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A CONTENT ANALYSIS ON GAMIFICATION

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Abstract:
There are many elements in games which motivate and entertain players and connect them to the game. If these elements can be transferred into a non-gaming context, then fun, motivation and commitment can also be transferred. In this context, the concept of gamification, which means using game elements in non-gaming systems, has emerged. In this study, M.A. theses and dissertations regarding gamification carried out at Turkish Universities were analysed using the content analysis technique. For this purpose, a total of 34 M.A. theses and eight dissertations were found and included in the scope of the study. Although theses and dissertations were mainly in the educational context, there were also those about communication, modelling, marketing, and so on. In most of the theses and dissertations, gamification was in the main role, and in some of them, it was in the auxiliary role. The results revealed that besides fully-gamified systems, it could also be possible to include only a few elements of gamification. Based on the results, use of gamification could be said to have positive effects on motivation, attitude and academic achievement.

Keywords: gamification, content analysis, motivation, game in education, serious game

1. Introduction

The current state of technology and especially easy access to technological products have resulted in the development of applications related to these products. Among these applications, electronic games are prominent. These games, which used to be played with various console games, are now popularly played in computers and in any other platform including mobile platforms thanks to the development of mobile devices. According to a report prepared by Newzoo (2018), the global market size has increased to 137.9 billion dollars by 2018. According to the report, in this enormous size

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of the market, the biggest share belongs to mobile games (51%), while console and PC games had similar shares in the market.

The fact that games are entertaining not only draws the attention of children but interests adults as well. Therefore, games for adults have appeared (Meşe, 2016). Based on the results of related studies, it could be stated that adults spend a considerable amount of time on games (Liu and Chang, 2016). As people are so much interested in games, use of this technology has become inevitable in non-gaming environments. Pelling (2011), in his own blog, claimed that user interfaces of games could be used on non-gaming environments as well. The researcher used the word "gamification" to refer to use of game-like designs which will make electronic processes both entertaining and fast. The concept of gamification appeared following this view of Pelling (Marczewski, 2015). This view put forward by Pelling was defined by Zicherman and Cunningham (2011) as use of game-related elements to draw users' attention.

Gamification can be used in any area in all sectors. It can be applied to any boring and uninteresting subject to transmit any information, thought or emotion. The main benefit of its use is mostly related to easy marketing of information, thoughts and emotions. Therefore, the main fields of its use could be said to include education and marketing.

Though 'gamification' was first introduced by Pelling in 2011, the term could be said to have appeared in such sectors as marketing, trade and advertisement in 2010 (Fiş Erümit, 2016). Getting badges thanks to the check-ins in the application of Foursquare and receiving points and rewards by responding to questions in various social media applications could be given as examples of such applications (Huotari and Hamari, 2013). Gamification applications, which first started based on commercial attempts, were then transferred into educational environments over time, and they are now used to increase motivation and interest in lessons (Prensky, 2001; Pillay, 2003; Marczewski, 2015; Kapp, 2012).

2. Related Literature

Bozkurt and Durak (2018), in their research on gamification, aimed to define the tendencies and models in related studies. For this purpose, the researchers carried out a systematic content analysis by examining a total of 208 studies conducted between 2011 and 2016. They examined all these studies with respect to the methods, models, key words, research topics and theoretical structures used in the studies. The results revealed that the category of conceptual/exploratory/other was most popular among the research methods (46,6%) followed by quantitative (32,2%), qualitative (13,4%) and mixed (3,3%). As the research designs, literature review was found to be the most common in the studies (32,7%) followed by experimental (11,5%), correlational (10,6%), survey (9,6%) and case study (8,7%).

In another systematic review study, Hamari, Koivisto and Sarsa (2014) examined a total of 24 studies with respect to the effects of gamification on certain variables like achievement and motivation. The researchers reported positive as well as negative

effects of gamification, yet they generally focused on the positive effects. The researchers examined the studies in terms of motivational aspects, psychological and behavioural outcomes, positive and negative effects usage areas and research designs. The results demonstrated that the most frequent research method was the quantitative one (71%) followed by mixed (21%) and qualitative (8%) research methods.

