

## **How Graphics Affect the Gaming Experience**

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## **Abstract**

### **Background**

The majority of the academic inquiries either focused on the technical aspects of game or some merely probe into the behaviour aspects of game user. Hence to fill these gaps an academic inquiry to explore the impact of a technical feature of game on the behavioural aspect of user was identified.

### **Aim**

The aim of this research was to explore the impact of graphics on the gaming experience of users.

### **Method**

This quantitative inquiry used deductive approach, in order to answer the core research question this study utilised primary data. For the collection of primary data a survey of 117 students was carried out. Research devised an exclusive questionnaire to collect the data. Primary data was analysed with the utilisation of computer program.

### **Results**

This study has divulged that graphics of game effects user's need satisfaction, emotions, motivation, convenience and immersion.

### **Conclusion**

This study has concluded that graphics of game by influencing various and major determinants of gaming experience, substantially and significantly affects the gaming experience of user.

## Table of Content

<b>Chapter 1 Introduction .....</b>	<b>7</b>
1.1 Background .....	7
1.2 Aim.....	8
1.3 Objectives.....	8
1.4 Questions.....	8
1.5 Rational and Significance.....	8
<b>Chapter 2 Literature Review .....</b>	<b>10</b>
2.1 The Concept and Features of Graphics in Gaming .....	10
2.2 The Concept of Gaming Experience .....	11
2.2.1 Satisfaction.....	11
2.2.2 Learning .....	12
2.2.3 Efficiency .....	12
2.2.4 Immersion .....	12
2.2.5 Emotion.....	13
2.2.6 Motivation.....	13
2.2.7 Socialisation.....	13
2.3 Relationship between Graphics and Gaming Experience .....	14
<b>Chapter 3 Method.....</b>	<b>16</b>
3.1 Introduction .....	16
3.2 Research Method.....	16
3.3 Research Approach.....	17
3.4 Research Strategy.....	17
3.5 Data Collection .....	18
3.5.1 Sample.....	18
3.6 Data Analysis .....	19
3.7 Ethical Considerations.....	19
3.8 Validity and Reliability of Research .....	20
<b>Chapter 4 Results \$ Discussion.....</b>	<b>21</b>
1.1 Age Distribution.....	21
4.2 Gender Distribution.....	22

4.3	Educational Level.....	23
4.3	Playing Duration .....	24
4.4	Playing Frequency.....	25
4.5	Effects of Game Graphics on Need Satisfaction.....	26
4.6	Effects of Game Graphics on Convenience .....	27
4.7	Effects of Game Graphics on Learning.....	28
4.8	Effects of Game Graphics on Efficiency.....	29
4.9	Effects of Game Graphics on Immersion.....	30
4.10	Effects of Game Graphics on Emotions.....	31
4.11	Effects of Game Graphics on Motivation .....	32
4.12	Effects of Game Graphics on Overall Gaming Experience .....	33
<b>Chapter 5</b>	.....	<b>34</b>
<b>Conclusion and Recommendation</b>	.....	<b>34</b>
<b>Bibliography</b>	.....	<b>36</b>
<b>Appendix</b>	.....	<b>40</b>
Questionnaire .....		40
Progress Map.....		43

**Table of Illustrations**

Figure 1:Age Distribution.....	21
Figure 2: Gender Distribution.....	22
Figure 3: Education Level of participants.....	23
Figure 4:Playing Duration.....	24
Figure 5:Playing Frequency.....	25
Figure 6: Need Satisfaction.....	26
Figure 7 Effects on Convenience.....	27
Figure 8: Effects on Learning.....	28
Figure 9: Effects on Efficiency.....	29
Figure 10: Effects on Immersion.....	30
Figure 11: Effects on Emotions.....	31
Figure 12: Effects on Motivation.....	32
Figure 13: Effects on Gaming Experience.....	33

## Dissertation



### How Graphics Affect the Gaming Experience

#### Chapter 1 Introduction

##### 1.1 Background

Video and computer games emerged in the late 60's and achieved commercial popularity in the 70's. Its long history of four decades reaches the present with household consoles like PlayStation, to name just one, to install games on personal computers, multi-player online and off, and applications for portable devices such as cellular phones. The game, activity and word that consists of both the term as the name game computer games, was studied by several theoretical and is analysed by Huizinga (1964) who defines it as an act or voluntary occupation that is done within certain fixed limits of time and space, according to voluntarily accepted rules but absolutely mandatory that bears his end in itself and is accompanied by a sense of tension and enjoyment more aware of being distinct from ordinary life.

Regarding the first part of the word game, it requires the action of the same visually displayed on a screen. Originally the word video was referring to cathode ray tubes that were used in cabinets located in known public rooms as arcades and on home consoles that were connected to a TV, but the term survived and currently games distributed on computers, consoles or mobile devices

display pixel-based Video Games (VGs) are usually called. As for the name "computer games" the last word refers to the software that contains the game is executed on a microprocessor.

VGs are a phenomenon of the entertainment industry that produces economic dividends in some cases superior to movies and promotes technological advances constantly by launching products that require computers and increasingly technologically required devices (Gee, 2014).

## **1.2 Aim**

The aim of this research is to explore the impact of graphics on the gaming experience of users.

## **1.3 Objectives**

- To explain the concept and features of graphics in gaming
- To discuss the concept of gaming experience
- To Explore the relationship between graphics and gaming experience
- To explore impact of graphic on the gaming experience of player

## **1.4 Questions**

- What is the concept and features of graphics in gaming?
- What is the concept of gaming experience?
- What is the relationship between graphics and gaming experience?
- What is the impact of graphic on the gaming experience of player?

## **1.5 Rational and Significance**

In the course of the most recent couple of many years of game outline and advancement, the graphical resources in VGs and computer has changed from essential pixel craftsmanship to complex 3D models, complete with surfaces and lighting. Game mechanics have additionally turned out to be more perplexing, making a domain where a VG are seen as casual today.

Egenfeldt-Nielsen et al., (2013) have concentrated on how game mechanics influence the user;

be that as it may, there has been little examination concerning how the graphics of game influences experience of user, particularly under conditions where game mechanics are kept reliable. This is an essential inquiry to consider different reasons. To begin with, there is a custom being developed and of mechanics testing of game in an iterative procedure, with expanding the model through the improvement lifecycle. It is essential to comprehend whether the graphics utilised as a part of the lower-constancy models influence user reaction to the workman under assessment (Hughes et al., 2013).

Dynamics, mechanics and the subsequent feeling in the user as the centre segments of games. Comprehending the association between the layers of this system, and how changes in one layer influence another is imperative for propelling the hypothesis of game communication (Lengyel, 2012). Contemporary literature on gaming has not research effect of graphic on client experience in a compressive and cantered manner. Particularly the client of game or user for whom really the whole gaming are created are once in a while taken into consideration for the improvement of different games and there visual features. Hence, this inquiry will provide a comprehensive insight into significance of graphics to influence experience of game players and these findings can be utilised to further develop the graphics on the basis of user's perception, needs and expectations,

## Chapter 2 Literature Review

### 2.1 The Concept and Features of Graphics in Gaming

According to Bartle (2015) an assortment of CG techniques has been utilised to show VG content all through the historical backdrop of VGs. The transcendence of individual techniques have developed after some time, fundamentally because of equipment advances and limitations, for example, the handling force of focal or graphics preparing units. A portion of the most punctual VGs were text-based VGs that utilised text characters rather than bitmapped or vector graphics. As per Ivory (2015) Illustrations incorporate Multi-User Dungeons (MUDs), where players could read or view delineations of rooms, articles, different players, and activities performed in the virtual world; and maverick likes, a subgenre of pretending VGs highlighting numerous beasts, things, and environmental impacts, and also an accentuation on randomisation, replay capacity and changeless passing. A portion of the soonest text VGs were produced for computer which had no display by any means.

