UNDERSTANDING GAMIFICATION: UTILIZING GAMIFICATION AS A TANGIBLE TOOL FOR ORGAN DONATION CAMPAIGNS

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by
Ali ALSAMAREI

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We approve the thesis of **Ali Al-SAMAREI**

Examining Committee Members:

Asst. Prof. Dr. Ayça Tunç COX
Department of Industrial Design, İzmir Institute of Technology

Prof. Dr. Zafer ÖZDEN
Department of Visual Communication Design, Ege University

Prof. Dr. Nuri BAŞOĞLU
Department of Industrial Design, İzmir Institute of Technology

19 December 2016

Asst. Prof. Dr. Ayça Tunç COX
Supervisor, Department of Industrial Design
İzmir Institute of Technology

Prof.Dr. Önder ERKARSLAN
Head of the Department of Industrial Design

Prof. Dr. Bilge KARAÇALI
Dean of the Graduate School of Engineering and Sciences

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ABSTRACT

UNDERSTANDING GAMIFICATION:
UTILIZING GAMIFICATION AS A TANGIBLE TOOL FOR ORGAN DONATION CAMPAIGNS

Ever more increasingly, play and fun are not meant for entertainment only, but also began to be embedded within the daily life routines. Many services and products borrowed game-like systems from entertainment to attract customers. Furthermore, behavior economics see in that also a way to motivate people and change their behavior. The term commonly used in academia and in the professional field in order to describe the process of using game elements in non-gaming context is “Gamification”. Game elements such as point, goal, rewards, level, badges, story, etc. can be implemented in a product to induce fun experience for the users and encourage them to come back/continue using the product or the service. However, this is not always a successful endeavor; to guarantee success, gamification should be understood profoundly; why and when it fails, how it works. This constitutes the first part of this study.

Most of the well-known gamification examples are digital and it is hard, if not impossible, to find pure tangible gamification. This reveals the second part of this study which examines the ways of converting digital gamification elements into a tangible product. Few marketing campaigns used gamification to attract consumers. Having been inspired by such examples, I thought that awareness campaigns can utilize gamification as a tool to gain and increase support for their cause. To provide insights on its effectiveness, an experiment was conducted in this study. The experiment aimed at comparing tangible gamification and a usual organ donation campaign tool (a brochure). Such experiment can help understanding the setting where gamification can be used and how the users perceive such products. All in all, this study can introduce gamification to designers and help them to understand the ways of implementing it into their design processes.

ÖZET

OYUNLAŞTIRMAYI ANLAMAK: ORGAN BAĞIŞI KAMPANYALARI IÇIN ELLE TUTULUR BIR ÜRÜN OLARAK OYUNLAŞTIRMANIN

Giderek artan biçimde oyun ve eğlence yalnızca eğlence amaçlı olmaktan çıkıp günlük yaşam rutinleri içine yerleştirilmeye başlandı. Birçok hizmet ve ürün, müşterileri çekmek için eğlenceden oyun benzeri sistemler ödünç aldı. Ayrıca, davranış ekonomisi de bunu insanları motive etmenin ve davranışlarını değiştirmenin bir yolu olarak görmektedir. Akademik ve mesleki alanda, oyun unsurlarını oyun dışı bağlamda kullanma sürecini tanımlamak için yaygın olarak kullanılan terim "oyunlaştırma" (gamification) dır. Puan, hedef, ödül, seviye, rozet, hikaye vb. gibi oyun öğeleri, kullanıcılara eğlenceli bir deneyim yaşatmak ve ürün veya hizmeti kullanmaya devam edip/geri dönmeleri için onları teşvik etmek amacıyla bir üründe kullanılabilir. Fakat, oyunlaştırma her zaman başarılı bir girişim değildir. Başarıyı garantilemek için oyunlaştırmayı derinlemesine anlamak gerekmektedir; neden ve ne zaman başarısız olduğu, nasıl işlediği v.b. hususlar analiz edilmelidir. Oyunlaştırma kavramının tartışılması çalışmanın ilk kısmını oluşturmaktadır.

İyi bilinen oyunlaştırma örneklerinin çoğu dijitaldir ve saf somut bir oyunlaştırma bulmak, imkansız değilse de, oldukça zordur. Tüketicileri cezbetmek için birkaç pazarlama kapmanyasının oyunlaştırmayı kullandığı görülmektedir. Bu örneklerden ilham alarak ben de farkındalık kampanyalarının, oyunlaştırmayı, amaçlarına ulaşmalarını sağlayacak desteği kazanma ve artırmada bir araç olarak kullanabileceklerini düşündüm. Bu amaçla, aracın etkinliğini ölçmeyi hedefleyen bir deney tasarlanıp uygulanmıştır. Deneyin temel hedefi, geleneksel organ bağışı kampanya araçlarından broşür ile elle tutulur oyunlaştırılmış ürünü karşılaştırmaktır. Böylelikle, oyunlaştırılmış ürünün kullanıldığı ortam ve kullanıcıların ürünü nasıl algıladıkları anlaşılacaktır Son tahlilde, bu çalışma, tasarım süreçlerinde oyunlaştırmanın nasıl kullanılabileceği konusunda tasarımcılara yol gösterici olacaktır.

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CHAPTER 1

INTRODUCTION

Many of us perceive games as a way of entertaining and having fun, maybe to relax and release some pressure caused by daily life chores. Sometimes we create our own games from objects that surround us with our family and friends. Ever increasingly, some individuals try to utilize games for purposes other than their entertainment value. This technique has various terms or names and has been used in a variety of fields; for example, in the field of design, advertising, marketing, business and services design. “Gamification” is one of these terms that is being used in this context, more frequently in recent years, especially in the academia.

There are many aspects related to gamification. Some are confined with the hype of gamification and some see it as falsehood. Gamification has advantages and disadvantages, though it all depends on the implementation. Bearing both sides in mind, this study will focus mainly on exploring gamification from the perspective of users’ satisfaction. It will expose ways that gamification can be utilized to bring the benefit to both the users and the businesses.

1.1. Problem Definition

The use of game-like systems in many different services and products has noticeable increased in the last decade. This tendency is especially discernible in the digital realm. If a company wants to use or include game-like elements within their products, they can consult certain companies that offer product development with game-like experience to their clients[1]. If one looks closely at this increasing demand of game-like experiences, one will notice it is mostly utilized in the digital medium and human-computer interaction (HCI) products. This can be due to the fact that game-like systems

[1] For example: badgeville.com, a website that offers gamification services. This website helps various clients to gamify their businesses.

need to track their users to give them a better experience and it is easier to do that over the internet or having a local digital database (Deterding, Dixon, Khaled, & Nacke, 2011; J. Hamari, Koivisto, & Sarsa, 2014). This constitutes the first issue that this thesis will try to explicate. Understanding the game-like systems or "Gamification" (the common term used for it), and its possibility to be utilized not just digitally but as tangible products as well; this means going back to the basics. In this respect, one of the purposes of this study is to investigate the use of gamification across different media (Altarriba, 2014).

Understanding gamification is also essential for other reasons. The increasing use of gamification does not mean that every system is a winner design that brings fortune and benefit for all. Some business failed at delivering an interesting game-like experience for the product or the service they offered. So, it is important to understand gamification well, so that it is possible to end up with a beneficial design for all. Therefore, understanding when and why gamification fails proves crucial.

Gamification is generally used to motivate people. Understanding gamification will help designers gain more knowledge to be invested in designing playful products whereby using fun and entertainment can motivate people. This can be particularly helpful for awareness campaigns. Most of the time awareness campaigns use common tools to advocate their messages such as brochures or posters … etc. Therefore, using a gamified tangible tool to conduct the message of an organ donation campaign might yield interesting and significant results.

1.1.1. Research Questions

This thesis had two questions to begin with, but ideas were developed along the way and some sub-questions emerged over time while reviewing the literature. Accordingly, the main research questions have been:

1. How gamification can be utilized to design a tangible playful tool for awareness campaigns?
2. How individuals will perceive a gamification product when related to awareness campaigns?

Additional questions that need to be answered are:

- What is gamification and how it works?
- What is the aim of using gamification?
- How and when it fails?
- How gamification can be utilized when designing tangible playfulness?
- When tangible gamification is used as a campaign tool how it differs from other common tools for campaigns?

1.2. Aim of Study

The main purpose of this study is to understand the concept of gamification comprehensively and investigate how gamification can be used to motivate people. Besides, it aims at exploring new tools that can be used to enhance and speed up the design of playful products. Ultimately, it strives to provide a way of converting digital gamification into tangible products. My initial research revealed that gamification has been used in digital marketing campaigns, and following from that, this study takes awareness campaigns as its medium. Lastly, it is hoped that this thesis will provide a foundation for researchers and designers who do not know much about gamification and its uses to build their own research and practice on.

1.3. Methodology

In order to understand gamification and how and where it is used, literature review is conducted surveying books, conference magazine/papers and research papers. Beside that, a few video lectures given by gamification gurus[2] have been helpful to grasp knowledge about the subject. Most of these references directly handle the subject

[2] An example of such lecturers is Kevin Werbach, an associate professor at the University of Pennsylvania, and he gives lectures about gamification at www.coursera.org.

gamification. In addition to gamification, other related subjects such as interaction design, motivation and behavior change have been studied.

In order to answer the research questions an experiment was conducted. Awareness campaigns were chosen as an example for the experiment. Since the beginning of this study the idea of creating an awareness campaign was always in mind. But the actual subject of it was not clear. Having addressed different topics and studied their possibility, one awareness campaign has come to the fore: “Organ donation campaign”.

The experiment serves two purposes. One is the process itself of creating the prototype for the experiment; to understand and learn from the translation of digital gamification to tangible gamification. And the second is to understand how tangible gamification will differ from common campaign tools and how people will perceive gamification. To this end, a brochure was used to contrast with the gamification prototype, and then a questionnaire was used to analyze the effectiveness of the two.

1.4. Outline of The Study

This thesis is organized in five chapters:

Chapter 1 is the introduction, and in brief, it describes what this study is about, its problems, questions and methods. Moreover, the aims and the objectives of this thesis are explained in this chapter.

Chapter 2 is about the concept of gamification and examination of different categories. It provides a discussion about play and games as well as the differences between them. Then it moves into explaining gamification in detail, and the reasons why and how gamification is used. Also a few topics related to gamification such as motivation and flow will be discussed in this chapter. This chapter also provides views against gamification and when gamification can fail in order to draw a comprehensive view of the subject.

Chapter 3 is divided into two topics; game elements and player types. The first topic elaborates upon game elements and few of the common elements are covered in

more detail. The second topic will list different players (users) types who the gamification system can encounter. At the end, an interpretation of the given types is presented based on the researcher's analysis.

Chapter 4 is the methodology chapter, meaning that the experiment, the analysis and its results will be discussed here. Besides, it presents a discussion regarding its limitation and about how the experiment can be enhanced in the future.

Chapter 5 is the conclusion chapter. It gives a summary of the study and the findings. Moreover, it includes suggestions for further studies.

CHAPTER 2

AN INTRODUCTION TO GAMIFICATION

> When people are in a good mood, they're more creative about problem solving, and they can work through points of confusion more effectively. *(Anderson, 2011, p. 58)*

Human beings love fun and retreat to it when their daily routine has less pleasure to offer. Fun is a familiar concept for everybody and it is one of basic human needs (Figure 1). Different people experience fun variedly but we can observe the pleasure derived from having fun in children the best; they show their fondness in fun through playing without limitations. (Altarriba, 2014; Huizinga, 1944, p. 3)."We are also now coming to understand that we are hardwired to play, with researchers increasingly discovering the complex relationships between our brains, neural systems, and game play"(Zichermann & Cunningham, 2011, p. ix).When we add the elements of fun to a product that people will interact with, it helps to give a kind of humanly nature characteristic to these products and endows them with an ability to amuse. Also, fun brings about humor, which actually can function to release tension and anxiety in various situations. People can perform complicated tasks when they feel happy[3] and be more creative about solving problems (Anderson, 2011, p. 61; Isen, 2001). Play puts people in a special mental state that has its own rules, which are not normally associated with a regular state. It is noteworthy that fun and play motivate people intrinsically and engage them differently than an extrinsic motivation such as work. It is embedded in human psychological needs and behavior patterns (Altarriba, 2014, p. 35; Consalvo, 2009, p. 409; Ryan & Deci, 2000, p. 70).

[3] Feeling happy is linked to the release of the hormone "Dopamine" which is a neurotransmitter released into the brain; it is correlated with reward and pleasure (Anderson, 2011, p. 61; Isen, 2001).

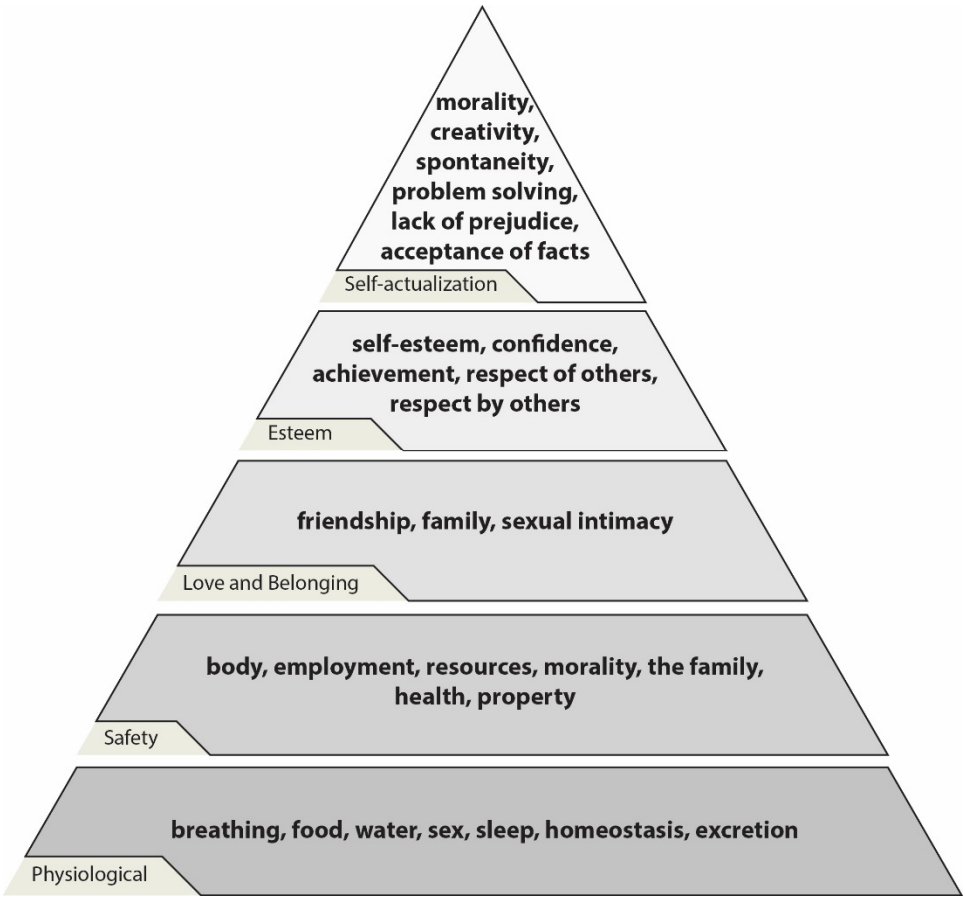

Figure 1. Illustration made by the researcher to represent "The hierarchy of needs" by Abraham Maslow

Volkswagen understood the psychological impact of fun on humanbeings and used it in a campaign to motivate people to do things that they normally would not. They called it *The Fun Theory*[4]. They believed and argued that by making an activity more fun they might motivate people to do it. The website includes many videos about the social experiment showcasing this idea. Also a TV show from the national geographic channel called *Crowd Control*[5] went on a quest to test the idea of using fun and games to motivate people; they discovered that some cases help people remember certain things better. Said social experiments demonstrated that fun, play and games helped people's behavior to change, even if slightly, or in that instant, around the product. Both *The Fun Theory* and *Crowd Control* exemplified that people are more engaged with the product and willing to do the activity that the product announces when there is a fun, play or game element in it. Mark LeBlanc is a game designer and researcher who produced "The 8 kinds of fun" list. According to him, there are eight

[4] http://www.thefuntheory.com
[5] http://channel.nationalgeographic.com/crowd-control/

pleasures that player will get from playing games. He mentioned this in a MDA framework (2004)[6] and made a website for it[7]. This list consists of eight attributes that spark fun, these are: Sensation, Fellowship, Fantasy, Discovery, Narrative, Expression, Challenge, and Submission.

Zichermann in his book *Gamification by Design* states there are four reasons why people might play. He argues that people play because of 1) the mastery that the game or application offers, or 2) simply to relax and 3) have fun. But also many people play because of 4) the socialization potential a given game or application presents (Zichermann & Cunningham, 2011, p. 20). A product that provides fun and play will provide their users with enjoyable emotions. The product that gives a wide range of emotions will motivate users and might enhance the self-motivation to use the product (Arrasvuori et al., 2011). Norman argues that positive emotions are important to evoke people's curiosity and encourage them to learn new things (Norman, 2005, p. 19).

In the 1950s D.E. Berlyne proposed a theory for human curiosity. It shows different types of curiosity. Anderson in his book *Seductive Interaction Design* (2011) illustrated this theory by two axes (Figure 2). The first axis is between perceptual and epistemic curiosity. Epistemic curiosity is raised by complex and conceptual ideas that motivate one to ask a question and undergo experiments to gain knowledge. Perceptual curiosity is roused by senses stimulation (visual, sound…), it motivates the person to seek information through these senses. The other axis is between specific and diversive. Specific is motivated by both epistemic and perceptual curiosity. It involves carefully examining novel stimuli to gain new information, can be arouse by situations with rich stimuli. On the other hand, diversive is activated when there are fewer stimuli with the feel of boredom. It allows the person to search for something new and interesting(Collins, Litman, & Spielberger, 2004, p. 1128). Anderson argues that delightful, playful interaction can fall under perceptual-specific curiosity (2011, p. 84).

[6] MDA framework is (Mechanics, Dynamics and Aesthetics), please see p.45 for more detail.
[7] http://8kindsoffun.com/

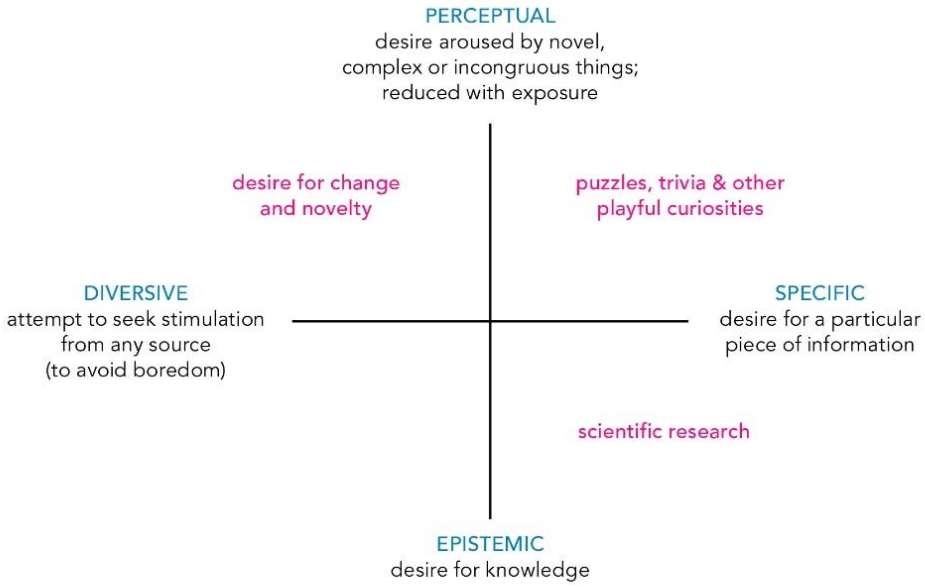

Figure 2. Curiosity matrix
Source: (Anderson, 2011, p. 85)

Moreover, Lazzaro mentions about five properties that will be strengthened by these emotional products: Enjoyment; focus; decision-making; performance; and learning. Lazzaro argues that not only the visual of the product can be used to achieve this but also the interaction with the product can provide enjoyable experience for the users (2009, p. 157). It is suggested that adding goal, mystery and some other game elements to the interaction can help rise the playfulness experience in a product which is not specifically meant for entertainment (Garris, Ahlers, & Driskell, 2002, p. 443). Costello and Edmonds describe that play behavior can also rise while exploring a product. "Through exploration the unfamiliar becomes familiar and it is then that play occurs… the player switching back and forth between the explorative goal -what can this object do- and the playful goal -what can I do with this object-"(2007, p. 77).

However, regardless of the amount of fun and play that the product offers, people's engagement with it and their interpretation might be unpredictable, especially when it comes to products for the mass use. Fun and play could be appropriate or unsuitable depending on the environment the product will be in. "Humor does not always translate well across cultures"(Anderson, 2011, p. 56).

On the other hand, it is mentioned in various sources (Mitchell & Savill-Smith, 2004, p. 7; Susi, Johannesson, & Backlund, 2007, p. 8) that games could affect the health negatively especially if one plays for a long period of time. Headaches and mood

swings are among common problems. Also it might cause psychological problems such as depression and social isolation. Aggression and negative behavior could be a side effect of violent games. Still, it should be stressed that games have also positive effects, they could improve some skills of the player. Strategic skills, learning skills and enhanced visual attention can be given as examples. Games can also be seen as a safe way of releasing frustration. To know more about engagement through play and games, a definition should be presented first.

2.1. Definition of Play and Games

2.1.1. Play

Play as an activity is defined in many sources as adding pleasure and fun to a product, game design or a social behavior. Costello and Edmonds discus play and pleasure through an interaction design perspective. They look at different definitions and characteristics of play. A person who plays will have different kinds of experiences, one of which is a pleasurable feeling such as joy, delight and amusement. Put simply, "it is free movement within a more rigid structure"(2007, p. 77). People engage in a play activity because it gives them fun and pleasure. Those who play do not feel the pressure of playing, they just do it willingly. Play satisfies the need of being with others in a social surrounding, and the curiosity to discover unknown terrains of knowledge. Play activities do not have rules, and play is a free form which can be performed spontaneously (Knaving & Björk, 2013).

An interesting framework to mention and related to play is Costello and Edmonds' framework about emerging feeling from play; it is called "13-pleasure framework" (2007) . This framework focuses on the pleasurable feeling that the users feel while in an activity. It can be used to find a way to afford play through activity. Costello and Edmonds develop this framework after examining different philosophers' and psychologists' perspectives. However, this framework is made for designing and evaluating interactive artwork, but it can still be used whenever there is design for emerging play activity in a product (Knaving & Björk, 2013). These thirteen pleasure

categories are[8]: Creation, Exploration, Discovery, Difficulty, Competition, Danger, Captivation, Sensation, Sympathy, Simulation, Fantasy, Camaraderie and Subversion.

There are other frameworks based on this thirteen-pleasure framework such as PLEX "Playful experience" framework. This framework consists of 22 playful experiences. It is meant to understand playful features of user experience and design for it. This framework is based on Costello and Edmonds' framework "13 Pleasure framework" (2007). PLEX framework made some changes to Costello and Edmonds' framework and added new categories and shifted the focus of the framework from pleasure to playfulness (Arrasvuori et al., 2011). These 22 playful experiences are[9]: Captivation, Challenge, Competition, Completion, Control, Cruelty, Discovery, Eroticism, Exploration, Expression, Fantasy, Fellowship, Humor, Nurture, Relaxation, Sensation, Simulation, Submission, Subversion, Suffering, Sympathy, and Thrill.

Also, Jon Radoff, a game designer, set a list to describe the things that humanbeings perhaps find fun in a daily routine; he called it "42 Fun Things" (2011). He links it with the 13-pleasure framework by Costello and Edmonds (2007). Some of the things that he mentions which can achieve fun in his book are: Recognizing Patterns, Collecting, Achieving, Creating Order out of Chaos, Gathering Knowledge, Being the Center of Attention, Exchanging Gifts, Nurturing, Relaxing, Improving One's Health and Improving Society[10].

2.1.2. Game

Games are not something new; in fact, they have been around us for thousands of years. The British archaeologist Leonard Woolley discovered in Ur[11] an ancient game called "Royal game of Ur" (Figure 3) dated back to 2600-2400 BC. This suggests that games have existed since the beginning of the human civilization. But from the game name it could be inferred that it was popular only among certain social classes.

[8] Please refer to Costello & Edmonds, 2007, pp. 79-81)for a detail explanation on each category.
[9] Please refer to Arrasvuori et al., 2011) for further explanation.
[10] The full descriptive information about this list can be found in his book "*Game On: Energize Your Business With Social Media Games*" (2011, pp. 108-124).

[11] Ur is an ancient city from Sumerian civilization in Iraq.

However, nowadays fun is widespread through games especially mobile games and computer games. It is much easier to play a game at the present time through the Internet than ever. Many people spend many hours and a lot of money on games. Most of us, at one point in our lives, enjoyed playing games whether it be physical games between friends in the neighborhood or school, board games like chess or cards games with friends and family or digital games like *Super Mario Bros*[12], *Farmville*[13]… etc. Today mobile devices can encourage playing through easy games, therefore, this behavior of playfulness is wide spreading through such devices (Korn, Schmidt, & Hörz, 2012; Mekler, Brühlmann, Opwis, & Tuch, 2013; Zichermann & Cunningham, 2011).

Figure 3. Royal Game of Ur
Source:
(http://www.bbc.co.uk/schools/primaryhistory/worldhistory/royal_game_of_ur/)

The definition of game (physical or digital) can be similar to play, though games have limits preventing players from doing certain things while trying to achieve a certain goal. Tracy Fullerton, a game designer and educator, defines games as a closed, formal system, that engages players in a structured conflict, and resolves in an unequal outcome (2014, p. 46). Jesse Schell goes one step further to add problem solving to the definition of games. He defines games as a problem-solving activity, approached with a playful attitude. (2014, p. 47)

[12] It is classic game 1985 from Nintendo: http://mario.nintendo.com/.
[13] www.zynga.com/games/farmville

The activity in Games can be fulfilled by one player or many players collaborating or competing to achieve it (Knaving & Björk, 2013). Board games (such as Chess) and various sport games (such as football) can be an example for multiple player games that require competition and collaboration. Single or multiple player games are obvious genres in video games, they have numerous examples for single player games such as *Assassin creed*[14] and multiple player games such as *Dota 2*[15].

Games are bonded by one or many rules at the same time. Players participating willingly to achieve a goal accept these rules as they are, though some players try to break them. Agreeing to play a game also means to accept the conditions of it. These rules and conditions will determine the experience the player will get while achieving the goal the game asks the player to accomplish (Deterding, Khaled, Nacke, & Dixon, 2011, p. 2; Von Ahn & Dabbish, 2008, p. 61). The outcome of the game can be defined by these rules, but it will be known at the end of the activity. It is an unbalanced outcome; win or lose. Some player(s) win while other(s) lose. Once agreed to play the game the players also accept this disequilibrium (Altarriba, 2014; Fullerton, Swain, & Hoffman, 2004, pp. 42-43).

Games have their own space and life, emotionally. Players leave their own real life and transfer into the game life. The space they live in changes into the space the game offers, at least in the players' mind. It is an imaginary world that can have connection to real life, but in most cases do not. The game has its own time and social groups. Players can bring their own real life into the game which can be observed through their actions (Consalvo, 2009, p. 415; Michael & Chen, 2005, p. 19; Susi et al., 2007, p. 4)."When you play a game, you set the rules of life aside and take up the rules of the game instead. Conversely, when you finish playing a game, you set aside the incidents and outcome of that game and return to the trappings of the outside world." (Fullerton et al., 2004, pp. 42-43).

[14] http://assassinscreed.ubi.com/en-gb/home/
[15] http://store.steampowered.com/app/570/

Jesper Juul, a video game theorist and developer, mentions six features that games have (Figure 4) (2010)and describes them as follows :

1. Rules: Games are rule-based
2. Variable, quantifiable outcome
3. Value assigned to possible outcomes
4. Player effort
5. Player attached to outcome
6. Negotiable consequences

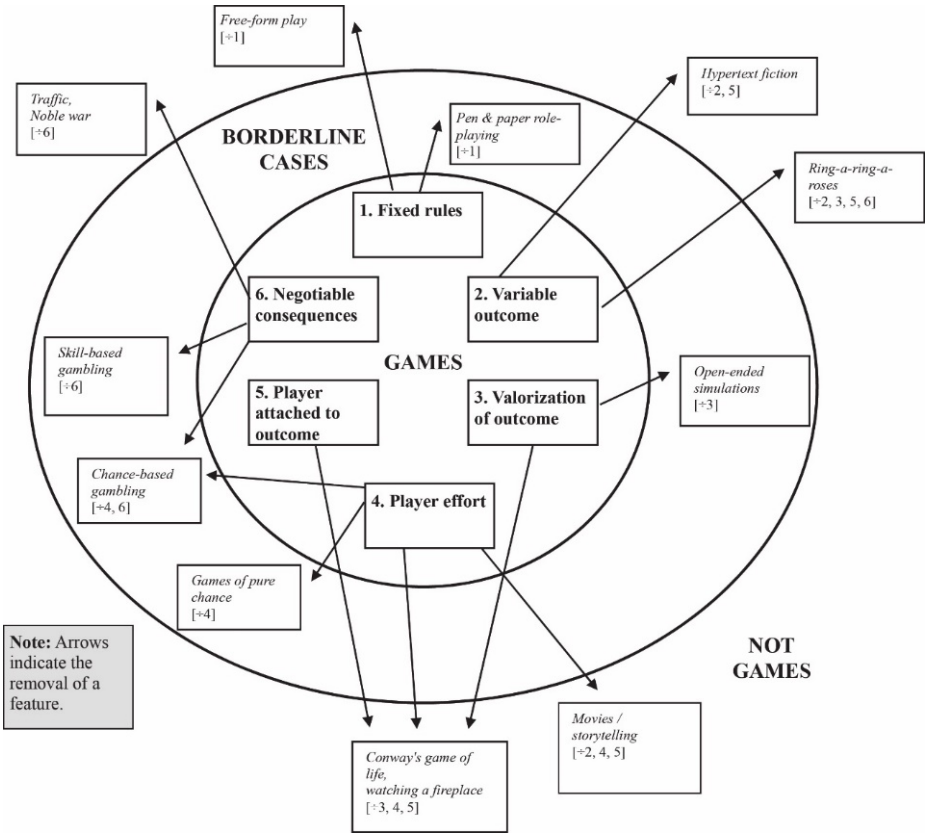

Figure 4. Game diagram by Jesper Juul
Source: (https://www.jesperjuul.net/text/gameplayerworld/)

2.2. Gamification

Usually games (physical or digital) are planned, designed and published for entertainment purposes. It is a huge business directed toward profiting from people who seek the enjoyable emotion and the fun that the games provide. Yet, ever-increasingly many researchers and scholars state that games can be used in non-entertainment contexts, retaining their entertainment values. Game components can be used to

enhance application in a non-gaming-related context (Deterding, Dixon, et al., 2011; Groh, 2012). The idea of using fun, play and games is not new phenomena. It has been used in education to motivate students to learn. Also in the 1980s, at the rise of human-computer interaction, pleasurable interaction was introduced through enjoyable interfaces and game-like systems (Deterding, 2012; Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011; Knaving & Björk, 2013).

It seems plausible that the increasing number of games and entertainment products might result in applications such as "gamification" to thrive. In addition, people who grew up around 1980s and 1990s, where games were more available especially as digital platforms like Atari, Arcades, and other video game consoles, are the working force and the consumers in the current society. Those people can be good audiences and consumers for today's gamification and gameful design products (Radoff, 2011). Game can satisfy the psychological need to connect with other people, oneself, objects, or environment. Baudrillard (1998, pp. 113-114) argues that playfulness (ludic) has been dominating people's daily lives and habits regarding objects, relationships, … etc. This can be given as another reason for the significant rise of gameful design. However, this study will not elaborate on this side of the topic at hand, but will only focus on the developing of gamification products and its benefits.

