

**EXPLORING GAMIFICATION AND USER BEHAVIOUR OF PLAYER  
UNKNOWN BATTLE GROUND GAME (PUBG) GAMERS IN MANADO**

**MENJELAJAHI GAMIFIKASI DAN PERILAKU PENGGUNA GAME PLAYER UNKNOWN BATTLE  
GROUND (PUBG) GAMERS DI MANADO**

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**Abstract:** Gamification is the application of game features, mainly video game elements, into non-game context for the purpose of promoting motivation and engagement in non-gaming situation. With gamification, game creators and game developers can shape user behaviour of gamers that they become addicted. This study investigates gamification and user behaviour on PUBG mobile game (PUBG gamers) in Manado. The research method is qualitative analysis with interview technique. The sample size is 15 respondent using purposive sampling technique. The results show that most gamers are between 16-32 years old because almost all the games have a high level of difficulty which is so challenging and hard indeed for people below 16 and above 32 years old and PUBG game has various techniques of gamification that influence how the gamers want to keep playing. It is recommended that game developers need to study deeper about gamification to improve engagement for the users.

**Keywords:** Gamification, User Behavior, Game Player, Game Element, Dynamics, Mechanics, Components, Psychology, Sociology, Behavioral Economics.

**Abstrak:** Gamifikasi adalah penerapan fitur-fitur game, terutama elemen video game, ke dalam konteks non-game untuk tujuan mempromosikan motivasi dan keterlibatan dalam situasi non-game. Dengan gamification, pembuat game dan pengembang game dapat membentuk perilaku pengguna dari para gamer yang mereka kecanduan. Penelitian ini mengkaji gamifikasi dan perilaku pengguna pada game PUBG mobile (PUBG gamers) di Manado. Metode penelitian adalah analisis kualitatif dengan teknik wawancara. Besar sampel sebanyak 15 responden dengan menggunakan teknik purposive sampling. Hasil penelitian menunjukkan bahwa sebagian besar gamer berusia antara 16-32 tahun karena hampir semua game memiliki tingkat kesulitan yang tinggi yang sangat menantang dan berat memang untuk orang yang berusia di bawah 16 tahun ke atas 32 tahun dan game PUBG memiliki berbagai teknik gamifikasi yang mempengaruhi bagaimana para gamer ingin terus bermain. Direkomendasikan agar developer game perlu mempelajari lebih dalam tentang gamification untuk meningkatkan interaksi bagi pengguna.

**Kata Kunci:** Gamifikasi, Perilaku Pengguna, Pemain Game, Elemen Game, Dinamika, Mekanika, Komponen, Psikologi, Sosiologi, Ekonomi Perilaku.

## INTRODUCTION

According to a report published by Sensor Tower, PUBG Mobile's revenue reached more than 354 Million US dollars in one month's period last May 2019. This figure is the highest amount of income since the game was first released. The income of PUBG Mobile figure increased by 40 percent from October 2019. Previously, the highest income ever achieved by PUBG Mobile in one month was 25.7 million US dollars in August 2018. The PUBG Mobile game itself is actually free to play, but players can buy various cosmetic items such as clothes, shoes, hats and various other appearance accessories to distinguish the players from other players.

Every time the players play a free game, players will often be disturbed by the ads in the form of images, links, and videos. There are even some ads that automatically save their ads on the device's memory. The developers of game have inserted these advertisements into the game they made. The reason is because the biggest income comes from advertising. If the gamer does want the ads to appear in the game, he has to pay to the game developer. That means, the game is no longer free. There are several games that use the 'life' system to play the game. If the 'life' runs out, gamer has to wait to get he gets the life back. If the gamer does want to wait, he has to share the game with his friends on social media or he has to watch a video ad with a long duration to get the 'life' instantly. It is one way for game developers to promote the game more broadly. The more people downloading the games, the more they are seeing the advertisements. The more people see the ads; the more profit obtained by game developer.

Not only from advertising, game developer can also benefit from selling items in the game. To upgrade characters or raise levels faster, not a few gamers are willing to spend a lot of money. For example, in PUBG Mobile, they sell weapon skins and clothes including goods and tempting items that make players interested in buying the items.