As per Duncan et al., (2012) text VGs are regularly less demanding to compose and require less handling force than graphical VGs, and along these lines were more basic from 1970 to 1990. On the other hand, terminal emulators are still being used today, and individuals keep on playing MUDs and investigate intuitive fiction. Scacchi, W. (2011) argues that numerous starting programmers still make these sorts of VGs to acquaint themselves with a programming dialect, and challenges are held even today on who can wrap up a maverick like inside of a brief timeframe period, for example, seven days.

According to Pavlidis (2012) vector graphics entails to the utilisation of geometrical primitives, for example, focuses, lines, and bends rather than determination subordinate bitmap graphics to speak to pictures in CGs. In VGs this sort of projection is fairly uncommon, however has turned

out to be more basic as of late in program based gaming with the approach of Flash, since Flash backings vector graphics locally. As per Dunn and Parberry (2011) vector VG can likewise allude to a VG that uses a vector graphics show fit for anticipating images utilising an electron pillar to draw pictures rather than with pixels, much like a laser appear. Numerous early arcade VGs utilised such shows, as they were fit for showing more definite pictures than raster shows on the equipment accessible around then. Numerous vector-based arcade VGs utilised full-shading overlays to supplement the generally monochrome vector pictures.

According to Novak (2011) different employments of these overlays were exceptionally point by point drawings of the static gaming environment, while the moving articles were drawn by the vector shaft. VGs of this sort were delivered for the most part by Sega, Cinematronics and Atari. Illustrations of vector VGs incorporate Eliminator, Armor Attack, Space Fury, Lunar Lander, Star Trek, Space Wars, Zektor, Tempest and Tac/Scan. The Vectrex home reassures likewise utilised a vector show. After 1985, the utilisation of vector graphics declined generously because of changes to sprite technology; rasterised 3D graphics came back to the arcades and were popular to the point that vector graphics could no more contend (Novak, 2011).

## **2.2 The Concept of Gaming Experience**

As per Watson et al., (2014) Gaming Experience (GE) is characterised as: an arrangement of properties that portray the GE utilising a particular game system whose principle target is to give delight and diversion, by being dependable and fulfilling, when the user plays alone or in organisation. GE is portrayed by diverse credits and properties to gauge the VG experience.

### **2.2.1 Satisfaction**

This entails to the level of satisfaction or joy of the user for finishing a VG or some part of it like instrument, graphics, client interface, story, and so on. Satisfaction is a very subjective trait that

incites a troublesome measuring because of delights and inclinations of user having impact in the satisfaction for particular game components: characters, virtual world, difficulties, etc.

(Rodrigues et al., 2012).

### **2.2.2 Learning**

The office to comprehend and rule the game mechanics and system (targets, rules, how to interface with the VG, and so forth.). The Pc Systems attempt to minimise the Learning exertion, yet in VGs we can utilise the Learning bend as per the game nature. For instance, in one hand, we can request incredible starting capacities before to play, or preparing them cruelly in first periods of the game, to help users to comprehend and command all the game principles and assets and they can utilise them from the earliest starting point of the game. In the other hand, users can learn regulated guided when they require some capacity in the VG (Rodrigues et al., 2012).

### **2.2.3 Efficiency**

Its vital time and resource to offer fun and amusement to users while they accomplish the diverse game destinations and achieve objective. An efficient VG has the capacity get the user's consideration from the first moment, and incite him to keep playing to the end of the game. Efficiency can be broke down as the right utilisation of the test through the game, the right organising of the targets or the best adjustment of the control to the activities in the game (Rodrigues et al., 2012).

### **2.2.4 Immersion**

It's the ability of user to have confidence in the VG substance and coordinate the user in the virtual game world. The submersion incites that the user looks included in the virtual world, turning out to be a piece of this and connecting with it on the grounds that the client sees the

virtual world spoke to by the VG, with its laws and standards that portray it. A VG has a decent drenching level when it has balance between the proposed challenges and the vital user capacities to overcome it (Rodrigues et al., 2012).

### **2.2.5 Emotion**

The inner drive starts because of the boost of the VG and incites sentiments or unleashes programmed responses and behaviours. The utilisation of Emotions in VGs get a best GE and leads users to diverse Emotional states: joy, trepidation, interest, interest, trouble... utilising the game challenges, story, tasteful appearance or the music creations that are equipped for move, influence, to make to grin or to cry to the user. A major accomplishment of VGs is that they can incite to users distinctive emotions in a short space of time, some of them scarcely possible every day in this present reality (Rodrigues et al., 2012).

### **2.2.6 Motivation**

It's a factor that incites the user to acknowledge solid activities and continue in them until their finish. To get a high level of Motivation, the game ought to have an arrangement of assets to guarantee the users tirelessness in the performed activities to beat the game challenges. This implies, distinctive elements to verify positive conduct in the understanding of the game procedure, centring the user on the proposed difficulties, demonstrating the targets' importance to reach and remunerate for difficulties, elevating the user certainty to face them and the joy to accomplish them (Rodrigues et al., 2012).

### **2.2.7 Socialisation**

The level of game components resources and characteristics that advance the social variable of the game involvement in gathering. This kind of experience incites valuing the VG differently, on account of the relations that are set up with different users or with different characters of the

game that help the user to determine together the game challenges in a community oriented, focused or agreeable way. The game socialisation permits users to have a very surprising game experience when they play with different persons and advance new social connections thank to the association among them. Notwithstanding this, socialisation additionally is available at how the social associations that we have are anticipated with the gathering in the characters of the VG and connection in which the game is figured it out (Rodrigues et al., 2012).

### **2.3 Relationship between Graphics and Gaming Experience**

As per McLean and Griffiths (2013) games user research has connected ideas from brain research to deteriorate user experience with the objective of aiding game engineers settle on educated design choices. Sweetser et al., (2012) look at drenching in VGs and recommend that adaptations are important for the idea to be appropriate to VGs. Gerling et al.,(2013) discuss a methodology, the GameFlow model, which influences the thought of matching so as to make an ideal experience expertise and test to apply it to the design of VGs. Expanding on past work examining stream and submersion in VGs and centre gathering meetings, Zhao et al., (2012) propose a model of user experience comprising of the nine measurements satisfaction, stream, inventive drenching, tangible submersion, anticipation, ability, negative influence, control, and social vicinity, especially highlighting the assortment of viewpoints that add to the general experience when drawing in with games. Chen, et al. (2011) proposes a model expanding on mental builds. They theory of self-determination was applied to dissect user experience and recognise characteristic inspiration, fitness, self-governance, relatedness, vicinity, and natural controls as applicable segments. These cases demonstrate that user experience is an intricate wonder, and existing work in games client examination has laid out elements that add to the general experience. In that regard, little work has been done in games client research. A first

approach by Arnab et al., (2015) researches the effect of developments graphical and mechanics authenticity of game on submersion. With some alteration they changed game graphics, material science of game and symbol graphics. Pietschmann et al., (2013) demonstrate that members saw changes in authenticity of graphics, however not in game material science, and that members reported a predictable GE over all conditions.