Nah, Zeng, Telaprolu, Ayyappa and Eschenbrenner (2014), in their systematic review study examined 15 studies with respect to the popular gamification factors and the learning outcomes. The researchers focused on scores, levels, badges, leader board, rewards, progress bar, story and feedback in terms of their usages. The results revealed that the most frequent variable was participation (73%) followed by motivation (26%), entertainment (13%) and feeling of achievement (13%).

In another study, Caponetto, Earp and Ott (2014) searched five commonly used databases and reached a total of 119 studies carried out on gamification in education between 2011 and 2014. In the study, the researchers focused on the difference between gamification and game-based learning and pointed out that the two supported each other. The studies were conducted using the conceptual/theoretical (51%) and empirical (49%) research designs. In addition, of all the studies, 39% of them included statistics obtained via field experiments. When the participants in the studies were examined, it was seen that they included undergraduate students (43%), secondary school students (4%), high school students (2%), elementary school students (2%) and other students (48%).

One other study examined how gamification was used by famous brands (Xu, 2015). In the study, the researcher examined gamer types, game mechanics and gamification platforms and tried to explain why games and gamification are being used in different fields.

Özkan and Samur (2017) carried out content analysis on nine studies to examine the effects of gamification on students' motivation. The researchers reported positive effects of gamification on motivation in seven of the studies and found no significant difference in the other two studies. In their study, the researchers concluded that for better use of gamification, the process should be planned well. They also pointed out that gamification should be used to increase motivation. In addition, the researchers examined in the participants in the studies and found that the participants included undergraduate students (44%), elementary school students (22%), secondary school students (11%) and other students (22%). When the variables in the studies were taken into consideration, it was seen that all the studies focused on motivation, which was followed by academic achievement (55%).

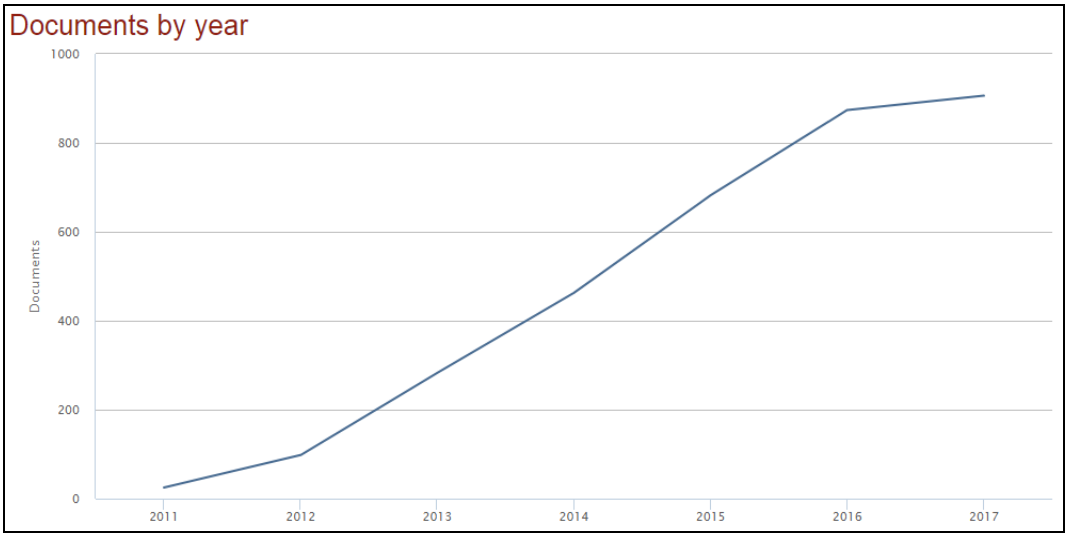

Figure 1: Distribution of the number of Scopus scientific studies by year

When the studies on gamification in Scopus, the biggest academic database in the world, was examined by year, quite a rapid increase was observed in the number of these studies (Fig. 1). Accordingly, it could be stated that an increasingly larger number studies have been carried out on the concept of gamification and that this concept has gradually gained importance in related literature. Therefore, it is important to carry out a content analysis study which will allow systematic analysis of studies on the concept of gamification. In the present study, M.A. theses and Dissertations regarding gamification in Turkey were examined using the content analysis method.

