni çok rahatsız ediyor." [I2-4]

"Bununla da ilgili demek ki bir birikimim varmış aldığım puanları ben o şekilde değerlendiriyorum." [I1-4]

"Kazanma durumu da beni aşırı derecede mutlu etti." [I2-1]

"Bilgi yarışması dışında bir derste sessiz sinema gibi bir şey yapmıştık. Onda da eğlenmiştik ama formatın dışına çıkmamıştık. Bu şekilde farklı uygulamalar eklenebilir." [I2-17]