A vast majority of tasks can be accomplished if fun is introduced. Following on this, many researchers started writing on how to use games in non-gaming contexts. Industries noticed the vast use of games and their popularity among people. They understand how games became a cultural medium and source of information. Moreover, researchers looked into the effects that it has on motivating people either intrinsically or extrinsically. Recently many products started using games in non-gaming contexts. More studies have been done in order to explore its benefits, either for the users or for the companies (Deterding, Björk, Nacke, Dixon, & Lawley, 2013; Deterding, Dixon, et al., 2011; Deterding, Sicart, et al., 2011; Mekler et al., 2013).

A product that adopts the use of a game-like system might either use the full game, a.k.a. "Full-fledged"[16] or might only take some elements from games. Usually with gamification, it is a layer added to full working product (Deterding et al., 2013). Nowadays there are many companies using this method to approach their users. They

[16] Full-fledged Games: Every bit of it ıs designed to be a game from the beginning.

look at it as a way to increase user engagement with the product, social activity and the quality of the action that the user takes (J. Hamari et al., 2014).

Gamification in most of its applications does what it is meant to do; motivating people and attracting them via enjoyable interaction. (J. Hamari et al., 2014). Its effectiveness come from the powerful feedback loop that gamification implements, especially in behavior changing products. Scheider et. al. (2015) explain that the loop consists of:

1. Measuring behavior that the user needs to take.
2. Relating it to other behaviors or norms (relevance).
3. Illuminating the path ahead (consequence).
4. Action, the user will take the action that leads to the behavior.

Gamification can also invoke playfulness while the user is using the gamified product. It can be user-oriented and designed to suit its users. Some gamified products offer its users the possibility to customize the product to their needs, allowing them to create their own goals and feedback (Knaving & Björk, 2013).

Moreover, behavioral economics researchers also noticed a way to help people to shape certain behaviors with game-like systems (Anderson, 2011; Eyal & Hoover, 2014). One of them is Dr. B.J. Fogg, a professor at Stanford University and the founder of the Persuasive Technology Lab, developed a model[17] (Figure 5) and grid[18] (Figure 6) mentioned in the book *Design for Behavior Change* (Wendel, 2013).

[17] http://behaviormodel.org/
[18] http://www.behaviorgrid.org/

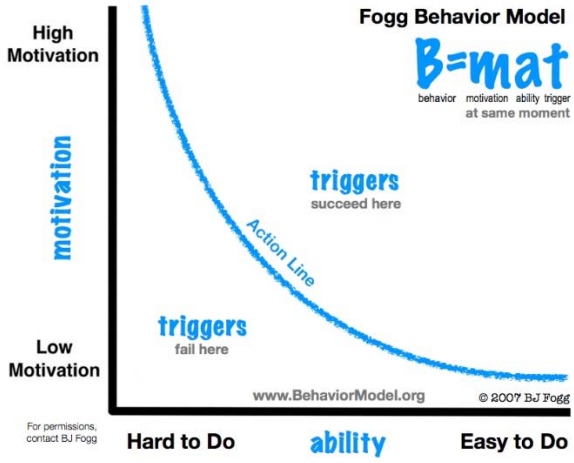

Figure 5. Fogg behavior model
Source: (Fogg, 2007)

FOGG Behavior Model (Figure 5) explains how behavior occurs when three elements are presented (Motivation, Ability and Trigger). If these elements or one of them are not utilized then the behavior does not occur. Fogg argues that intentional actions happen when all these elements aligned at the same time. He argues that the trigger is the crucial part; when it is right it will drive the behavior. Applying it with the right motivation can influence behavior positively (Anderson, 2011, pp. 208-210; Wendel, 2013, p. 43). The other model, "Fogg behavior grid" (Figure 6), shows the 15 ways a behavior can change. Anyone of them might require a different set of psychology, strategies and persuasive techniques. Fogg made online wizard[19] that help designers who want to design products and services for behavior change.

[19] http://www.behaviorwizard.org/wp/

	GREEN behavior	BLUE behavior	PURPLE behavior	GRAY behavior	BLACK behavior
	Do **NEW** behavior, one that is unfamiliar	Do **FAMILIAR** behavior	**INCREASE** behavior intensity or duration	**DECREASE** behavior intensity or duration	**STOP** doing a behavior
DOT behavior is done **ONE-TIME** ◯	**GreenDot** Do **NEW** behavior one time *Install solar panels on house*	**BlueDot** Do **FAMILIAR** behavior one time *Tell sister about eco-friendly soap*	**PurpleDot** **INCREASE** behavior one time *Plant more trees and native plants*	**GrayDot** **DECREASE** behavior one time *Buy fewer cases of bottled water today*	**BlackDot** **STOP** doing a behavior one time *Turn off space heater for tonight*
SPAN behavior has a **DURATION**, such as 40 days ▭	**GreenSpan** Do **NEW** behavior for a period of time *Try carpooling to work for three weeks*	**BlueSpan** Do **FAMILIAR** behavior for a period of time *Bike to work for two months*	**PurpleSpan** **INCREASE** behavior for a period of time *Recycle more of household waste for one month*	**GraySpan** **DECREASE** behavior for a period of time *Take shorter showers this week*	**BlackSpan** **STOP** a behavior for a period of time *Don't water lawn during summer*
PATH behavior is done **FROM NOW ON**, a lasting change ⟹	**GreenPath** Do **NEW** behavior from now on *Start growing own vegetables*	**BluePath** Do **FAMILIAR** behavior from now on *Turn off lights when leaving room*	**PurplePath** **INCREASE** behavior from now on *Buy more local produce*	**GrayPath** **DECREASE** behavior from now on *Eat less meat from now on*	**BlackPath** **STOP** a behavior from now on *Never litter again*

Figure 6. Fogg behavior grid[20]
Source: (Anderson, 2011, p. 207)

2.2.1. Development

Gamification as a term begun to surface in the literature around 2008, but gained more visibility after 2010, when many products started using it and recently has become very popular (Deterding, Khaled, et al., 2011; J. Hamari et al., 2014; Knaving & Björk, 2013). There are various definitions for the term, and some even suggested other terms for it. Knaving and Björk describe gamification as a way to enrich the engagement of activities that lack intrinsic motivation (Knaving & Björk, 2013). In the book *Gamification by Design* (Zichermann & Cunningham, 2011) gamification is defined as the use of game mechanics and game thinking to solve problems and interact with users in non-gaming contexts. In a similar vein, Werbach and Hunter explains the concept as: "the use of game elements[21] and game-design techniques in non-game contexts" (Werbach & Hunter, 2012, p. 25).

Hamari and Eranti state that gamification has already been there, so what we are having right now (precisely the current boom of gamification) can be described as a

[20] The author modified it by adding shapes on the time column for better illustration
[21] Chapter 3 describes Game Elements in further detail.

"new wave of gamification". What they mean is, previously many products incorporated some game characteristic into the design. They argue that "Gamification" is more successful as social games and social online networks (Juho Hamari & Eranti, 2011). Furthermore, the development of enhancing (non-game) services with game mechanics has also been referred to as "Gamification" (Deterding, Dixon, et al., 2011; Huotari & Hamari, 2012). Deterding, et. al. put it in a different way by explaining that "gamification is an informal umbrella term for the use of video game elements in non-gaming systems to improve user experience (UX) and user engagement" (2011, p. 2425).

Gamification is also defined as the use of software and hardware from games in non-gaming contexts (Deterding et al., 2013). It refers to the use of game technologies outside the game arena (Deterding, Dixon, et al., 2011). Hamari et. al. argue that gamification is a means to boost a product with motivational affordances through invoking the same emotional state that the games offer to their players. Also they state that gamification is made up of three parts: "1) the implemented motivational affordances, 2) the resulting psychological outcomes, and 3) the further behavioral outcomes" (2014, p. 3026). Gamification is used as a tool or a layer over already working products, but not full-fledged game such as serious games which are built from the start as a game. This means in gamification it is not about creating a full game but using some elements from games to engage users (El-Khuffash, 2012).

Deterding et. al. (2011, p. 13) explain gamification in an easy way to understand:

- The use (rather than the extension) of
- Design (rather than game-based technology or other game related practices)
- Elements (rather than full-fledged games)
- Characteristic for games (rather than play or playfulness)
- In non-game contexts (regardless of specific usage intentions, contexts, or media of implementation).

Since the start of using the term "Gamification" there were other terms suggested by many other researchers and HCI scholars. A designer and researcher Jane McGonigal suggests using the term "Gamefulness" in contrast with playfulness. Also

she describes it as “alternate reality games” (McGonigal, 2011, p. 120). Other alternative terms used to describe gamification are: “productivity games, surveillance entertainment, funware, playful design, behavioral games, game layer and applied gaming” (Deterding, Dixon, et al., 2011). “Motivation mechanics” is a term coined by Sharleen Sy in contrast to game mechanics (Sy, 2010b). On the other hand, Ian Bogost, a game designer suggested to use the term “Exploitationware” since many companies used gamification to gain benefit over the users’ needs (Bogost, 2011).

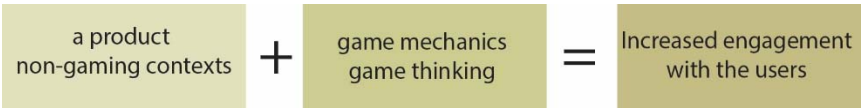

Figure 7. Gamification definition illustrated by the researcher

2.2.1.1. Gamification Between Game, Play and Serious Games

From the previous definition stated above, it is possible to differentiate between various types of fun and enjoyment providers. Below are different illustrations and tables to clarify the difference between each category. Table 1 is made by the researcher to show the differences between play and game (Arrasvuori et al., 2011; Caillois & Barash, 1961, p. 13; Deterding, Dixon, et al., 2011; Groh, 2012; Knaving & Björk, 2013):

Table 1. Play vs games

Play	Game
Paidia*	Ludus*
Freeform	Rules bound
Impulsively	Goals oriented
Enjoyment rush	Content
Open-ended activity	Competitive
Exploratory tendencies	Determined goals
Expressive	Quantifiable outcome
Improvisational	Disequilibrium outcome
Used in entertainment application	
Action of the users impact onto fictional world	

*Note. Named by Roger Caillois (1961)

Deterding et. al. (2011) presented an illustration (Figure 8) to place gamification in its right category related to taking part of gaming in its design. Also, Marczewski put an illustration (Figure 9) that shows a comparison between different field borrowed game thinking and elements in their design.

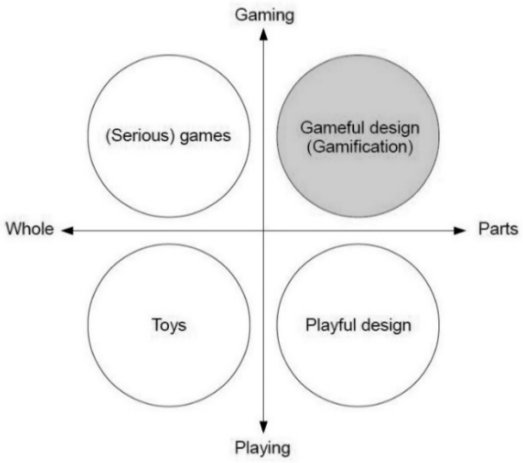

Figure 8. Gamification between game and play
Source: (Deterding, Dixon, et al., 2011)

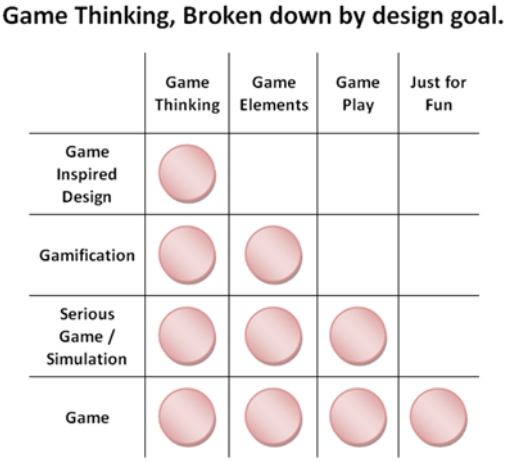

Figure 9. Differences of game-like systems (Marczewski, 2016)
Source: (http://www.gamified.uk/gamification-framework/differences-between-gamification-and-games/)

Table 2 is created by the researcher to show the differences between playfulness, Gameful design, Gamification and serious games:

Table 2. Gamification between game-like system

	Playfication Playfulness	Gameful design	Gamification Game with a purpose Gamefulness	Serious games Simulation
Definition	Is the use of play elements in non-play contexts. (Scott, 2012)	Is the result of a design process where Game thinking has been used. (Altarriba, 2014) p.18	Is the use of game elements in non-game contexts. (Deterding, 2012)	Full-fledged games implemented in non-entertainment purposes to engage users through fun and enjoyable interaction. (Michael & Chen, 2005)
Used in	Non-entertainment application			
Using	Play elements	Game thinking	Use elements of games as a layer on top fully working system	Complete games developed from scratch
Player output	Action impact onto non-fictional world.			
Fun for	Using fun to drive real life-related outcome			

Regardless of these differences, there is a key question whether a person is playing something for the sake of enjoyment or playing it as a game. And this translates into gamified application and products. Fabian Groh describes in his article "*Gamification: State of the Art Definition and Utilization*" that maybe a person is using a gameful application such as *foursquare*[22] as a game just to play it socially or use it for the information it provides. (2012, p. 14). Regarding the platform that play and games can use, there are two options; analog and digital. The choice will depend on the behavior complexity of playful, gameful or mix of both that the user needs to achieve.

[22] *foursquare* (foursquare.com) started as an app, users can use it to find locations such restaurant, hotel, …etc. At the time mentioned by Groh (2012) the app had badges, users will gain them by doing certain quest. Gamification used in this app to attract uses. But they stopped provide badges in the main app and released another app for that called *Swarm* (swarmapp.com), which has the gamification part.

Each one of them has its own properties, the context will determine which one is more suitable. Though recently many games and play have place with digital technology, it does not mean that analog is lees of useful to produce enjoyable emotion. people love objects, users can play and interact with them (Altarriba, 2014; Baudrillard, 1996, p. 94).

2.2.2. Why Gamification?

Recently business, products and services have started using gamification and it has been forecasted that by 2015 over 50 percent of them will use gamification to engage their users. Then, it becomes important to ask now; what are the reasons for that? Many refer to gamification as a layer to induce fun in the products. And perhaps it could attract more users and keep them using the products. Gamification have positive effects on the users, but it all depends on the context that gamification is used in and on the users (J. Hamari et al., 2014, p. 3025). On the other hand, some companies utilize gamification to exploit their workers or their customers. Such applications see gamification as a way to increase their profit without caring for the users' interest[23].

Gamification can increase the engagement that the user will have with the product. It motivates users' behavior and generally increases the joyful use of the product (Deterding et al., 2013). Gamification may also make users collaborate or compete, these are characteristics borrowed from games. At the same time it influences the social activity around the product such as making people communicate with each other to reach a goal within the gamified product (J. Hamari et al., 2014). In addition, gamification can be used in campaigns to raise awareness or in marketing campaigns[24] to gain more customers. Also it can be beneficial in the field of education and educational products and services[25] (El-Khuffash, 2012; Werbach & Hunter, 2012; Zichermann & Cunningham, 2011).

Korn Schmidt and Hörz look into using gamification in production line and its benefits for the workers and work line. They claim that using game-like experience as a

[23] Section 2.2.7. Views against gamification (p.38) discusses this point in further detail.
[24] *Coca-Cola* in many of their campaigns uses some game elements to attract people through fun.
[25] For example, *Khan Academy* (www.khanacademy.org) which is a website for learning math and some other subjects uses game design elements to make learning fun.

system that help the worker in production line can be useful. It can increase the fun while working, but the most important aspect is the feedback the worker gets from the system about their work, this proves especially useful for impaired workers (2012). Using gamification helps to increase the speed and reduce the mistakes the worker makes. Overall, it can reduce the accidents in production line and increase the engagement of the worker (Korn, Funk, & Schmidt, 2015).

Werbach and Hunter divide gamification into three categories in their book *For The Win How Game Thinking Can Revolutionize Your Business* (Figure 10) from a business perspective. Yet, it can be generalized to exemplify why gamification is used (2012, pp. 20-25). These three categories are:

1. Internal Gamification: "Companies use gamification to improve productivity within the organization"
2. External Gamification: "Gamification here is a way to improve the relationships between businesses and customers"
3. Behavior-change Gamification: "Seeks to form beneficial new habits among a population"

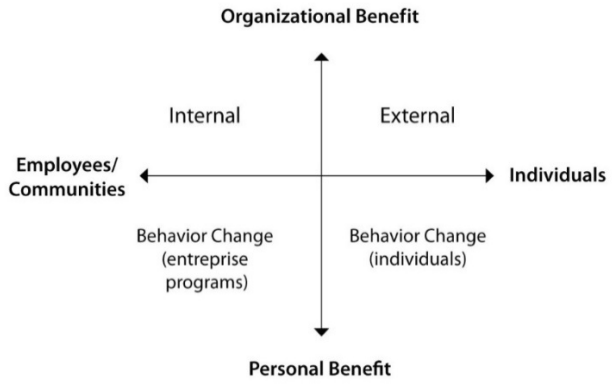

Figure 10. Relationship between different gamification categories
Source: (Werbach & Hunter, 2012, p. 21)

El-Khuffash redesigns these categories to match the targeted users of the gamification product (2012, p. 10) (Figure 11). In his model, gamification product used in the organization to enhance employees in certain ways is called "employee gamification" (this is the internal gamification in Werbach and Hunter model). Customer gamification on the other hand is meant to benefit the consumer of the

organization (external gamification). In El-Khuffash's model behavior changing gamification is divided into two categories; one is the "community gamification", which is external for community. The other is "individual gamification", meant to change personal behavior for a single individual (El-Khuffash, 2012, p. 10).

Figure 11. Gamification categories by targeted users
Source:(El-Khuffash, 2012, p. 10)

Products and services can be divided into four categories. Eyal and Hoover present a matrix in their book *Hooked: How to Build Habit-Forming Products* (2014, chapter 6) and call it "Manipulation matrix" (Table 3). Even though this matrix is for products and services specifically, it but can also explain gamification usage in different areas. These four categories are:

1. Facilitators: "Use their own product and believe it can materially improve people's lives". It can be linked with Werbach and Hunter's model (internal and external organization benefit)
2. Peddlers: "Believe their product can materially improve people's lives but do not use it themselves". It can be linked with Werbach and Hunter's model as (external organization benefit and Behavior-change Gamification)
3. Entertainers: "Use their product but do not believe it can improve people's lives". Here it can be different from Werbach and Hunter's model as this is more for pure fun, enjoyable interaction for the sake of pleasure not providing an impact on real life.

4. Dealers: “Neither use the product nor believe it can improve people’s lives”. This argues that gamification aims to exploit users and gain fast benefit for the business without caring for the users.

Table 3. Manipulation matrix

Materially improve the user’s life	Peddlers	Facilitators
Does not improve the user’s life	Dealers	Entertainers
	The maker does not use it	The maker use it

Note. Taken from: (Eyal & Hoover, 2014, chapter6)

Implementing gamification in business and products start blossoming after 2010 because many researchers and conferences began to discuss it and introduce its benefits to the world. Thanks to this, gamification started to be used in many fields such as education and health, which are the most common fields using gamification. Beside these other fields like marketing, sustainability, productivity, finance and entertainment likewise use gamification layer. Furthermore, vendors start to offer gamification services to other companies (Deterding, Dixon, et al., 2011; Groh, 2012; J. Hamari et al., 2014). El-Khuffash mentions that 51 percent of gamification implementations drive user motivation and 88 percent of it are free to users. He says that 74 percent of gamification is websites services (2012).

Another example of gamification is Alternate Reality Games (ARGs)[26], which is considered as “Meaningful gamification”. In this area, one gamification element is very useful and important, which is narrative. (ARGs) in a basic sense, is the use of game elements to tell a story based on non-gaming contexts. Users engage with such systems because of their meaningful contexts. (ARGs) usually will relate the users to other users that share the same personal interests. “McGonigal[27] argues that good ARGs present obstacles within a story with a wide scope, and that players feel satisfied and positive about their own abilities by overcoming them” (Scott, 2012).

[26] Some example of (ARGs): *Halo 2- I Love Bees*, *World Without Oil*, *Reality Ends Here*, *Traces of Hope*.

[27] Jane McGonigal (janemcgonigal.com), is a world-renowned designer of alternate reality games or games that are designed to improve real lives and solve real problems. She is the author of the book *Reality is Broken: Why Games Make Us Better and How They Can Change the World* and is the inventor and co-founder of *SuperBette* (www.superbetter.com).

2.2.4. Gamification and Motivation

Gamification stimulates motivation either intrinsically or extrinsically. Gamification researchers and scholars agree that gamification has effects on the user's motivation; whether this effect will be positive or negative depends on the context and the elements used (Deterding, 2012; Mekler et al., 2013; Scott, 2012; Werbach & Hunter, 2012; Zichermann & Cunningham, 2011). Many "behavior changing products"[28] appropriate gamification to help users change behavior or develop a new one though motivation (Eyal & Hoover, 2014; Wendel, 2013).

However, human motivation is a complex subject and if one is designing for motivation, one should be wary of every decision made related to the design. Also, it is important to understand users' personality types and match game elements to these. Different people perceive fun and motivation differently (Sy, 2010a). Some game elements might motivate users, others do not, though it depends on the context and also on the social environment that the product exists. Some gamification application can only motivate for a short period of time if not designed well (Mekler et al., 2013).

Also, one should consider the types of motivation. Basically, there are two types; intrinsic and extrinsic (Ryan & Deci, 2000). Each type has its own best working gamification elements. If the gamification is heavily depended on motivating the users extrinsically then it has a chance to fail. For example, given that it is only a type of reward that motivates the user to use the product, as soon this reward does not exist anymore the user might stop using the product (Mekler et al., 2013; Scott, 2012; Zichermann & Cunningham, 2011). Gamification designer needs to know about human motivation. Ryan and Deci discuss different theories of motivation (2000). A balance should be offered between the two aforementioned types of motivation to attract various users. Yet, intrinsic motivation should have more share in the gamification system as possible (Altarriba, 2014). To benefit more from Gamification, intrinsic and extrinsic motivation should be aligned. In order to successfully design the gamification interaction it is important to understand how the users will be motivated through the product (Zichermann & Cunningham, 2011).

[28] Behavior changing products such as: *Nike+* or *Fitbit*, product that encourage fitness.

2.2.4.1. Motivation Theories

2.2.4.1.1. Intrinsic Motivation

Understanding human nature is a complex task in itself. For instance, why people do certain things without being offered a reward at the end? What motivates them whilst going after something new, taking a new challenge or going out of their comfort zones? Curiosity, playfulness and feeling joy might provide a partial answer. This is explained in the context of intrinsic motivation and the emotion it triggers. In accordance with this, one's action might purely be done for the pleasure and satisfaction of it, without the effect of the outside environment (Ryan & Deci, 2000, p. 70). Steven Reiss, a professor of Psychology at Ohio State University, proposes a theory of sixteen basic desires that guide nearly all human behavior, and he links it to intrinsic motivation. These sixteen desires can be adopted within the product to create an emotional attachment. Gamification uses this together with the mechanics to make the system more enjoyable for the user to interact with. These sixteen desires are: acceptance, curiosity, eating, family, honor, idealism, independence, order, physical activity, power, romance, saving, social contact, social status, tranquility, and vengeance (Reiss, 2004, p. 187).

2.2.4.1.2. Extrinsic Motivation

It is the opposite of intrinsic motivation; one takes an action not necessarily because of the joy of doing it but to gain something out of it; physically, virtually or mentally. Working to earn a salary can be given as a good example of this kind of motivation. Extrinsic motivation also involves the people around, which means gaining social status can be considered as extrinsic motivation (Ryan & Deci, 2000, p. 71; Zichermann & Cunningham, 2011, pp. 26-29).

Ryan and Deci present the concept of "the self-determination continuum" (*Figure 12*) to show the differences between intrinsic and extrinsic motivation. Also, it is possible to notice through the illustration that the emotions under each category can be useful while designing the gamification layer.

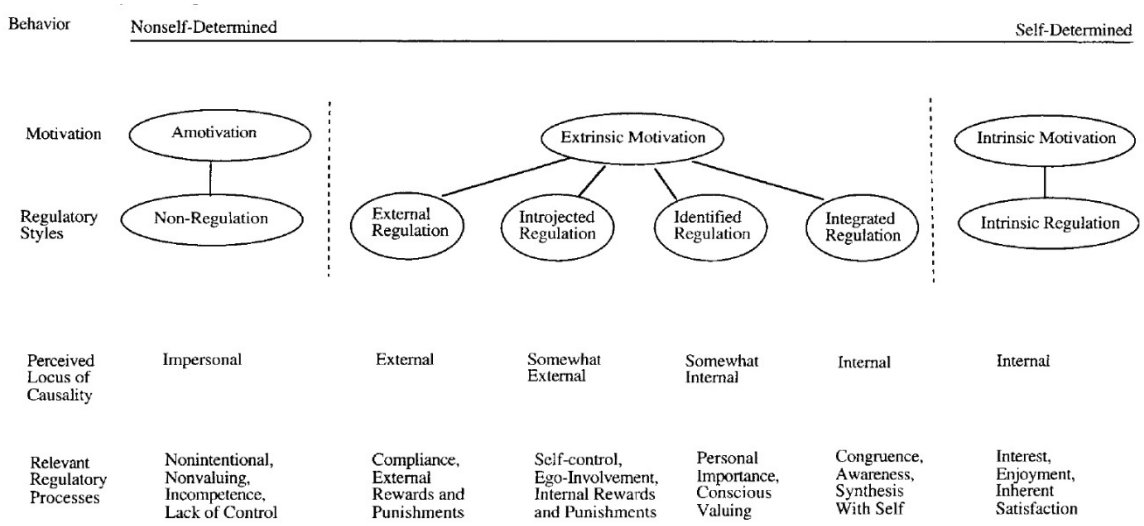

Figure 12. The self-determination continuum
Source: (Ryan & Deci, 2000, p. 72)

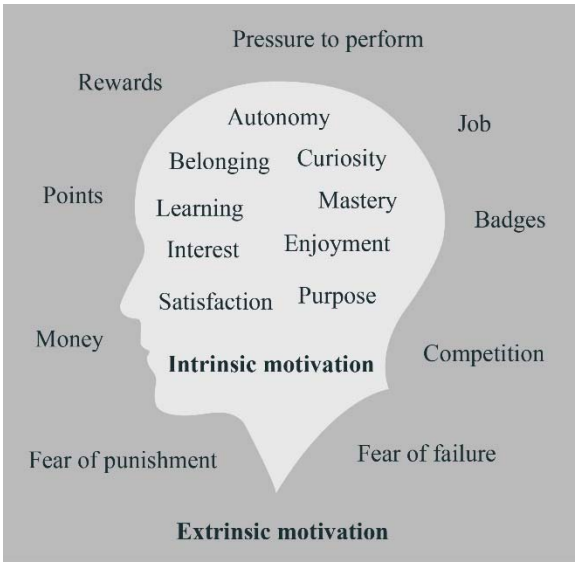

Figure 13. Illustration by the researcher to show different examples of intrinsic and extrinsic motivation

2.2.4.1.3. Self-Determination Theory (SDT)

Ryan and Deci define The Self-Determination Theory (SDT) as “an approach to human motivation and personality that uses traditional empirical methods while employing an organismic metatheory that highlights the importance of humans' evolved inner resources for personality development and behavioral self-regulation” (Ryan & Deci, 2000, p. 68). Users’ motivation can be driven by the value of the given activity or by an outside influence on users such as fear or social commitment. People’s psychological needs and inner growth are essential for self-motivation and positive progression. Ryan and Deci use the empirical process to identify three needs related to SDT (2000). These are important for one’s self-growth, social development, and well-being. Ryan and Deci identify these three as (2000, p. 73):

- Relatedness: The need to connect with others and compare with others and socialize, feeling of belonging.
- Competence: The need to feel having a grip on the given issue. The feel of ability to perform an action and master it.
- Autonomy: The need to be in control of the action, the feel on choice and willingness.

Based on this, Marczewski (2013) made a model that uses the idea from SDT theory and suggests an extra point; “Purpose”. This model can be used in an application to provide intrinsic motivation to the user. It has four components:

- Relatedness: To connect with other and relate to them.
- Autonomy: To have freedom in choosing something.
- Mastery: To develop a skill and master it.
- Purpose: To have a great reason in doing something.

2.2.4.1.4. Cognitive Evaluation Theory (CET)

CET is a sub-theory of SDT, and it is a way to explain versatility in intrinsic motivation. This theory focuses on competence and autonomy. It argues that in a social

context, feedback or rewards that lead to a feeling of competence can enhance intrinsic motivation, and yet, it should be accompanied with a sense of autonomy. Positive feedback will enrich the motivation while a negative one will decrease it. Based on that, CET suggests that social environment has an effect on the intrinsic motivation. CET works on the activity that has an appeal for the user to begin with (novelty, challenge or aesthetic value), an activity that is interesting for the user. "According to CET, people must not only experience competence or efficacy, they must also experience their behavior as self-determined for intrinsic motivation to be in evidence" (Ryan & Deci, 2000, p. 70). All in all, this theory explains the changeability of intrinsic motivation by the extrinsic motivation factor which will result in either enhancing the intrinsic motivation or diminishing it.

2.2.4.1.5. Organismic Integration Theory (OIT)

OIT is a sub-theory categorised under the rubric of SDT, and it focuses on various types of external motivators that can be integrated with one's internal motivation. SDT argues that motivation is either within one's self or an external factor, whereas OIT claims that part of the external factor can be integrated to serve partial internal motivation. Competence, relatedness and autonomy can produce these factors if integrated with external influence. For instance, if there is an external factor such as a threat, that can affect the person, for example, the threat of beeing fired from a job. Yet, one feels competent to succeed, in this case the person feels able to do the job at hand. Thus, this external factor, "the threat", is partially converted to internal motivation; in the example above, the person will be motivated intrinsically to do the job by means of the external threat. It is also applicable to the social context in a similar fashion; for example, one might want to be associated with a certain social class (the feel of relatedness), for instance, a person aims to become a CEO of a company so the person's social class will be considered higher (Ryan & Deci, 2000, p. 72).

2.2.4.2. Motivation in Gamification

2.2.4.2.1. Intrinsic Vs Extrinsic

Even though extrinsic motivation can be used in a gamification system as a motivator, it has its own problems. If not planned well, extrinsic motivations can cause hindering of creative and complex thinking (Pink, 2011)[29]. Some people with competitive tendencies might be demotivated if the game elements push them to corporate with others in a given social context. Users with high competitive personality might still try to win in a corporative context. In gamification, using reward as an extrinsic motivation can be manipulative or it might diminish motivation if badly designed or the rewards cease to be offered (Zichermann & Cunningham, 2011, pp. 26-29). Research by Ryan and Deci (2000, p. 70) reveals that threats and pressure, such as deadlines, have an impact on intrinsic motivation similar to tangible rewards. On the other hand, giving the user a choice, acknowledging their feelings, allowing self-direction and some autonomy will enhance intrinsic motivation. Ryan and Deci (2000, p. 75) mention another study that underwent to find out the effects of intrinsic and extrinsic ambitions on the well-being statuses affiliated with self-esteem, self-actualization, happiness and calmness. They mention that intrinsic ambitions that are related with the basic needs such as personal growth will have positive effects on the well-being statuses. In contrast, extrinsic ambitions that are not related with the basic needs directly such as fame, wealth… etc., have a negative effect on the well-being statuses. Beside that they mention that the feeling of depression and anxiety can be intertwined with extrinsic ambitions.

2.2.4.2.2. Using Motivation Theories

Gamification designers can use SDT to match different game elements with it. Some game elements that provide autonomy can be used to enhance the engagement;

[29] *Drive* is a book by Daniel H. Pink, who is the presenter and one of the producer of the show *Crowd Control* on national geographic channel.

for example, avatars, the ability to choose a quest or a challenge, customizable path and so on. Competence can be integrated into game elements; feedback can be used as a significant tool for that. An engaging feedback for the users such as points, badges or leaderboard can help with motivation, but it should include autonomy in its design, giving the user an intuitive control over it (Forde, Mekler, & Opwis, 2015; Scott, 2012).