3. Methodology

In the study, the content analysis method, one of qualitative research methods, was applied. Content analysis is defined as systematic analysis of communication in clear quantitative ways and as systematic analysis of content in objective quantitative ways (Berelson, 1952). In the present study, the researchers made use of content analysis, and the study is thought to be an effective guide for future studies by summarizing a large volume of literature. Thanks to the research method applied in the study, it will, as a systematic and objective tool, help describe and quantify the phenomena (Schreier, 2012).

In the present study, content analysis was conducted on the dissertations carried out in Turkey which included the key words of "gamification" and "gamify". The dissertations were reached via the database of Turkish Council of Higher Education (TCHE). TCHE has an electronic database which includes all the M.A. theses and dissertations conducted so far in Turkey and which is accessible to all researchers. Figure 2 presents the methodology applied in the study.

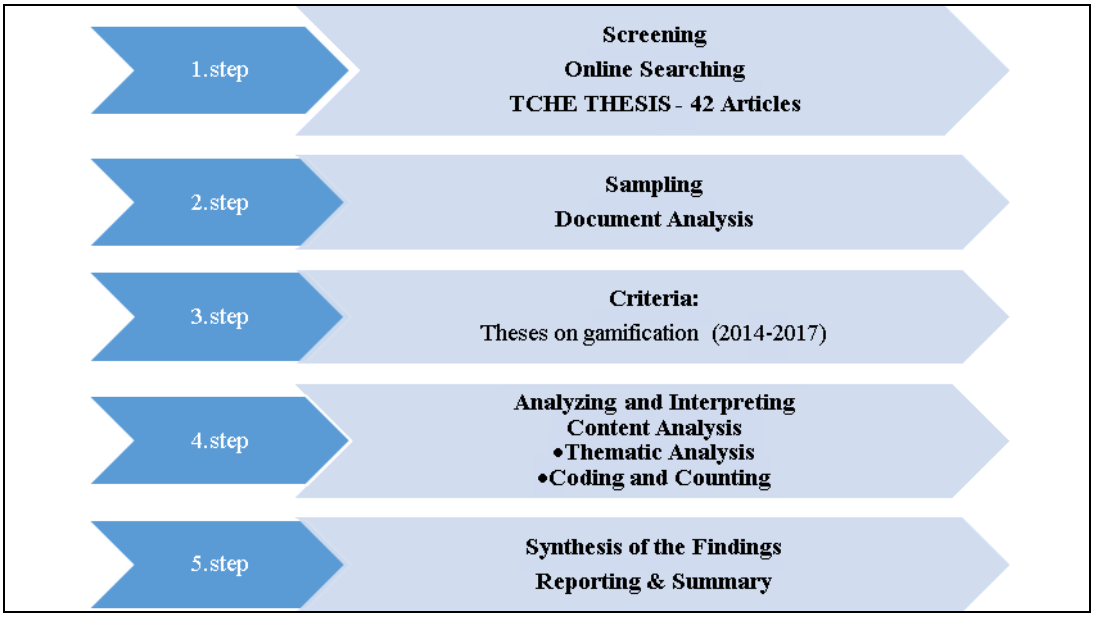

Figure 2: The overall research flow

With respect to the key words, a total of 42 theses (34 M.A. theses and 8 dissertations) were reached. Content analysis was conducted on these theses, and the theses were examined in terms of certain variables. In the study, frequencies and percentages were used to examine the descriptive statistics regarding the variables, data collection tools and participants in the theses. In addition, these statistics were compared with the results of other similar studies reported in literature (Fig. 2).