Hence, when examining the effect of quality of game graphic on experience of user, inquire about past insignificant mental impacts of VGs on players is important to represent association impacts between distinctive game components that may impact user experience. Collins (2013) presents a large-scale study that looks at how feel music, sound, and movements – impact player conduct in easy-going games. They presume that the consideration of activity has a constructive outcome on players: their outcomes demonstrate that members in the liveliness condition progressed further in the played and game fundamentally more than members in the condition that did exclude movements. In any case, the creators take note of that activity did have a tasteful quality, as well as gave player input. They do not give experiences into whether members in the condition without movements got other criticism on the condition of the game world; then again, they conjecture that low ease levels in using game was experienced by player.

Wu (2012) indicated that there are contrasts in user experience in the middle of dynamic and nitty-gritty representations, yet that the level of point of interest does not impact user experience. Expanding on these outcomes and an exploratory study examining the effect of graphical representation on user experience in Rockband et al, (2013) showed a positive effect of graphical quality on user experience.

## **Chapter 3 Method**

### **3.1 Introduction**

This chapter presents the methodological aspects of this dissertation. It explains how the problem under consideration is viewed by the researcher with respect to ontological and epistemological principles of research. Besides this chapter also explains the research approach and strategy researcher has used to conduct this inquiry and answer the research question. Towards the end this chapter presents the ethical considerations and measures relating to reliability and validity of the findings and results.

### **3.2 Research Method**

This is a quantitative inquiry; there are essentially two sorts of research methods: qualitative and quantitative methods. As per Myers (2013) the quantitative method of executing a methodology has been an essential practice in sociology research. Rossi et al., (2013) notice that the quantitative research considers similar measurements of discernments which subsequently give rundowns of data on assorted characteristics through different procedures of data collection which are for the most part organised. Quantitative research is a productive method of investigating profoundly into crucial ideas and variables. Creswell (2013) on the other hand, states that data is generally evaluated in this method for specific variables at a specific time. Henceforth the research can be tested with restrictions and instabilities.

Qualitative method of inquiry alludes to the inside and out comprehension of human observation and the components influencing human perception and experience. The researcher is generally centring practice and procedures rather than results of a phenomenon. The researcher plans to comprehend the experiences of the dissertation's members and the way the members understand their experience of gaming (Flick, 2015).

### **3.3 Research Approach**

The research approach decided for this thesis is deductive, According to Creswell (2013), deductive thinking happens when a researcher works from the more broad data to the more particular. At times this is known as the "top-down" approach in light of the fact that the researcher begins at the top with an exceptionally wide range of data and they work their way down to a particular conclusion. Case in point, a researcher may start with a hypothesis about his or her theme of hobby. From that point, he or she would limit that down into more particular speculations that can be tried. The theories are then contracted down considerably facilitate when perceptions are gathered to test the speculations. This eventually drives the researcher to have the capacity to test the theories with particular data, prompting an affirmation (or not) of the first hypothesis and touching base at a conclusion (Salaberry, Comajoan, 2013).

Inductive thinking works the inverse route, moving from particular perceptions to more extensive speculations and hypotheses. This is in some cases called a "base up" approach. The researcher starts with particular perceptions and measures, starts to then distinguish examples and regularities, plan about speculative theories to investigate, lastly winds up building up some broad conclusions or hypotheses (Bryman, 2012).

### **3.4 Research Strategy**

This dissertation has basically relied on the primary data to answer the research question. Primary data for this study was collected through a survey. The rational for preferring the primary data is that this dissertation basically seeks to analyse the experience of game user and how this experience is influenced due to graphics, hence primary data can provide a more realistic and updated insight on the perception of game users(Flick, 2015).

### **3.5 Data Collection**

In order to conduct this study researcher has developed a specific questionnaire. This data collection instrument (questionnaire) was divided into two segments, the first section obtain the personal information about the participants and the second section obtained participants views regarding their experience of gaming and how graphics has affected this experience.

Questionnaires are said to satisfy the whole reason for surveys and turned out to be vital methods for the effective collection of data in qualitative structure. As proposed by Creswell (2013), questionnaire surveys give gigantic amounts of numerical data that are delivered by a set up set of questions. All the more in this way, the gathered data can be coordinated to get thorough data for research. Flick (2015)state that questionnaire surveys comprise of exact variables that in the end help the researcher make particular examination required for the research to be expert. On the other hand, with the end goal of this venture, a questionnaire survey was made and disseminated to University students including undergraduate and post-graduates understudies. In spite of the fact that, Creswell (2013), contend that questionnaires are fairly confined and restricted, Myers (2013) then again, expresses that the questionnaire survey method serves as a decent method for gathering data namelessly inside of a constrained space of time which is the situation for this research. At long last, having assessed the important research worldview, plan, approach and methods used in this study, it is in this manner urgent to plot the sample population of study.

#### **3.5.1 Sample**

The sample population of this study comprises of 117 university students, in order to conduct this inquiry researcher sent electronic survey forms to 350 university students but only 129 responded to the request. 12 survey forms were not filled properly so they were discarded.

### **3.6 Data Analysis**

The quantitative data obtained from the questionnaire is analysed using appropriate computer programme to assess gaming experience of user on the basis of their feedback. The result of the analysis is presented with graph and table.

### **3.7 Ethical Considerations**

Considering research morals in a dissertation has dependably been critical to the execution of any study. Research morals as depicted by Bryman (2012), are an arrangement of ethically sketched out obligations connected with the whole procedure of research, Research morals bring both respondents and associations into issues in regards to values and respectability. On the other hand, it is important for researchers to see to moral standards to stay away from any negation of research morals. In that capacity, this paper guaranteed that these moral standards were followed all through the study.

Preceding undertaking this study, a few moral concerns, for example, educated assent, namelessness, mischief to members, security, classification, data assurance and protection were considered and the researcher chose to outline the questionnaire in a manner that every one of these worries can be kept away from. The questions incorporated into the study don't, in any capacity, get money related data neither do they ask any individual data from the members. The questionnaire was messaged to the respondents along these lines giving them outright flexibility whether to take an interest or not. Furthermore, all the secondary data that was condensed in the writing audit is legitimately referenced to guarantee that all writers get fitting acknowledgment for their work.

### **3.8 Validity and Reliability of Research**

Chime and Bryman (2011) concur that reliability and validity are basic angles that must be set up in each research. As indicated by Pickard (2013), the validity of a research is disclosed as the extent to which a speculation measures what should be measured. Reliability then again, is depicted as relating to the questions of whether the outcomes or discoveries of a research are repeatable. Creswell (2013) and also Bryman (2012) build up that reliability and validity of a research is crucial in light of the fact that it can affect the data examination and whole procedure of approval. Along these lines, this research is considered as dependable and substantial as the collection of data through quantitative method which is numeric and effortlessly quantifiable was utilised. Myers, M. D. (2013) declares that the reliability and validity of a research should be assessed through the connection of a few variables.

## Chapter 4 Results & Discussion

### 1.1 Age Distribution

The total number of participant in this study was 117, the analysis of age data shows that the population of the study comprised of younger people. The majority of the survey respondents (59%) were between 18-25 years of age, this may be is the case because the original sample comprises of university students. These findings also confirm the previous studies in which it was indicated that video/computer games are more popular in young population as compare to middle age and older people.