Motivational theories by Ryan and Deci (2000) can help gamification to sustain motivation through supporting Competence, Autonomy and Relatedness. Caring about such elements can lead to a positive delightful experience. Studying the users' types[30] and the context that the gamification product will be used in will help craft motivation that suits the users best (Dodero, Gennari, Melonio, & Torello, 2014).

In gamification, OIT can help to produce a meaningful design. Understanding the user and their needs will facilitate to craft the motivation, especially if the product has external motivation elements. In this respect, external control should be reduced so it will not create a negative feeling in the user. Gaming activity should be worthwhile and significant for the user. In the case of rewards, if it is unrelated to the activity, it has a higher chance not to be internalized since the user can feel the loss of control over these kinds of rewards. To make the rewards more meaningful in gamification, the designer should make the user feel related, and bestow them with autonomy; for example, giving the user freedom to choose the reward. Alternatively the reward itself gives the user a chance to relate to a social group (Scott, 2012). In addition, applying the self-determination theory (SDT) to the gamification system can be another way to make it more meaningful. Each category of (SDT) can be utilized as follows:

Relatedness can be employed to give the users meaningful experience, by adding some value to the interaction with the product. Some examples of ways to employ this category are ; 1) consideration of adding the sense of community that the user can relate to and has interests in, 2) personal goals can be the center of the interaction, 3) giving the user a way to feel connected to a story or a social cause (Groh, 2012).

Competence is another key to transform the user experience into something enjoyable. This can be utilized if the game elements are designed to: 1) keep the users in flow state of mind by using challenges that are not too hard nor too easy, 2) the elements should give sense of urge to solve a problem with likelihood of the capability

[30] Chapter 3 elaborate upon users' types (p.63)

of doing that, 3) big issues and problems can be divided into smaller parts that the users go through. When the user goes through parts with success, the user will feel confident to continue throughout the remaining part (Groh, 2012).

Autonomy is another category that the game elements can be used to tailor it in a way to give the user a sense of having control over the actions. A good example of that is: The users can feel in control over the rewards, challenges or the visual appearance of the system. The user will have more meaningful connection with the product because of the feeling of that nobody is taking over the actions the user commits. (Groh, 2012).

2.2.5. Gamification and Flow

The term "FLOW" is assigned by Csikszentmihalyi to explain a certain state of mind. A person in flow state will feel fully engaged with the action. Users in flow state will not be fully aware of their surrounding or at least will be less interested in what is going on around them. Users will forget time and fatigue, and focus on the activity in hand. People will feel satisfied in what they are doing during flow state. They will be able to go through the experience and repeat it over again. In flow the activity itself needs to nurture the user; it should not be so difficult that the user will quit the activity or it should not be so easy either so that the user will not quit the activity due to lack of challenge. The activity should put the user between anxiety and boredom (Figure 14) (Csikszentmihalyi, Abuhamdeh, & Nakamura, 2005, p. 600).

Play and game-like behaviors and activities can help achieve this state of mind. These activities can have clear goals, direct feedbacks and a balance between the activity and users' performance. When achieved in the flow state of mind, these kinds of activities become intrinsically satisfying (Knaving & Björk, 2013). In the literature on gamification, flow is discussed as a way to nurture users' experience and as a useful way to make the interaction more meaningful and motivational (Deterding, Dixon, et al., 2011; Groh, 2012; Werbach & Hunter, 2012; Zichermann & Cunningham, 2011). Gamification that uses elements that provide autonomy and competence can trigger the flow state of mind in the user. Customizable elements, such as users picking their own goals, too, allow the users achieve the flow state of mind (McGonigal, 2011).

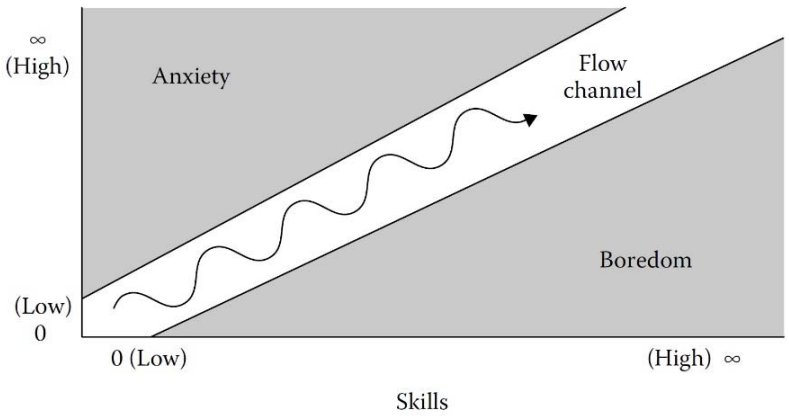

Figure 14. Flow
Source: (J. Schell, 2014, p. 141)[31]

Csikszentmihalyi explains what happens when the users are in flow state of mind. During the flow, users feel (2005, pp. 600-601):

- Fully focused on the task at hand, forgetting the surrounding.
- The loss of self-awareness
- In control or losing it.
- Less worried about getting the action done successfully, which ultimately results in an enjoyable experience.
- Time differently, in other words, time feels like flying.

Additionally, Csikszentmihalyi indicates various conditions that lead to the flow state of mind, he states that (2005, pp. 601-602):

- The goal of the action should be very obvious, and the direction should be clear to give a purpose to do the activity.
- Challenges of doing the action and users' skills to achieve the action should be in balance.
- The feedback from the action should be direct, immediate and clear, which allows the users to alter their performance accordingly.

[31] This is based on the original graphical representation of flow by Csikszentmihalyi in his book *Flow the Psychology of Optimal Experience* (1990, p. 74).

Moreover, when users are fully committed to an activity they will find it enjoyable and have enough intrinsic motivation to do and complete the action. According to Csikszentmihalyi, flow can affect motivation as follows (2005, pp. 602-603):

- Competence: Users will feel motivated if they feel competent to do the task, immediate positive feedback can achieve that.
- Emergent Motivation: Users discover something new in the interaction with a product which motivates them to continue the interaction.

2.2.7. Views Against Gamification

> If you use the power of games to give people an opportunity to do something they want to do, then you're doing good. If you're using the power of games to get people to do something you want them to do, then you're doing evil. (Kumar & Herger, 2013, p. Chapter 8)

Gamification is a great tool to motivate users and add elements of fun into action and product interaction. However, gamification is a tool that has its own problems. Many scholars and researchers spoke out against it. There are many points mentioned but these are the four main threats and disputes:

1. Bad implementation of game elements:

Many business and products try to copy successful gamified application or social games (Such as *Foursquare* or *Farmville*) thinking that they will have the same success. The reason for their failure is the fact that they take the least important part of games like points, badges and add them directly to the interaction without the actual planning experience (Deterding, 2012, p. 14). These elements can motivate people but it can also demotivate them or reduce engagement time if designed badly. Adding gamification layer is not about adding a game element but designing a game-like experience. The meaningful interaction in gamification is one of the factors that would lead to successful gamification (Deterding, 2012).

Furthermore, applying rewards directly without planning it correctly can produce unwanted behavior and results. It can shift users' intrinsic motivation into extrinsic motivation and it can cause a loss of control, which ultimately means "loss of

autonomy", leading to demotivation. Users will be forced to take an action over their interests to gain rewards. This also can make the user addicted to rewards that the system gives, and when there are no more rewards they eventually leave the system (Groh, 2012; Scott, 2012; Zichermann & Cunningham, 2011). A study mentioned by Groh speaks against the use of tangible rewards and focusing on extrinsic motivation and how it affects intrinsic motivation:

> One of the studies demonstrates that children will draw more pictures, but in lesser quality, if they are paid for drawing pictures. However, the more important fact is that the children did not like drawing pictures as much as before, after they are stopped being paid. This effect is known as "Overjustification"[32] and verified by (Lepper, Greene, & Nisbett, 1973) where intrinsic motivation is shifted towards the extrinsic incentives. (2012, p. 41)

Additionally, there are "gaming the system" threats, where people will try to find a solution to overcome the rules and challenges of game elements to gain the rewards or to achieve the goal. The user might find an easy way to achieve the goal without going through the whole experience. For example: If the product offers a reward for walking five miles a day; the product is tracking the user movement through smart phone, the user might cheat this rule by using a car to achieve five miles without walking. Such issues could happen especially if the system is poorly designed and the designer does not attend to each part of the experience (Knaving & Björk, 2013).

2. Exploitationware

Ian Bogost (2011) called the kind of gamification which is only made for the companies' benefits "Exploitationware". It basically means the use of gamification elements to drive users for the sake of the business. These companies think that adding game elements to an unsuccessful business will produce successful results and fix their problems. Before adding any game elements to the experience, one must know the reasons behind the element, what it is supposed to do or enhance, and plan its experience.

[32] Overjustification can be understood as: When people are rewarded for doing an interesting activity, they are likely to attribute their behavior to the reward and thus discount their interest in the activity as the cause of their behavior, leading to post behavior intrinsic motivation that is lower than it would be if they had not gotten the reward (Deci, Koestner, & Ryan, 1999, p. 630).

Werbach and Hunter (2012) too address this as “Exploitationware”, and they mention in their book a case that explicates this term:

> Laundry workers at Disneyland hotels in Anaheim, California, have a name for the leaderboard system the company installed in 2011: “The Electronic Whip”. Large flat panel monitors in laundry rooms show employees how quickly they fulfill their tasks and how their speed compares to co-workers. The system has certainly had an effect. Relationships between workers are increasingly tense as the work environment becomes more competitive. Some are even skipping bathroom breaks to pump up their numbers. Those low in the rankings worry about their job security. (2012, p. 114)

3. Gamepocalypse:

This is a term for gamification that has been suggested by Jesse Schell[33]. He states that “gamepocalypse is when every second of your life you're actually playing a game in some way” (Jesse Schell, 2010). He worries that every action we do in life will be gamified in in one way or another; one’s daily routine, one’s job or even the entertainment itself. He further argues that users will only do something to gain some points or to achieve some badges and be on the top of the leaderboard (Jesse Schell, 2010).

4. Intrinsic and extrinsic motivation problems:

Gamification not only has a positive effect on motivation but negative effects too. Extrinsic motivation can affect intrinsic motivation negatively. The intrinsic motivation the user may have to engage with the product can diminish if the gamification system focuses on extrinsic motivation only (Deci et al., 1999). Hanus and Fox (2015) found that badges (in class settings) decrease intrinsic motivation if they were mandatory. In long-term gamification application if only extrinsic motivation sustained, it might replace the intrinsic motivation and reduce it. This can be avoided if the system works on motivating the users intrinsically too (Scott, 2012; Seaborn & Fels, 2015).

5. Novelty and time:

In certain settings and environment gamification appears to be something novel to the users. This novelty can drive the first engagement with the product, but whether this will drive the engagement forward for a long period of time or short time depends

[33] Jesse Schell is an American video game designer, author, CEO of Schell Games and a Professor of Entertainment Technology at Carnegie Mellon University's (CMU). His website: www.jesseschell.com

on the context, users' types and the design of the gamification. When it loses it novelty users might not get attracted to the experience that the system gives. This is especially so if the gamification has a poor design that releases the users from the experience in short time. Users who interact with the system intermittently will leave the system due to a bad experience. Users who lose constantly and early in the engagement due to bad game experience design, leave the system and might have a negative impact on social repetition of the system (J. Hamari et al., 2014).

2.2.7.1. When Gamification Fails

Some of the reasons that the gamification experience might fail are:

1. The base is not strong:

Services and products utilize gamification to enhance the interaction and the chance the product reaches a wider range of users and keep them loyal. However, this cannot be an easy task performed simply by plug ins and play systems. First of all, the Business/ System/ Application/ Product should have some sort of intrinsic value to the user before adding the gamification experience. The main activity the user needs to do (without the gamification part) should be designed strong enough (it should function well even before the gamification layer is added). Even if the system has no intrinsic value to the user, it should function successfully without problems. If the developer of the system does not attend to the base, gamification will not help much and the experience might fail (Deterding, 2012; Knaving & Björk, 2013).

2. Gamification which is not fun and playful:

Gamification uses the least important part of the game like points and badges to design the experience. However, gamification should adopt the fun and playfulness of games too. Playfulness should be included in the design process to enrich the experience. It provides the user with some intrinsic motivation. For example, users will gain pleasure from discovery and accomplishment via what gamification products offer. If gamification disregards this aspect of games, it might cause the experience to fail (Knaving & Björk, 2013). Zicherman argues that most educational gamification products fail to achieve their purpose because of the lack of fun (2011).

3. Designing without understanding:

Designing the game experience and adding game elements without understanding the reasons behind it is the road to failure. Comprehending each game element and the meaning behind it is necessary for designing gamification. Not knowing the users, what motivate them and why they approach the system can cause the gamification to fail. Leaving the experience to chance without controlling it might produce unwanted results. Gamification and its experience which are not meaningful enough for the user are prone to failure (Felker, 2014; Scott, 2012; Zichermann & Cunningham, 2011).

4. Gamification layer which does not update over time

This can be explained by Kano's model (Figure 15), which is invented by Dr. Noriaki Kano in 1984. This model can help to track how the product or service can impact users' satisfaction. It uses customer needs to evaluate the product. Users' needs are divided into three categories and it is demonstrated that these needs might change over time. Anderson (2011, pp. 200-202), and Sauerwein et al., (1996, pp. 1-2) explain these three needs as follows:

1) Basic needs or must be requirements: If these needs are not fulfilled, users will be extremely dissatisfied. On the other hand, their fulfillment will not increase users' satisfaction. Users will notice these features only when they are missing or poorly implemented.

2) Performance needs or one-dimensional requirements: These needs are demanded by users usually during the product development stage, but they can also be demanded after the product is in the market. Satisfying these needs will increase customer satisfaction as a whole.

3) Exciters, delighters or attractive requirements: These are not needed requirements or features and the users do not necessarily ask for them. However, if the product or service provides these needs they will bring greater value to the product or service and increase the users' satisfaction, even though missing these features will not reduce satisfaction.

When a product offers gamification layer, it could become a problem if not updated over time. Based on the model mentioned above, Exciters will change over time into basic needs. It seems plausible to argue that gamification itself can be considered as “Exciters requirements” based on Kano's model. It is not a need that the user will notice if it does not exist. On the other hand, once it exists, the users might ask for it constantly over time or the user will notice the problems with it and get frustrated by it.

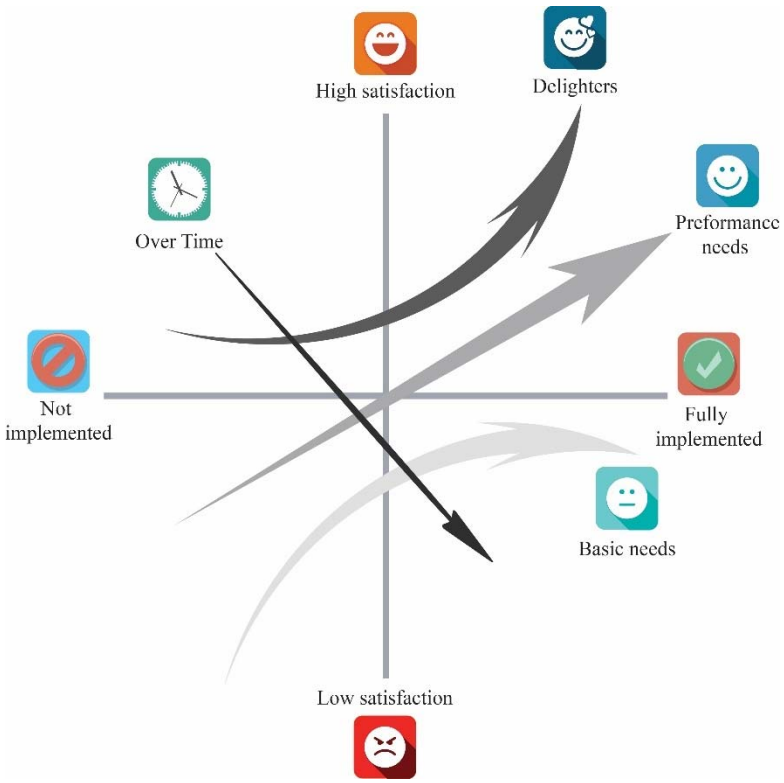

Figure 15. Kano's model illustration by the researcher

CHAPTER 3

GAMIFICATION ELEMENTS AND PLAYERS TYPES

3.1. Game Elements

As explained earlier, gamification is using game elements in non-gaming contexts. Gamification takes game components and characteristics then apply these to the product. The final product is not a full-fledged game. If the gamification is removed from the product the product can and will still work and function (Deterding, Khaled, et al., 2011, pp. 2-3; Groh, 2012, p. 40).

Game elements are described in various ways in the pertinent literature. Some indicate that it is a design pattern that is applied to the interface such as points and badges. Others use game mechanics as a way to describe the elements that are acquired from games. Game elements have also been referred to as game design units and methods (Deterding, Khaled, et al., 2011, pp. 3-4).

In the book *Seductive Interaction Design,* Anderson (2011, pp. 152-154) puts game elements in a model (Figure 16) with play as a core element. He argues that what makes a play evolve to a game is the introduction of challenges. These challenges are surrounded by conflicts and choices that the players agreed on, it effects the experience of the challenges. While the players go through the experience, feedback will present their progress. These feedback loops can be extrinsic motivators like rewards and goals, gaining badges can be given as an example. This whole experience the player goes through has place in the imaginary world that the player chooses to enter.

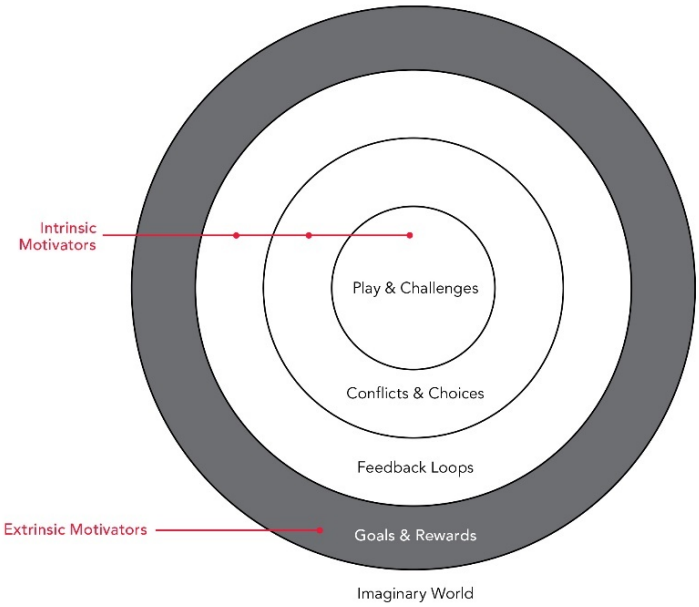

Figure 16. Elements of game design model
Source: (Anderson, 2011, p. 152)

Game elements can be considered as small parts that make up the whole game, and gamification is basically using these elements in a product (Werbach & Hunter, 2012). Gamification uses many different elements from games, some of which are easy to put into the products and common, and others are less common and need more design studies as well as testing to be adopted in the product. It all depends on the context that these elements will be used in. Currently the most common elements observed in products, services and application include: Avatars, points, badges, leaderboards, rewards, ranks, levels, challenges, rules, time, teams, goals, competition, cooperation, and feedback (Deterding, Dixon, et al., 2011; Zichermann & Cunningham, 2011).

Hunicke, LeBlanc and Zubek propose a framework for working with game design elements which is MDA, stands for (Mechanics, Dynamics, and Aesthetics). This framework analyzes game elements which can be used for applying them outside the game industry. The MDA framework breaks down the game into its distinct elements (*Figure 17*). These components are:

- Mechanics describes the particular components of the game, at the level of data representation and algorithms.
- Dynamics describes the run-time behavior of the mechanics acting on player inputs and each other's outputs over time.
- Aesthetics describes the desirable emotional responses evoked in the player, when player interacts with the game system.

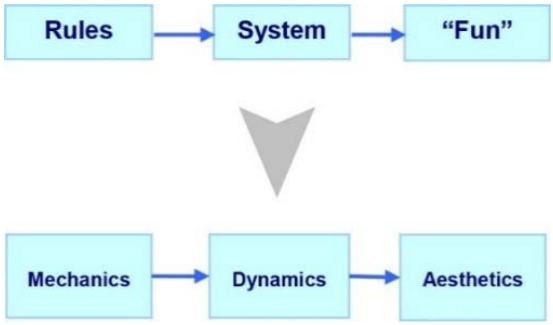

Figure 17. MDA framework
Source: (Hunicke et al., 2004)

In the book *For The Win: How Game Thinking Can Revolutionize Your Business* by Werbach and Hunter (2012, pp. 78-83), game elements are divided into three categories dynamics, mechanics, and components (Figure 18). Adding these three parts together in the gamification will increase the engagement appeal of the product for the user. These three categories are tied to each other; however, all these parts are not necessary to be implemented in every product. And even in each category, a product designer will not use all the elements together.

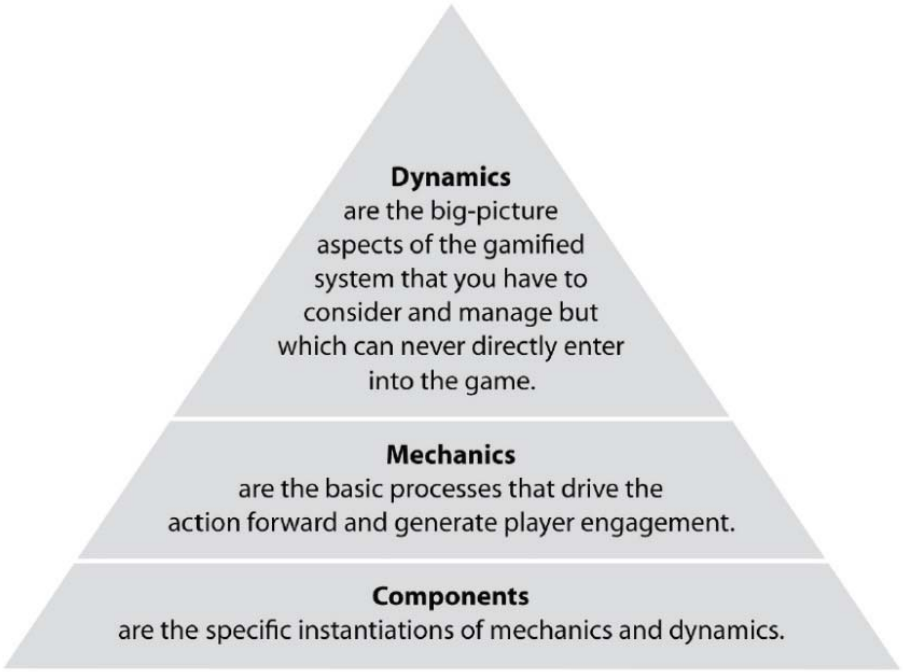

Figure 18. Game elements
Source: (Werbach & Hunter, 2012)

Werbach and Hunter (2012) explain that dynamics is considered as "behind the scene" of gamification. It states what the game is, explains how the gamification will be motivational and fun. Altarriba describes it as "the grammar of a game" (2014). Moreover, mechanics is the part that helps the action of the gameplay and makes the user engage. These mechanics connect to dynamics and help fulfill it. Furthermore, Werbach and Hunter describe the components as the delicate parts that connect with mechanics or dynamics. These are used to attracted users and to keep them engaged. Most of them will have direct connection with the user. Each category is listed in Table 4.

Table 4. Dynamics, mechanics and components

Dynamics[34]	**Mechanics**[35]	**Components**[36]
Constraints	Challenges	Achievements
Emotions	Chance	Avatars
Narrative	Competition	Badges
Progression	Cooperation	Boss Fights
Relationships	Feedback	Collections
	Resource	Combat
	Rewards	Content Unlocking
	Transactions	Gifting
	Turns	Leaderboards
	Win States	Levels
		Points
		Quests
		Social Graphs
		Teams
		Virtual Goods

There are many other elements that can be taken from games. The components mentioned by Werbach and Hunter (2012) above are the commonly used elements in gamification. Any game element has the potential to be integrated into a product depending on the context. Elements such as badges, points, levels and leaderboards are argued to be the basic and commonly integrated ones in products. They are easy to have an impact on the users' behavior, even if slightly (J. Hamari et al., 2014, p. 3027; Mekler et al., 2013, p. 66). Sharleen Sy made a chart (Figure 19) based on other frameworks and users type. It can be helpful while designing the gamification layer. She matches the game elements with the user type and their motivation.

[34] Please refer to Werbach & Hunter, 2012, pp. 78-83 for further information.
[35] Please refer to Werbach & Hunter, 2012, p. 79 for further information.
[36] Please refer to Werbach & Hunter, 2012, pp. 78-83 for further information.

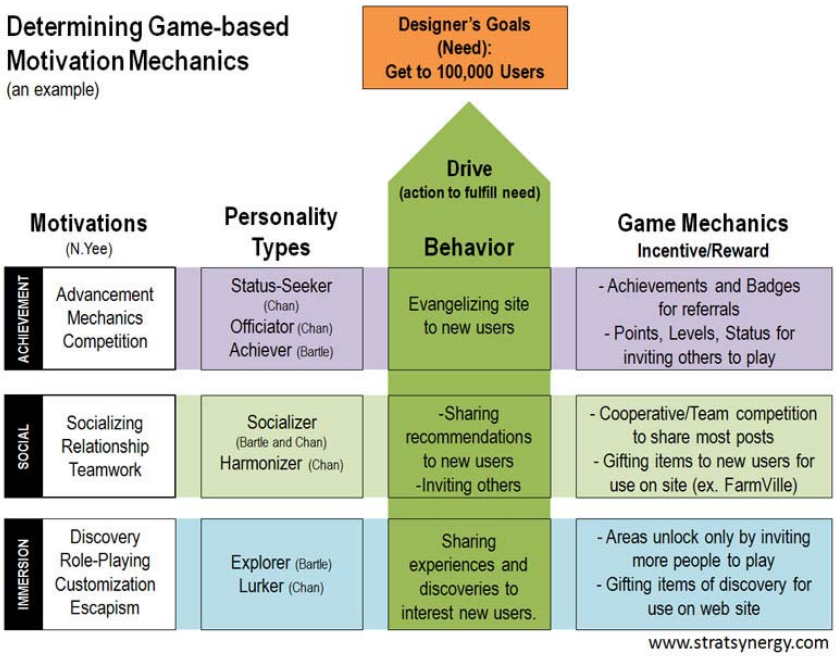

Figure 19. Motivation model
Source: (Sy, 2010b)

3.1.1. Common Game Components

Certain game elements need to be described in detail to develop a better understanding of them. In this section, prevalent game elements will be discussed. These elements are easily noticeable in games, hence is the common use. Some of these elements will be used in designing the prototype for the experiment.

3.1.1.1. Points and Scoring

This component is very common and easy to use. Points have different types and scoring has multiple levels. Scoring can give meaningful information to the user and their engagement can be assessed through points (Scheider et al., 2015). Points provide valuable data for both the designer about the user and for the user as immediate feedback for their progression and product engagement. Figure 20 is an example from *Nike+* app as it shows points as miles, it indicates how much the user runs. Points and score can be used as rewards for the user, a motivational driver, and functions to gain the user's trust (El-Khuffash, 2012). Points can be gained individually or shared

between the users, and also can drive the action of the user forward. Zichermann states five types of points gamification can use, these are[37]: Experience Points (XP), Redeemable Points (RP), Skill Points (SP), Karma Points and Reputation Points (Zichermann & Cunningham, 2011, pp. 38-40).

Figure 20. Screenshot of *Nike+* app is an example for point and scoring, here points presented as miles
Source: (https://itunes.apple.com/us/app/nike+-running/id387771637)

3.1.1.2. Achievements and Badges

Achievements[38] or badges are not new things to be used as a motivational driver. They have been used in educational system and activity-based organizations such as boys' scouts and military (Deterding, 2012, p. 16). They are either physical or visual representatives of points and accomplishments as argued by Zichermann (2011) and Werbach and Hunter (2012). They should be visible to other users so that they would indicate the status of the user.

One gamification example that utilizes this is: *Khan Academy*[39]; it is an educational website which uses gamification as additive layer to add fun to learning (Figure 21). Many game platforms and systems use badges or trophies to keep users

[37] Please refer to (Zichermann & Cunningham, 2011, pp. 38-40) for detail explanation of each type.
[38] It is a visual or physical representative shows that the user achieved something.
[39] www.khanacademy.org

playing with their system like *Xbox, Steam* and *PlayStation*. Usually in games, gaining badges is considered as sub-goals and secondary rewards that the player can gain. (Juho Hamari & Eranti, 2011). However, in gamification, gaining badges can be considered as the main goal or a drive pushing the user towards the main goal, depending on the context and the user's mindset. Perhaps some users might use the product just because they are interested in gaining the badges and to share them with their friends (Groh, 2012).

Figure 21. An example for achievements and badges game element, here is Khan Academy badges
Source: (Taken from the researcher profile on the website)

Users who have a particular interest in collecting things look for these badges. Some users are more interested in the surprise part of the achievement and the sudden appearance of a badge. Others can feel pleasure by the appeal of the badges per se. Designers of gamification can use badges to promote social activity and goal paths, also as a feedback for the user's progress (Zichermann & Cunningham, 2011, p. 55). Hamari and Eranti summarize the parts that make up the achievements and badges (2011, pp. 5-14). It consists of three components:

1. Signifier: Which is the visual, name and description of the badge.
2. Completion Logic: It is about the requirement from the player to gain it; consists of: Trigger, pre-requirements, conditional requirements and multiplier.
3. Rewards: It consists of three part depending on the boundaries that the badges gained in; in-game, out-game and achievement (meta-)game

3.1.1.3. Feedback

Most of the other elements are designed to stream into Feedback either visually like badges and trophies or informatively like points and levels. *Duolingo* website can be given as an example (Figure 22); it is a website that helps users to learn another language. Feedback gives direct information on how the user is heading toward a goal. Werbach and Hunter argue that feedback increases autonomy and self-reported intrinsic motivation and users can use it to regulate their behavior (2012, pp. 65-66). It is essential to gamification designers to add this very element into their products especially in the fields of health, education and path like progression (Zichermann & Cunningham, 2011). An example of Feedback is presented by Korn, Schmidt and Hörz in their test of gamification in a factory production line:

> The normal speed of an individual user will be shown by a transparent grey stone, so that the worker always knows if he or she is doing well compared to the personal average. This method, called "shadowing'', is derived from racing games, where drivers can compete against their own best rounds or documented best drives. (Korn et al., 2012)

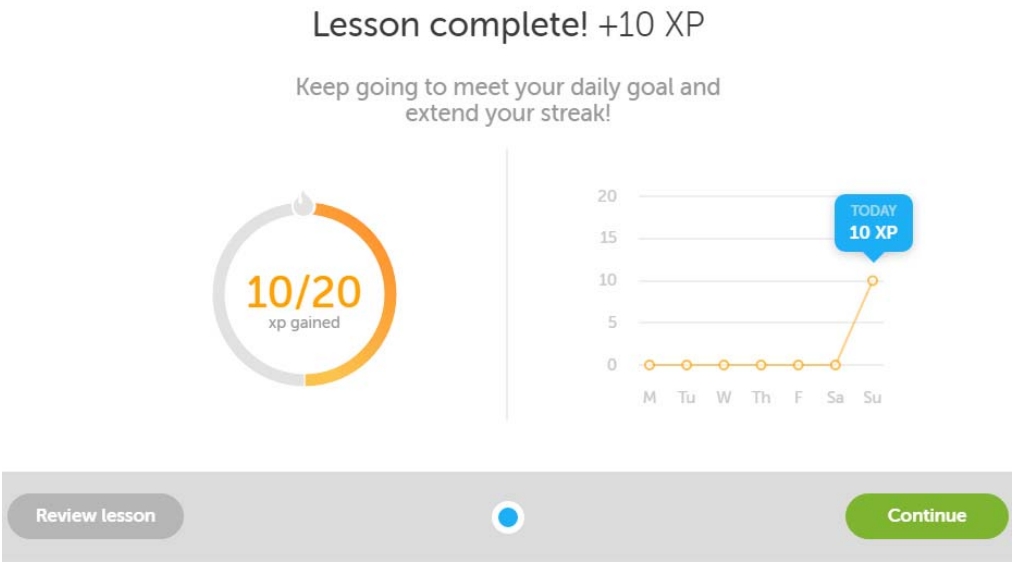

Figure 22. An example for feedback game element, here is Duolingo progress of lesson completion
Source: (The researcher profile)

Feedback can also keep the users in a loop that cause them to keep using the product (Zichermann & Cunningham, 2011). Feedback loop can cause users to dismiss an old behaviour or generate a new one either by positive feedback or negative feedback. The simplest loop can be explained briefly as:

1. Users make the action (or interact with the product) then,
2. They will get information about their action such as points or get rewards then,
3. The users will use the product again or come back to it again.