There are also game developers who benefit from sponsors. This method is apparently rarely used by game developers. The way it works is when game developer creates a game, they will look for famous game publishers like Amora Games or Kongregate. Game developers send the game they want to be sponsored. If the game publisher agrees, they will give a certain amount of money to game developer and presents their logo in the game. Benefits can also be obtained by those who are not game developers, namely by holding tournaments. Counter Strike, Dota 2, or Point Blank are some of online games often hold tournaments. Usually the tournament is held when there are certain events, such as on campus events. It can go throughout the city, national tournaments, and even international tournaments.

Indonesia is having a large market share of up to 60 million players and revenues of up to US \$ 1 billion in 2019. Local game companies still difficult in developing and competing with foreign game companies. In 2019, there was a Challenge Market Program in Indonesia aimed at promoting South Korean games in Indonesia. Arnesia CEO, Adam Ardisasmita, claimed that this condition was a challenge for game creator and game developer in Indonesia. Arnesia is an Indonesian game developer company based in Bandung and has been established since 2011. "Spending market share for games in Indonesia rose nearly 30% to US \$ 1 billion," he added. "However, only less than 1% goes to Indonesian game developers. So, 99% goes to overseas game developers." Prodigy game publisher company also expressed a similar opinion. Prodigy has been established since 2009 and claims to have become one of the companies that can publish top-notch games such as Battle of Immortal, Harvest moon, Touch Online, and Dance On. A good gamification plays an important part in improving people's interest to play the game. By using gamification, the game developers may improve the engagement and the number of people playing their games.

In general, there are several types of gamers such as: 1) Killers: interfere with the functioning of the game world or the play experience of other players; 2) Achievers: accumulate status tokens by beating the rules-based challenges of the game world; 3) Explorers: discover the systems governing the operation of the game world; and 4) Socializers: form relationships with other players by telling stories within the game world. These type of gamers are depending on the individual on how they get involved on particular of games.

Video gaming is a very popular leisure activity. Video gaming is known to have some benefits such improves alertness and co-ordination, improves cognitive abilities, and socializes with new people. Yet, it may also come with costs when it is used heavily such as however, there are also some negative effects of PUBG game such as: increases violent tendencies in a person, makes one addict, anti-social, promotes poor physical health, affects mental health, or disrupts sleep pattern. Although PUBG game tends to be perceived with negative effects by spending a predominant part of the day gaming in which excessive video gamers are at risk, yet in appropriate level of usage, the game can be a means for relieving stress or pursuing hobby.

While some researchers have emphasized the benefits of game playing, others have been intrigued by its potential dangers. People may be worried about their excessively playing children being addicted. It happens only video game use goes beyond the extent of playing. Potential negative consequences of excessive gaming such as mental disorder, low self-esteem, anxiety, aggression, depression, lack of real-life friends, and decreased academic achievement. In addition to problematic consequences of video game use, it is important to see why people play video games. Video games are used for very different reasons such as to enjoy the social relationships in the virtual world, escape from life stress, personal satisfaction, social interaction, and competition.

In Manado, there are a lot of gamers and they are addicted with the game especially the challenging game such as PUBG Mobile. People in Manado they started to like it since game streamers started making videos about this new game on YouTube channel. Since, streamers loved that game a lot, it spread among them and then made the other gamers and viewers play that, a lot of gamers in Manado are familiar with action/shooting game but a lot of game have the same characteristic of game, since PUBG game started the battleground game the gamers are moved to play the battleground game. With gamification, game creators and game developers can shape user behaviour of gamers that they become addicted. This study investigates game element (gamification) and user behaviour on PUBG mobile game with title : Exploring the role of gamification and user behaviour of Player Unknown Battle Ground (PUBG) gamers in Manado.