Age Distribution		
Age Group	Number of Participants	Per cent
14-18	30	26%
18-25	69	59%
25-35	18	15%
	114	100%

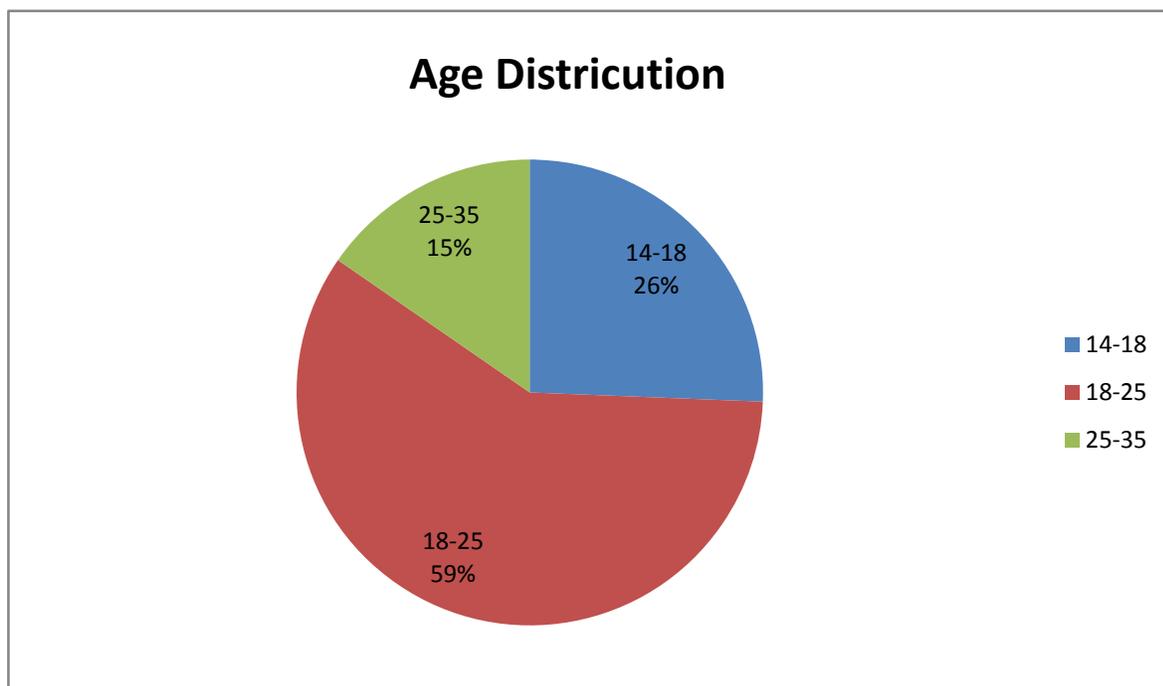


Figure 1: Age Distribution

## 4.2 Gender Distribution

In terms of gender the majority of the participants (68%) were male and only 325 female participated in this study. This finding is interesting in context of gaming studies because researcher distributed the samples randomly to both male and female population, but majority of the females did not responded to the survey request or questionnaire.

Gender Distribution		
Gender	Number of Participants	Per cent
Male	79	68%
Female	38	32%

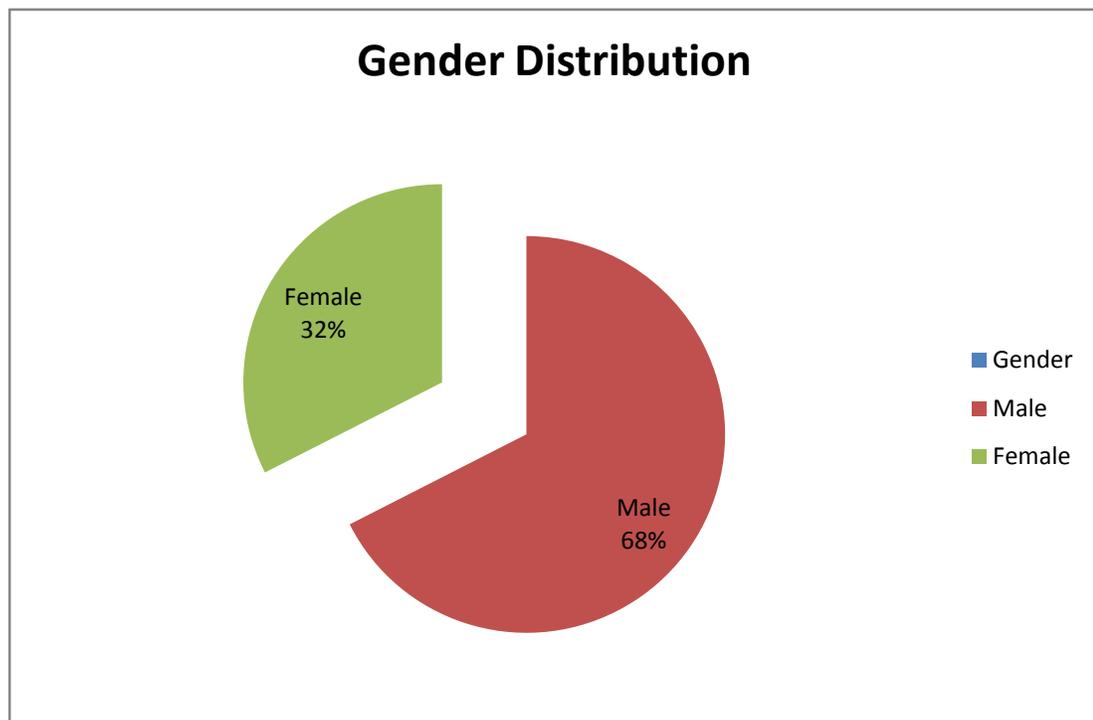


Figure 2: Gender Distribution

This finding also confirms the previous studies in which it's indicated that in terms of gender male population is more found of playing computer/video games that female populace.

### 4.3 Educational Level

The entire population of this study is enrolled in educational courses. Majority of the participants (50%) in this dissertation were under graduate students, 22% were college students and 15 students of Graduation classes. This again confirms the high prevalence of computer gaming habits among students in UK.

Education		
Educational Level	Number of Participants	Per cent
College	25	22%
Under Graduation	58	50%
Graduation	18	15%
Masters	11	9%
Others	5	4%