The hook model is another way to see how feedback can affect human behavior. This model (Figure 23) is mentioned in the book *Hooked: How to Build Habit-Forming Products* (2014). It evaluates and puts a plan to create products that will help their users to improve or disavow a behavior. It consists of four stages that act as a cycle that needs to be repeated to be effective. These phases can help the product to hook their users in the sense that they will come back repeatedly and willingly. These four stages are:

1. Trigger: The behavior activator.
2. Action: The behavior is done in anticipation of a reward.
3. Variable Rewards.
4. Investment: The user's investment in product or service such as time, money, etc. It makes the user go again in the cycle.

Figure 23. The hook model
Source: (Eyal & Hoover, 2014)

3.1.1.4. Rewards

Rewards are used in gamification as a way to enrich the experience. Other gamification elements can also be used as rewards to attract users and keep them loyal to the product or the service. Elements like points and badges could be regarded as part of the reward system. It is not only the elements that can be considered as rewards, but also the emotional aspect of the gamification experience can be used as rewards depending on the user type[40] (Sy, 2010a; Zichermann & Cunningham, 2011). For example, if someone has an obsessive-compulsive personality, they might be inclined towards organizing things all the time, so playing a game that asks or allows them to organize stuff might be the reward itself such as a city planning games (for example: *plan it green).*

Eyal and Hoover reveal in their book *Hooked: How to Build Habit-Forming Products* (2014, chapter 4) three types of rewards. These rewards affect the kind of users that will engage with the system. These are:

1. Rewards of the Tribe: This kind of rewards have an affect on how user perceived by the other users.
2. Rewards of the Hunt: This kind of rewards are the objects and information users interested in gaining after using a product.
3. Rewards of the Self: This type is about the users themselves to feel some kind of fulfillment. This type is influenced by intrinsic motivation.

In the book *Gamification by Design* Zichermann introduces a system of rewards that give the designer an easy way to look and implement rewards in the gamification system. It is termed as "SAPS", which is the acronym for "Status, Access, Power, and Stuff" (2011, pp. 10-12).These rewards have the possibility to attract users, still the user might leave the product or the system if the rewards no more exists. The value and emotional effects of the rewards can either cause the user to come back or leave the system completely. For that the designer needs to understand the user to design an effective reward system (Zichermann & Cunningham, 2011).

[40] See p.63 for a description of the users' types.

3.1.1.5. Levels

Levels are designed to give the user an indication: 1) They can indicate a status that would underline the mastery of the system, as in real world like the ranks system in the military. 2) They can be seen as a progress in a path or journey to show the position of the user in relation to the whole path, a real world example would be grades at school. Levels can also indicate the difficulty of the system; the higher the level gets the more difficult the system is. However, like the interest curve (Figure 24), they should be designed in a curve liner form (Figure 25) to keep the user interested. In this way it gives the users a confidence to progress and that they can use the product without hindrance. Users who find the level too hard will leave they system, on the other hand, if the users manage to pass, they will feel accomplished something. Levels should be designed logically; starting with easy levels then progressing to more complex levels. Levels should suit the users' needs and should be easy to understand. Designers should make it flexible to add more levels if needed. The names of the levels should be memorable and attractive to the users. The name should give the user a value to desire it (Zichermann & Cunningham, 2011, pp. 45-46).

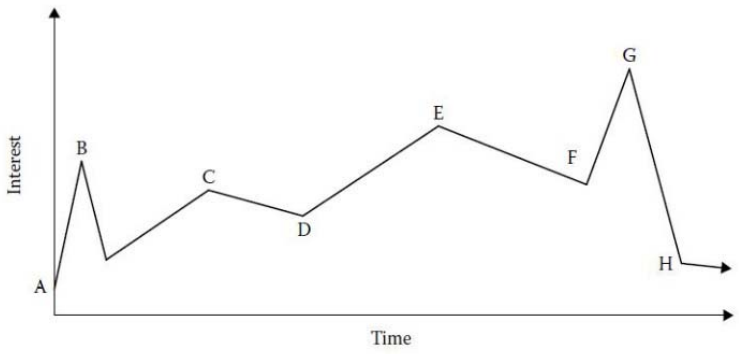

Figure 24. Interest curve
Source: (J. Schell, 2014, p. 282)

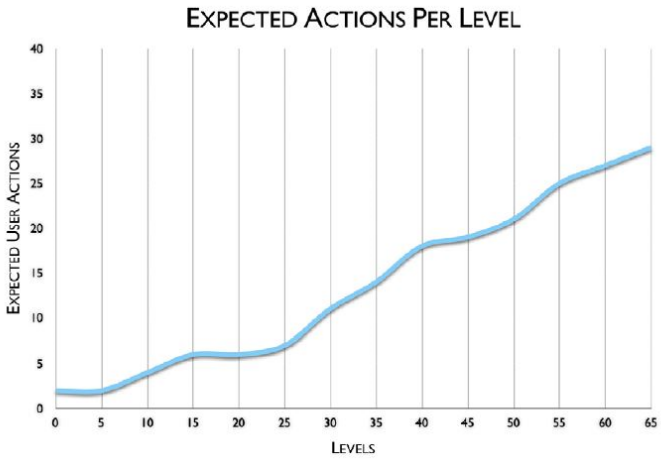

Figure 25. Level difficulty curve line
Source: (Zichermann & Cunningham, 2011, p. 46)

3.1.1.6 Leaderboards

Leaderboards are a way to help users measure their progress in comparison with other users. It is a classic game element used since the arcade game machines. Points and levels will stream into this mechanic and give a feedback to the users about their status in the leaderboards. In today's gaming systems, due to advanced technologies, there is a possibility to have many kinds of leaderboard arrangements. Zichermann underlines the most commonly used leaderboards: 1) The no-disincentive leaderboard puts users in the middle of a list among other users. 2) The infinite leaderboard enables users to see their status in a various arrangement and never disappears from the list; for instance, arranging by day, socially, globally or by selected group (2011, pp. 50-51). For example: *Nissan Leaf* [41]world leaderboard (Figure 26) to show covered miles. Nonetheless, leaderboards can have some negative effects if they are not designed deftly. Due to the competitive behavior that the leaderboard encourages, falling back in the list will demotivate some users, causing them to stop using the product (Werbach & Hunter, 2012, p. 76).

[41] http://www.nissanusa.com/electric-cars/leaf/

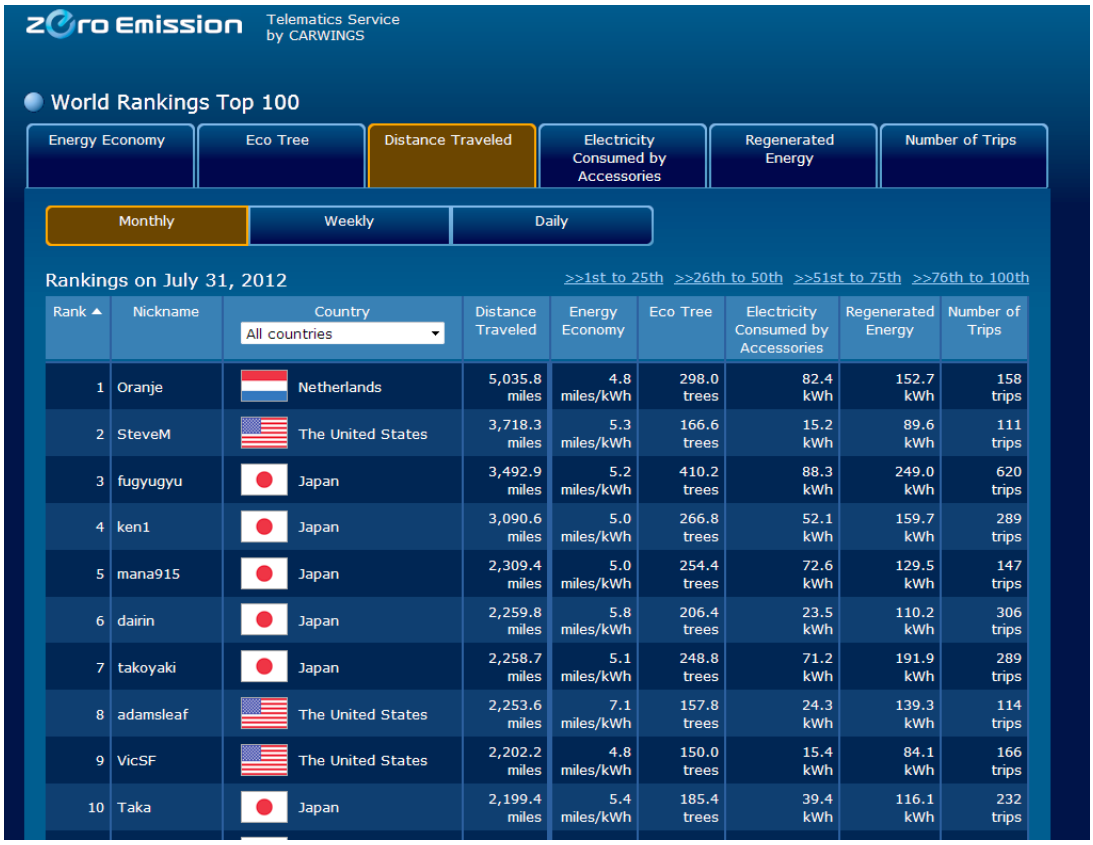

Figure 26. Nissan Leaf world leaderboard
Source: (https://jpwhitenissanleaf.com/2012/08/05/high-mileage-leafs-60000-miles-per-year/)

3.1.1.7. Onboarding

Onboarding is an element that helps new users to join the system and to use the product. It makes it easy for the users to understand how the system works. The first few minutes of user interaction with the product will be determining in the sense that it will either encourage the user to use the product and keep using it or leave and not use the product. Onboarding lets users experience the system and what it has to offer without them spending too much time. One of the ways to achieve this is to make easy levels for novice users and guide them while playing the level. Another option would be to offer rewards and badges from the beginning for the users to make them feel that they understand the system and that they are able to continue using it. Designers use this method to slowly introduce the user to the complexity of the system(Zichermann & Cunningham, 2011, pp. 59-62).

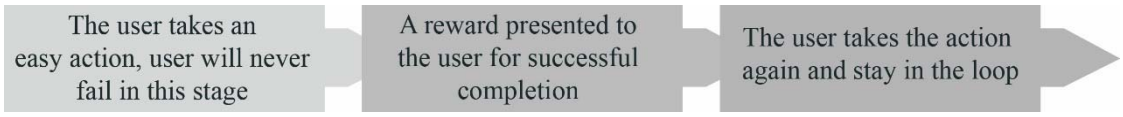

Figure 27. Onboarding loop

Figure 28. An example for onboarding game element, from *EpicWin* app
(It guides the users on how to use the app while playing)
Source: (http://www.rexbox.co.uk/epicwin/)

3.1.1.8. Challenges and Quests

To keep the user in a state of interest and let them enjoy the system, designers add diverse challenges. Also quests give the user a sense of direction in the system as to what needs to be completed. Challenges and quests make the goals clearer for the users. The overall experience can be shaped by adding multiple quests to create some depth into the gamification layer. This can be used to craft social behavior within the system by offering challenges and quests that require corporation between users. It can motivate users to accomplish the action or it can shape certain behavior (Werbach & Hunter, 2012; Zichermann & Cunningham, 2011, pp. 64-67).

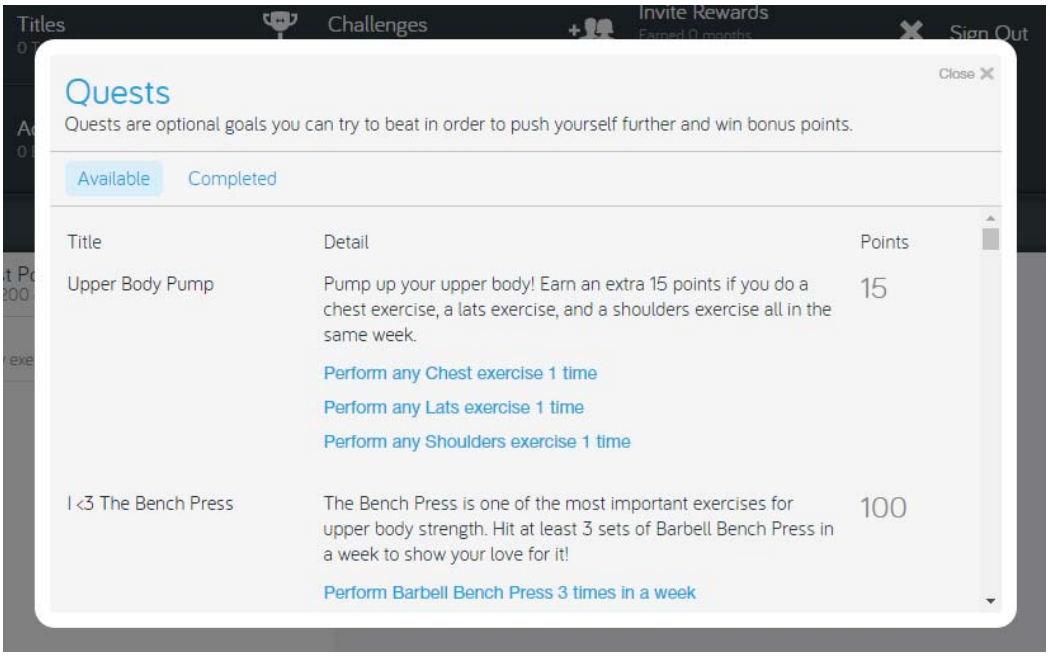

Figure 29. An example for challenges and quests game element, here is *Fitocracy*[42] quests
Source: (Researcher dashboard)

3.1.1.9. Goal

Giving users a goal to accomplish will make the experience more exciting and delightful, especially for users who are achiever types[43]. Goals can be shaped depending on the context and the users. Designers can add various goals to interest various type of users. Another way would be to let the users customize the goal by themselves. This element is not about the company or the business goals but about the users' benefit (Scheider et al., 2015).

[42] It is a website and an app that help users to manage their fitness routines (www.*fitocracy*.com)
[43] Please refer to chapter 3 for player types p.63 to know more about achiever type.

Figure 30. An example for goal game element, here is *Superbetter*[44] goal list
Source: (The researcher profile)

3.1.1.10. Storytelling

In games to keep a player interested in the gameplay they add a story to it; usually games are build based on a story. In the same vein, storytelling in the gamification is an important element, making it interesting. The story can shape the gamified product experience and motivate users' engagement with the product. The story can give more meaning to the gamified products (Altarriba, 2014). Therefore, it should not be there for the sake of it, in contrast, storytelling should be thought and designed very carefully (Werbach & Hunter, 2012).

[44] *Superbetter* (www.superbetter.com) website, made by Jane McGonigal, helps users to achieve personal growth and tackle real-life challenges. Users might use it to adopt a new habit, develop a talent, beat depression, overcome anxiety, and heal from physical injury.

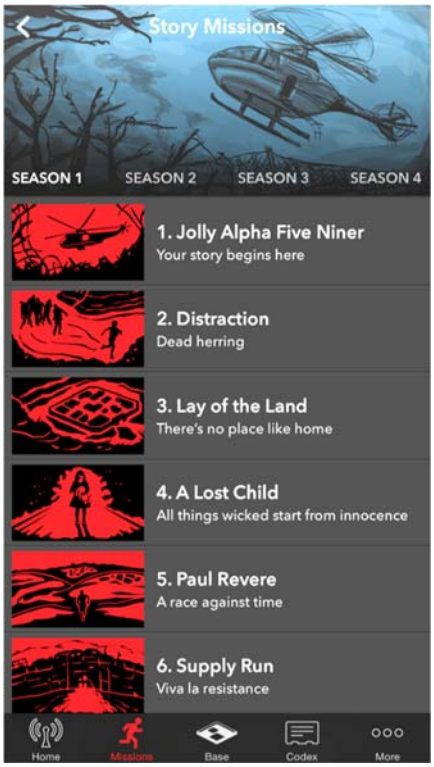

Figure 31. An example for storytelling game element
(*Zombies Run*[45] provides a background story to encourage users to run)
Source: (zombiesrungame.com)

3.1.1.11. Competition and Cooperation

These elements can spark social activity. It either encourages users to gather to solve an issue or make them compete to find a solution. Tasks in gamification system can be divided to serve both directions depending on the context and the goal that the user is trying to achieve. Other game elements can help to tailor competition and cooperation. Points and badges can push competitive behavior whilst quest and story can suggest corporative behavior (El-Khuffash, 2012).

[45] *Zombies Run* is a fitness app to encourage user to enjoy running and prevent them from getting bored.

Figure 32. An example for cooperation: users cooperate to open the door of the fridge to get the drinks
(By saying "I am canadian" in six different languages).
Source: (https://www.youtube.com/watch?v=-z9d1sk3N-M)

3.1.2. Useful Models for Game Elements

Abovementioned elements are among many other game mechanics that a gamification system can use to introduce fun and enjoyment to a product. There are some toolkits to help designer to use gamification in their product such as Victor Manrique's toolkit "The 35-gamification mechanics toolkit"[46]. In this toolkit, he lists 35 mechanics, he explains each one, their pros and cons, and it is useful to consider when designing the gamification layer.

All these elements should work together to create a path for the user to take. The experience users will have through the journey of interaction with the product will depend on how these elements are put together. Wendel's model, which is called "CREATE", can help designing the path for the users. In his book *Design for Behavior Change,* he describes the path that an action can go through in a user's mind. His model consists of five stages (cue, reaction, evaluation, ability and timing) which the acronym CREATE stands for (Figure 33). Whether the user will take the action or not is based on these elements. These five stages are identified as follows (2013, pp. 288-289):

[46] http://www.epicwinblog.net/2013/06/the-35-gamification-mechanics-toolkit.html

- Cue: The thought of taking the action because of the external or internal cue. Gamification element can harness this to drive users into the products; for example, using a visual and sound to synchronize it with internal or external thoughts.
- Reaction: The automatic, intuitive self-reaction to the cue. It checks whether the action is relevant and interesting at all. It generates an emotional response. It activates and starts to consider other possible actions that the person might take. Making gamification elements easier and interesting to react with when the cue presented will help attract the user to pursue the cue.
- Evaluation: If the action is not intuitively rejected, it raises awareness for a cost benefit analysis: (Is the action hard? Is it valuable? Are there better alternatives?...). Making gamification element cover a wide range of alternative to hook the user also makes interacting with the elements much affordable.
- Ability: The person must actually be able to do the action. The users should 1) know how to do it, 2) have the resources to do it, and 3) the person should think there is no risk of failing. Some gamification elements can be used to make sure that users will be comfortable performing the act; for instance, onboarding can help the user in the beginning of the interaction.
- Timing: The action should be timed properly to invoke urgency and have a reason to do it now not later. Gamification elements such as narrative, goal, quest... etc. can be used to portray urgency and to give the user motivation to commit the action.

Figure 33. The create action funnel
Source: (Wendel, 2013, p. 40)

Throughout the path there will be distractions, either internal or external. These distractions might cause the user to leave the product while interacting with the gamification layer or before the interaction. The designer should consider these distractions and design a gamification layer accordingly, using the elements to pull the user away from these distractions and keep him in the system.

Another useful model is Yu-Kai Chou's framework that links game elements and cognitive drives with users, which can be used to plan engaging and motivating experience; he calls it "Octalysis framework" (Figure 34) (2012). This framework can be used to analyze and build gamification systems. He argues that almost all games are fun because of certain drives human beings have which motivate them to engage with the activity. There are eight drivers indicated by this framework[47]:

1. Epic meaning and calling.
2. Development and accomplishment.

[47] To know more about each drive, Pleas go to http://yukaichou.com/gamification-examples/octalysis-complete-gamification-framework/

3. Empowerment of creativity and feedback.
4. Ownership and possession.
5. Social influence and relatedness.
6. Scarcity and impatience.
7. Unpredictability and curiosity.
8. Loss and avoidance.

These drivers are organized in an octagon shape. The shape can be divided further into major sections, top and bottom, left and right. The right part can refer to the right brain activities and intrinsic motivation (creativity, self-expression and social). The left part can refer to the left-brain activities and extrinsic motivation (logic, calculations and ownership). Yu-Kai Chou refers to the top part as the white hat, which is the positive motivation that allows users to be creative, expressive and the activity has a meaning for them. The bottom part is referred to as the black hat, which is the negative motivation that drives users to engage with the system based on feelings such as fear of losing something and uncertainty. To achieve a good gamification layer these core drivers should be considered and planned well. Some drivers might be stronger than the others depending on what the product wants users to do.

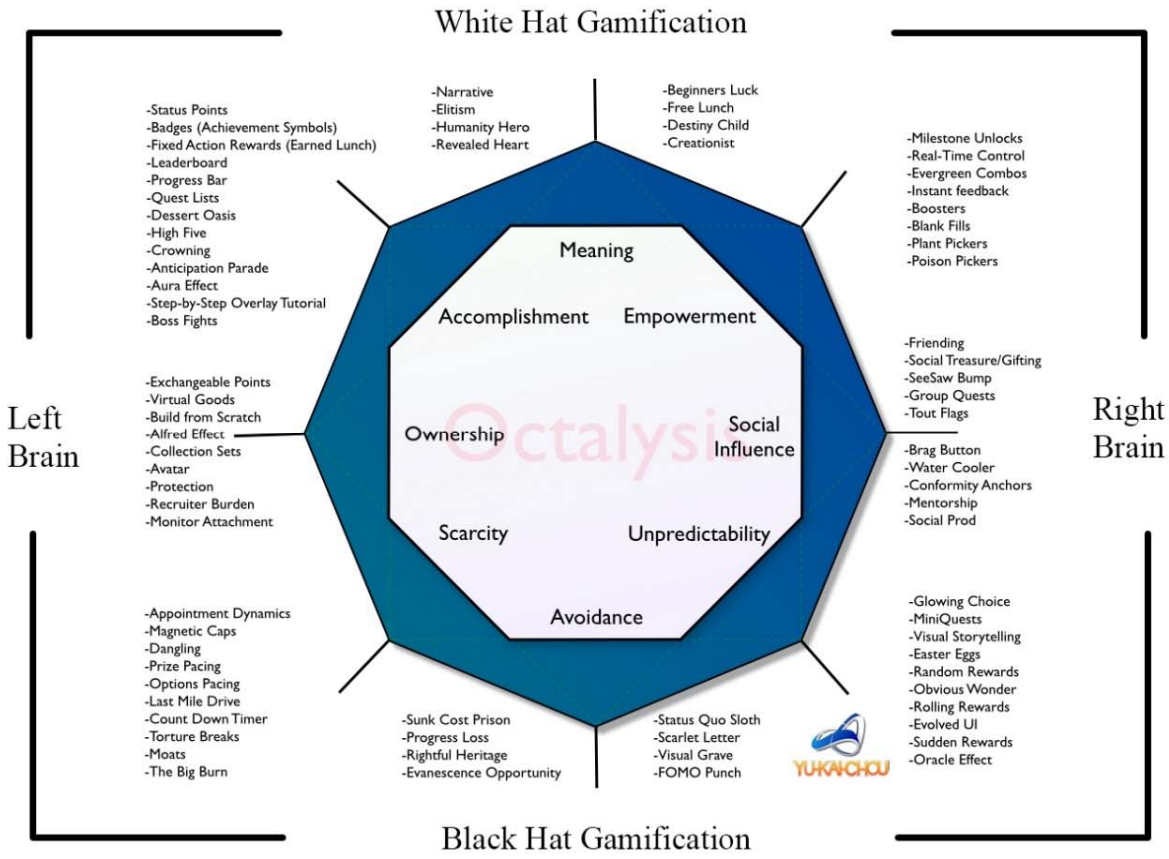

Figure 34. Octalysis complete gamification framework
Source: (Chou, 2012)

3.2. Users: Players

To design for motivation the designer needs to know and understand users, in this case, the players. Products that use gamification can appeal to a certain social group depending on the context. Knowing the target users can help shape the delightful experience for them. There are many player types models mentioned in the literature and also by game designers. It does not mean that certain users will fall under one category or another, one user can have different types and characteristics (Bekker, Sturm, & Barakova, 2010; Zichermann & Cunningham, 2011). Examining these will help building the prototype for the experiment since these players' types can be appropriated for the both worlds, digital and analog. Designers can incorporate these types into their design if they intend to develop playful products and services.

3.2.1. Lazzaro's Player Types

According to Lazzaro (2004), there are four reasons why people play and have fun. She explains this in the model "4 key 2 fun"[48]:

- Hard fun players: These players search for something challenging and make strategical thinking works, they seek for competition and winning.
- Easy fun players: Players seeking exploration and roleplaying. Finding curiosity and adventure, they like to explore.
- Altered state players: Players seeking excitement and escaping from their thoughts. Reaching the play for its internal sensation of joy.
- Social players: Players seeking connection with other people, connecting with certain social groups. They seek the enjoyment of being with the team and socializing that the gameplay offers, they are reaching others by playing.

3.2.2. Bartle's Player Types

Bartle suggested that there are four types of players (1996) (Table 5); the personality that comes with it drive the player towards playing and fun. This model is based on Multi-User Dungeons (MUD) games. It is organized as two main factors: First, players are either acting on or interacting with. Secondly, players are interacting with the other players or the world (Figure 35).

Table 5. Bartle's player types characteristics

	Achievers	**Explorers**	**Socializers**	**Killers**
Seeking	Win and gain	Discovery	Interact with other	Power of dominating
Act on	World			People
Interacting with		World	People	

[48] http://www.nicolelazzaro.com/the4-keys-to-fun/

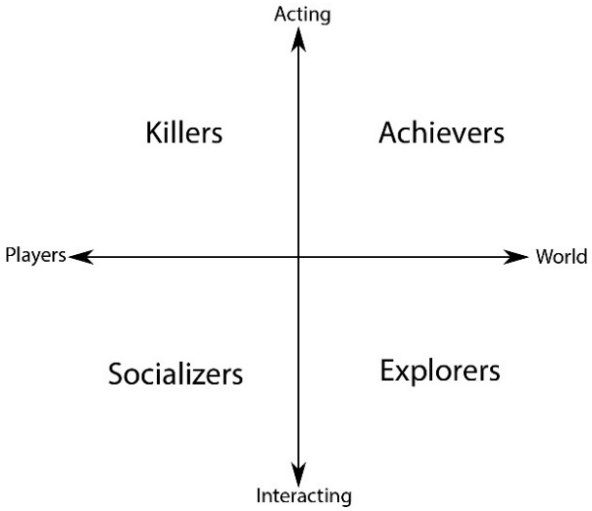

Figure 35. Bartle's player types
Source: (Bartle, 1996)[49]

Since this model only applies to MUD games as stated, designers, including Bartle himself, indicate that this model has its flaws, especially if considered to be used with a system other than MUD. Bartle mentions two flaws particularly: 1) player can change type over time, and 2) the main player types seem to have sub-types. Having modified this model, he added a third dimension (Table 6) (Bartle, 2005, p. 3) . This third dimension causes each of the previous four types to have two subcategories (Figure 35). Bartle made the new model for the virtual world. He added the third dimension which contains two categories: 1) Implicit: Action is done automatically, 2) Explicit: Action is planned for it (2005, p. 2).

Table 6. Bartle's new player types

	Implicit	**Explicit**
Achievers	Opportunists	Planners
Explorers	Hackers	Scientists
Socializers	Friends	Networkers
Killers	Griefers	Politicians

[49] Please refer to (Bartle, 1996) for further information on each type.

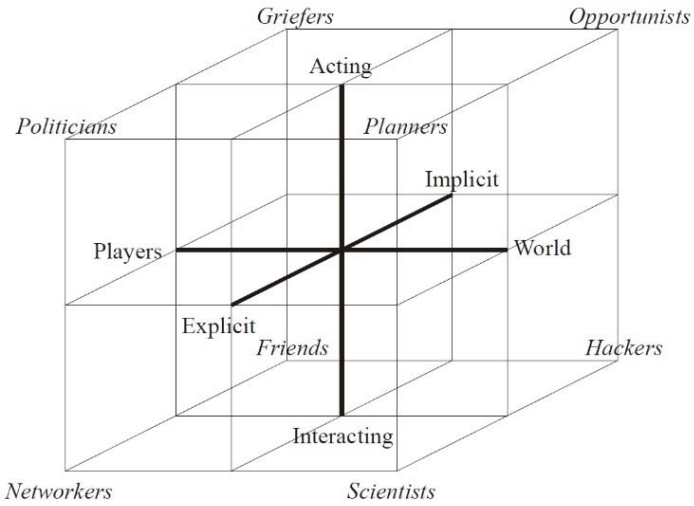

Figure 36. Bartle's new player types
Source: (Bartle, 2005, p. 2) [50]

3.2.3. Amy Jo Kim's Players Types "Social Games"

Kim's social matrix (2014) focuses on describing player types on the basis of their social context (Figure 37). Players are categorized based on how they would act in the social world. She identifies four types of personalities, and she adds different keywords on the matrix that indicate the personality. These types are[51]:

1. Explorers: They thrive on knowledge they gain by exploring.
2. Creators: They enjoy creating and customizing.
3. Competitors: They are skill seekers, they value learning and friendly competitions.
4. Collaborators: Teamwork and winning as a group is their goal.

[50] Please refer to (Bartle, 2005) for further information on the eight types.
[51] Please refer to (Kim, 2014) for further information.