## THEORETICAL REVIEW

### Consumer behaviour

may be defined as a range of actions and activities intended to meet consumption needs of individuals or groups by acquiring goods and services and correlated with the preferences system and with the way of dealing with purchased goods. According to Mowen (1987)

### Gamification

is a design process that applies play, fun and user experience elements to different applications/services in non-gaming contexts (Deterding et al. 2011). According to Chou (2017)

### Dynamics

are the highest level of thinking with mechanics coming as second and components as third. The higher level directs the lower level and several lower level components can be used to achieve a higher level goal. Werbach & Hunter (2012)

### Mechanics

are already more specific elements in the way that they imply towards more specific actions. They steer the actions of players into a wanted direction and depending on what mechanics are used the game can have a very different style and feel. Several mechanics can be included into one dynamic. For example feedback and rewards can both give a feeling of progression. Werbach & Hunter (2012) explained the elements of Mechanics as follows:

1. Challenges: The game sets an objective for the player to reach.
2. Chance: Not everything is decided by skill. There is also luck involved. Some results of player action are randomized which creates a sense of surprise and uncertainty.
3. Cooperation and competition: Both work towards creating a feeling of winning and losing. People working together or against each other in order to win.
4. Feedback: Feedback allows players to see how they are doing in the game. Feedback gives the feeling of progression and tells the player when they are doing the right things to win the game.
5. Resource acquisition: In the game the player can collect things that help him to reach the goal of the game. Sometimes the items or things collected are necessary in order to win.
6. Rewards: Reward is a benefit the player can get from an achievement in the game.
7. Transactions: Transaction means buying and selling or exchanging something with other players in the game. Transactions can also happen with non player characters.
8. Turns: Every player in the game has their own time and opportunity to play. Traditional games like card games of board games often rely on turns to keep balance in the game, while many modern computer games work in real time without turns.
9. Win states: The state which defines winning the game.



### Components

Components specific applications that can be seen and used in the INTERFACE of the game. This is the most concrete level of elements and might be what first comes to mind when thinking about game elements. Several components can be a part of one mechanic. For example badges and content unlocking can both be part of rewards. Werbach & Hunter (2012)

### User Behaviour

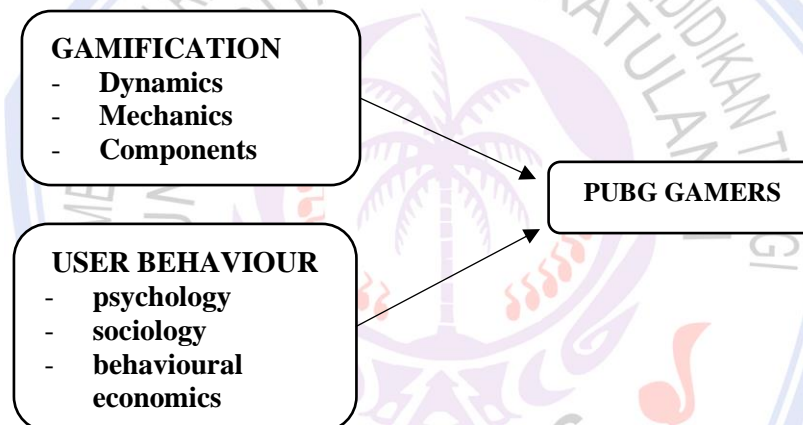
Research in digital game has expanded to the recognition of interaction between user and game to create user experience.

### Psychology

Psychology is a broad field that encompasses the study of human thought, behavior, development, personality, emotion, motivation, and more. Gaining a richer and deeper understanding of psychology can help people achieve insights into their own actions as well as a better understanding of other people (Cherry 2020).

### Sociology

Sociology may be that it is a social science which studies the processes and patterns of human individual and group interaction, the forms of organization of social groups, the relationship among them, and group influences on individual behavior, and *vice versa*, and the interaction between one social group and the other (Doda, 2005).



**Figure 1. Conceptual Framework**

*Source: Authors, 2020*

### RESEARCH METHOD

#### Type of Research

This research use qualitative methodology to discover gamification toward user behavior. According to Crossman (2020), qualitative research is a type of social science research that collects and works with non-numerical data and that seeks to interpret meaning from these data that help understand social life through the study of targeted populations or places.

#### Data Collection Method

Data collection method are important by providing useful information to understand the process before gaining the result. Data collection method are divided into primary and secondary. the primary data was gained using in-dept interview with the respondents. Secondary data of this research was gained from books, articles, and previous research that support and related with the topic that are being discussed in this research.