3.1 Reliability

Based on the previously defined criteria, a table was prepared for the articles reached via the search. The articles were analysed by two researchers individually, and they noted the results down in their own tables. Next, the tables prepared by the researchers were compared to identify the differences, and the related articles were examined again. Inter-rater reliability of the second-round coding was found to be κ =.865. Altman (1991) proposed that the extent of agreement for Cohen's kappa can be qualified as poor (< 0.20), fair (0.21 to 0.40), moderate (0.41 to 0.60), good (0.61 to 0.80), and very good (0.81 to1.00). Thus, the reliability of raters can be considered as very good. Content analysis ended arriving at a consensus on all the findings..

4. Findings and Discussions

In this part of the study, the results obtained have been presented and interpreted by comparing them with those of other studies in related literature. In addition, the research methods and models/designs, participants, data collection tools, variables and key words have been examined in related sub-headings.

Figure 3 presents the distribution of the total 42 M.A. theses and dissertations by year.

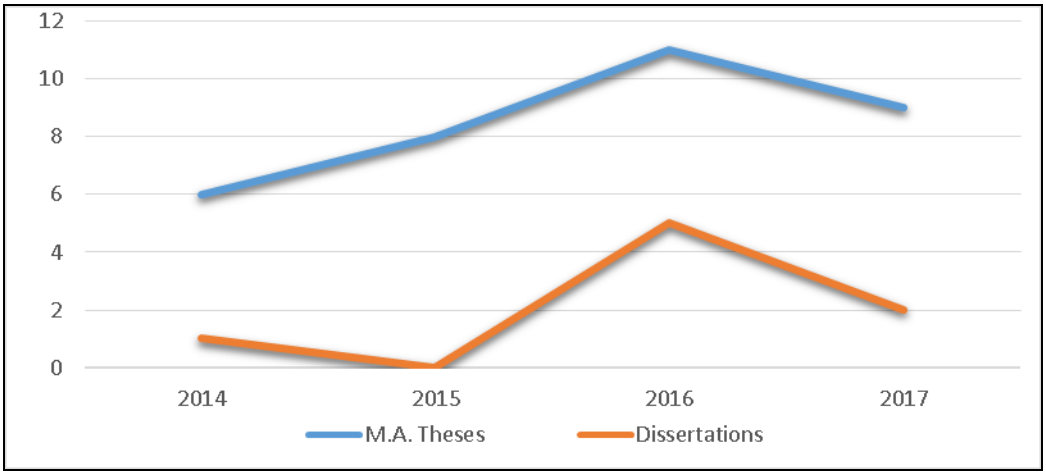

Figure 3: Number of Publications Regarding the Concept of Gamification

When Figure 3 is examined, it is seen that there was a gradual increase in the number of M.A. theses. However, the number of the dissertations was limited, and it increased in one year and decreased in another. Based on this result, it could be stated that the concept of gamification is quite a new concept as the first related thesis was carried out in 2014.

4.1 Keyword Analysis

In the study, the key words in Table 1 used in the studies regarding the concept of gamification were examined. The results revealed that gamification was the most frequent key word used in a total of 36 studies. This key word was followed by motivation used in 11 studies, education in 11 studies and games in education in eight studies. In the light of this result, it could be stated that gamification was mostly used in the field of education.

Table 1: Key words used in the studies and their usage frequencies

#	**Keywords**	*f*	#	**Keywords**	*f*
1	Gamification	36	20	Simulation	3
2	Motivation	11	21	Game Mechanics	3
3	Education	11	22	Attitude	3
4	Game in Education	8	23	New Technologies	2
5	Achievement	6	24	Game Design	2
6	Game	6	25	Virtual	2
7	Engagement	4	26	Flow	2
8	Connection	4	27	Serious Game	2
9	Marketing	4	28	Reality	2
10	Vocabulary	4	29	Project Management	2
11	Lesson	4	30	Imagination	2
12	Design and Development	4	31	Personality	2
13	Behaviour Change	4	32	Interactive Exhibitions	2
14	e-Learning	4	33	Crowdsourcing	2
15	Game Elements	4	34	In-depth Interview	2
16	Game-Based Learning	4	35	Logical Thinking	2
17	Social Media	3	36	Consumption	2
18	Experience	3	37	Mobile Learning	2
19	Physiotherapy	3	38	Entertainment	2

The results obtained in relation to the key words were similar to those in other related studies. In the studies carried out by Caponetto, Earp and Ott (2014) and Bozkurt and Durak (2018), gamification ranked the first, which was followed by such key words as education and motivation.