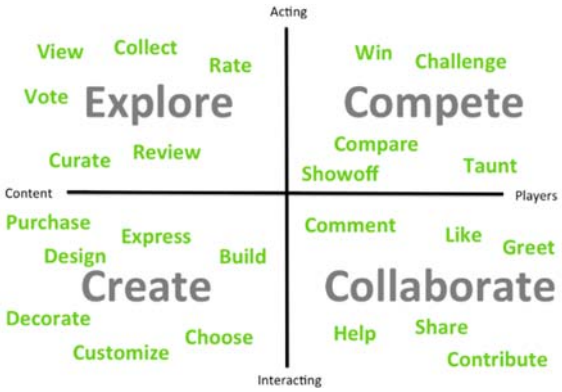

Figure 37. Amy Jo Kim's players' types "Social games"
Source: (Kim, 2014)

3.2.4. Andrzej Marczewski's Gamification Users' Types

Marczewski's (2015) model is based on Bartle's Player Types (1996) but integrates motivational needs into it. Applying intrinsic vs. extrinsic motivation to the model creates six player types (Figure 38). Marczewski states that these six types can be divided into three willingness to play (Table 7) (Willing, Less Willing or Non-Willing). These six types are[52]:

Table 7. Six types by willingness to play

Willing to play	**Less Willing**	**Non-willing to play**
Player	Socializers	Disruptors
	Free Spirits	
	Achievers	
	Philanthropists	

[52] Please refer to (Marczewski, 2015) for further information, Also see http://www.gamified.uk/user-types/

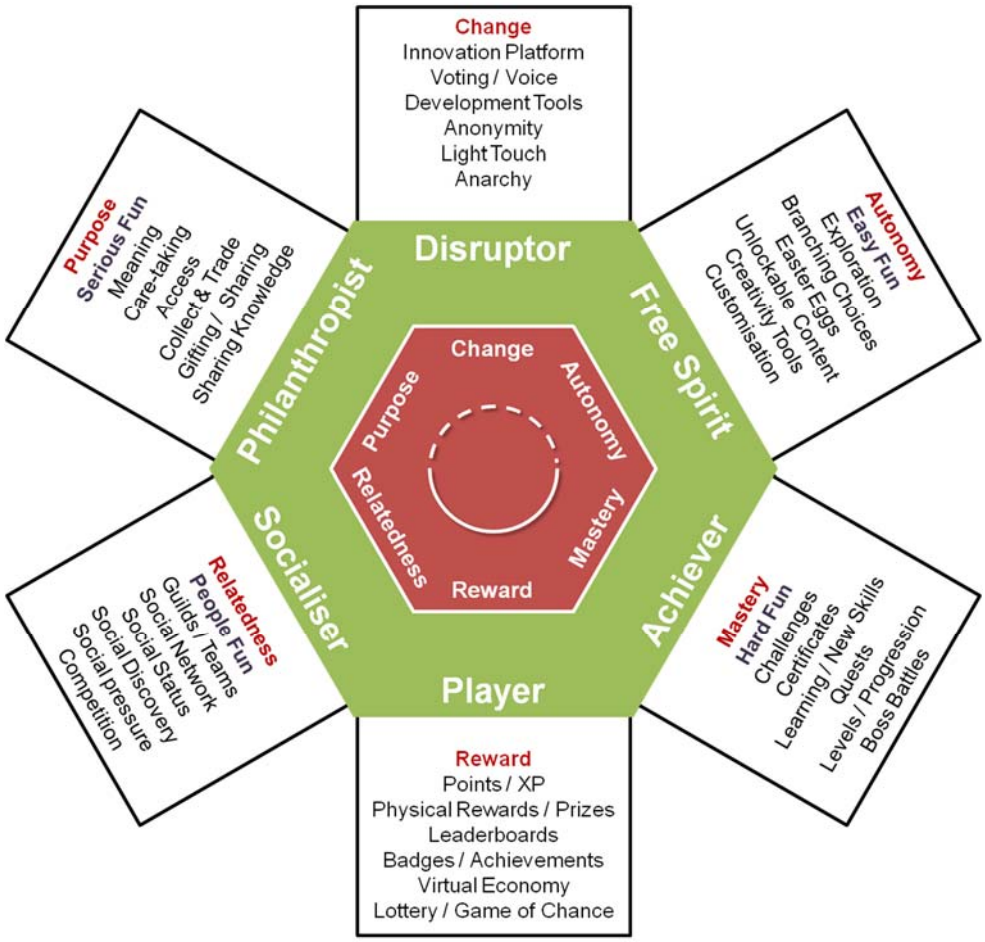

Figure 38. Marczewski's gamification users' type
Source: (http://www.gamified.uk/wp-content/uploads/2013/02/supporting-gamification-user-types.png)

3.2.5. Dreyfus Users' Types by Mastery

This model (Table 8) investigates users in terms of how they master and engage with the given system. This model can be used when designing for gamification. Understanding each skill level and its characteristics can be beneficial when designing the gamification system. Designing for different skill levels can guide the users on their experience journey. This model is divided into five levels[53] :

[53] Please refer to (H. L. Dreyfus & Dreyfus, 2005) for further information on each skill level.

Table 8. Dreyfus users' types by mastery

Skill level	Components	Perspective	Decision	Commitment
Novice	Context-free	None	Analytical	Detached
Advanced beginner	Context-free and Situational	None	Analytical	Detached
Competent	Context-free and Situational	Chosen	Analytical	Detached Understanding and deciding. Involved in outcome
Proficient	Context-free and Situational	Experienced	Analytical	Involved Understanding. Detached deciding
Expert	Context-free and Situational	Experienced	Intuitive	Involved

Note. Source: (H. Dreyfus, Dreyfus, & Athanasiou, 2000, p. 50)

3.2.6. Characteristics and Components of Players' Type

The researcher further organizes user types under two umbrella categories: 1) User types by characteristic (Figure 39), and 2) User types by components (Figure 40). The naming of each category is adopted from Lazzaro's player types (2004). Lazzaro's player types appear to be the most appropriate for the purposes of this thesis, since it is a direct and simple representative of players' attributes. With its four main categories of players' characteristics, it is easy to connect to other characteristics and components mentioned by other researchers and academicians. In this respect, pertinent terms and characteristics of different users can be summarized in four categories: 1) Hard fun player, 2) Easy fun player, 3) Altered state and 4) Social player.

Figure 39. An illustration by the researcher: user type by characteristic

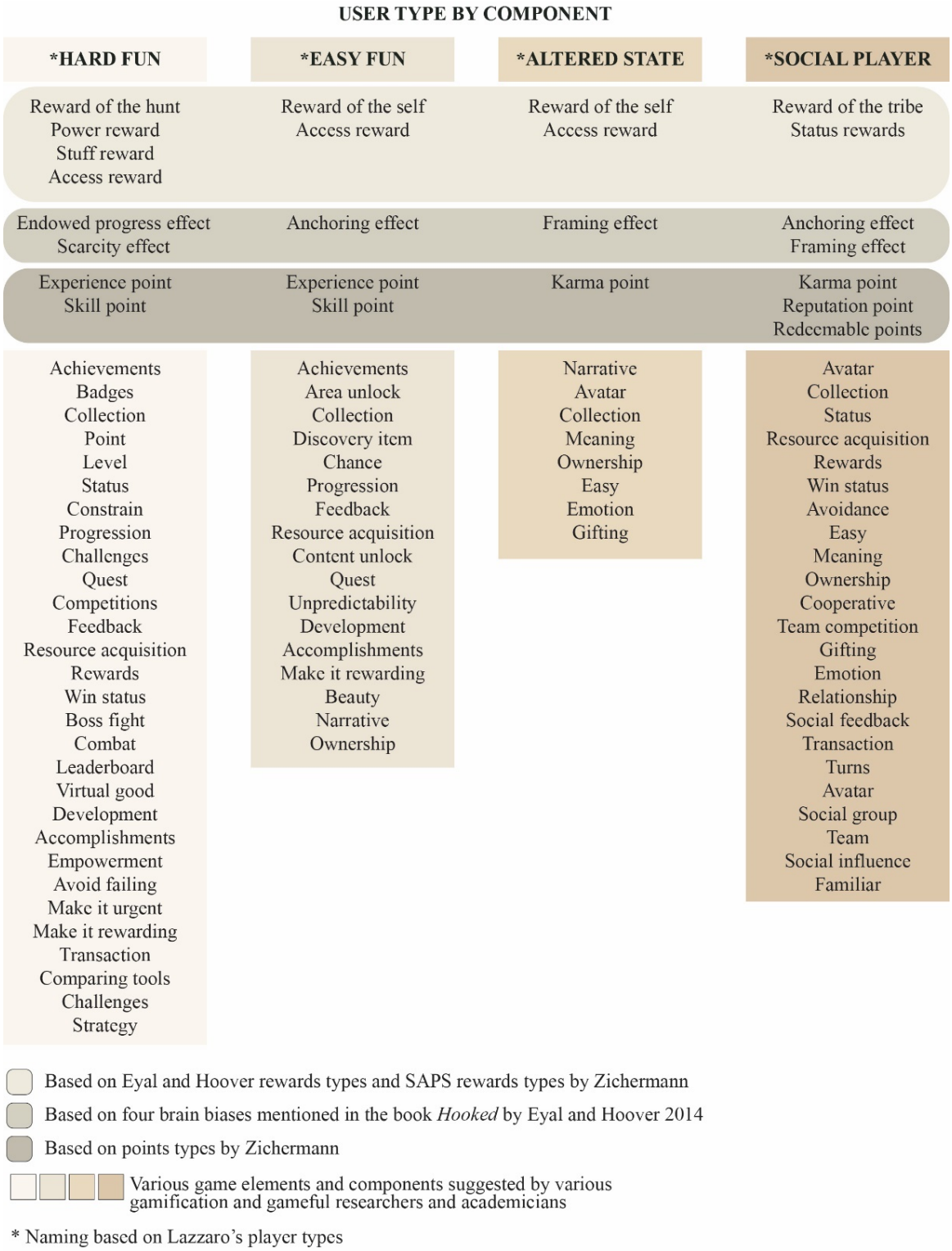

Figure 40. An illustration by the researcher: user type by component

Such structure that puts all the data into two compact charts allows it to be demonstrated in an easily comprehensive way. This can help when building a playful product or service, particularly because it visualizes all the components making it easy for the designer to choose from. Moreover, knowing the characteristics of each player's type will assist developing an interesting experience for the users. Designers can use the list underneath each type to enhance the product, and focus on the specific components that are associated with that user type. However, the user is not meant to fall under just one of these categories, sometimes the user behavior might belong to more than one category or the user behavior might shift from one category to another throughout the experience.

CHAPTER 4

THE EXPERIMENT

For the specific purposes of this thesis, an experiment is designed and used in order to understand how people interpret gamification. To this end, it proves important to design an experiment which would as well function to epitomize the ideas derived from the pertinent literature. Human beings may react differently to gamification from one place to another, from culture to culture and depending on their age. Therefore, it should be kept in mind that this experiment is conducted in Izmir/Turkey with seventh grade (secondary school) students around the ages twelve and thirteen. That is to say, the results and data received by this experiment might or might not work for other places and cultures, meaning this particular experiment can be a reference work for further experimentation in various cultures and/or with various age groups.

The research questions this experiment is intended to find answers to are:

- How individuals would perceive gamification products when related to awareness campaigns?
- How does a tangible gamified tool differ from common conventional campaign tools?[54]

For this research, the chosen subject to design the experiment about is awareness campaigns. Organ donation is the specific topic for the awareness campaign that the experiment will cover. The reason to choose this subject was: 1) the feasibility to find the necessary information about it, 2) a dedicated establishment for organ donation in the Ministry of Health, 3) the researcher's personal interest in the subject. In basic sense, the experiment was conducted to compare between a brochure and a gamified prototype which includes the same information as in the brochure. The brochure is provided by Izmir health department, it has been commonly used in the campaigns they organized. The information was used in the experiment without any alteration. Due to time limitation, the researcher did not opt for testing the brochure design to check

[54] Please refer to page 2 to see other relevant research questions.

whether it is effective enough or the design of the brochure need to be enhanced. This could be the subject for another study that could improve the brochure design and compare between different designs of the same medium.

In brief, the experiment was conducted in a secondary school in Urla with the seventh-grade students. The ultimate aim of the organ donation campaigns organized by the health department is to convince more people to sign for becoming an organ donor. For this experiment on the other hand, the aim of the campaign was to spread the knowledge of organ donation and transplantation. The legal age to become an organ donor in Turkey is eighteen and the participants of this very experiment are twelve and thirteen years old. Therefore, the main purpose of this study is to see the differences between the two different media used to deliver the message of the campaign.

4.1. Organ Donation in Turkey

Based on the information given by the Ministry of Health[55], there are campaigns throughout the year in different forms to cover the issue of organ donation. Their usual method to advocate organ donation is putting a stand in busy public areas. Areas such as metro stations or shopping areas that have a heavy public presence are chosen for this specific purpose. These stands have usually various posters and brochures that cover topics related to organ donation, cornea donation, the process to become a donor etc. The health department staff attend these stands to give further information if it is required. Some campaigns use gift items that have logos, slogans or taglines about organ donation. In addition, the Ministry of Health uses videos as part of their campaign. These videos are widely broadcasted by national television channels as an obligatory spot or during various pertinent exhibitions. Moreover, sometimes the health department makes presentations and organizes campaigns at schools and universities. Additionally, since Turkey is a Muslim country, some people are likely to be concerned about the religion's view about organ donation and transplantation. Thus, the Ministry

[55] An unofficial interview conducted between the researcher and the organ donation unit in the health department in Izmir, on May 2016. A meeting underwent with few officials discussing the information about organ donation in Turkey and the researcher's proposed experiment. More information about organ donation can be found in their website (in Turkish): http://bagis.ism.gov.tr/ and: organ.saglik.gov.tr

of Health occasionally employs a religious figure in mosques to explain the Islamic point of view about organ donation and transplantation.

According to the Ministry of Health, the process of becoming an organ donor (after death) is relatively easy in Turkey. One has to visit one of three places to register: 1) City's or county's health management, 2) Public or family health centers, 3) Hospitals. Then one has to fill a form declaring his/her interest in donating his/her organ after death. Then the person will get a card that states the holder is an organ donor. Furthermore, it is requested from the donor to inform relatives, family and friends to reduce the chances of misunderstanding about the organ donation after death. Also, as a way of motivating individuals, the health department plants a tree in the name of the donor. The surgery required for organ donation after death and the transplantation is free for local Turkish citizens in Turkey.

4.2. Campaign Tools

Campaigns exist to tell the public something important (at least from the campaign organizer's point of view) (Lamb, 2010). For that they use different means to attract their audience. Various media exist to promote campaigns for a business, issues, ideas etc., to the masses, to the people who are the audience, the scope or the target of the campaign. Media like television and radio can help to spread the word to a wide range of people. Similarly, social media in particular issued as a medium in many campaigns. Additionally, there are the usual tools such as posters, brochures and gift items.

However, there are also different unusual methods used for campaigns: For instance, a theatrical in the public. Campaigns try to utilize novel ideas, these ideas/products have different traits to catch the public's attention. Some of these products deliver the message without the need of the users' interaction but other products need the interaction of the individuals around. One example of such campaigns is the "autism speaks campaign" (Figure 41). This campaign uses technology to achieve an interactive experience. Mainly there are two things; a screen and a face tracking

device. The tracking device will track people's movement in front the screen and then move the girl in the video to a different direction. Whatever direction the participants move they cannot make an eye contact with the girl in the video. This is designed specifically so that the participants will understand that children with autism refrain from eye contact.

Figure 41. Autism speaks campaign
Source: (CampYes1, 2011)

These interactive products come in different shapes and colors, some have partial movements, and for others, the whole product moves to interact with the surrounding. It is compelling to see that campaigns can use and adopt from other fields to spread their message. This was the actual starting point for this thesis; what happens when campaign organizers think about the users/target audience who will interact with their products?

4.3. Designing The Prototype

The prototype required for this experiment is made to duplicate a few game elements. To discover how people feel about gamification while receiving information (the campaign message), few game elements were embedded in the prototype. There are many game elements as discussed before in the third chapter, however not all the elements are easy to transform from a digital form to a tangible form. Before designing the prototype, the campaign material was needed to be prepared. To this end, the researcher approached the health department in Izmir (İzmir İl Sağlık Müdürlüğü) to

gather the information for the campaign. The information gained is about the process of donating, what they do for campaigns and other data related to organ donation in Turkey in general. Also they provided a brochure which they usually use in their campaigns to be used in the experiment.

The steps undertook in order to design the prototype are as follows:

1. First step was to examine the information received from the health department; the brochure[56] to be precise. This required the information to be translated to English from Turkish. Not all the information in the brochure is used in the experiment, and that is because: a) to keep the prototype as small as possible, b) to reduce the time that each individual will spend to do the experiment, c) to reduce the possibility of boredom the participant might get throughout the experiment.

2. The following step was to organize the information in similar manners in both tools; the prototype and the new brochure. The new brochure was made similar to the one taken from the health department but with less information as stated above[57]. The same information in the new brochure was transformed into the prototype. A new brochure was created because the experiment compares one conventional campaign tool, in this case the brochure, with the prototype.

3. Next step was to integrate the information into the prototype in a gamified way. In order to do this, a storyline was created, which itself is actually a game element[58]. The story consists of questions that provide the participant with the information about organ donation. The whole story is put in such a way that the user feels an urge to help the character[59].

4. Another step was to design the prototype that includes the game elements in addition to the information about the organ donation.

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[56] Please check appendix A for the brochure
[57] Please check appendix B for the new brochure.
[58] Please see p.57 for the game element: story.
[59] Please check appendix C for the storyline.

5. Final step was to translate back all the information into Turkish because the participants are Turkish citizens[60].

Various designs have been made for the prototype to explore the idea of converting digital gamification to a tangible product. Additionally, this experiment serves to understand and experiment with applying digital gamification to tangible artifacts. There is a vast selection of game elements that can be applied to a gamification product. Some can work well in digital form due to the ability of tracking the user data. Others work well as a physical form such as a tangible reward. By studying and understanding each element, one can decide which element fits best to the available situation.

The idea of the prototype for this experiment is a game-like tool with a storyline that has questions in order to deliver the information. Put simply, the prototype is an informative game the users will play. Having studied all the game elements, a set of elements were used in the prototype to evoke playfulness and increase the interest of the user to play and learn about the information. The game elements used in the prototype are: Avatar, path, goal, points, score, storyline, feedback and levels (Figure 42). One point to mention here that this particular design was made for this particular campaign (organ donation), and thus, it might require intense modification when appropriated for other awareness campaigns. Having said this, tangible gamification can be designed in such a way that different campaigns can use it without the need for heavy modification. It is also possible to design one gamified product that works for multiple campaigns but it will require extensive planning and testing.

[60] The appendices include the Turkish and English versions of all the material used in the experiment.

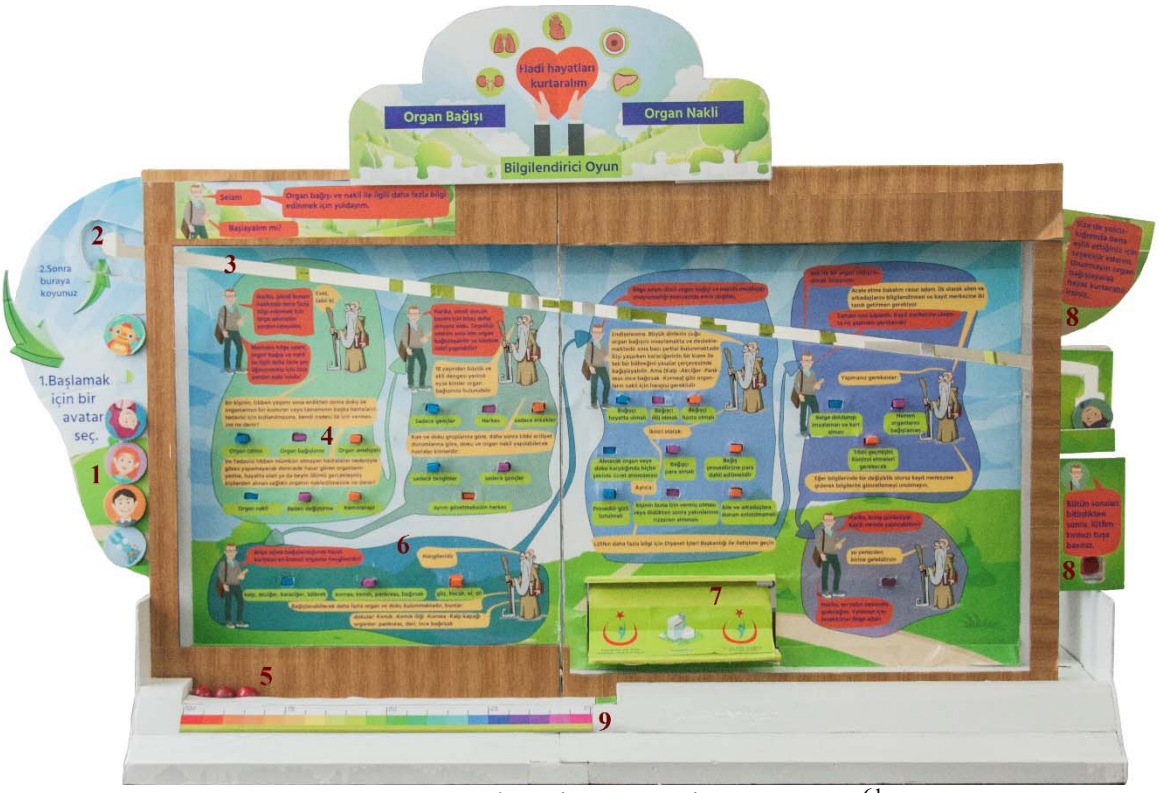

Figure 42. Organ donation campaign prototype[61]

Here is how the prototype functions (Figure 42) once the participant sits in front of the prototype:

1) The participant selects one avatar from the six available.
2) The participant puts the avatar in the beginning of the path.
3) The avatar rolls down the path then stops at the first stopper.
4) The participant answers the question correctly to allow the avatar to continue rolling down, if the participant answers the question wrong, a red ball falls from the back and then rolls from behind to the front side of the prototype.
5) All the wrong balls (red color) groups in front of the participant in a slot designated for the balls.
6) Each group of questions is considered as a level, participant moves from one level to the other. There are six levels in total.
7) The last level is not a question but rather one button; when pressed, it lets a door open to show the last piece of information.

[61] Appendix C contains larger format of the designed Text.

8) After the participant answers all the questions, the participant presses the last button where a graduate card appears for the user.

9) At the end, the participant can see the score, which is the amount of red balls (if any) deducted from a total hundred points.

The prototype is made of wood, some wood pieces are laser cut into specific shapes that are glued together. The graphical interface is printed on a sticker paper, put on the frontal side of the main wood interface. The buttons for the right and wrong answers are designed to move. The right answer permits the avatar to progress and eventually to reach the final post. Behind each wrong answer is a glass red ball which falls when the button is pushed. Also, there are two moving plates to show further information when certain button is pushed.

4.4. The Experiment

As explained above, the experiment was conducted to understand the reaction of participants to gamification, specifically tangible gamification. Also, this experiment can be regarded as a way to find out whether a gamified tangible product can be used as a campaign tool. To this end, the experiment is organized as follows:

1) There are two groups, one group receives the information about organ donation through a brochure, the second group obtains the same information through the tangible gamification prototype. This is done individually, not as groups.

2) After the participant finishes the experiment, the participant answers a questionnaire.

3) The questionnaire examines the participant's feeling about the method that delivered the information (prototype/ brochure). Also, it tests the knowledge the participant gained from the experiment.

4) Some other data is recorded through the experiment such as the time each participant spends to finish the experiment and the score from the prototype.

Figure 43. The experiment

In total, there were 50 participants, 25 for group one (the brochure) and 25 for group two (the prototype). The experiment was conducted in Egiad Ortaokulu (Egiad Secondary School) between the 12th of October 2016 and the 19th of October 2016 with the seventh-grade students only. In group one there were 13 female participants and 12 male participants, 10 students 12 years old and 15 students 13 years old. In group two there were eight female participants and 17 male participants,13 students 12 years old and 12 students 13 years old (Table 9).

Table 9. Gander with ages within each group

		Brochure			Prototype		
		Male	Female	Total	Male	Female	Total
Age	12	**5**	**5**	**10**	**8**	**5**	**13**
	13	**7**	**8**	**15**	**9**	**3**	**12**
Total	25	**12**	**13**	**25**	**17**	**8**	**25**

The experiment was carried out while the participants' classes are conducted. The participants entered the experiment room, which was the computer room in the school, one by one. The environment was quiet in general while the participants going through the experiment except at the break times when all the students were out from their classes. Some participants had to answer the questionnaire at the beginning of the break time.

A random assignment sampling method was used to choose the participants. To be sure that there is no bias in picking the participants in each group:

1. An automatic random list is generated by a website[62] that generates a random list for experiments; this is used as first phase. There is one column that has participant numbers, it goes on as 1,2,3…50. There is another column which has the random group number one or two (one is the brochure group, two is the prototype group). The list has equal numbers of participants for both groups (25/25).

2. In the second phase the participant choses a piece of paper that has one number from the list of numbers from 1 to 50. The participants and the observer do not know which number they will fall under, and additionally, the participant does not know what each number represents. So, the participant is randomly assigned to a group.

All the participants are in grade seven and in this grade level they just begin to learn about organ donation in the science class[63]. The experiment was conducted one week before the science teacher explains organ donation to them. However, some of the participants have already heard about organ donation. Additionally, some participant knew some people who either became organ donor or underwent organ transplantation. As (Table 10) shows, 46 participants in total heard about organ donation before the experiment. There are two participants from each group who did not hear about organ donation before. When it comes to knowing organ donors, in each group there are three participants who knew someone who have become organ donors (Table 11). However, there are three participants from group one and four participants in group two who knew someone who underwent organ transplantation (Table 12).

Table 10. Heard about organ donation before the experiment

		Group		
		Brochure	Prototype	Total
Heard about organ donation before the experiment	yes	**23**	**23**	**46**
	No	**2**	**2**	**4**
Total		**25**	**25**	**50**

[62] http://randomization.com/
[63] As told by the seven-grade science teacher to the researcher.

Table 11. Know a person who underwent organ transplantation

		Group		
		Brochure	Prototype	Total
Know a person underwent organ transplantation	yes	**3**	**4**	**7**
	No	**22**	**21**	**43**
Total		**25**	**25**	**50**

Table 12. Know an organ donor

		Group		
		Brochure	Prototype	Total
Know an organ donor	yes	**3**	**3**	**6**
	No	**22**	**22**	**44**
Total		**25**	**25**	**50**

The experiment contains reading and playing. For the group one, which is the brochure group, reading is the main activity to get the information. On the other hand, group two, the prototype group, both playing and reading is used to deliver the information. That is why questions are put in the questionnaire to check how frequently the participant does these activities throughout the week. 20 percent of the participants read most of the day every day, and only one participant fall under group two does not read at all during the week. However, 30 percent of the participant read 4/5 days a week and 28 percent read 1/2 days a week (Table 13).

Table 13. Frequent reading per week

	Frequency	Percent
Most of the day every day in the week	**10**	**20.0%**
Less time in day but every day in the week	**10**	**20.0%**
4 or 5 days in the week	**15**	**30.0%**
1 or 2 days in a week	**14**	**28.0%**
Do not do that at all	**1**	**2.0%**
Total	**50**	**100.0%**

For playing activity, 26 percent of the participants play most of the day every week, 12 percent play less time every day, and 16 percent play 4/5 days a week. 38 percent of the participants play 1 or 2 days a week and 8 percent do not play through the week (Table 14).

Table 14. Frequent playing per week

	Frequency	Percent
Most of the day every day in the week	**13**	**26.0%**
Less time in day but every day in the week	**6**	**12.0%**
4 or 5 days in the week	**8**	**16.0%**
1 or 2 days in a week	**19**	**38.0%**
Do not do that at all	**4**	**8.0%**
Total	**50**	**100.0%**

In total, 54 percent of the participants play 4/5 days or more a week. Comparing that with the frequency of reading, 70 percent of the participants read 4/5 days or more a week. One can conclude that in this experiment the participants are more on the side of reading activity then playing, but not in high percentage. This can be due to the fact that they are in school where they require to study and read more, and there is less time for playing. The result of this experiment will therefore represent a range of users who are performing reading activity a little more than playing activity. Table 15 and Table 16 demonstrate that in group one (which involves reading activity only), 40 percent of the participants read every day and 32 percent play every day. However, in group two (which involves both playing and reading), 40 percent read every day and 44 percent play every day.

Table 15. Frequent reading per week

	Group	
	Brochure	Prototype
Most of the day **every day** in the week	**20.0%**	**20.0%**
Less time in day but **every day** in the week	**20.0%**	**20.0%**
4 or 5 days in the week	**20.0%**	**40.0%**
1 or 2 days in a week	**40.0%**	**16.0%**
Do not do that at all	**0.0%**	**4.0%**

Table 16. Frequent playing per week

	Group	
	Brochure	Prototype
Most of the day **every day** in the week	**20.0%**	**32.0%**
Less time in day but **every day** in the week	**12.0%**	**12.0%**
4 or 5 days in the week	**20.0%**	**12.0%**
1 or 2 days in a week	**40.0%**	**36.0%**
Do not do that at all	**8.0%**	**8.0%**

For this instant, two sub groups can emerge 1) a reader group who read more than play in the week, 2) a player group who play more than read in a week. There is another group; the equal group, however for this study it will be overlooked. (Table 17) (Table 18).

Table 17. Read/Play frequency percentage sub groups in total

	n	N%
Equal	**11**	**22%**
Reader	**22**	**44%**
Player	**17**	**34%**
Total	**50**	**100%**

Table 18. Read/Play frequency percentage sub groups within each main group

	Group 1	Group 2
Read more than play	40%	48%
Play more than read	32%	36%
Equal amount	28%	16%
Total	100%	100%

4.5. Experiment Result

Before examining the results of the experiment here are the research questions that needed to be answered by this experiment:

1. How individuals will perceive gamification product when related to awareness campaigns?

To answer this question, the results about interest, enjoyment, attraction, and understanding of the information related to method (brochure or prototype) should be examined.

2. When tangible gamification is used as a campaign tool how it differs from other common tools for campaigns?

To answer the second question, the results about general attraction, understanding of the information related to method (brochure or prototype) and gaining more support for the campaign should be examined.

There are few sub-questions related to the hypotheses to be answered too by this experiment:

1. Which group has more interest in what they are doing?
2. Which group absorbs the information more?
3. What are the differences in both groups?

Finally, this thesis has four hypotheses in the beginning of the research that helped to build the experiment and examine the results:

1. People will be attracted to a gamified product.
2. The information will be more understandable or interesting.
3. It will help more people to be interested in donating.
4. People will remember it more.

4.5.1. The Interest

This experiment was set up to understand whether people are more attracted to gamification tools than traditional tools associated with campaigns. Therefore, most of the questions in the questionnaire were designed to measure how the participants think of the method that was used in the experiment. Also, more questions were added to get the participants' thoughts about the information they receive in the brochure or via the prototype. The questionnaire was designed with 5-points Likert scale for two specific reasons: 1) not to force the participants to choose between only two answers, which could confuse the students as if one of the answer is right and the other is wrong. 2) to use the mean of the Likert scale to compare the results in general. Table 19, Table 20 and Table 21 show the mean answers for section B questions[64] for both groups, also the line chart (Figure 44) will help better understand the results.

[64] Please refer to appendix D to examine the full questions.

Table 19. Questions 1-7 Section B

Group	interesting	appropriate	novel	fun	frequent to use	easy to use	effective
Brochure	**3.48**	**4.40**	**3.96**	**3.64**	**4.00**	**4.12**	**4.20**
Prototype	**3.68**	**4.60**	**4.20**	**4.00**	**4.12**	**3.88**	**4.36**

* These numbers are means of the 5-points Likert scale of each question.

Table 20. Questions 8-13 Section B

Group	Happy	Not exhausted	enjoy	not wasted time	Not bored	public attract
Brochure	**4.28**	**4.36**	**4.20**	**4.64**	**4.44**	**3.80**
Prototype	**4.56**	**4.52**	**4.52**	**4.76**	**4.64**	**4.32**

* These numbers are means of the 5-points Likert scale of each question.

Table 21. Questions 14-19 Section B

Group	easy to understand	require thinking	curious	valuable information	easy to remember	enough understanding
Brochure	**4.52**	**3.08**	**4.00**	**4.56**	**4.16**	**4.04**
Prototype	**4.56**	**3.04**	**4.32**	**4.80**	**4.60**	**4.12**

* These numbers are means of the 5-points Likert scale of each question.