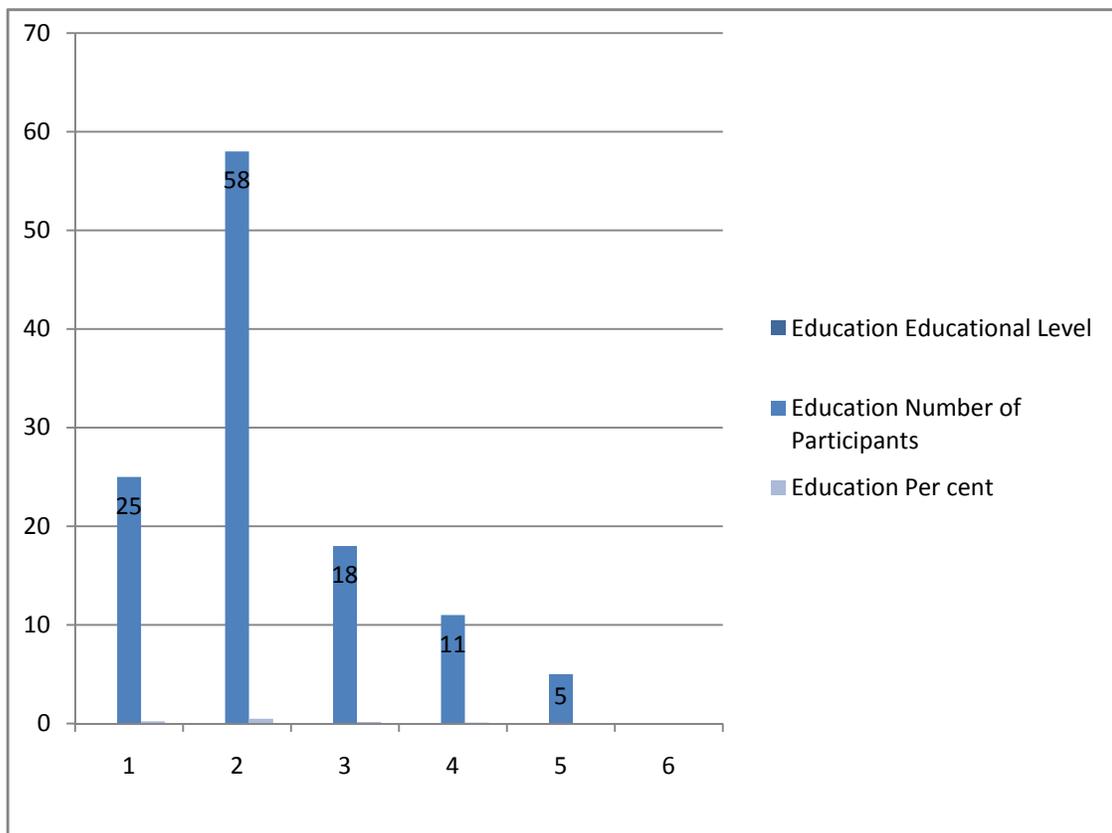


Figure 3: Education Level of participants

### 4.3 Playing Duration

The second section of survey focused on exploring the interest and involvement of participants in video/computer game. This assessment was very crucial to establish the validity of this dissertation. It was found that an overwhelming majority of the participants is attached to game playing as they are playing games for about a decade.

Playing Duration		
Duration	Number of Participants	Per cent
1-2 years	15	13%
2-5 years	25	21%
5- 10 years	41	35%
More than 10 years	36	31%

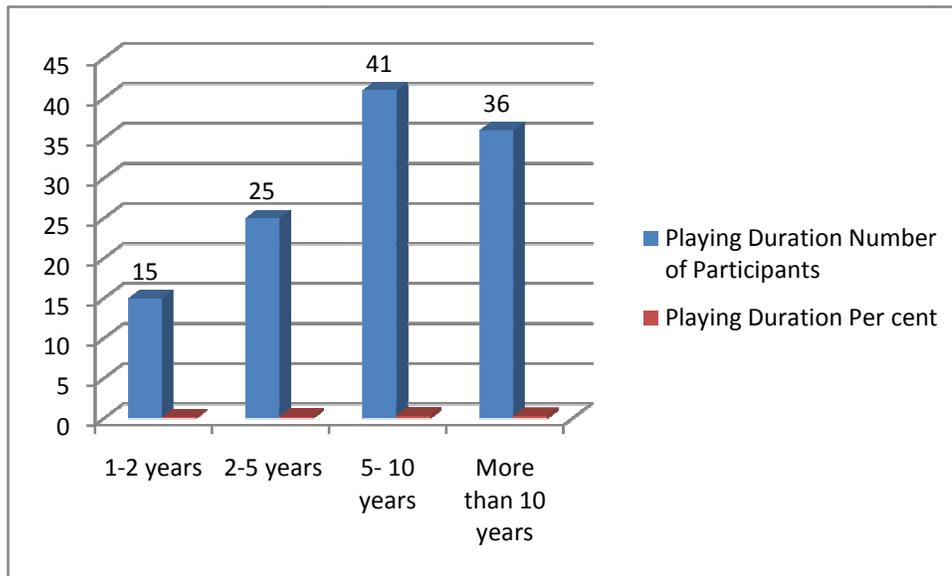


Figure 4:Playing Duration

From the marketing perspective the game developers this findings is very interesting as it reveals the long involvement of customers with a product, but during this time period with growing age, their taste, preferences, interests and expertise all changes. Hence in developing game's graphics developer must keep in mind the age group of target market. One graphical setting of a game can be very attractive to high school boy but it can turn out to be clumsy for university student.

#### 4.4 Playing Frequency

In order to assess the interest and involvement of participants in video/computer game another question in the survey was pitched which inquired the respondents about frequency of playing video/computer game. A clear majority (59%) of the participants in this survey were found of playing VG on daily basis. And a good number (34%) of the respondents play VG at least once in a week.

Playing Frequency		
Frequency	Number of Participants	Per cent
Once a Month	8	7%
Once a Week	40	34%
Daily	69	59%

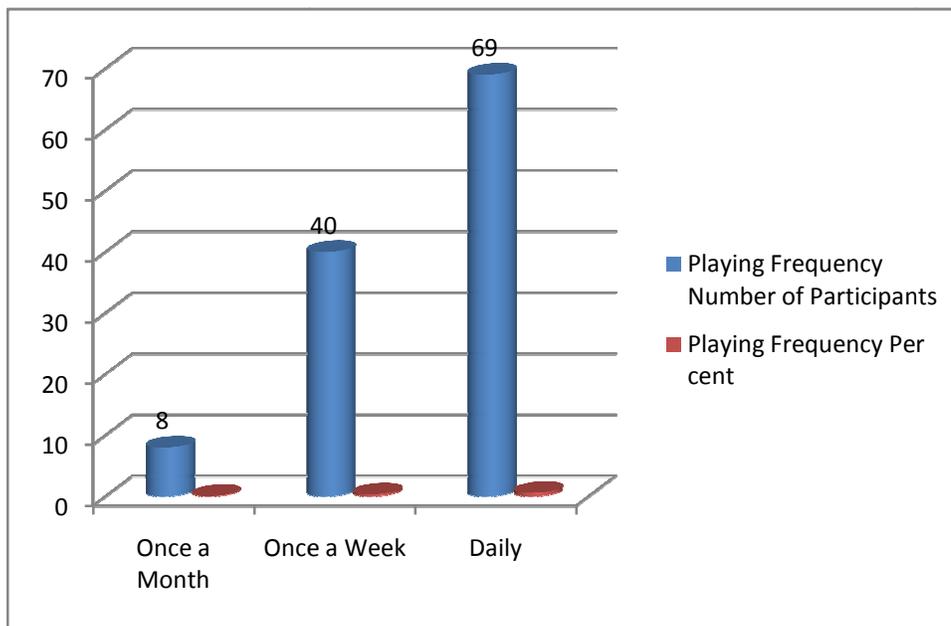


Figure 5:Playing Frequency

This finding is very significant in establishing the validity of data, as it's evident that most relevant data was selected for the study. Majority of the students are actively and frequently connected with VG hence their observation of computer graphics can be entitled as valid.

#### 4.5 Effects of Game Graphics on Need Satisfaction

When respondents in this survey were inquired whether the graphic of a video/computer game effects their need satisfaction, a clear majority of the participant (68%) responded in affirmation that their need satisfaction from a game is effected by the graphics.