## Operational Definition of Research Variables

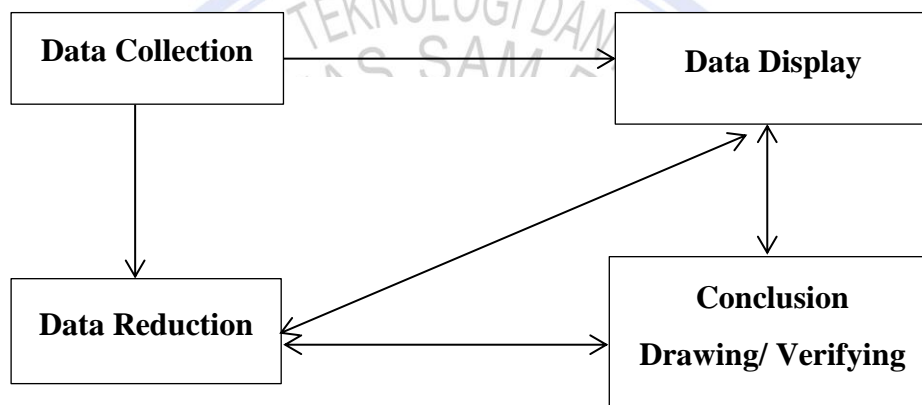
**Table 1. Definition of Research Variables**

No	Variable	Definition	Indicator
1.	Gamification	gamification is the craft of deriving all the fun and addicting elements found in games and applying them to real-world or productive activities, create the reward, punishment, rules of the game and the interface design	Dynamics, Mechanics, Components ,
2.	User Behaviour	Is engineer by a trigger from the game that will form a reaction or action from the user	psychology, sociology, behavioural economics.

Source: Author's, 2020

### Data Analysis Method

In this qualitative data analysis there are explanations in detail of the process after collecting data till getting conclusions. According to Miles and Huberman in Sekaran and Bougie (2010) there are generally steps in qualitative data analysis:



**Figure 2. Steps in Qualitative Data Analysis**

Source: *Research Methods for Business* (2007)

In this qualitative data analysis, there are explanations in detail of the process after collecting data till getting conclusions. According to Miles and Huberman in Sekaran and Bougie (2010) there are generally steps in qualitative data analysis:

- Data Collection, is the process where the researcher found information or data from any kind of source such as books, internet website and gather deeper information from the informant.
- Data Reduction, involves selecting, simplifying and transforming the data to make it more manageable and understandable.
- Data Display, helps qualitative researches to organize information and view it in way that enables them to identify linkages and develop explanations that relate their findings to existing theories.
- Drawing and Verifying Conclusion, drawing conclusion involves deciding what the identified themes and patterns and how they help to answer the research question. Verification involves checking and re-checking the data ensure the initial conclusions are realistic, supportable and valid.

### Validity and Reliability

Validity refers to how well a test measure compare to the research purpose. Creswell (2007) defined validity as validation in qualitative research to be an attempt to assess the “accuracy” of the findings, as best described by the researcher and the participants. Validation as a distinct strength of qualitative research in that the account made through extensive time spent in the field, the detailed thick description, and the closeness of the researcher to participants in the study all add to the value or accuracy of a study.

Reliability is a tool to produces stable and consistent result. In qualitative research, “reliability” often refers to the stability of responses to multiple coders of data sets. Reliability can be enhanced if this study obtains detailed field-notes by employing a good-quality tape for recording and by transcribing the tape (Creswell, 2007).

## RESULTS AND DISCUSSION

### Result

The interview results are gained by using qualitative research method, in-depth interview with the respondents or informants. The population in this research is players of mobile applications. The sample is from 15 players of PUBG who are really addicted and spent a lot of time and money in this game. As the first step, questions were arranged and prepared before conducting the interview.

### Description of Research Object

The research object is mobile games (PUBG) application consumers in Manado. A mobile application is an application designed to be installed and used on a mobile device, whether a tablet or a smartphone, and is generally distributed by app stores , in here the research is focusing in more specific type of gamers who are addicted with the game. The respondents or informants of this research are the consumers of PUBG games application that ever do purchases, not only the consumers who play. In order to know the effectiveness of in-application purchases that have been applied on mobile games application.