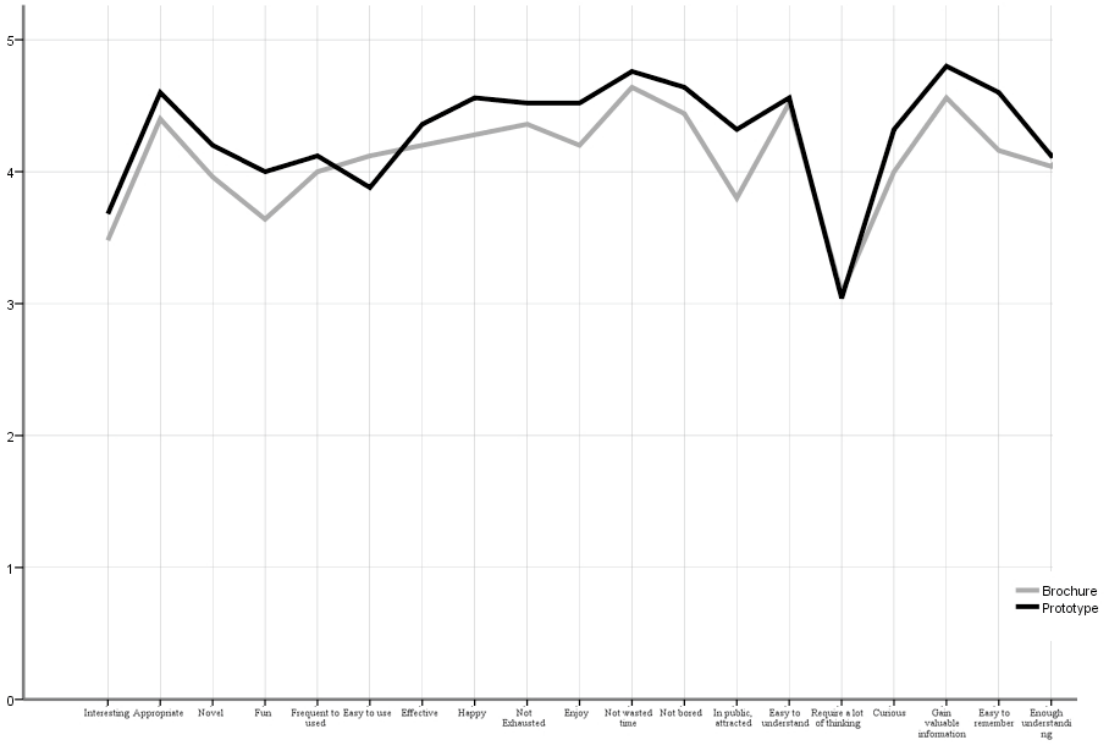

Figure 44. Line chart of the mean of the 5-points Likert scale section B questions[65]

[65] Appendix E contains a larger format of this line chart.

Table 19, Table 20, Table 21 and Figure 44, indicate that the prototype group shows higher means then the brochure group in most of the questions. In group one, the means for questions 1-7 (Section B)[66] (Table 19)related to the method they receive the information by are 3.48, 4.40, 3.96, 4, 4.12, and 4.20 respectively. For group two the means are 3.68, 4.60, 4.20, 4, 4.12, 3.88 and 4.36 respectively. It is obvious there is only a little bit difference between the two groups. This data could be interpreted as the prototype can be more attractive to interact with than the brochure except the brochure is easy to handle than the prototype.

A similarity can be observed when it comes to the questions regarding participants' feelings; questions 8-12 (Section B)[60] (Table 20). The means are 4.28, 4.36, 4.20, 4.64 and 4.44 for group one, and for group two the means are 4.56, 4.52, 4.52, 4.76, and 4.64 respectively. These numbers show that group two which interacted with the prototype enjoyed the experience more than the group one which only read the brochure. Notably it can be inferred that if gamification utilized as a tool in a campaign, it can appeal more to such age groups that are interested in fun and playing. This is also noticeable in questions13 (Section B)[60] related to the public attraction. For group one 3.8, and for group two 4.32 are the means for this question. Also, it should still be noted that the prototype is not easier to use than the brochure and that might have resulted in some boredom within the participants.

Related to the information itself (which is basically the same for both groups, only for group two the information is embedded in a story-like scenario), the means also show that group two has a bit higher mean than group one. The questions are about the information, whether it is easy to understand, requires thinking, evokes curiosity, valuable information, easy to remember and whether they have enough understanding to share it with others[67] (Table 21). The means are 4.52, 3.08, 4.00, 4.56, 4.16 and 4.04 respectively for group one and 4.56, 3.04, 4.32, 4.80, 4.60 and 4.12 respectively for group two. Even though in both groups the information is the same both groups perceive the information differently. This could be due to the fun or enjoyment they felt while gaining the information in the second group, which ultimately could make the participants believe they have a good understanding of the information and it was easy to understand and remember.

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[66] Please refer to appendix D to observe the full questions.
[67] Questions 14-19 (Section B) in the questionnaire.

At the end of the experiment, all students of grade seven (n=69) are asked three questions to see if such method (the gamification prototype) will appeal to them as group and if it will be interesting for other people in general. These three questions are (Table 22):

1. Which one would you like to use for knowing more about organ donation (the prototype or brochure)?
2. Which one would you like to interact with in outdoors when it comes to receive information about an issue (the prototype or brochure)?
3. Which one would you think people other than you (but around the same age) would like when it comes to awareness campaigns (the prototype or brochure)?

Table 22. Three final question related to attractiveness of the prototype

	Brochure		Prototype		Total	
	N	N%	N	N%	N	N%
Question 1	**5**	**7%**	**64**	**93%**	**69**	**100%**
Question 2	**32**	**46%**	**42**	**61%**	**69**	**100%**
Question 3	**9**	**13%**	**60**	**87%**	**69**	**100%**

This sample includes participants who interacted with the prototype and the brochure at the time of the experiment. Also, it includes participants who are seeing the prototype and the brochure for the first time. Table 22 shows that for question one, most of the students would prefer something like the prototype to use for knowing more about organ donation (7 percent brochure, 93 percent prototype). For question two, 46 percent express their interest to receive information about other issues than organ donation using brochure outside environment, 61 percent chose the prototype for the same question though. For the third question, 13 percent of the participants think that other people around same age would be attracted to brochure when it comes to awareness campaigns and 87 percent chose the prototype. From all that it is clear that gamification can have advantages to attract people to the campaign (at least the same age with the participants). It can be utilized to catch people's attention in public areas and by its novelty, it can break the usual look of a campaign.

4.5.2. The Information

One of the hypotheses of this thesis is that using a gamified tool to deliver the intended message of a campaign would cause the participants to understand the message better, and it could enable users to absorb similar amount or more information compared to the traditional campaign tools. For that reason, at the end of the questionnaire, after the participants underwent the experiment, they were asked to answer seven questions[68] to test their absorption of the information they gained form the prototype or the brochure. Each question has one right answer and one wrong answer, and a "not sure" option in case they do not know the answer for certain. Table 23 shows the percentage of the right answers for each group (brochure, prototype, reader and player) and the percentage of "not sure" answers. Additionally, it is possible to compare the participants' answers to these seven questions depending on which activity group they fall under (reading/playing) within the main two groups (Table 24).

Table 23. Section C questions' percentages for each main group

		Group			
		Brochure	Prototype	Reader	Player
Q1	Right answer	**84.0%**	**80.0%**	**81.0%**	**88.2%**
	Not sure	**16.0%**	**12.0%**	**19.0%**	**11.8%**
Q2	Right answer	**92.0%**	**76.0%**	**90.5%**	**100.0%**
	Not sure	**4.0%**	**12.0%**	**9.5%**	**0.0%**
Q3	Right answer	**40.0%**	**24.0%**	**38.9%**	**43.8%**
	Not sure	**52.0%**	**60.0%**	**61.1%**	**56.3%**
Q4	Right answer	**36.0%**	**24.0%**	**38.5%**	**42.9%**
	Not sure	**40.0%**	**48.0%**	**61.5%**	**57.1%**
Q5	Right answer	**84.0%**	**92.0%**	**95.5%**	**94.1%**
	Not sure	**16.0%**	**8.0%**	**4.5%**	**5.9%**
Q6	Right answer	**84.0%**	**56.0%**	**81.3%**	**92.9%**
	Not sure	**8.0%**	**12.0%**	**18.8%**	**7.1%**
Q7	Right answer	**96.0%**	**84.0%**	**100.0%**	**100.0%**
	Mean*	**73.71%**	**62.29%**	**75.10%**	**80.27%**

* Means for the right answers only

[68] Section C questions in the questionnaire.

Table 24. Section C questions' percentages for player/reader within the main groups

		Group			
		Brochure		Prototype	
		Reader	Player	Reader	Player
Q1	Right answer	**70.0%**	**100.0%**	**90.9%**	**77.8%**
	Not sure	**30.0%**	**0.0%**	**9.1%**	**22.2%**
Q2	Right answer	**100.0%**	**100.0%**	**81.8%**	**100.0%**
	Not sure	**0.0%**	**0.0%**	**18.2%**	**0.0%**
Q3	Right answer	**44.4%**	**62.5%**	**33.3%**	**25.0%**
	Not sure	**55.6%**	**37.5%**	**66.7%**	**75.0%**
Q4	Right answer	**33.3%**	**50.0%**	**42.9%**	**37.5%**
	Not sure	**66.7%**	**50.0%**	**57.1%**	**62.5%**
Q5	Right answer	**100.0%**	**87.5%**	**91.7%**	**100.0%**
	Not sure	**0.0%**	**12.5%**	**8.3%**	**0.0%**
Q6	Right answer	**77.8%**	**100.0%**	**85.7%**	**85.7%**
	Not sure	**22.2%**	**0.0%**	**14.3%**	**14.3%**
Q7	Right answer	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Mean*	**75.07%**	**85.71%**	**75.19%**	**75.14%**

* Means for the right answers only

At first glance, it can be noted from the mean percentages at the end of Table 23 and Table 24 that participants' answers in group one (brochure group) are higher than the other group. Yet, the player group in general has a higher percentage than the reader group. Though the difference between these percentages are not enormous, the difference between group one and two is around 11 percent; this could reflect differently if this experiment was conducted with a larger number of participants[69]. In order to analyze the level of absorption, the two sets of questions should be evaluated together: On one side is the questions related to ease of use, ease to remember and understand the information (Table 25) and on the other side is the section C questions in the questionnaire that test the participants' absorption of the information[70] (Table 26).The tables only show the percentages among who answered the highest number (5) in the Likert scale in each question not from the total number of participants.

[69] From the results of this experiment, it is better to do such experiment with a larger sample in the future.

[70] Please refer to the questionnaire in the appendix to read the full questions.

Table 25. Section B questions 6, 14 and 18

		Easy to remember*	Easy to understand*	Easy to Use*
Group	Brochure	**45.5%**	**51.4%**	**55.6%**
	Mean**	**4.16**	**4.52**	**4.12**
	Prototype	**54.5%**	**48.6%**	**44.4%**
	Mean**	**4.60**	**4.56**	**3.88**
	Total	**100%**	**100%**	**100%**

* These percentages are based on the answers scoring the highest number (5) in the Likert scale.
** The mean of the 5-points Likert scale of the questions

Table 26. Section B questions 6, 14 and 18 compared with section C questions

		Easy to remember**		Easy to understand**		Easy to use**	
		G1	G2	G1	G2	G1	G2
Q1	Right answer*	**86.7%**	**88.9%**	**83.3%**	**82.4%**	**86.7%**	**75.0%**
Q2	Right answer*	**100.0%**	**72.2%**	**100.0%**	**76.5%**	**100.0%**	**83.3%**
Q3	Right answer*	**53.3%**	**16.7%**	**50.0%**	**29.4%**	**46.7%**	**16.7%**
Q4	Right answer*	**40.0%**	**27.8%**	**33.3%**	**23.5%**	**46.7%**	**25.0%**
Q5	Right answer*	**86.7%**	**88.9%**	**94.4%**	**94.1%**	**86.7%**	**91.7%**
Q6	Right answer*	**86.7%**	**61.1%**	**77.8%**	**58.8%**	**93.3%**	**75.0%**
Q7	Right answer*	**100.0%**	**83.3%**	**94.4%**	**88.2%**	**93.3%**	**83.3%**
	mean	**79.06%**	**62.70%**	**76.17%**	**64.70%**	**79.06%**	**64.29%**

* The other percentages that it is not included here is divided between "Not sure" answers and the wrong answers.
** These percentages are based on the answers scoring the highest number (5) in the Likert scale.

Consequently, it is possible to argue that the group one had more correct answers than group two. Among the participants who thought of the information they received was easy to remember, around 79 percent answered the questions correctly from group one and 62.7 percent from group two. Around 76 percent of the participants who thought it was easy to understand the information from group one gave the correct answers and 64.7 percent from the group two. Similarly, around 79 percent of the participants who thought it was easy to use the brochure (in this case reading it and navigating around the brochure's pages) answered the seven questions correctly and around 64 percent from group two (in this case playing with the prototype and

navigating around the prototype) answered them correctly. This result shows that group one has done better than group two. This could happen because:

1. The prototype has an interface that did not help the participant to focus on the information to retain it, but more to drive the participant towards the playing mental state rather than learning mental stat.

2. Table 25 shows only 48.6 percent of the participants in the prototype group scoring the highest number (5) in the Likert scale thought that the information is easy to understand, and 44.4 percent thought the prototype is easy the use, which is less than the half. This could affect the way they answered the seven questions and thus might have resulted in a lesser percentage of correct answers.

Furthermore, there is another set of questions which can be used to compare each group to give more insight on the results. Questions 4, 10 and 19 (Table 27) can be compared with the right answers from the seven questions (Table 28). The tables only show the percentages among who answered the highest number (5) in the Likert scale in each question not from the total number of participants.

Table 27. Section B questions 4, 10 and 19

		Had Fun*	Enjoyed*	Enough understanding*
Group	Brochure	**38.1%**	**38.7%**	**47.8%**
	Mean**	**3.64**	**4.20**	**4.04**
	Prototype	**61.9%**	**61.3%**	**52.2%**
	Mean**	**4.00**	**4.52**	**4.12**

* These percentages are based on the answers scoring the highest number (5) in the Likert scale.
** The mean of the 5-points Likert scale of the questions.

Table 28. Section B questions 4, 10 and 19 compared with section C questions

		Fun**		Enjoyed**		Enough understanding**	
		G1	G2	G1	G2	G1	G2
Q1	Right answer*	**75.0%**	**84.6%**	**75.0%**	**84.2%**	**90.9%**	**83.3%**
Q2	Right answer*	**100.0%**	**69.2%**	**100.0%**	**73.7%**	**100.0%**	**66.7%**
Q3	Right answer*	**37.5%**	**23.1%**	**33.3%**	**21.1%**	**45.5%**	**25.0%**
Q4	Right answer*	**37.5%**	**15.4%**	**25.0%**	**26.3%**	**27.3%**	**25.0%**
Q5	Right answer*	**87.5%**	**84.6%**	**75.0%**	**89.5%**	**81.8%**	**83.3%**
Q6	Right answer*	**87.5%**	**84.6%**	**75.0%**	**57.9%**	**81.8%**	**75.0%**
Q7	Right answer*	**100.0%**	**84.6%**	**100.0%**	**84.2%**	**100.0%**	**75.0%**
	mean	**75.00%**	**63.73%**	**69.04%**	**62.41%**	**75.33%**	**61.90%**

* The other percentages that are not included here are divided between "not sure" answers and wrong answers.
** These percentages are based on the answers scoring the highest number (5) in the Likert scale.

The tables above demonstrate that the prototype group had more fun and enjoyed more than the brochure group. 38.1 percent of the participants in group one stated that they had fun and 38.7 percent enjoyed while reading the brochure. In contrast, 61.9 percent of the participants in group two stated that they had fun and 61.3 percent enjoyed while interacting with the prototype. Furthermore, 47.8 percent of the participants in group one think that they have enough understanding of the information to share it with other people and 52.2 percent from group two. This result supports what is inferred above; group two participants were in a play state rather than a learning state due to having fun and enjoying the activity more.

However, the answers for section C questions in the questionnaire show that group one has more correct answers than group two even when compared with the pervious questions 4, and 10. 75 percent of the participants in group one who had fun answered the seven questions correctly and 63.73 percent in group two answered correctly. Also, around 69 percent in group one who enjoyed answered correctly whilst 62.41 percent in group two answered correctly. Question 19 register a similar difference; around 75 percent of the participants in group one answered correctly whereas around 62 percent in group two answered correctly. The interesting point to note here is that students who interacted with the prototype (mean 4.12) think they have a good understanding of the information to share with other people, in comparison with those in group one (mean 4.04). Yet the answers to the seven questions show that students who interacted with the prototype had less correct answers than those who read the brochure. The above data supports the claim that when participants read the

brochure they merge into a learning state of mind, probably because: 1) they were at school while doing the experiment, 2) before participating in the experiment they were doing learning activity in class, 3) they are required to learn via a lot of reading as this is the main activity for students. These results might be different if the experiment is conducted in different environment settings (for example: a playground, public gathering, shopping mall), meaning that the participants would not be interrupted in the middle of a learning activity to perform the experiment.

4.5.3. Increase Supporters

Another hypothesis of the thesis has been that if gamification is utilized as a campaign tool it will gain more supporters for the campaign by attracting more people toward it. Accordingly, the experiment was made to see if there is a difference in the number of students who want to become an organ donor at the end of the experiment between the two groups. 46 percent of the participants (23 out of 50 in total, 11 group 1 and 12 group 2, (Table 29)) express their interest in becoming an organ donor. Group two has an advantage over group one by only 4 percent. This is not a big difference, however it would be meaningful to see why the prototype group scored higher when it comes to becoming an organ donor. To this end, a comparison focusing on the Likert-scale questions might be helpful (Section B questions):

Table 29. Would you consider becoming organ donor?

		yes		No		Maybe		total	
		n	N%	n	N%	n	N%	n	N%
Group	Brochure	**11**	**44%**	**2**	**8%**	**12**	**48%**	**25**	**50%**
	Prototype	**12**	**48%**	**2**	**8%**	**11**	**44%**	**25**	**50%**
	Total	**23**	**46.0%**	**4**	**8.0%**	**23**	**46.0%**	**50**	**100%**

Table 30 shows among the participants in group one who answered “Yes” (11 participants) to become an organ donor, 45.5 percent of the participants think this method (brochure) of delivering the information is interesting. 45.5 percent had fun while doing the activity (reading). Moreover, 54.5 percent think of this method (brochure) to be easy to use and 45.5 percent think this method is effective in delivering the information. With regards to their feelings having read the brochure, 63.6 percent of

the participants chose happy, 72.7 percent enjoyed and 81.8 percent not bored. Related to the information they read, 72.7 percent found it easy to understand and it is valuable information. 63.6 percent agreed that they have enough information to share it with others.

On the other hand, among those who answered "Yes" (12 participants) to become an organ donor in group two, 50 percent of the participants think this method (prototype) of delivering the information is interesting. 50 percent had fun while performing the activity. 41.7 percent think of this method (prototype) to be easy to use. 66.7 percent think this method is effective in delivering the information. In regards with their feelings having interacting with the prototype, 66.7 percent of the participants chose happy, 75 percent enjoyed and 75 percent not bored. Related to the information they received, 66.7 percent found it easy to understand and 91.7 percent found the information valuable. 50 percent agreed on that they have enough information to share it with other.

Table 30. Section B questions (1,4,6,7,8,10,12,14,17,19) for only interest in donating organ

The method	Group 1*	Group 2*
Interesting	**45.5%**	**50%**
Fun	**45.5%**	**50%**
Easy to use	**54.5%**	**41.7%**
Effective	**45.5%**	**66.7%**
Happy	**63.6%**	**66.7%**
Enjoyed	**72.7%**	**75%**
Not board	**81.8%**	**75%**
Easy to understand	**72.7%**	**66.7%**
Information is valuable	**72.7%**	**91.7%**
Enough information to share	**63.6%**	**50%**

*These percentages are based on the answers scoring the highest number (5) in the Likert scale.[71]

The data above shows that in group two they had more fun than group one. They think the method (the prototype) is interesting and more effective to deliver the information compared to group one. Also, in group two, more participants felt happy and enjoyed than those in group one. Overall, it can be inferred that the participants in group two were more willing to become an organ donor because they enjoyed the

[71] Please refer to appendix E for the full table

experience. However, it is interesting to notice that the mean of question 20 in section B shows a different result (Table 31). It shows that the mean of participants in group one who think that other people should donate their organ is higher than the mean of group two.

Table 31. Do you feel people should consider donating their organ?

Group	mean
Brochure	**4.44**
Prototype	**4.28**

* These numbers are means of the 5-points Likert scale of each question.

4.6. After The Experiment

In the end, a few points have surfaced after finishing the experiment, some related to the design of the prototype, others related to the experiment itself. In general, the experiment had no issues while undertaken and it run smoothly. However, when it comes to the participants, a few of them seemed to rush to finish either the experiment part or the questionnaire part. This probably was because the experiment took place during their class time or sometimes it overlapped with their breaks. It was also observed that some students tend to answer the questions in a way that would please their teacher and/or the researcher. It might be the reason why they chose the highest point in the Likert scale questions. Few participants had difficulty in understanding how the questions should be answered as in the case of the Likert scale questions; for that an extra explanation was required. There is one case where the participant asked for the brochure in group one again to find answers for section C in the questionnaire. His request was denied for the credibility and accuracy of the experiment, and thus, he was asked to answer without referring to the brochure. Moreover, some participants took some time thinking before answering the questions in section C, while others answered it without delay. These all might have a role in the final outcome of the experiment.

Related to the prototype, few points were noticed about the design and the experience of the participants during the experiment. Generally, when the participants see the prototype they get excited to know what it is. Few students enjoyed more when they saw the red ball fall and come to the front of the prototype (red ball for the wrong answers). The prototype has a lot of texts to read, this might have caused boredom in some participants. In retrospect, it can be argued that it would work better if the

prototype included some pictures instead, such as the organ parts. Some participants found it hard to follow the direction of the story within the design, thus they jumped from question to question on the prototype trying to finish the nine questions. At the end, when participants finish the nine questions within the prototype they can see their score, but the design of the score system did not seem to achieve the desired/anticipated excitement in the participants.

In relation to the design of the experiment, three points could have affected the results in general. The first point is about the measurement of how the participant recalls the knowledge gained from the experiment. After the experiment both groups answered seven questions (section C) in the questionnaire to test their knowledge about what they understood from the information in the experiment. It was done in a traditional fashion; that is, they read the question then tick the answer. This activity itself is a reading activity, meaning it is similar to what the first group (brochure group) did. However, it does not match with the second group (prototype group) since the main activity for them was playing (though it included reading). Perhaps if playing was the way to test their knowledge retrain it could yield different result. The idea here is to test the participant with the same activity they used to gain the information. Another point needs to be mentioned as well; due to time limitation there was no break time between the participants gaining the knowledge and testing their knowledge. If we could allow a time gap between the two phases, the results might have been different. This point can be tested in further research by giving participants a time break between the experiment and the questionnaire. The third point that might have affected the result is the time spent on the experiment itself for each group. For group one the average time spent on the experiment was one minute and 56 seconds and for group two 5 minutes and 48 seconds (Table 32). Short time might mean that the participants did not have enough time to retrain the information. Alternatively, longer time might have caused boredom which ultimately had an impact on the participants' digestion/internalization of the information.

Table 32. Time took to finish the experiment

Group	Mean	Minimum	Maximum
Brochure	**0:01:56**	**0:00:54**	**0:03:03**
Prototype	**0:05:48**	**0:03:25**	**0:11:52**

Finally, the whole experiment was conducted in such a way that it did not measure the effect on the mass at once. The experiment was designed to be done individually, meaning that the final data reveal the individual perception on the research matter. The data could have been different if this experiment was conducted in groups of participants at once or in a public setting. In this research, the participants were forced, due to their random selection, to be in one of the groups, and then answer accordingly. However, in a public setting when both methods are exposed simultaneously it could lead to different data.

CHAPTER 5

CONCLUSION

In general, this research has been about using entertainment in non-entertainment contexts. The specific type of entertainment that this research refers to is play and games. Referring to the wide range of literature and practice of gamification, this study strived to appropriate and utilize gamification as a tangible and explanatory tool to encourage learning as part of an organ donation campaign. To this end, an experiment was conducted to compare the effects/learning outcomes of traditional campaign methods and gamified tools.

In this study, there are four hypotheses examined through the experiment:

- People will be attracted more to a gamified product.
- Consequently, it will help more people to be interested in donating an organ.
- The information will be more understandable or interesting.
- Therefore, the information will be more memorable.

In relation with abovementioned hypotheses, the experiment has revealed that:

- Gamification can be a good way to attract people. Gamification can be a way to increase the interest of the users toward the medium used for the campaign. Thus, it will cause more people to show interest in the campaign, which means the message of the campaign will be widespread.
- The experiment showed an increase in the support for the cause of the campaign. Thanks to gamification users enjoy themselves more while receiving the message of the campaign. This can pave the way for the users to participate in the cause of the campaign.

- When it comes to comprehending and internalizing the information, the experiment revealed that gamification might have the same effect with other medium to deliver the information. However, the experiment shows that participants who used the gamified prototype did not retain the information as much as the brochure group. Many factors might have had a role to play in that: 1) it was school environment which require learning by reading, 2) when playing with the prototype, participants might have shifted their mind from learning state to playing state without focusing on the exact information.

In light of the results of the experiment, it is plausible to argue that gamification can be a good tool for campaigns to attract more supporters for the cause, but only if it is used properly in the right setting. Furthermore, its experience should be designed to create a playful experience, and therefore, should not only focus on the utilization of game elements. Moreover, it should be kept in mind that there are various kinds of people who will interact with the system. For that reason, gamification experience should be designed to support all the different types of players (in this case, users). In addition, knowing the environment in which the gamified product and services will be implemented would prove important to increase the chances of acquiring intended results.

To conclude, suggestions for further studies can be mentioned here. Due to time limitation, the experiment time was short and it had to be done with a small sample group. That is to say, further research should be carried out with larger groups to gain more accurate data. Also, further experiments can be conducted with different age groups and in different settings then the school environment. This would be particularly useful in order to gain more insight about how the environment the users are in could affect the results. Another suggestion could be planning the experiment in a group format where groups of participants undergo the experiment at the same time. Or this experiment can be conducted in a public area to see how people will react intuitively without forcing them to use certain method of the campaign.

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APPENDIX A

ORIGINAL BROCHURE ENGLISH AND TURKISH VERSION

KİMLER ORGAN BAĞIŞINDA BULUNABİLİR?

18 yaşından büyük ve akli dengesi yerinde olan herkes organ bağışında bulunabilir

ORGAN BAĞIŞI DİNİ İNANÇLARA AYKIRI MIDIR?

Büyük dinlerin çoğu organ bağışını onaylamakta ve desteklemektedir.

Diyanet İşleri Başkanlığı Din İşleri Yüksek Kurulu 6.3.1980 Tarih ve 396 sayılı kararı ile organ naklinin caiz olduğunu açıklamıştır. Bu Kararda;

- *Zaruret halinin bulunması, hastanın hayatını veya hayati bir organını kurtarmak için, bundan başka çaresi olmadığının mesleki ehliyet ve dürüstlüğüne güvenilen bir doktor tarafından tespit edilmesi,*
- *Doku ve organı alınacak kişinin bu işlemin yapılmış olduğu sırada ölmüş olması,*
- *Toplumun huzur ve düzeninin bozulmaması bakımından organ ve dokusu alınacak kişinin sağlığında buna izin vermiş olması veya hayatta iken aksine bir beyanı olmamak şartıyla, yakınlarının rızasının sağlanması*
- *Alınacak organ veya doku karşılığında hiçbir şekilde ücret alınmaması,*
- *Tedavisi yapılacak hastanın da kendisine yapılacak olan bu nakle razı olması gerekir.*

"Her kim de birini (hayatını kurtararak) yaşatırsa sanki bütün insanları yaşatmıştır."

(Maide Suresi, Ayet 32)

İZMİR ORGAN VE DOKU NAKLİ BÖLGE KOORDİNASYON MERKEZİ
TEL: 0 232 446 20 25
Faks: 0 232 446 20 13
www.ism.gov.tr

T.C. Sağlık Bakanlığı
İzmir İL SAĞLIK MÜDÜRLÜĞÜ

"BAĞIŞLANAN ORGAN FİLİZLENEN CANDIR"

ORGAN BAĞIŞI NEDİR?

Bir kişinin, tıbben yaşamı sona erdikten sonra doku ve organlarının bir kısmının veya tamamının başka hastaların tedavisi için kullanılmasına, kendi iradesi ile izin vermesi ve bunu belgelendirmesidir.

ORGAN NAKLİ NEDİR?

Tedavisi tıbben mümkün olmayan hastalıklar nedeniyle görev yapamayacak derecede hasar gören organların yerine, hayatta olan ya da beyin ölümü gerçekleşmiş kişilerden alınan sağlıklı organın nakledilmesidir.

HANGİ ORGAN VE DOKULARIN NAKLİ YAPILMAKTADIR?

Ülkemizde nakil yapılan organlar;

- -Böbrek
- -Kalp
- -Karaciğer
- -Akciğer
- -Pankreas
- -Deri
- -İncebağırsak

Ülkemizde nakil yapılan dokular;

- -Kemik
- -Kemik iliği
- -Kornea
- -Kalp kapağı

Bağışlanan kalp, akciğer, karaciğer, böbrek gibi organlar nakledilen kişinin hayatını kurtarır.

HER ÖLÜMDEN SONRA ORGAN NAKLİ YAPILABİLİR Mİ?

Kişi hayatta iken organ bağışında bulunmuş olsa dahi her ölümden sonra organ nakli mümkün değildir. Evde ya da yolda vefat eden kişinin bağış kartı ve ailesinin rızası olsa bile organları alınamaz.

Yalnızca hastane yoğun bakım ortamında tıbben (beyin) ölümü gerçekleşen insanlardan organ nakli yapılabilir.

KİŞİ ÖLMEDEN ORGAN NAKLİ KARARI ALINABİLİR Mİ?

Hastane yoğun bakım ortamında hekimlerden oluşan bir heyet tarafından beyin ölümü kararı verilmeden organ nakli asla yapılamaz.

BEYİN ÖLÜMÜ NEDİR?

Beyin ölümü, beyin işlevlerinin geri dönüşümsüz olarak sonlanmasıdır.

Beyin ölümü tıbben ve hukuken ölüm halidir.

BEYİN ÖLÜMÜ İLE BİTKİSEL HAYAT ARASINDAKİ FARK NEDİR?

Beyin ölümü ile bitkisel hayat kavramları birbirinden farklıdır. En önemli fark, bitkisel hayattaki hastaların solunumu devam eder.

Bitkisel hayat tanısı alan hastalar tıbbi destek ile yaşamına yıllarca devam edebilir ve bazı durumlarda iyileşerek normale dönebilirler.

Beyin ölümünde ise hastaya ne kadar tıbbi destek sağlanırsa sağlansın geri dönüş mümkün değildir.

İLERİ YAŞ VEYA KRONİK HASTALIĞIN OLMASI ORGAN BAĞIŞINA ENGEL MİDİR?

Yaşın ileri olması, kronik bir hastalığı olması, alkol veya sigara kullanımı vb. nedenler organ bağışında bulunmaya engel değildir.

BAĞIŞLANAN ORGANLAR KİMLERE NAKLEDİLİR?

Organ nakli yapılacak hastalar öncelikle kan ve doku gruplarına göre, daha sonra tıbbi aciliyet durumlarına göre belirlenmektedir.

Organ nakli yapılırken cins, ırk, din, zengin-fakir ayırımı kesinlikle yapılmaz.

NEREYE-NASIL ORGAN BAĞIŞI YAPILABİLİR?

- -İl Sağlık Müdürlüğü
- -İlçe Sağlık Müdürlükleri
- -Hastaneler
- -Toplum Sağlığı Merkezleri
- -Aile Sağlığı Merkezleri

Organ bağışı yapmak isteyen kişiler yukarıda belirtilen yerlerden herhangi birine başvuru yaparak iki tanık huzurunda bir belge imzalar ve "Organ Ve Doku Bağış Kartı"na sahip olurlar. Organ bağışı kartını alan kişi, bu durumdan ailesini haberdar etmelidir.

Kişi organ bağışından vazgeçmek isterse kayıtlı bulunduğu merkeze bu durumu bildirmelidir.

Original brochure English

What is Organ Donation?

Organ donation is giving permission to use one's organs and body tissues in the treatment of other patients partly or as a whole after the legal death takes place and certifying this permission.

What is Organ Transplantation?

Replacing untreatably damaged organs with healthy organs taken from alive or brain dead people is organ transplantation.

Which Organs and Tissues Can Be Transplanted?

In Turkey,

Organs: Kidney, heart, liver, lungs, pancreas, epidermal, small bowel

Tissues: Bone, bone marrow, cornea, cardiac valve can be transplanted

Donated organs such as heart, lungs, liver, kidney save the lives of people.

Is It Possible to transplant Organs after every death?

Even if a person has a donation will, it is not possible to transplant organs after every death. The organs of a person who dies at home or on the street cannot be transplanted even if there is a donation card or the will of his/her parents.

Organ transplantation is only possible for people who die in hospital intensive care environment.