4.3 Participants

Table 2 presents the frequencies regarding the participants and the sample size in the theses examined within the scope of the present study.

Table 2: Participants and sample sizes

Participants	**Sample Size (*f*)**			
	<30	**31-100**	**>101**	**Total**
Undergraduate	3	9	2	14
Postgraduate	-	1	-	1
Adults	3	-	1	4
K12 students	2	5	3	10
K12 teachers	1	-	-	1
Experts	6	-	-	6
Institutions	1	1	-	2
Documents	2	-	-	2
System/Program	1	-	-	1
Total:	**19**	**16**	**6**	

The results presented in Table 2 demonstrated that the most popular participants were undergraduate students in 14 of the studies. In 10 of the studies, the participants were K12 students, and experts were participants in six of the studies. Similar to these results obtained in the present study, Caponetto, Earp and Ott (2014) and Özkan and Samur (2017), in their studies, reported the most popular participants to be undergraduate students. As for the sample sizes in the studies, the biggest sample size was "<30". Similarly, Özkan and Samur (2017) found that the biggest sample size ranged between 20 and 54.

4.4 Data Collection Tools

Table 3 presents the frequencies regarding the data collection tools in the theses examined within the scope of the present study.

Table 3: Data collection tools used in the theses

Tools	***f***	**%**
Focus Group	14	29
Survey	11	23
Scale	6	12.5
Interview	6	12.5
Document Analysis	6	12.5
Observation	4	8.4
Web Page Analysis	1	2.1

According to the results shown in Table 3, the most frequent data collection tools included focus groups in 14 studies and surveys in 11 studies. Scale, interview and document analysis were used in six studies, and observation was used in four studies. Web page analysis was the least popular data collection tool used only in one study.

4.5 Variables/Research Interests

Table 4 demonstrates the frequencies regarding the variables in the theses examined within the scope of the present study.

Table 4: Number of theses including the most frequent variables

Variables	*f*	%	**Variables**	*f*	%
Motivation	25	25	Age	3	3
Achievement	24	24	Gender	3	3
Yield	9	9	Interaction	2	2
Attitude	8	8	Satisfaction	1	1
Participation	6	6	Self-sufficiency	1	1
Effect	6	6	Cooperation	1	1
Experience	6	6	Contact	1	1
Perception	4	4			

When the results in Table 4 are examined, it is seen that the variable of motivation was used in 25 theses and the variable of achievement in 24 theses. Depending on this result, it could be stated that the dependent variables of motivation and achievement were more popular in studies carried out in the field of education. As a support this finding, Nah, Zeng, Telaprolu, Ayyappa and Eschenbrenner (2014), in their study, reported that participation was the most frequent variable followed by motivation. Another similar result was obtained by Caponetto, Earp and Ott (2014) and Xu (2015), who revealed that motivation and participation were the most common variables. In addition, Bozkurt and Durak (2018) reported motivation and participant to be prominent as well.

4.6 Research Method and Design

Table 5 presents the frequencies regarding the research designs popular in the theses examined in the present study.

Table 5: Popular research designs

Method	*f*	%	**Model/Design**	*f*	%
Quantitative	5	11.9	Survey	3	7.1
			Experimental	2	4.7
Qualitative	10	23.8	Case Study	5	11.9
			Ethnography	1	2.4
			Content Analysis	2	4.7
			Delphi	2	4.7
Practice Based	15	35.7	Design-based Research	14	33.3
			Action Research	1	2.4
Mixed	10	23.8	Embedded	3	7.1
			Convergent Parallel	1	2.4
			Explanatory Sequential	6	14.3
Conceptual/Descriptive/Other	2	4.7	Literature Review	2	4.7
			Total:	**42**	**100**