Effects on need Satisfaction		
Category	Number of Participants	Per cent
Yes	79	68%
No	17	14%
Don't Know	21	18%

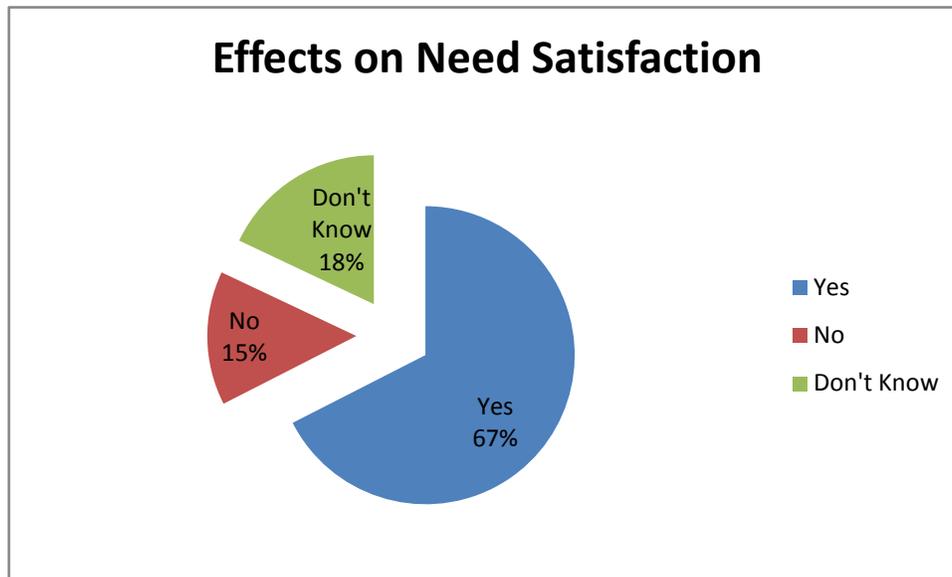


Figure 6: Need Satisfaction

This finding is highly crucial in terms of over dissertation and from the game development point of view as well. The review of literature divulged that need satisfaction is a very important aspect of overall gaming experience, if a game does not serve to the need satisfaction of the gamer it means he or she is less likely to return to this game (Rodrigues et al., 2012). This finding divulges that graphics of video/computer game has an important role to play to influence user's need satisfaction from a game.

#### 4.6 Effects of Game Graphics on Convenience

In order to assess the impact of graphics on another determinant of gaming experience “convenience”, participants in this study were inquired whether game graphics affects their level of convenience while playing computer/video game. A clear and dominant majority of the respondents (63%) stated that game graphic effects their level of convenience and only 29% of the responded replied that game graphics do not affects their convenience while playing video/computer game.

Effects on Convenience		
Category	Number of Participants	Per cent
Yes	63	54%
No	25	21%
Don't Know	29	25%

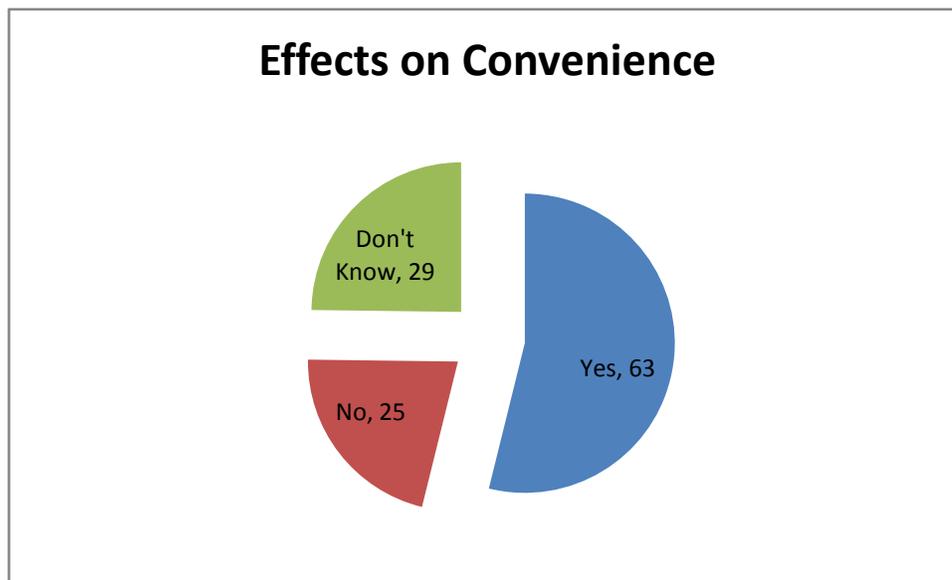


Figure 7 Effects on Convenience

This finding confirms the previous studies such as Adams (2014), who indicated that in game designs the convenience in operating and playing the game is very important aspect in the success or failure of a game. In relation to graphics Adams (2014), refers to convenience as

visual ease, image clarity, readability etc. Hence it can be deduced that graphics by influencing gamer's convenience in a video/ computer game, virtually influence the overall gaming experience of a player.

#### 4.7 Effects of Game Graphics on Learning

When respondents in this survey were inquired whether the graphic of a video/computer game effects on their learning while playing, the response was somewhat mixed. Surprisingly a sizable number of participants (46%) remained neutral in replying and only 32% of the respondents indicated that game graphics influence their learning.

Effects on Learning		
Category	Number of Participants	Per cent
Yes	38	32%
No	26	22%
Don't Know	53	46%

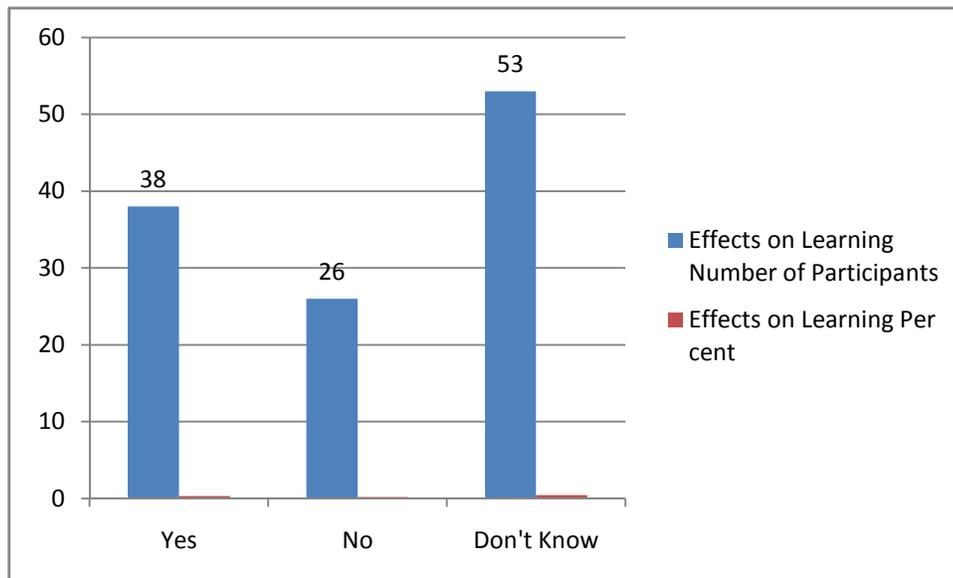


Figure 8: Effects on Learning

Learning as a determinant of overall gaming experience is well established (Rodrigues et al., 2012). Besides, Sampayo-Vargas et al., (2013) in a comprehensive study indicated that a positive correlation between various features of computer based programs and student's learning. Hence

this finding of our dissertation does not withstand the previous studies and do not indicate any strong association between game graphics and learning of player. This result might have arrived since the population of this study is dominated by young students who play video/computer games after doing with their academic assignment and they might have taken this question in relation to their game learning.

#### 4.8 Effects of Game Graphics on Efficiency

When respondents in this survey were inquired whether the graphic of video/computer game effects on their level of efficiency, an overwhelming majority (76%) of participants replied game graphics effect their efficiency in playing video/computer game.