Is it possible to have a organ transplantation decision before a person dies?

It is impossible to transplant organs before the decision of death by a board in hospital intensive care environment.

What is Brain Death?

Brain death is the permanent end of brain functions. It is the state of legal and medical death.

What is the difference between brain death and vegetative state?

They are two separate concepts. The most important difference is that the patients in vegetative state continue to breathe. Patients in vegetative state can live with medical support and can get better in some cases. In brain death situation, it is impossible for patient to get better even with a medical support.

Are old age and chronic illnesses a hindrance for organ transplantation?

Old age, chronic diseases, alcohol and smoking are not hindrance for organ transplantation.

Who receives the donated organs?

The patients who will receive the organs are first determined by their blood and tissue groups and then by their medical emergency. There is no discrimination in terms of gender, race, religion, status while transplantation.

How and where can we donate organs?

- City health management
- County health management
- Hospitals
- Public health centers
- Family health centers

People who want to donate their organs can apply to one the above-mentioned centers with two witnesses and signs a certificate to get an "Organ and tissue donation card". The person who receives this card has to inform their family accordingly.

If the person changes his/her mind, then he/she has to inform the center where the registration took place.

Who can donate organs?

Every person over 18 and compos mentis can donate their organs.

Every donated organ is a new life

Is organ donation against religious beliefs?

Most of the great religions approve and support organ donation. Religious Affairs Office declared the approval of organ donation by their decree no:396 dated 6/3/1980. In this decree;

- There must be a situation of necessity recognized by an expert and trusted doctor to save the life of the patient
- The person who donates the organs has to be dead by then.
- The donator has to make a statement while alive or the family of the deceased has to state a will in favor of the donation
- There has to be no charge for the donation
- The patient who will receive the organ has to state a will in favor of the operation

"And whoever saves one - it is as if he had saved mankind entirely."

Surah Al-Maida Ayat 32

you have to make and online registration for the validity of organ donations done before 2013

Donated organ is a sprouting life

APPENDIX B

MODIFIED BROCHURE ENGLISH AND TURKISH VERSION

BAĞIŞ YAPMANIN PROSEDÜRÜ NEDIR?

İlk olarak ailenizi ve arkadaşlarınızı bilgilendirerek iki kişiyi tanık olarak kayıt merkezine getirin. Organ bağışı kaydı yaptırmak için şu yerlerden birine başvurabilirsiniz:

1)İl ve ilçe Sağlık Müdürlüğü

2)Hastane

3)Toplum ve Aile Sağlığı Merkezleri

Orada bir belge doldurup imzaladıktan sonar organ bağış kartına sahip olursunuz.

Eğer bilgilerinizde bir değişiklik olursa kayıt merkezine giderek bilgilerinizi güncellemeyi unutmayın.

DINI INANÇLAR ORGAN BAĞIŞI HAKKINDA NE DÜŞÜNMEKTEDIR?

Büyük dinlerin çoğu organ bağışını onaylamakta ve desteklemektedir ama bazı şartlar bulunmaktadır:

1)Doku ve organı alınacak kişinin bu işlemin yapılmış olduğu sırada ölmüş olması,

2)Alınacak organ veya doku karşılığında hiçbir şekilde ücret alınmaması,

3)kişinin buna izin vermiş olması veya öldükten sonra yakınlarının rızasının alınması.

(Lütfen daha fazla bilgi için Diyanet İşleri Başkanlığı ile iletişime geçin.)

T.C. Sağlık Bakanlığı
İZMİR
İL SAĞLIK MÜDÜRLÜĞÜ

"Bir organ bağışlayarak bir hayat kurtarırsınız."

ORGAN BAĞIŞI NEDIR?

Bir kişinin, tıbben yaşamı sona erdikten sonra doku ve organlarının bir kısmının veya tamamının başka hastaların tedavisi için kullanılmasına, kendi iradesi ile izin vermesi ve bunu belgelendirmesidir.

ORGAN NAKLI NEDIR?

Tedavisi tıbben mümkün olmayan hastalıklar nedeniyle görev yapamayacak derecede hasar gören organların yerine, hayatta olan ya da beyin ölümü gerçekleşmiş kişilerden alınan sağlıklı organın nakledilmesidir.

BAĞIŞLANAN ORGANLAR KIMLERE NAKLEDILIR?

Organ nakli yapılacak hastalar öncelikle kan ve doku gruplarına göre, daha sonra tıbbi aciliyet durumlarına göre belirlenmektedir. Organ nakli yapılırken ayrım kesinlikle yapılmaz.

HAYAT KURTARAN EN ÖNEMLI BAĞIŞLANABILEN ORGANLAR HANGILERIDIR?

Bu organlar kalp, akciğer, karaciğer ve böbreklerdir.

HANGİ ORGAN VE DOKULARIN NAKLİ YAPILMAKTADIR?

Nakli yapılan organlar;
-Böbrek
-Kalp
-Karaciğer
-Akciğer
-Pankreas
-Deri
-incebağırsak

Nakli yapılan dokular;
-Kemik
-Kemik iliği
-Kornea
-Kalp kapağı

KIMLER ORGAN BAĞIŞINDA BULUNABILIR?

18 yaşından büyük ve akli dengesi yerinde olan herkes organ bağışında bulunabilir

Modified brochure English[72]

What is Organ donation?

It is giving permission to use one's organs and body tissues in the treatment of other people in need after the legal death.

What is Organ transplantation?

Replacing untreatably damaged organs with healthy organs taken from alive or brain dead people.

who can donate organ and tissues?

Anyone over 18 and compos mentis can donate organ and tissues.

who can receive organ and tissues?

After matching blood group and checking the medical emergency, Any Patients without discrimination can receive organ and tissues.

What is most important organs donated that can safe life?

These organs are: heart, lungs, liver and kidney

What are other organs and tissues can be donated and transplanted?

Tissues are: cornea, Bone, bone marrow and cardiac valve

Other Organs are: pancreas, epidermal and small bowel.

What do religious beliefs think about organ donation?

Most of the great religions approve and support organ donation and transplant but there are few condition:

1) The person who donates the organs has to be dead by then
2) organ donation should be without charge.
3) The donor has to make a statement while alive in favor of the donation

(Please contact the Religious Affairs Office to know more)

What is the procedure to donate?

First: inform your family and friend then bring two witness to the place of registration.

Second: you need to visit one of these places to register for organ donor:

1) City and county Health Management
2) Hospital
3) public and family health centers.

[72] It has some differences from the modified brochure the Turkish version, because some editing happened directly on the Turkish version from the health department

Third: you need to fill a form, sign it and then get a donor card.

Remember that you need to update your information in case of change later especially related to your name at the place of registration.

By donating an organ, you save a life.

APPENDIX C

PROTOTYPE TEXT ENGLISH AND TURKISH VERSION

Prototype text English[73]

Boy: Hello there,

Boy: I am on a journey to find out more about Organ donation and transplant to help my fellow city people…. Shell we start. (pick avatar to start)

Boy: Great now let's visit the wise man to help us get more information about this.

Boy: Hello wise man, can you help us to know more about organ donation and transplant.

Wise man: yes of course.

by giving permission to use one's organs and body tissues in the treatment of other people in need after the legal death is called:

A) Organ stealing B) Organ donation C) Organ surgery

And by Replacing untreatably damaged organs with healthy organs taken from alive or brain dead people is called:

A) Organ transplantation B) Changing body C) Chemotherapy

Boy: Great, this is much clearer for me now, thank you. But who can donate organs and who can receive it.

Wise man: if over 18 and compos mentis then people who can donate organ and tissues are:

A) Only men B) Only young people C) Everyone

After matching blood group and checking the medical emergency, Patients who can receive organ and tissues:

A) only reach people B) anyone without discrimination

C) only young people.

Boy: O wise man what is the most important organs donated that can safe life?

Wise man: These are:

A) heart, lungs, liver, kidney B) cornea, Bone, pancreas, bowel

C) Eye, Leg, Hand, Tongue

Wise man: Also there are more organs and tissues that can be donated these are:

(Bone, bone marrow, cornea, cardiac valve, pancreas, epidermal, small bowel)

[73] It has some differences from the Turkish version, because some editing happened directly on the Turkish version from the health department

Boy: O wise man I am not sure of religion approve of organ transplant and donation.

Wise man: Do not worry about that. Most of the great religions approve and support organ donation and transplant but there are few condition, the first one:

A) the organ donor should be Alive B) the organ donor should be dead

C) the organ donor should be sick

The second one:

A) organ donation should be without charge

B) Organ donor should get money

C) Money should be involved in the procedure of donation.

Also:

A) The procedure should be kept secret

B) family and friend should not know about the procedure

C) The donor has to make a statement while alive in favor of the donation

If you want know more you should contact Religious Affairs Office.

Boy: I would like to be an organ donor now.

Wise man: hold your horses courageous man, first of all you need to inform you family and friend and you should bring 2 witness to the place of registration.

Boy: yes I will do that, when I reach to the place of registration what do they need me to do?

Wise mam: A) fill a form, sign it and get a donor card

B) donate your organ instantly

C) they will check your medical record.

But remember you need to update your information in case of change later especially related to your name at the place where you will register in.

Boy: Great that sound easy, where can I go to do the registration?

Wise man: you can go to one of these: (button when press reveal the answer

1) City and county Health Management
2) Hospital
3) public and family health centers.

Boy: that sound great, I will visit them soon, Thank you for the help wise man

You too thank you for the help in my journey, remember when you donate organ, you save life

Prototype text Turkish

Sami: Selam,

Sami: Organ bağışı ve nakli ile ilgili daha fazla bilgi edinmek için yoldayım. Başlayalım mı? Başlamak için bir avatar seç.

Sami: Harika. Şimdi bunun hakkında daha fazla bilgi edinmek için bilge adamdan yardım isteyelim.

Sami: Merhaba bilge adam, organ bağışı ve nakli ile ilgili daha fazla şey öğrenmemiz için bize yardım eder misin?

Bilge adam: Evet, tabii ki. Bir kişinin, tıbben yaşamı sona erdikten sonra doku ve organlarının bir kısmının veya tamamının başka hastaların tedavisi için kullanılmasına, kendi iradesi ile izin vermesine ne denir?

A) Organ çalma B) Organ bağışlama C) Organ ameliyatı

Ve Tedavisi tıbben mümkün olmayan hastalıklar nedeniyle görev yapamayacak derecede hasar gören organların yerine, hayatta olan ya da beyin ölümü gerçekleşmiş kişilerden alınan sağlıklı organın nakledilmesine ne denir?

A Organ nakli B) Beden değiştirme C) Kemoterapi

Sami: Harika, şimdi durum benim için biraz daha anlaşılır oldu. Teşekkür ederim ama kim organ bağışlayabilir ve kimlere nakil yapılabilir?

Bilge adam: 18 yaşından büyük ve akli dengesi yerindeyse kimler organ bağışında bulunabilir

A) sadece erkekler B) Sadece gençler C) Herkes

Kan ve doku gruplarına göre, daha sonra tıbbi aciliyet durumlarına göre, doku ve organ nakli yapılabilecek hastalar kimlerdir:

A) sadece zenginler B) ayrım gözetmeksizin herkes C) sadece gençler

Sami: Bilge adam bağışlandığında hayat kurtaran en önemli organlar hangileridir?

Bilge adam: Hangileridir?

A) kalp, akciğer, karaciğer, böbrek
B) kornea, kemik, pankreas, bağırsak C) göz, bacak, el, dil

Bilge adam: Bağışlanabilecek daha fazla organ ve doku bulunmaktadır, bunlar:

Kemik -Kemik iliği -Kornea -Kalp kapağı, pankreas, deri, ince bağırsak

Sami: Bilge adam dinin organ bağışı ve naklini onaylayıp onaylamadığı konusunda emin değilim.

Bilge adam: Endişelenme. Büyük dinlerin çoğu organ bağışını onaylamakta ve desteklemektedir ama bazı şartlar bulunmaktadır. Kişi yaşarken karaciğerinin bir kısmı ile tek bir böbreğini yasalar çerçevesinde bağışlayabilir. Ama (Kalp -Akciğer -Pankreas-ince bağırsak -Kornea) gibi organların nakli için hangisi gereklidir

A) Bağışçı hayatta olmalı B) Bağışcı ölü olmalı

C) Bağışçı hasta olmalı

İkinci olarak

A) Alınacak organ veya doku karşılığında hiçbir şekilde ücret alınmaması
B) Bağışçı para almalı C) Bağış prosedürüne para dahil edilmelidir

Ayrıca:

A) Prosedür gizli tutulmalı B) Aile ve arkadaşlara durum anlatılmamalı

C) kişinin buna izin vermiş olması veya öldükten sonra yakınlarının rızasının alınması

Sami: Ben de bir organ bağışçısı olmak istiyorum.

Bilge adam: Acele etme bakalım cesur adam. İlk olarak ailen ve arkadaşlarını bilgilendirmen ve kayıt merkezine iki tanık getirmen gerekiyor.

Sami: Tamam onu yaparım. Kayıt merkezine ulaşınca ne yapmam gerekecek?

Yapmanız gerekenler:

Bilge adam: A) Belge doldurup imzalaman ve kart alman

B) Hemen organlarını bağışlaman

C)Tıbbi geçmişini Kontrol etmeleri gerekecek .

Eğer bilgilerinde bir değişiklik olursa kayıt merkezine giderek bilgilerini güncellemeyi unutmayın.

Sami: Harika, kolay görünüyor. Kaydı nerede yaptırabilirm?

Bilge adam: şu yerlerden birine gelebilirsin:

İl ve ilçe Sağlık Müdürlüğü

Hastane

Toplum ve Aile Sağlığı Merkezleri

Sami: Harika, en yakın zamanda gideceğim. Yardımın için teşekkürler Bilge adam

Size de yolculuğumda bana eşlik ettiğiniz için teşekkür ederim. Unutmayın organ bağışlayarak hayat kurtarabilirsiniz.


Hadi hayatları kurtaralım
Organ Bağışı
Organ Nakli
Bilgilendirici Oyun
Selam
Organ bağışı ve nakli ile ilgili daha fazla bilgi edinmek için yoldayım.
Başlayalım mı?
2.Sonra buraya koyunuz
1.Başlamak için bir avatar seç.
Harika. Şimdi bunun hakkında daha fazla bilgi edinmek için bilge adamdan yardım isteyelim.
Evet, tabii ki.
Merhaba bilge adam, organ bağışı ve nakli ile ilgili daha fazla şey öğrenmemiz için bize yardım eder misin?
Bir kişinin, tıbben yaşamı sona erdikten sonra doku ve organlarının bir kısmının veya tamamının başka hastaların tedavisi için kullanılmasına, kendi iradesi ile izin vermesine ne denir?
Organ çalma
Organ bağışlama
Organ ameliyatı
Ve Tedavisi tıbben mümkün olmayan hastalıklar nedeniyle görev yapamayacak derecede hasar gören organların yerine, hayatta olan ya da beyin ölümü gerçekleşmiş kişilerden alınan sağlıklı organın nakledilmesine ne denir?
Organ nakli
Beden değiştirme
Kemoterapi
Harika, şimdi durum benim için biraz daha anlaşılır oldu. Teşekkür ederim ama kim organ bağışlayabilir ve kimlere nakil yapılabilir?
18 yaşından büyük ve akli dengesi yerinde yse kimler organ bağışında bulunabilir
Sadece gençler
Herkes
sadece erkekler
Kan ve doku gruplarına göre, daha sonra tıbbi aciliyet durumlarına göre, doku ve organ nakli yapılabilecek hastalar kimlerdir:
sadece zenginler
sadece gençler
aynım gözetmeksizin herkes
Bilge adamı bağlandığında hayat kurtaran en önemli organlar hangileridir?
Hangileridir
kalp, akciğer, karaciğer, böbrek
kornea, kemik, pankreas, bağırsak
göz, bacak, el, dil
Bağışlanabilecek daha fazla organ ve doku bulunmaktadır, bunlar:
dokular: Kemik -Kemik iliği -Kornea -Kalp kapağı
organlar: pankreas, deri, ince bağırsak
Bilge adam dinin organ bağışı ve naklini onaylayışı onaylamadığı konusunda emin değilim.
Endişelenme. Büyük dinlerin çoğu organ bağışını onaylamakta ve desteklemektedir ama bazı şartlar bulunmaktadır. Kişi yaşarken karaciğerinin bir kısmı ile tek bir böbreğini yasalar çerçevesinde bağışlayabilir. Ama (Kalp -Akciğer -Pankreas -ince bağırsak -Kornea) gibi organların nakli için hangisi gereklidir
Bağışçı hayatta olmalı
Bağışçı ölü olmalı
Bağışçı hasta olmalı
İkinci olarak:
Alınacak organ veya doku karşılığında hiçbir şekilde ücret alınmaması
Bağışçı para almalı
Bağış prosedürüne para dahil edilmelidir
Ayrıca:
Prosedür gizli tutulmalı
kişinin buna izin vermiş olması veya öldükten sonra yakınlarının rızasının alınması
Aile ve arkadaşlara durum anlatılmamalı
Lütfen daha fazla bilgi için Diyanet İşleri Başkanlığı ile iletişime geçin
Size de yolculuğumda bana eşlik ettiğiniz için teşekkür ederim. Unutmayın organ bağışlayarak hayat kurtarabilirsiniz.
Son da bir organ bağışçısı olmak istiyorum.
Acele etme bakalım cesur adam. İlk olarak ailen ve arkadaşlarını bilgilendirmen ve kayıt merkezine iki tanık getirmen gerekiyor.
Tamam onu yaparım. Kayıt merkezine ulaşınca ne yapmam gerekecek?
Yapmanız gerekenler:
Belge doldurup imzalaman ve kart alman
Hemen organlarını bağışlaman
Tıbbi geçmişini Kontrol etmeleri gerekecek
Eğer bilgilerinde bir değişiklik olursa kayıt merkezine giderek bilgilerini güncellemeyi unutmayın.
Harika, kolay görünüyor. Kayıt nerede yaptırabilirim?
şu yerlerden birine gelebilirsin
Harika, en yakın zamanda gideceğim. Yardımın için teşekkürler Bilge adam
Bütün soruları bitirdikten sonra, lütfen kırmızı tuşa basınız.
100
75
50
25
0

APPENDIX D

QUESTIONNAIRE ENGLISH AND TURKISH VERSION

ORGAN BAĞIŞI KAMPANYASI HAKKINDA DENEY

P#: Date: Time: Place:

GÖZLEMCI TARAFINDAN DOLDURULACAKTIR.

1.AŞAĞIYI OKUYUN:

Değerli katılımcı,
Bu deney, İzmir Yüksek Teknoloji Enstitüsü, Mühendislik ve Fen Bilimleri Enstitüsü, Endüstriyel Tasarım Yüksek Lisans Programı'nda okuyan Ali Al-Samarei tarafından yürütülen yüksek lisans tezi kapsamında yapılmaktadır.

Bu deney, farkındalık yaratma amaçlı kampanyalarda kullanılan araçları/malzemeleri ve bu araçların/malzemelerin kampanyalar hakkındaki bilgilerin algılanmasını nasıl etkilediğini daha iyi anlayabilmek için hazırlanmıştır. Deneyde iki grup olacaktır. Katılımcı, bu gruplardan sadece birinde olacaktır.

Katılım gönüllü olup, deneyden istediğiniz zaman geri çekilebilirsiniz.

Kişilerin okuma/yazma hızına göre deneyi bitirmek yaklaşık 5-10 dakika (Grup 1 için) ya da 10-20 (Grup 2 için dakika) alacaktır.

2.DENEYI YAPIN:

Lütfen devam edin ve grubunuza göre deneyinizi yapın.

Group #: V#: TTtFtE: PdSor:

Comments:

GÖZLEMCI TARAFINDAN DOLDURULACAKTIR.

3.ANKET:

Bu ankette size düşünceleriniz, duygularınız ve fikirleriniz hakkında sorular sorulacaktır. Sorulara istediğiniz şekilde cevap verebilirsiniz fakat cevapların dürüstçe verilmesi gerçekten önemlidir.

* Verdiğiniz cevapların hepsi gizli tutulacaktır, verdiğiniz bilgiler tarafından kim olduğunuz anlaşılamayacağı gibi bu bilgiler üçüncü şahıslarla paylaşılmayacaktır.

* Seçtiğiniz cevabı yuvarlak içine alabilir ya da yanına tik (✓) veya çarpı (✗) işareti koyabilirsiniz.

*Birden fazla seçeneği olan sorular için lütfen tek bir cevabı seçiniz.

AŞAĞIDAKI SORULARI CEVAPLAYIN

A. GENEL SORULAR:

1. Yaşınız: _____
2. Cinsiyetiniz: ☐ Erkek ☐ Kadın
3. Kaçıncı sınıfa gidiyorsun? _____
4. Baba işi: _____ ☐ Çalışmıyor
5. Anne işi: _____ ☐ Çalışmıyor
6. Bugüne kadar organ bağışını hiç duydunuz mu? ☐ Evet ☐ Hayır
7. Organ bağışçısı olan birisini tanıyor musunuz? ☐ Evet ☐ Hayır
8. Organ nakli olan birisini tanıyor musunuz? ☐ Evet ☐ Hayır

Aşağıdakileri haftada ne sıklıkta yaparsınız?:

		Haftanın her günü, günün büyük bir kısmında	Haftanın her günü ama günün az bir kısmında	Haftada 4 veya 5 gün	Haftada 1 veya 2 gün	Hiç yapmıyorum
9.	Okumak:					
10.	Dinlemek (herhangi bir şey: müzik / sohbet…vs.):					
11.	İzlemek (herhangi bir şey: videolar /filmler … vs.):					
12.	Oyun oynamak					

B. DENEY HAKKINDA SORULAR:

Okumuş olduğunuz **bu bilgi aktarımı metodu** hakkında ne düşünüyorsunuz?

1.	İlginç değil	1	2	3	4	5	İlginç
2.	Uygun değil	1	2	3	4	5	Uygun
3.	Yenilikçi değil	1	2	3	4	5	Yenilikçi
4.	Eğlenceli değil	1	2	3	4	5	Eğlenceli
5.	Sıkça kullanıl-mamalı	1	2	3	4	5	Sıkça kullanılmalı
6.	Kullanması zor	1	2	3	4	5	Kullanması kolay
7.	Az etkili	1	2	3	4	5	Daha etkili

Deneyi bitirdikten sonra kendinizi nasıl hissettiniz?

8.	Mutlu değil	1	2	3	4	5	Mutlu
9.	Yorgun değil	1	2	3	4	5	Yorgun
10.	Keyif almamış	1	2	3	4	5	Keyif almış
11.	Zamanımı boşa harcadım	1	2	3	4	5	Zamanımı boşa harcamadım
12.	Sıkılmış	1	2	3	4	5	Sıkılmamış

13. Genel olarak insanlar bu tarz bir metodu çekici bulurlar:

Kesinlikle katılmıyorum	1	2	3	4	5	Kesinlikle katılıyorum

Bilgi hakkında:

14.	Anlaması kolay değil	1	2	3	4	5	Anlaması kolay
15.	Fazla düşünme gerektirmiyor	1	2	3	4	5	Fazla düşünme gerektiriyor
16.	Beni merak-landırmıyor	1	2	3	4	5	Beni merak-landırıyor
17.	Faydalı bir bilgi elde etmedim	1	2	3	4	5	Faydalı bir bilgi elde ettim
18.	Hatırlaması kolay değil	1	2	3	4	5	Hatırlaması kolay

Bu konu hakkında diğer insanlarla paylaşmak için yeterince fikir sahibi olduğunuzu düşünüyor musunuz?

19.	Kesinlikle katılmıyorum	1	2	3	4	5	Kesinlikle katılıyorum

Sizce insanlar bu konu hakkında ne düşünmeliler?

20.	Organlarını bağışlama-mayı	1	2	3	4	5	Organlarını bağışlamayı

21. Organ bağışçısı olmayı düşünür müydünüz?

☐ Evet ☐ Hayır ☐ Belki

22. Eğer bir organ bağışçısı olacaksanız ilk olarak kime danışırdınız?:

☐ Anne-baba ☐ Akraba ☐ arkadaş
☐ Öğretmen ☐ Doktor ☐ Dini bir kişilik
☐ Sevgili ☐ Kimse ☐ Diğer _____

23. İhtiyacınız olursa organ nakli ameliyatı olur muydunuz?

☐ Evet ☐ Hayır ☐ Belki

C. EDINILEN BILGI ÜZERINE SORULAR:

Bu sorular, deneyden elde ettiğiniz bilgiyi sınamak içindir:

1. 15 yaşında biri organ bağışlamak istiyor;

☐ Olabilir ☐ İmkansız ☐ Emin değilim

2. Sadece genç insanlara organ bağışlanabilir.

☐ Evet ☐ Hayır ☐ Emin değilim

3. Kornea, birisinin ölmemesi için gerekli olan hayati organlardan biri midir?

☐ Evet ☐ Hayır ☐ Emin değilim

4. Kalp kapakçığı kullanılabilir/bağışlanabilir mi?

☐ Evet ☐ Hayır ☐ Emin değilim

5. Türkiye'de organ bağışlarsanız karşılığında para alır mısınız?

☐ Evet ☐ Hayır ☐ Emin değilim

6. Aileniz ve arkadaşlarınız sizin organ bağışladığınızı bilmemelidir, bu kural doğru mudur?

☐ Evet ☐ Hayır ☐ Emin değilim

7. Organ bağışçısı olmak için kayıt **olamayacağınız** yerlerden biri hangisidir?

☐ Aile Sağlığı Merkezleri
☐ Belediye binası
☐ ilçe Sağlık Müdürlüğü

BU DENEYE KATILIMINIZDAN DOLAYI TEŞEKKÜR EDERIZ.

CEVAPLARINIZ VE KATILIMINIZ BIZIM IÇIN DEĞERLIDIR.

ORGAN DONATION CAMPAIGN EXPERIMENT

P#: Date: Time: Place:

FILLED BY THE OBSERVER

1.READ BELOW:

Dear participant,

This experiment is conducted for the master thesis by Ali Al-Samarei who is student in Izmir Institute of Technology, the graduate school of engineering and sciences, department of industrial design master program.

This experiment is prepared to understand more about campaigns tools and the way they impact on perceiving information in campaigns. There will be two groups. The participant will fall under one of these groups.

Participation is voluntary you can withdraw from the experiment at any time.

It might take you around (10 -20 minutes for group 1) (15 -25 minutes for group 2) to finish the experiment depending on individual read/write speed.

2.DO THE EXPERIMENT:

Please go ahead and do the experiment depending on your group

Group #: V#: TTtFtE: PdSor:

Comments:

FILLED BY THE OBSERVER

3.THE QUESTIONNAIRE

In this questionnaire section you are asked about your thoughts, feeling and ideas, feel free to respond in the way you feel comfortable but it is very important the answers are honest.

*all the answers are confidential and you will not be able to be identified from the information and will not be shared with third parties.

* you can Circle or tick (✓) or add (X) sign next to the answer you want.

ANSWER THE QUESTIONS BELOW

A. GENERAL QUESTIONS:

1. Age : _____
2. Gender: ☐ Male ☐ Female
3. Your grade: _____
4. Father job: _____ ☐ not working
5. Mother job: _____ ☐ not working
6. Have you heard about organ donation before this? ☐ yes ☐ no
7. Do you know anyone became organ donor? ☐ yes ☐ no
8. Do you know anyone had organ transplantation? ☐ yes ☐ no

How frequent per week you:

		Most of the day every day in the week	Less time in day but every day in the week	4 or 5 days in the week	1 or 2 days in a week	Do not do that at all
9.	Read:					
10.	Listen (any of: music / talk…etc.):					
11.	Watching (any of: videos /films … etc.):					
12.	Playing games:					

B. ABOUT THE EXPERIMENT QUESTION:

What do you think about **this method** of delivering the information you have read?

1.	Not interesting	1	2	3	4	5	Interesting
2.	Not appropriate	1	2	3	4	5	Appropriate
3.	Not novel	1	2	3	4	5	Novel
4.	Not fun	1	2	3	4	5	Fun
5.	Should not be used Frequently	1	2	3	4	5	Should be used frequently
6.	Hard to use	1	2	3	4	5	Easy to use
7.	Less Effective	1	2	3	4	5	More Effective

How do you feel **after** you finish **the experiment**?

8.	Not Happy	1	2	3	4	5	Happy
9.	Not Exhausted	1	2	3	4	5	Exhausted
10.	Not Enjoyed	1	2	3	4	5	Enjoyed
11.	I wasted my time	1	2	3	4	5	I did not waste my time
12.	Bored	1	2	3	4	5	Not bored

13. In public, people will be attracted to this kind of method:

Strongly disagree	1	2	3	4	5	Strongly agree

About **the information**:

14.	Not easy to understand	1	2	3	4	5	Easy to understand
15.	Does not require a lot of thinking	1	2	3	4	5	Require a lot of thinking
16.	It does not make me curious	1	2	3	4	5	Make me curious
17.	I did not gain valuable information	1	2	3	4	5	I gained valuable information
18.	Not easy to remember	1	2	3	4	5	Easy to remember

Do you feel you have enough understanding of this information to share it with other people?

19.	Strongly disagree	1	2	3	4	5	Strongly agree

Do you feel people should consider:

20.	Not donating their organ	1	2	3	4	5	Donating their organ

21. Would you consider becoming organ donor?

☐ yes ☐ no ☐ maybe

22. If you are going to be an Organ donor who do you mostly consult first:

☐ parent ☐ family member ☐ friend
☐ teacher ☐ doctor ☐ religious figure
☐ loved one ☐ no one ☐ other _____

23. Would you go through organ transplantation in case you need it?

☐ yes ☐ no ☐ maybe

C. QUESTION FROM THE INFORMATION:

These question is to test the information you gained from the experiment:

1. 15 years old want to donate an organ?

☐ possible ☐ not possible ☐ not sure

2. Only young people can receive organ?

☐ yes ☐ no ☐ not sure

3. Cornea is one of the vital organs needed so one does not die?

☐ yes ☐ no ☐ not sure

4. Cardiac valve can be used/donated?

☐ yes ☐ no ☐ not sure

5. You will receive money if you donate organ in turkey?

☐ yes ☐ no ☐ not sure

6. Family and friend should not know if you donate an organ, this rule is true?

☐ yes ☐ no ☐ not sure

7. One of these places you **cannot** register in it to become organ donor:

☐ family health center
☐ city hall
☐ city health management

THANK YOU FOR YOUR PARTICIPATION IN THIS EXPERIMENT. YOUR ANSWERS AND PARTICIPATION IS VALUABLE TO US.