### Description of Research Respondents

In the table below are description of respondents of this research.

**Table 1. List of Informants**

No.	Name	Gender	Profession	Age
1.	T R	Female	Student	22
2.	J L	Male	Employee	32
3.	R K	Male	Businessman	32
4.	M P	Female	Student	22
5.	G W	Male	Student	22
6.	H T	Male	Employee	32
7.	C.K	Male	Employee	20
8.	T K	Male	Businessman	23
9.	J S	Male	Employee	24
10.	K T	Male	Employee	16
11.	R D	Male	Student	18
12.	M K	Female	doctor	22
13.	M K	Female	doctor	22
14.	C S	Female	Student	22
15.	V O	Male	Employee	22

Source: Author's, 2020

Table 1. shows that the range of age of respondents is 16 to 32 years old. In regard to gender, there are 5 female respondents and 10 male respondents. Seen from occupation, there are students (5 respondents), employees (6 respondents), businessman (2 respondents), and doctors (2 respondents).

### Description of Research Variable

This study will try to investigate some selected factors namely: dynamics, mechanics, and components under Gamification variables and psychology, sociology, and behavioural economics under User Behaviour variable on PUBG Mobile game.

### Interview Result

The interview results are gained by using qualitative research method, in-depth interview with the respondents or informants. The population in this research is players of mobile applications. The sample is from 15 players of PUBG who are really addicted and spent a lot of time and money in this game. As the first step, questions were arranged and prepared before conducting the interview.

**Discussion** This study explores gamification and user behaviors of PUBG gamers in Manado. The respondents, who are online game players especially PUBG game, are of the average age of 16 to 32 years old. Video gaming is no longer a hobby exclusively enjoyed by the young. As generations have grown up with video games a normal part of life, the age of the average gamer also increases. While 40 percent of video game players still comes from the 18 to 35 age demographics, some 21 percent are 50 years and older (Gough, 2019).

The basic information gathered from respondents regarding to gamification (game elements) of PUBG games in general are: challenging game, killing time, FPS mode, train focus, hobbies (even for specific hobbies related to tactical games, adventure games, and war games), and suitable games. It means PUBG gamers feel the game not only challenging but it also enables them to practice their hobby or fulfil their expectation in the game as well as to make them feel more challenges to get a reward from the game.

Based on the interview results coming from the respondents, coding the answer is done to get best explanation of gamification and user behaviors of the gamers. The coding can be seen in the following table.

**Table 2. Interview Coding**

Variable	Description	Respondent
<b>Gamification</b>		
Mechanics	pleasure	R1
	Limited item	R7,R11
	High graphic	R2
	Voice call	R9,R10,
	Increase level	R4,R5,R6,R7,R13,R14,R15
	Push rank	R13
Dynamics	Games like reality	R1,R2,R3
	Looting place	R4,R5,R12,R13,
	Hiding place	R5
	Big maps	R4,R5,R6,R9
	challenged	R9,R15
	FPS mode	R10
Component	New skin	R1,R3
	Reward	R2
	Item	R1,R2,R5
	Touch up	R11,R12,R13
	Upgrade weapon	R3,R6,R7,R15
	Clothes	R2,R3,R4,R6,R8,R10,R13,R14,
<b>User Behavior</b>		
Psychology	Experience in war	R1,
	Realistic game play	R2,R3,R4,R8,R10
	competitive	R5,R6,R7
	Sporty	R5
	Hobby	R14,
	A lot mode game	R9
Sociology	Make friends	R3,R5,R6,R7,R8,R9,R12,R14,R15
	Sharing	R1
	Communicate	R2,R15
	Build team	R4,R10,R13
Behavioral Economics	Buy limited item	R9
	Get income	R1,R2,R5,R6,R7,R8,R10,R11,R12, R13,R14,R15
	Purchase item	R9

Source: Author's, 2020

Table 2 shows that in general most respondents are addicted to the PUBG game because increase their level (mechanism), able to looting place (dynamics), and able to dress up their avatar (components).