According to the results shown in Table 5, the design-based research design was the most frequent research design used in 14 theses. In addition, although no prominent difference was found between the other methods, Explanatory Sequential was used in six theses and case study in five theses. Different from these results, Hamari, Koivisto and Sarsa (2014) pointed out that quantitative research methods were more popular in the studies they examined. Bozkurt and Durak (2018) reported that among the Conceptual/Descriptive methods, Literature Review was the most frequent research model. It is seen that the results reported in related literature support those obtained in the present study. The reason for this similarity could be the fact that only the M.A. theses and dissertations conducted in Turkey were selected as the sample in the present study.

5. Conclusion and Future Research Directions

In the present study, which examined the theses carried out regarding gamification, use of this concept could be said to bear positive results especially in the field of education. The theses demonstrated that students learn better and have higher levels of academic achievement when they have high levels of motivation and participation in lessons.

The fact that the variables of motivation and achievement were used in all the theses included in the scope of the present study was not a surprising finding as these variables were the most frequent ones examined in the field of education. In the studies focusing on the concept of gamification in education, it was concluded that gamification generally had positive influence on motivation. On the other hand, in some of the studies, no significant difference was found. Similar to motivation, in all the theses examining the changes in attitudes, it was seen that gamification affected attitudes positively. In addition, most of the studies examining the effects of gamification on academic achievement reported positive results.

In the studies carried out in relation to the use of gamification in the field of education, it was found that students considered use of gamification to be entertaining and the especially elementary and secondary school students were fairly enthusiastic about applications involving gamification. As for the studies focusing on teachers' views, it was seen that the teachers were more enthusiastic during lessons; that they were content with their students' participation in lessons; that their students had higher levels of achievement in courses; and that they generally reported positive results. In addition, it was found that use of cooperative learning in gamification-related applications increased productivity.

As revealed by the results obtained in the theses examined within the scope of the present study, use of gamification produced positive results in terms of such variables as academic achievement and motivation. Accordingly, in relation to the field of education, it could be stated that gamification could be used to increase young learners' motivation and engagement in lessons. When the gamification applications used in the theses examined in the present study were taken into account, those who apply gamification could be said to have a great role in the success of such applications.

It is necessary for those who apply gamification should plan their education systematically and take the necessary precautions in advance to cope with the current deficiencies and probable problems. In this respect, the feedbacks to be provided by learners during the application are quite important. These feedbacks should be evaluated by those who apply gamification, and the necessary changes and arrangements should be done accordingly. The environment where gamification is applied should be entertaining, yet entertainment should not be the basic goal. Therefore, those apply gamification should maintain the balance.

For researchers, practitioners, designers and developers who are interested in gamification, the following suggestions could be put forward:

- The number of postgraduate theses carried out on gamification could be said inefficient. In other words, there is a need for more studies on gamification.
- Almost all the theses examined within the scope of the concept of gamification were found to be carried out in the fields of computer education and computer engineering. It is thought that conducting such studies in other disciplines will contribute to the related literature.
- The theses examined in the present study revealed that gamification was mostly applied to undergraduate and K-12 students. An increase in the number of studies to be carried out especially with adults could help reveal the influence of gamification in adult education. In addition, future studies could examine the effects of socio-economic variables on various other samples, and experimental studies based on the reason-result relationship could be designed.
- Gamification applications designed for different populations could be re-arranged depending on cultural differences.
- Designers and developers could also consider such factors as age, gender, educational background, subject and cultural levels.
- When studies on gamification were examined, it was seen that all of them focused on gamification factors considering technology as well. However, it could be stated that in general, gamification is a more comprehensive concept and that it could be applied in environments without technology. In this respect, studies on gamification could be conducted in different environments to examine the related effects.
- For the purpose of preventing students' deviation from the game due to the game factors in the application process, it is necessary to follow the process well and to make the related interventions when and where necessary.

References

Berelson, B. (1952). Content analysis in communication research. New York: Hafner Press.