APPENDIX E

CHART AND DATA

		Group				Reader or Player					
		Brochure		Prototype		Equal		Reader		Player	
		n	N %	n	N %	n	N %	n	N %	n	N %
Age	12	**10**	**40.0%**	**13**	**52.0%**	**4**	**36.4%**	**8**	**36.4%**	**11**	**64.7%**
	13	**15**	**60.0%**	**12**	**48.0%**	**7**	**63.6%**	**14**	**63.6%**	**6**	**35.3%**
Gender	Male	**12**	**48.0%**	**17**	**68.0%**	**7**	**63.6%**	**12**	**54.5%**	**10**	**58.8%**
	Female	**13**	**52.0%**	**8**	**32.0%**	**4**	**36.4%**	**10**	**45.5%**	**7**	**41.2%**
Heard about organ donation before the experiment	yes	**23**	**92.0%**	**23**	**92.0%**	**10**	**90.9%**	**22**	**100.0%**	**14**	**82.4%**
	No	**2**	**8.0%**	**2**	**8.0%**	**1**	**9.1%**	**0**	**0.0%**	**3**	**17.6%**
Know an organ donor	yes	**3**	**12.0%**	**3**	**12.0%**	**3**	**27.3%**	**3**	**13.6%**	**0**	**0.0%**
	No	**22**	**88.0%**	**22**	**88.0%**	**8**	**72.7%**	**19**	**86.4%**	**17**	**100.0%**
Know a person underwent organ transplantation	yes	**3**	**12.0%**	**4**	**16.0%**	**2**	**18.2%**	**2**	**9.1%**	**3**	**17.6%**
	No	**22**	**88.0%**	**21**	**84.0%**	**9**	**81.8%**	**20**	**90.9%**	**14**	**82.4%**
Frequent reading per week	Most of the day every day in the week	**5**	**20.0%**	**5**	**20.0%**	**4**	**36.4%**	**6**	**27.3%**	**0**	**0.0%**
	Less time in day but every day in the week	**5**	**20.0%**	**5**	**20.0%**	**5**	**45.5%**	**5**	**22.7%**	**0**	**0.0%**
	4 or 5 days in the week	**5**	**20.0%**	**10**	**40.0%**	**0**	**0.0%**	**11**	**50.0%**	**4**	**23.5%**
	1 or 2 days in a week	**10**	**40.0%**	**4**	**16.0%**	**2**	**18.2%**	**0**	**0.0%**	**12**	**70.6%**
	Do not do that at all	**0**	**0.0%**	**1**	**4.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**5.9%**
Frequent listening per week	Most of the day every day in the week	**8**	**32.0%**	**12**	**48.0%**	**6**	**54.5%**	**8**	**36.4%**	**6**	**35.3%**
	Less time in day but every day in the week	**8**	**32.0%**	**6**	**24.0%**	**4**	**36.4%**	**4**	**18.2%**	**6**	**35.3%**
	4 or 5 days in the week	**4**	**16.0%**	**3**	**12.0%**	**1**	**9.1%**	**3**	**13.6%**	**3**	**17.6%**
	1 or 2 days in a week	**4**	**16.0%**	**4**	**16.0%**	**0**	**0.0%**	**6**	**27.3%**	**2**	**11.8%**
	Do not do that at all	**1**	**4.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**4.5%**	**0**	**0.0%**
Frequent watching per week	Most of the day every day in the week	**4**	**16.0%**	**7**	**28.0%**	**4**	**36.4%**	**3**	**13.6%**	**4**	**23.5%**
	Less time in day but every day in the week	**12**	**48.0%**	**7**	**28.0%**	**4**	**36.4%**	**9**	**40.9%**	**6**	**35.3%**
	4 or 5 days in the week	**3**	**12.0%**	**4**	**16.0%**	**0**	**0.0%**	**3**	**13.6%**	**4**	**23.5%**
	1 or 2 days in a week	**5**	**20.0%**	**5**	**20.0%**	**3**	**27.3%**	**5**	**22.7%**	**2**	**11.8%**
	Do not do that at all	**1**	**4.0%**	**2**	**8.0%**	**0**	**0.0%**	**2**	**9.1%**	**1**	**5.9%**

Frequent playing per week	Most of the day every day in the week	**5**	**20.0%**	**8**	**32.0%**	**6**	**54.5%**	**0**	**0.0%**	**7**	**41.2%**
	Less time in day but every day in the week	**3**	**12.0%**	**3**	**12.0%**	**3**	**27.3%**	**0**	**0.0%**	**3**	**17.6%**
	4 or 5 days in the week	**5**	**20.0%**	**3**	**12.0%**	**0**	**0.0%**	**2**	**9.1%**	**6**	**35.3%**
	1 or 2 days in a week	**10**	**40.0%**	**9**	**36.0%**	**2**	**18.2%**	**16**	**72.7%**	**1**	**5.9%**
	Do not do that at all	**2**	**8.0%**	**2**	**8.0%**	**0**	**0.0%**	**4**	**18.2%**	**0**	**0.0%**
Would you consider becoming organ donor?	yes	**11**	**44.0%**	**12**	**48.0%**	**6**	**54.5%**	**9**	**40.9%**	**8**	**47.1%**
	No	**2**	**8.0%**	**2**	**8.0%**	**2**	**18.2%**	**0**	**0.0%**	**2**	**11.8%**
	Maybe	**12**	**48.0%**	**11**	**44.0%**	**3**	**27.3%**	**13**	**59.1%**	**7**	**41.2%**
If you are going to be an Organ donor who do you mostly consult first?	parent	**21**	**84.0%**	**20**	**80.0%**	**10**	**90.9%**	**18**	**81.8%**	**13**	**76.5%**
	family member	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
	friend	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
	teacher	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
	doctor	**4**	**16.0%**	**5**	**20.0%**	**1**	**9.1%**	**4**	**18.2%**	**4**	**23.5%**
	religious figure	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
	loved one	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
	no one	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Would you go through organ transplantation in case you need it?	yes	**17**	**68.0%**	**17**	**68.0%**	**6**	**54.5%**	**14**	**63.6%**	**14**	**82.4%**
	No	**1**	**4.0%**	**0**	**0.0%**	**1**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
	Maybe	**7**	**28.0%**	**8**	**32.0%**	**4**	**36.4%**	**8**	**36.4%**	**3**	**17.6%**

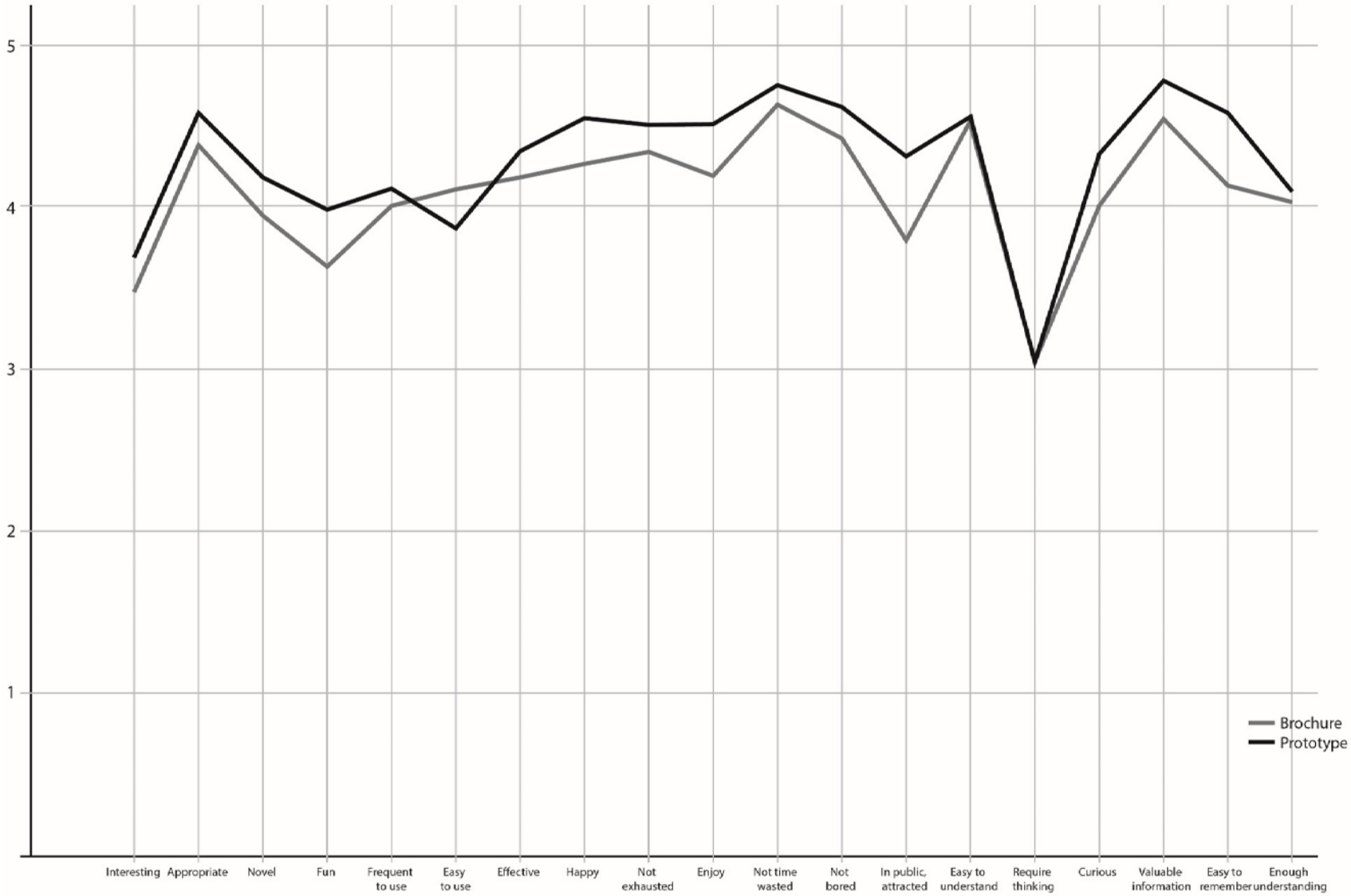
		Group				Reader or Player					
		Brochure		Prototype		Equal		Reader		Player	
		n	N %	n	N %	n	N %	n	N %	n	N %
How interesting is this method of delivering the information you have read?	Not interesting	**3**	**12.0%**	**1**	**4.0%**	**2**	**18.2%**	**2**	**9.1%**	**0**	**0.0%**
	2.00	**1**	**4.0%**	**5**	**20.0%**	**1**	**9.1%**	**3**	**13.6%**	**2**	**11.8%**
	3.00	**10**	**40.0%**	**5**	**20.0%**	**4**	**36.4%**	**5**	**22.7%**	**6**	**35.3%**
	4.00	**3**	**12.0%**	**4**	**16.0%**	**1**	**9.1%**	**4**	**18.2%**	**2**	**11.8%**
	Interesting	**8**	**32.0%**	**10**	**40.0%**	**3**	**27.3%**	**8**	**36.4%**	**7**	**41.2%**
How appropriate is this method of delivering the information you have read?	Not appropriate	**1**	**4.0%**	**1**	**4.0%**	**0**	**0.0%**	**1**	**4.5%**	**1**	**5.9%**
	3.00	**3**	**12.0%**	**1**	**4.0%**	**0**	**0.0%**	**3**	**13.6%**	**1**	**5.9%**
	4.00	**5**	**20.0%**	**4**	**16.0%**	**2**	**18.2%**	**3**	**13.6%**	**4**	**23.5%**
	appropriate	**16**	**64.0%**	**19**	**76.0%**	**9**	**81.8%**	**15**	**68.2%**	**11**	**64.7%**
How novel is this method of delivering the information you have read?	Not novel	**3**	**12.0%**	**0**	**0.0%**	**2**	**18.2%**	**0**	**0.0%**	**1**	**5.9%**
	2.00	**1**	**4.0%**	**2**	**8.0%**	**1**	**9.1%**	**2**	**9.1%**	**0**	**0.0%**
	3.00	**3**	**12.0%**	**4**	**16.0%**	**1**	**9.1%**	**3**	**13.6%**	**3**	**17.6%**
	4.00	**5**	**20.0%**	**6**	**24.0%**	**2**	**18.2%**	**2**	**9.1%**	**7**	**41.2%**
	novel	**13**	**52.0%**	**13**	**52.0%**	**5**	**45.5%**	**15**	**68.2%**	**6**	**35.3%**
How fun is this method of	Not Fun	**2**	**8.0%**	**2**	**8.0%**	**1**	**9.1%**	**2**	**9.1%**	**1**	**5.9%**
	less fun	**0**	**0.0%**	**1**	**4.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**5.9%**

delivering the	mid	**11**	**44.0%**	**5**	**20.0%**	**5**	**45.5%**	**7**	**31.8%**	**4**	**23.5%**
information you	fun	**4**	**16.0%**	**4**	**16.0%**	**1**	**9.1%**	**4**	**18.2%**	**3**	**17.6%**
have read?	A lot of Fun	**8**	**32.0%**	**13**	**52.0%**	**4**	**36.4%**	**9**	**40.9%**	**8**	**47.1%**
How frequent is	Should not be										
this method of	used frequently	**1**	**4.0%**	**2**	**8.0%**	**0**	**0.0%**	**2**	**9.1%**	**1**	**5.9%**
delivering the	3.00	**6**	**24.0%**	**5**	**20.0%**	**3**	**27.3%**	**5**	**22.7%**	**3**	**17.6%**
information you	4.00	**9**	**36.0%**	**4**	**16.0%**	**2**	**18.2%**	**3**	**13.6%**	**8**	**47.1%**
have read should	Should be used	**9**	**36.0%**	**14**	**56.0%**	**6**	**54.5%**	**12**	**54.5%**	**5**	**29.4%**
be used?	frequently										
How easy to use	Not Easy to use	**2**	**8.0%**	**4**	**16.0%**	**2**	**18.2%**	**2**	**9.1%**	**2**	**11.8%**
is this method of	2.00	**2**	**8.0%**	**0**	**0.0%**	**0**	**0.0%**	**2**	**9.1%**	**0**	**0.0%**
delivering the	3.00	**2**	**8.0%**	**3**	**12.0%**	**0**	**0.0%**	**3**	**13.6%**	**2**	**11.8%**
information you	4.00	**4**	**16.0%**	**6**	**24.0%**	**1**	**9.1%**	**4**	**18.2%**	**5**	**29.4%**
have read?	Easy to use	**15**	**60.0%**	**12**	**48.0%**	**8**	**72.7%**	**11**	**50.0%**	**8**	**47.1%**
How effective is	Less Effective	**0**	**0.0%**	**2**	**8.0%**	**0**	**0.0%**	**1**	**4.5%**	**1**	**5.9%**
this method of	3.00	**7**	**28.0%**	**1**	**4.0%**	**4**	**36.4%**	**2**	**9.1%**	**2**	**11.8%**
delivering the	4.00	**6**	**24.0%**	**6**	**24.0%**	**3**	**27.3%**	**4**	**18.2%**	**5**	**29.4%**
information you	More Effective	**12**	**48.0%**	**16**	**64.0%**	**4**	**36.4%**	**15**	**68.2%**	**9**	**52.9%**
have read?											
How happy do	Not Happy	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
you feel after	2.00	**0**	**0.0%**	**2**	**8.0%**	**0**	**0.0%**	**1**	**4.5%**	**1**	**5.9%**
you finish the	3.00	**5**	**20.0%**	**1**	**4.0%**	**1**	**9.1%**	**2**	**9.1%**	**3**	**17.6%**
experiment?	4.00	**8**	**32.0%**	**3**	**12.0%**	**4**	**36.4%**	**4**	**18.2%**	**3**	**17.6%**
	Happy	**12**	**48.0%**	**19**	**76.0%**	**6**	**54.5%**	**15**	**68.2%**	**10**	**58.8%**
How exhausted	Not Exhausted	**18**	**72.0%**	**18**	**72.0%**	**9**	**81.8%**	**14**	**63.6%**	**13**	**76.5%**
do you feel after	2.00	**3**	**12.0%**	**4**	**16.0%**	**1**	**9.1%**	**3**	**13.6%**	**3**	**17.6%**
you finish the	3.00	**1**	**4.0%**	**2**	**8.0%**	**0**	**0.0%**	**3**	**13.6%**	**0**	**0.0%**
experiment?	4.00	**1**	**4.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**4.5%**	**0**	**0.0%**
	Exhausted	**2**	**8.0%**	**1**	**4.0%**	**1**	**9.1%**	**1**	**4.5%**	**1**	**5.9%**
How enjoy do	Not Enjoyed	**1**	**4.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**5.9%**
you feel after	2.00	**0**	**0.0%**	**2**	**8.0%**	**0**	**0.0%**	**1**	**4.5%**	**1**	**5.9%**
you finish the	3.00	**4**	**16.0%**	**2**	**8.0%**	**3**	**27.3%**	**2**	**9.1%**	**1**	**5.9%**
experiment?	4.00	**8**	**32.0%**	**2**	**8.0%**	**2**	**18.2%**	**3**	**13.6%**	**5**	**29.4%**
	Enjoyed	**12**	**48.0%**	**19**	**76.0%**	**6**	**54.5%**	**16**	**72.7%**	**9**	**52.9%**
Do you feel after	I wasted my										
you finish the	time	**1**	**4.0%**	**0**	**0.0%**	**1**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
experiment you	3.00	**1**	**4.0%**	**2**	**8.0%**	**1**	**9.1%**	**1**	**4.5%**	**1**	**5.9%**
wasted your	4.00	**3**	**12.0%**	**2**	**8.0%**	**0**	**0.0%**	**2**	**9.1%**	**3**	**17.6%**
time?	I did not waste	**20**	**80.0%**	**21**	**84.0%**	**9**	**81.8%**	**19**	**86.4%**	**13**	**76.5%**
	my time										
How bored do	Bored	**1**	**4.0%**	**0**	**0.0%**	**1**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
you feel after	2.00	**1**	**4.0%**	**0**	**0.0%**	**1**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
you finish the	3.00	**2**	**8.0%**	**2**	**8.0%**	**1**	**9.1%**	**3**	**13.6%**	**0**	**0.0%**
experiment?	4.00	**3**	**12.0%**	**5**	**20.0%**	**1**	**9.1%**	**3**	**13.6%**	**4**	**23.5%**
	Not Bored	**18**	**72.0%**	**18**	**72.0%**	**7**	**63.6%**	**16**	**72.7%**	**13**	**76.5%**
In public, does	Strongly										
people will be	Disagree	**3**	**12.0%**	**0**	**0.0%**	**1**	**9.1%**	**1**	**4.5%**	**1**	**5.9%**
attracted to this	2.00	**1**	**4.0%**	**2**	**8.0%**	**1**	**9.1%**	**2**	**9.1%**	**0**	**0.0%**
kind of method?	3.00	**6**	**24.0%**	**4**	**16.0%**	**1**	**9.1%**	**3**	**13.6%**	**6**	**35.3%**
	4.00	**3**	**12.0%**	**3**	**12.0%**	**3**	**27.3%**	**2**	**9.1%**	**1**	**5.9%**
	Strongly Agree	**12**	**48.0%**	**16**	**64.0%**	**5**	**45.5%**	**14**	**63.6%**	**9**	**52.9%**

How easy is to understand the information?	Not easy to understand	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
	2.00	**1**	**4.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**4.5%**	**0**	**0.0%**
	3.00	**3**	**12.0%**	**3**	**12.0%**	**1**	**9.1%**	**2**	**9.1%**	**3**	**17.6%**
	4.00	**3**	**12.0%**	**5**	**20.0%**	**3**	**27.3%**	**2**	**9.1%**	**3**	**17.6%**
	easy to understand	**18**	**72.0%**	**17**	**68.0%**	**7**	**63.6%**	**17**	**77.3%**	**11**	**64.7%**
Does the information require a lot of thinking?	Does Not Require a lot of thinking	**6**	**24.0%**	**6**	**24.0%**	**3**	**27.3%**	**6**	**27.3%**	**3**	**17.6%**
	2.00	**3**	**12.0%**	**2**	**8.0%**	**1**	**9.1%**	**1**	**4.5%**	**3**	**17.6%**
	3.00	**7**	**28.0%**	**10**	**40.0%**	**3**	**27.3%**	**8**	**36.4%**	**6**	**35.3%**
	4.00	**5**	**20.0%**	**1**	**4.0%**	**0**	**0.0%**	**4**	**18.2%**	**2**	**11.8%**
	Require a lot of thinking	**4**	**16.0%**	**6**	**24.0%**	**4**	**36.4%**	**3**	**13.6%**	**3**	**17.6%**
Does the information make you curious?	it does not Make me curious	**2**	**8.0%**	**1**	**4.0%**	**1**	**9.1%**	**1**	**4.5%**	**1**	**5.9%**
	2.00	**1**	**4.0%**	**0**	**0.0%**	**1**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
	3.00	**3**	**12.0%**	**3**	**12.0%**	**0**	**0.0%**	**3**	**13.6%**	**3**	**17.6%**
	4.00	**8**	**32.0%**	**7**	**28.0%**	**3**	**27.3%**	**8**	**36.4%**	**4**	**23.5%**
	Make me curious	**11**	**44.0%**	**14**	**56.0%**	**6**	**54.5%**	**10**	**45.5%**	**9**	**52.9%**
Did you gain valuable information?	I did not gain valuable information	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
	3.00	**2**	**8.0%**	**2**	**8.0%**	**1**	**9.1%**	**0**	**0.0%**	**3**	**17.6%**
	4.00	**7**	**28.0%**	**1**	**4.0%**	**2**	**18.2%**	**3**	**13.6%**	**3**	**17.6%**
	I gained valuable information	**16**	**64.0%**	**22**	**88.0%**	**8**	**72.7%**	**19**	**86.4%**	**11**	**64.7%**
Is the information easy to remember ?	Not easy to remember	**1**	**4.0%**	**0**	**0.0%**	**1**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
	2.00	**2**	**8.0%**	**1**	**4.0%**	**0**	**0.0%**	**2**	**9.1%**	**1**	**5.9%**
	3.00	**4**	**16.0%**	**1**	**4.0%**	**1**	**9.1%**	**2**	**9.1%**	**2**	**11.8%**
	4.00	**3**	**12.0%**	**5**	**20.0%**	**1**	**9.1%**	**4**	**18.2%**	**3**	**17.6%**
	easy to remember	**15**	**60.0%**	**18**	**72.0%**	**8**	**72.7%**	**14**	**63.6%**	**11**	**64.7%**
Do you feel you have enough understanding of this information to share it with other people?	Strongly Disagree	**1**	**4.0%**	**0**	**0.0%**	**1**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
	2.00	**1**	**4.0%**	**3**	**12.0%**	**0**	**0.0%**	**1**	**4.5%**	**3**	**17.6%**
	3.00	**5**	**20.0%**	**3**	**12.0%**	**1**	**9.1%**	**3**	**13.6%**	**4**	**23.5%**
	4.00	**7**	**28.0%**	**7**	**28.0%**	**3**	**27.3%**	**6**	**27.3%**	**5**	**29.4%**
	Strongly Agree	**11**	**44.0%**	**12**	**48.0%**	**6**	**54.5%**	**12**	**54.5%**	**5**	**29.4%**
Do you feel people should consider donating their organ ?	Not donating their organ	**1**	**4.0%**	**2**	**8.0%**	**0**	**0.0%**	**1**	**4.5%**	**2**	**11.8%**
	3.00	**2**	**8.0%**	**2**	**8.0%**	**0**	**0.0%**	**2**	**9.1%**	**2**	**11.8%**
	4.00	**6**	**24.0%**	**6**	**24.0%**	**3**	**27.3%**	**6**	**27.3%**	**3**	**17.6%**
	donating their organ	**16**	**64.0%**	**15**	**60.0%**	**8**	**72.7%**	**13**	**59.1%**	**10**	**58.8%**

	Group		Reader or Player		
	Brochure	Prototype	Equal	Reader	Player

		n	N %	n	N %	n	N %	n	N %	n	N %
15 years old want to donate an organ?* not possible is the right answer	possible	**0**	**0.0%**	**2**	**8.0%**	**1**	**9.1%**	**1**	**4.5%**	**0**	**0.0%**
	not possible	**21**	**84.0%**	**20**	**80.0%**	**9**	**81.8%**	**17**	**77.3%**	**15**	**88.2%**
	not sure	**4**	**16.0%**	**3**	**12.0%**	**1**	**9.1%**	**4**	**18.2%**	**2**	**11.8%**
Only young people can receive organ?*no is the right answer	yes	**1**	**4.0%**	**3**	**12.0%**	**0**	**0.0%**	**1**	**4.5%**	**3**	**17.6%**
	No	**23**	**92.0%**	**19**	**76.0%**	**9**	**81.8%**	**19**	**86.4%**	**14**	**82.4%**
	not sure	**1**	**4.0%**	**3**	**12.0%**	**2**	**18.2%**	**2**	**9.1%**	**0**	**0.0%**
Cornea is one of the vital organs needed so one does not die?*no is the right answer	yes	**2**	**8.0%**	**4**	**16.0%**	**1**	**9.1%**	**4**	**18.2%**	**1**	**5.9%**
	No	**10**	**40.0%**	**6**	**24.0%**	**2**	**18.2%**	**7**	**31.8%**	**7**	**41.2%**
	not sure	**13**	**52.0%**	**15**	**60.0%**	**8**	**72.7%**	**11**	**50.0%**	**9**	**52.9%**
Cardiac valve can be used/donated?*yes is the right answer	yes	**9**	**36.0%**	**6**	**24.0%**	**4**	**36.4%**	**5**	**22.7%**	**6**	**35.3%**
	No	**6**	**24.0%**	**7**	**28.0%**	**1**	**9.1%**	**9**	**40.9%**	**3**	**17.6%**
	not sure	**10**	**40.0%**	**12**	**48.0%**	**6**	**54.5%**	**8**	**36.4%**	**8**	**47.1%**
You will receive money if you donate organ in turkey?*no is the right answer	yes	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
	No	**21**	**84.0%**	**23**	**92.0%**	**7**	**63.6%**	**21**	**95.5%**	**16**	**94.1%**
	not sure	**4**	**16.0%**	**2**	**8.0%**	**4**	**36.4%**	**1**	**4.5%**	**1**	**5.9%**
Family and friend should not know if you donate an organ, this rule is true?*no is the right answer	yes	**2**	**8.0%**	**8**	**32.0%**	**1**	**9.1%**	**6**	**27.3%**	**3**	**17.6%**
	No	**21**	**84.0%**	**14**	**56.0%**	**9**	**81.8%**	**13**	**59.1%**	**13**	**76.5%**
	not sure	**2**	**8.0%**	**3**	**12.0%**	**1**	**9.1%**	**3**	**13.6%**	**1**	**5.9%**
One of these places you cannot register in it to become organ donor?*city hall is the right answer	family health center	**1**	**4.0%**	**0**	**0.0%**	**1**	**9.1%**	**0**	**0.0%**	**0**	**0.0%**
	city hall	**24**	**96.0%**	**21**	**84.0%**	**8**	**72.7%**	**20**	**90.9%**	**17**	**100.0%**
	city health management	**0**	**0.0%**	**4**	**16.0%**	**2**	**18.2%**	**2**	**9.1%**	**0**	**0.0%**


5
4
3
2
1
Interesting
Appropriate
Novel
Fun
Frequent to use
Easy to use
Effective
Happy
Not exhausted
Enjoy
Not time wasted
Not bored
In public, attracted
Easy to understand
Require thinking
Curious
Valuable information
Easy to remember
Enough understanding
Brochure
Prototype

Participant Track sheet:

This list is written at the time of the experiment.

	P#*	Day	Date	time	Place	Group**	TTtFtE***	score****
1	6	Wednesday	12-Oct-2016	01:10:00	EgiadOrtOkl	2.00	00:07:50	80.00
2	8	Wednesday	12-Oct-2016	01:45:00	EgiadOrtOkl	1.00	00:02:35	-
3	3	Wednesday	12-Oct-2016	01:58:00	EgiadOrtOkl	1.00	00:02:56	-
4	7	Wednesday	12-Oct-2016	02:13:00	EgiadOrtOkl	1.00	00:02:06	-
5	4	Wednesday	12-Oct-2016	02:28:00	EgiadOrtOkl	1.00	00:01:45	-
6	2	Wednesday	12-Oct-2016	02:39:00	EgiadOrtOkl	1.00	00:01:43	-
7	1	Wednesday	12-Oct-2016	02:50:00	EgiadOrtOkl	2.00	00:06:15	90.00
8	9	Thursday	13-Oct-2016	11:05:00	EgiadOrtOkl	2.00	00:05:01	90.00
9	10	Thursday	13-Oct-2016	11:20:00	EgiadOrtOkl	2.00	00:04:54	85.00
10	5	Thursday	13-Oct-2016	11:33:00	EgiadOrtOkl	2.00	00:08:15	90.00
11	20	Thursday	13-Oct-2016	11:54:00	EgiadOrtOkl	1.00	00:01:13	-
12	28	Thursday	13-Oct-2016	12:05:00	EgiadOrtOkl	2.00	00:07:05	100.00
13	49	Thursday	13-Oct-2016	01:14:00	EgiadOrtOkl	2.00	00:05:26	90.00
14	15	Thursday	13-Oct-2016	01:30:00	EgiadOrtOkl	2.00	00:04:42	85.00
15	30	Thursday	13-Oct-2016	01:46:00	EgiadOrtOkl	2.00	00:06:16	95.00
16	48	Thursday	13-Oct-2016	02:06:00	EgiadOrtOkl	2.00	00:08:02	85.00
17	40	Thursday	13-Oct-2016	02:32:00	EgiadOrtOkl	2.00	00:03:25	85.00
18	42	Thursday	13-Oct-2016	02:42:00	EgiadOrtOkl	1.00	00:01:32	-
19	22	Thursday	13-Oct-2016	02:52:00	EgiadOrtOkl	1.00	00:01:03	-
20	11	Thursday	13-Oct-2016	03:02:00	EgiadOrtOkl	2.00	00:03:55	90.00
21	12	Friday	14-Oct-2016	10:53:00	EgiadOrtOkl	1.00	00:01:16	-
22	44	Friday	14-Oct-2016	11:01:00	EgiadOrtOkl	2.00	00:04:13	100.00
23	23	Friday	14-Oct-2016	11:14:00	EgiadOrtOkl	1.00	00:00:54	-
24	16	Friday	14-Oct-2016	11:30:00	EgiadOrtOkl	1.00	00:01:11	-
25	17	Friday	14-Oct-2016	11:39:00	EgiadOrtOkl	1.00	00:01:13	-
26	25	Friday	14-Oct-2016	11:47:00	EgiadOrtOkl	2.00	00:04:41	95.00
27	29	Friday	14-Oct-2016	12:05:00	EgiadOrtOkl	2.00	00:04:05	85.00
28	33	Friday	14-Oct-2016	01:00:00	EgiadOrtOkl	1.00	00:01:38	-
29	27	Friday	14-Oct-2016	01:10:00	EgiadOrtOkl	2.00	00:04:36	95.00
30	19	Friday	14-Oct-2016	01:23:00	EgiadOrtOkl	1.00	00:02:38	-
31	34	Tuesday	18-Oct-2016	11:00:00	EgiadOrtOkl	1.00	00:01:08	-
32	35	Friday	14-Oct-2016	01:50:00	EgiadOrtOkl	2.00	00:05:02	95.00
33	45	Friday	14-Oct-2016	02:03:00	EgiadOrtOkl	2.00	00:04:15	95.00
34	13	Friday	14-Oct-2016	02:17:00	EgiadOrtOkl	1.00	00:03:03	-
35	21	Friday	14-Oct-2016	02:32:00	EgiadOrtOkl	1.00	00:01:54	-
36	38	Friday	14-Oct-2016	02:42:00	EgiadOrtOkl	2.00	00:11:52	85.00
37	39	Tuesday	18-Oct-2016	11:09:00	EgiadOrtOkl	2.00	00:06:18	75.00
38	37	Tuesday	18-Oct-2016	11:30:00	EgiadOrtOkl	1.00	00:02:12	-
39	31	Tuesday	18-Oct-2016	11:44:00	EgiadOrtOkl	1.00	00:03:03	-
40	46	Tuesday	18-Oct-2016	11:57:00	EgiadOrtOkl	1.00	00:01:55	-
41	41	Tuesday	18-Oct-2016	12:07:00	EgiadOrtOkl	1.00	00:01:56	-
42	50	Tuesday	18-Oct-2016	12:56:00	EgiadOrtOkl	2.00	00:06:04	95.00
43	26	Tuesday	18-Oct-2016	01:13:00	EgiadOrtOkl	2.00	00:07:02	95.00
44	18	Tuesday	18-Oct-2016	01:45:00	EgiadOrtOkl	2.00	00:03:56	100.00
45	47	Tuesday	18-Oct-2016	01:58:00	EgiadOrtOkl	1.00	00:02:58	-
46	32	Tuesday	18-Oct-2016	02:14:00	EgiadOrtOkl	1.00	00:02:49	-

47	36	Tuesday	18-Oct-2016	02:39:00	EgiadOrtOkl	1.00	00:01:26	-
48	43	Tuesday	18-Oct-2016	02:39:00	EgiadOrtOkl	2.00	00:06:07	85.00
49	14	Tuesday	18-Oct-2016	02:55:00	EgiadOrtOkl	1.00	00:02:24	-
50	24	Wednesday	19-Oct-2016	01:09:00	EgiadOrtOkl	2.00	00:05:56	95.00

*Participant number based on the random list.
**1= Brochure / 2= Prototype
***TTtFtE: Time took to finish the experiment. (Minutes:Second)
****Score for the prototype