Moreover, seen from the user behaviour perspectives, PUBG game is a realistic game play (psychology), able to make friends (sociology), and get income (behavioural economics).

## CONCLUSION AND RECOMMENDATIONS

### Conclusions

From the interview result and discussion in the previous chapters, it can be concluded that:

1. Respondents are addicted to the PUBG games because they can increase their level (mechanism), able to looting place (dynamics), and able to dress up their avatar (components).
2. PUBG gamer think that PUBG games are a realistic game play (psychology), able to make friends (sociology), and to get income (behavioural economics).

### Recommendation

The following are some recommendations:

1. Game company may provide easy, less violent but challenging games especially those below 16 years old and above 32 years old to be able to play the game. In other words, game company should maintain the balance between challenge and simplicity in the game to make the gamers feel comfortable with that game.
2. Gamers should make a minimum and maximum fix budget for any purchases and for special purchases to avoid overexpenditure.

## REFERENCES

- Blohm, I., & Leimeister, J. M. (2013). Gamification Design of IT-Based Enhancing Services for Motivational Support and Behavioral Change Gamification. *Business & Information Systems Engineering*, 5(4), 275–278. Press: [https://www.researchgate.net/publication/260988461\\_Gamification\\_Design\\_of\\_IT-Based\\_Enhancing\\_Services\\_for\\_Motivational\\_Support\\_and\\_Behavioral\\_Change](https://www.researchgate.net/publication/260988461_Gamification_Design_of_IT-Based_Enhancing_Services_for_Motivational_Support_and_Behavioral_Change) (Acces: 5 May 2020)
- Farras. B CNBC Indonesia (2019) Ini Alasan Perusahaan Game RI Kalah Saing dengan Asing. Press <https://www.cnbcindonesia.com/tech/20190425073936-37-68717/ini-alasan-perusahaan-game-ri-kalah-saing-dengan-asing> (Acces: 30 May 2020)
- Bastian, 2015. Pengaruh kompetensi karakter, nilai virtual item dan kepuasan game terhadap pembelian virtual item dalam game online. *Indonesia: Journal of Manajement- Economic Manajement, Yogyakarta National University*. Press: [http://eprints.uny.ac.id/26428/1/Bastian\\_11408144047.pdf](http://eprints.uny.ac.id/26428/1/Bastian_11408144047.pdf) (Access: 12 April 2020)
- Cho, D, (2015). What influences people to purchase in-game mobile items?: Analysis of motivational drivers to use in-game mobile games items in the U.S. *International Journal of Telecommunication, Information Studies and Media - Master of Arts*. Press: <https://d.lib.msu.edu/etd/2963> (Access: 10 April 2020)
- Calero, C et al. Piattini, M and Moraga M,A(2008). Handbook of Research of Web Information System Quality Press: <https://www.igi-global.com/book/handbook-research-web-information-systems/519> (Access : 10 April 2020)
- Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: Sage Publications. Press: <https://psycnet.apa.org/record/1997-36445-000> (Access: 5 April 2020)
- Denzin, N., & Lincoln, Y., 1994. *Handbook of Qualitative Research*. California: Sage Publications. Press: ( <https://www.worldcat.org/title/handbook-of-qualitative-research/oclc/29029458> ) ( Access: 2 April 2020)
- Riberrio, L ., Dr.Silva,T.L ., & Mussi, A,Q(2018) Gamification: a methodology to motivate engagement and participation in a higher education environment, Vol 6. Press: <https://www.ijern.com/journal/2018/April-2018/21.pdf> (Accesss: 1 April 2020)