<b>Effects on Efficiency</b>		
<b>Category</b>	<b>Number of Participants</b>	<b>Per cent</b>
Yes	89	76%
No	9	8%
Don't Know	19	16%

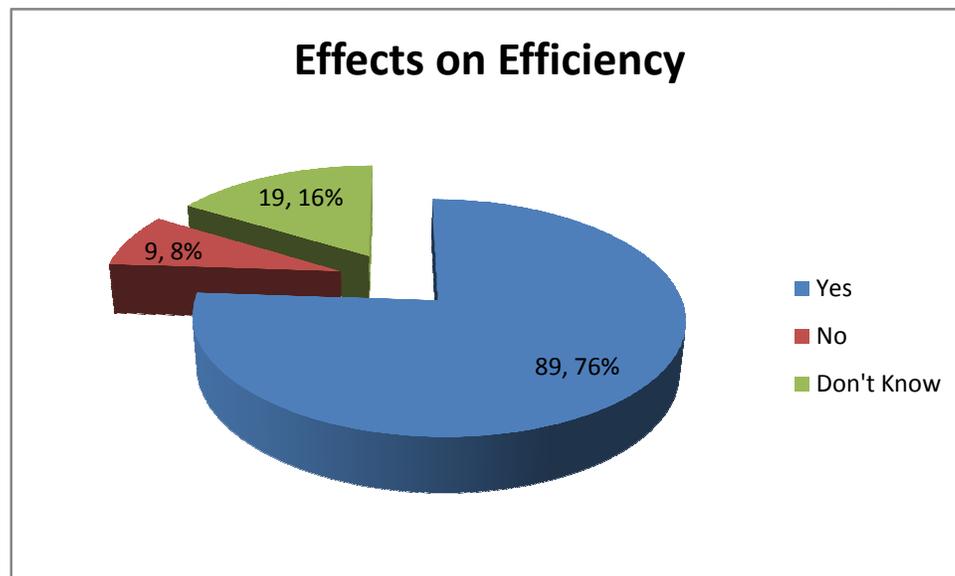


Figure 9: Effects on Efficiency

This finding of the dissertation withstands the previous studies for instance Adams (2014), classified graphics as a core determinant of user's efficiency in using computer based programs.

This finding is also very crucial in context of this dissertation as it establish that game graphics by influencing convenience of gamer affects the overall gaming experience.

#### 4.9 Effects of Game Graphics on Immersion

When respondents in this survey were inquired whether the graphic of video/computer game effects on their level of immersion, an overwhelming number of respondents (79%) stated that graphics of game effects their involvement in a computer/video game.

Effects on Immersion		
Category	Number of Participants	Per cent
Yes	93	79%
No	19	17%
Don't Know	5	4%

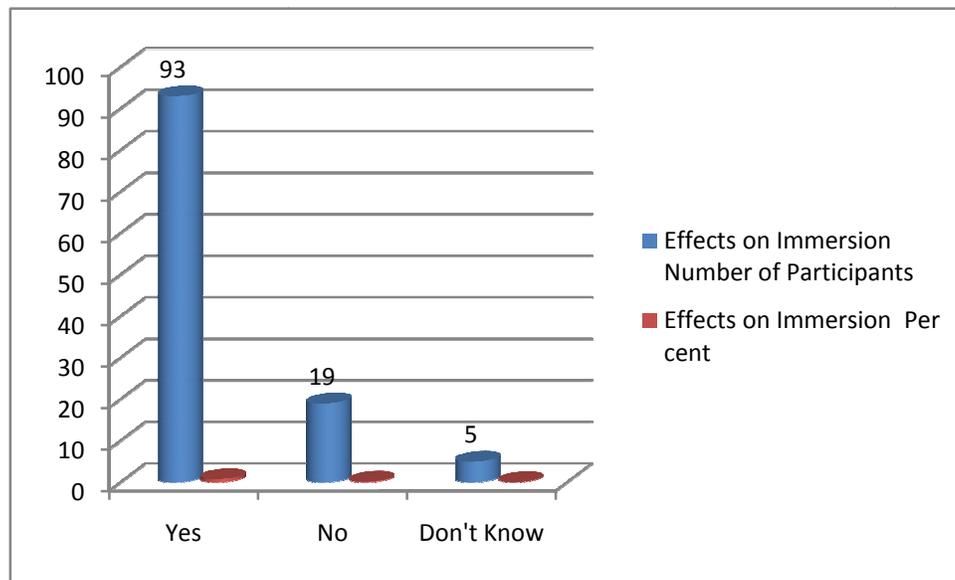


Figure 10: Effects on Immersion

Rodrigues et al., (2012) in their comprehensive study established that involvement of player is a critical factor in shaping and determining the quality of gaming experience. Withstanding the previous studies this dissertation established that graphics of game by influencing the immersion of gamer effects the overall gaming experience.

#### 4.10 Effects of Game Graphics on Emotions

Responding to a question regarding the effects of graphics on the emotions of gamer, a good number of participants (49%) affirmed that game graphics influence their emotions, surprisingly 34% of the respondents stated that game graphics do not influence their emotion. This finding overall is sufficient to establish that game graphics by influencing the emotions of majority of the gamers virtually affects their overall gaming experience.

Effects on Emotions		
Category	Number of Participants	Per cent
Yes	58	49%
No	40	34%
Don't Know	19	17%

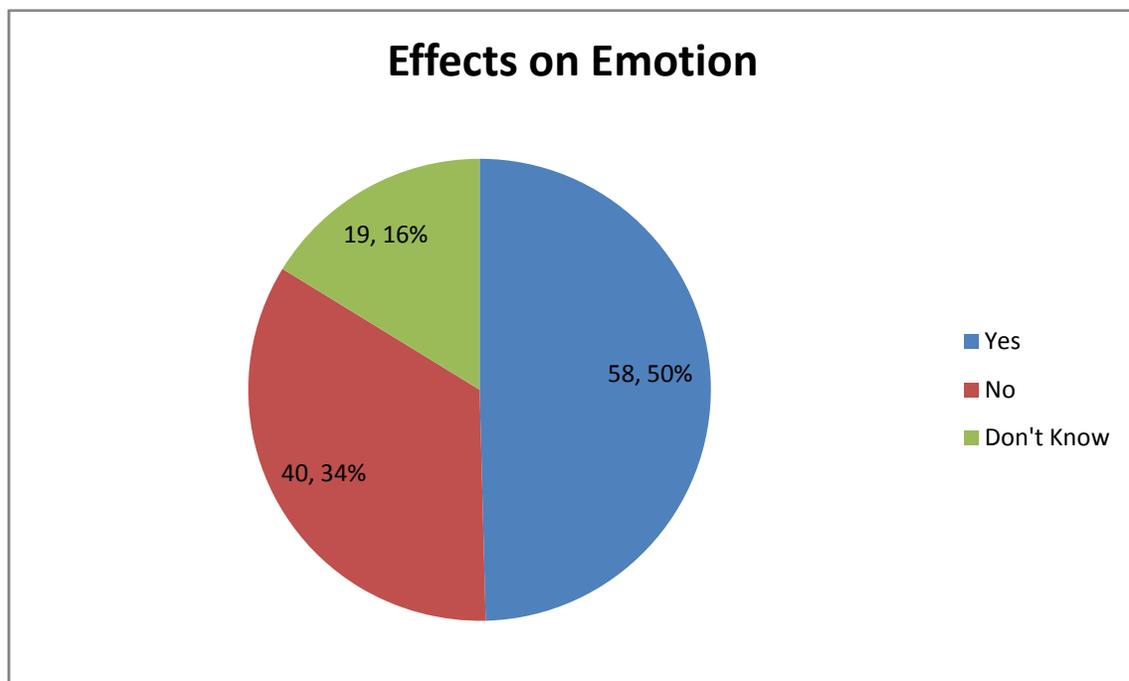


Figure 11: Effects on Emotions

This finding of dissertation also withstand the previous studies where its indicated that In graphics of game by means of facial expression robot-artificial emotion as a model of a human face is utilised as a media of displaying action units (AUs) system is also used to create six core

human facial expressions. This graphical presentation create a simulation for user between real world and game, the intent of this graphical presentation is to stimulate users involvement in the game and enhance the quality of his or her overall gaming experience (Kakarla et al., 2014).