Bozkurt, A., & Durak, G. (2018). A Systematic Review of Gamification Research: In Pursuit of Homo Ludens. *International Journal of Game-Based Learning (IJGBL)*, *8*(3), 15-33.

Caponetto, I., Earp, J., & Ott, M. (2014, October). Gamification and education: A literature review. In Proceedings of ECGBL 2014: Eighth European Conference on Games Based Learning (pp. 50-57).

Fiş Erümit, S. (2016). Oyunlaştırma yaklaşımlarının eğitimde kullanımı: tasarım tabanlı bir araştırma. Yüksek Lisans Tezi, *Atatürk Üniversitesi Eğitim Bilimleri Enstitüsü*, Bilgisayar ve Öğretim Teknolojileri Eğitimi Anabilim Dalı. Erzurum.

Hamari, J., Koivisto, J., ve Sarsa, H. (2014). Does Gamification Work? – A Literature Review of Empirical Studies on Gamification. *In proceedings of the 47th Hawaii International Conference on System Sciences*. Hawaii, USA.

Huotari, K., and Hamari, J. (2012). Defining gamification: A service marketing perspective. *In Proceeding of the 16th International Academic MindTrek Conference*. 17-22

Kapp, K.M. (2012). The gamification of learning and instruction: game-based methods and strategies for training and education. San Francisco, CA: John Wiley ve Sons.

Liu, C.C. ve Chang, I.C. (2016). Model of online game addiction: The role of computer-mediated communication motives. *Telematics and Informatics*, 33(4), 904-915.

Marczewski, A. (2015). *Even Ninja Monkeys Like to Play: Gamification, Game Thinking ve Motivational Design.* Gamified UK.

Meşe, C. (2016) Harmanlanmış öğrenme ortamlarında oyunlaştırma bileşenlerinin etkililiği. Doktora tezi, *Anadolu Üniversitesi Eğitim Bilimleri Enstitüsü*, Bilgisayar ve Öğretim Teknolojileri Anabilim Dalı, Eskişehir.

Nah, F.F.H., Zeng, Q., Telaprolu, V. R., Ayyappa, A. P., & Eschenbrenner, B. (2014, June). Gamification of education: a review of literature. In *International conference on hci in business* (pp. 401-409). Springer, Cham.

Newzoo (2018), "Newzoo's 2018 Report: Insights Into the $137.9 Billion Global Games Market", Newzoo: Insights Solutions [Online]. (20 Kasım 2018), https://newzoo.com/insights/articles/newzoos-2018-report-insights-into-the-137-9-billion-global-games-market/

Özkan, Z., & Samur, Y. Oyunlaştırma Yönteminin Öğrencilerin Motivasyonları Üzerine Etkisi. *Ege Eğitim Dergisi*, *18*(2), 857-886.

Pelling, N. (2011). *The (short) prehistory of "gamification"*. Funding Startups (and other impossibilities) [Online]. (23 Mart 2018). https://nanodome.wordpress.com/2011/08/09/the-short-prehistory-of-gamification/.

Pillay, H. (2003). An investigation of cognitive processes engaged in by recreational computer game players: Implications for skills for the future. *Journal of Research on Technology in Education, 34* (3), 336–350.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., ... & Duffy, S. (2006). Guidance on the conduct of narrative synthesis in systematic reviews. *A product from the ESRC methods programme Version*, *1*, b92.

Prensky M. (2001). Digital Natives, Digital Immigrants. *On the Horizon, MCB University Press.* Vol. 9 No. 5, pp.1-6.

Schreier, M. (2012). *Qualitative content analysis in practice*. Sage Publications.

Wilson, W.J. (2011). *When work disappears: The world of the new urban poor*. Vintage.

Xu, Y. (2015). Effective gamification design: A literature review. *The SIJ Transactions on Computer Science Engineering & its Applications (CSEA). The Standard International Journals (The SIJ)*, *3*(4), 47-54.

Zichermann, G. ve Cunningham, C. (2011). *Gamification by design: Implementing game mechanics in web and mobile apps.* Sebastopol, CA: O'Reilly Media Inc.