- Crowley D, Bresslin J and Corcoran P, Y, Karen (2012) Gamification of Citizen Sensing through Mobile Social Reporting.  
Press: <https://www.semanticscholar.org/paper/Gamification-of-citizen-sensing-through-mobile-Crowley-Breslin/b9728f511510a35d8bb92e896b350ac93bf0178a> (Access: 2 February 2020 )
- Engel J. F., Blackwell R. D., Miniard P.W. (1995), Consumer Behavior, FortWorth, 8th edition, T. X. Dryden Press. <https://www.worldcat.org/title/consumer-behavior/oclc/32666931> (Access: 1 February 2020)
- Engel, J., and Blackwell, R., 1982. *Consumer Behavior*. Hinsdale Illinois: The Dryden Press.  
Press: <https://www.tandfonline.com/doi/abs/10.1080/00913367.1979.10673276>  
(Access: 5 February 2020)
- Foxell, N., 2015. Mobile Games Monetization. *International Journal of Information System, Jyväskylä: University of Jyväskylä*.  
Press: <https://jyx.jyu.fi/bitstream/handle/123456789/47994/1/URN%3ANBN%3Afi%3Aju-201512063915.pdf> (Access: 6 February 2020)
- Romdhoni.F.M and Wibowo.R.P (2014) “Penerapan Gamification Pada Aplikasi Interaktif Pembelajaran SQL Berbasis Web”, Jurnal Teknik Pomits, Vol. 1, No. 1  
Press: <http://repository.radenintan.ac.id/5541/1/SKRIPSI%20RITA%20KISTIANI.pdf> (Access: 5 February 2020)
- Zicherman.G and Linder, J “Game-Based Marketing” Vol 3-5.  
Press: <https://atdstl.org/resources/Documents/game-based-marketing-zichermann-en-13865.pdf> (access 2 March 2020)
- Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Piscataway, New Jersey: Transaction. Press: [https://realitycheckinc.com/consumer-research-services/?gclid=CjwKCAjwID8BRAFEiwAnUoK1T8sbIB3bSGbdobL2p9Y5CI3AoBnGqF7A2ejYzQinw7Ky4sh1fPOWxoCJCMQAvD\\_BwE](https://realitycheckinc.com/consumer-research-services/?gclid=CjwKCAjwID8BRAFEiwAnUoK1T8sbIB3bSGbdobL2p9Y5CI3AoBnGqF7A2ejYzQinw7Ky4sh1fPOWxoCJCMQAvD_BwE) (Access: 18 February 2020 )
- Junus H (2016) “Penggunaan Gamifikasi dalam Proses Pembelajaran” Jurnal TICOM-Vol. 5 No.1  
Press: <http://repository.radenintan.ac.id/5541/1/SKRIPSI%20RITA%20KISTIANI.pdf> (Access: 5 March 2020 )
- Islam A, Hosam A-S, and Reem Y (2019) “The Role of Gamification Techniques in Promoting Student Learning: A Review and Synthesis”, Vol 18.  
Press: <http://www.jite.org/documents/Vol18/JITEv18ResearchP395-417Alomari5520.pdf>  
(Access: 12 March 2020)
- Simoes, J Redondo R,D and, Vilas, A, F (2013) “Computers in Human Behavior” Vol 2-8  
Press: [https://www.researchgate.net/publication/292720849\\_Using\\_Gamification\\_to\\_Improve\\_Participation\\_in\\_Social\\_Learning\\_Environments](https://www.researchgate.net/publication/292720849_Using_Gamification_to_Improve_Participation_in_Social_Learning_Environments) ( Access: 1 March 2020 )
- Janna A, MA1, and Lee R, MA2 (2014) Gamification and the Internet: Experts Expect Game Layers to Expand in the Future, with Positive and Negative Results  
Press: <https://www.liebertpub.com/doi/abs/10.1089/g4h.2012.0027> ( Access: 20 March 2020 )
- Yee. N (2006) The Demographics, Motivations, and Derived Experiences of Users of Massively Multi-User Online Graphical Environments, Virtual and Augmented Reality Volume 15.  
Press: <https://www.mitpressjournals.org/doi/10.1162/pres.15.3.309> ( Access: 12 February 2020 )
- Neil D (2015) “Gamification: The metrics and measurements that matter”  
Press: <https://it-benchmarking-journal.com/2015/10/gamification-the-metrics-and-measurements-that-matter/> (Access: 10 February 2020)

Brym,R, J , Lie. J (2006) ‘Sociology your compass of a new world’

Press: <https://atdstl.org/resources/Documents/game-based-marketing-zichermann-en-13865.pdf> (Access 10 February 2020)