#### 4.11 Effects of Game Graphics on Motivation

When respondents in this survey were inquired whether the graphic of video/computer game effects on their level of motivation of gamers, a majority of the participants (54%) indicated that their motivation for playing a certain game is affected by the game's graphics.

Effects on Motivation		
Category	Number of Participants	Per cent
Yes	63	54%
No	29	25%
Don't Know	25	21%

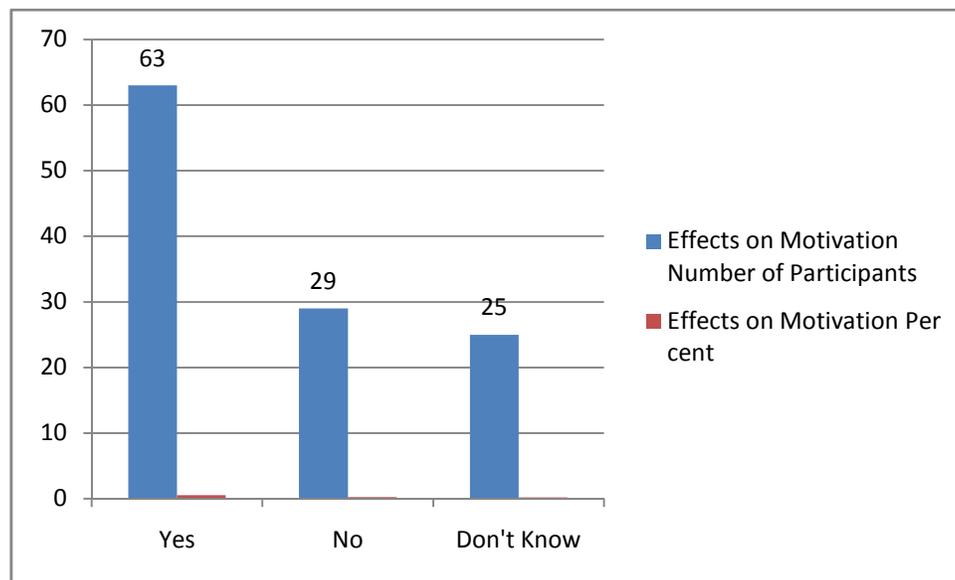


Figure 12: Effects on Motivation

This finding of dissertation is highly significant as its illuminate on the determinants of gamer's motivation. As per Ghuman and Griffiths (2012) indicated that motivation of computer game player is one of the main concerns of game developers and there is very little evidence available

about set of motives. The findings of this dissertation also confirms the previous studies as Ghuman and Griffiths (2012) reported that limited motivating factors in computer gaming do not withstand the established human motivation theories. Hence, this dissertation can provide a good food for thought to game developers that few determinants of player's motivation lie with a game rather than in user. Overall this finding by establishing the correlation between game graphics and gamer motivation proves that game graphics effects the overall gaming experience of user.

#### 4.12 Effects of Game Graphics on Overall Gaming Experience

When respondents in this survey in the last question were inquired whether the graphic of video/computer game affects their overall gaming experience, it was found that graphics substantially affects the overall gaming experience of players as majority of respondents believe that graphics either extremely or very much influence their gaming experience.

Effects on Gaming Experience		
Category	Number of Participants	Per cent
Little	17	15%
Very Much	43	37%
Extremely	54	46%
Not at All	3	2%

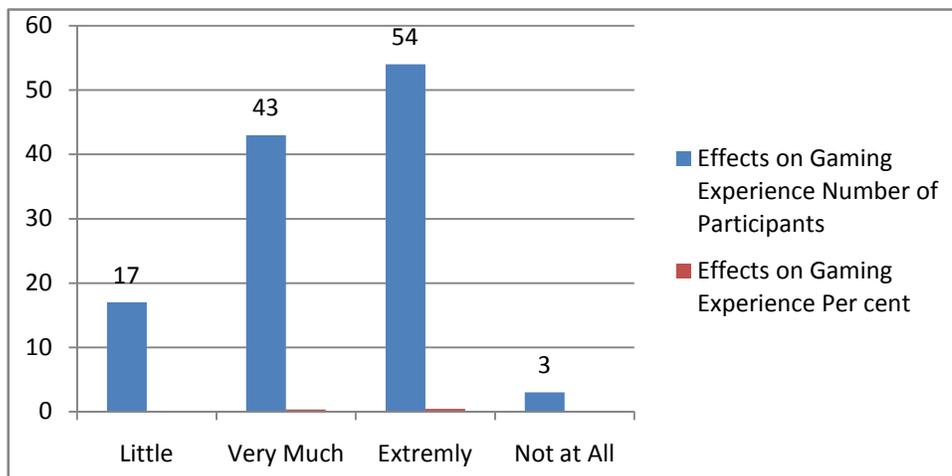


Figure 13: Effects on Gaming Experience

## Chapter 5

### Conclusion and Recommendation

Video games are computer programs, connected to a computer screen or television, make up a video and audio system. Through this system the user can live experiences and enjoy activities that in reality would not practice. The percentage of users of video games, especially among children, has soared in recent years in the world. This phenomenon increase in the use of computer and video game has been broadly attributed to the parallel developments in the field of digit technologies. The rise of video and online gaming as business segment attracted marketing and computing researchers to further explore this evolving industry. However, the majority of the academic inquiries either focused on the technical aspects of game or some merely probe into the behaviour aspects of game user. Hence to fill these gaps this dissertation aimed to explore the impact of a technical features of game on the behavioural aspect of user. This dissertation decided to explore the impact of graphics of the gaming experience of users.

It's evident from the findings of this study that graphic of video/computer game influence almost every aspects of user's/player's gaming experience. Game graphic effects users need satisfaction, learning, motivation, emotion, involvement, convenience and efficiency. Together all of these factors shape the overall gaming experience of a video/computer game player. Hence on the basis of the findings of this dissertation it can be concluded that graphics development affects users gaming experience in very substantial and significant way. The findings of this dissertation are consistent with previous researches in which a positive correlation between game graphics and player emotions and enjoyment was established.

In order to market successful video and computer games in future graphical elements of a game would stand highly crucial. This dissertation ere recommend that due to high significance of

graphics is shaping gaming experience; game developers must pay high attention to graphic development. However, in developing and improving the graphical elements of game, it's imperative to not overlook any violent or adverse effects of graphics on gamer's health and psychology. For the future investigations, this dissertation recommends a precise inquiry on the various elements of graphics which gamers want to change or improve.

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## **Appendix**

### **Questionnaire**

#### **Section A**

##### **1. Age**

- 14-18
- 18-25
- 25-35
- Above 35

##### **2. Gender**

- Male
- Female

##### **3. Education**

- High School
- Under graduation
- Graduation
- Masters
- Others

#### **Section B**

##### **4. For how long you have been playing computer/video games?**

- 1-2 years
- 2-7 years
- 10 years
- More than 10 years

5. How often do you play computer/video games?

- Once a month
- Once a week
- Daily

### Section C

5 Do you think game graphics effects your need satisfaction?

- Yes
- No
- Don't Know

5 Do you think game graphics affects your convenience of playing computer/video games?

- Yes
- No
- Don't Know

6 Do you think game graphics affects your learning while playing computer/video games?

- Yes
- No
- Don't Know

7 Do you think game graphics affects your efficiency playing computer/video games?

- Yes
- No
- Don't Know

8 Do you think game graphics effects your immersion while playing computer/video games?

- Yes
- No
- Don't Know

9 Do you think game graphics effects your emotion while playing computer/video games?

- Yes
- No
- Don't Know

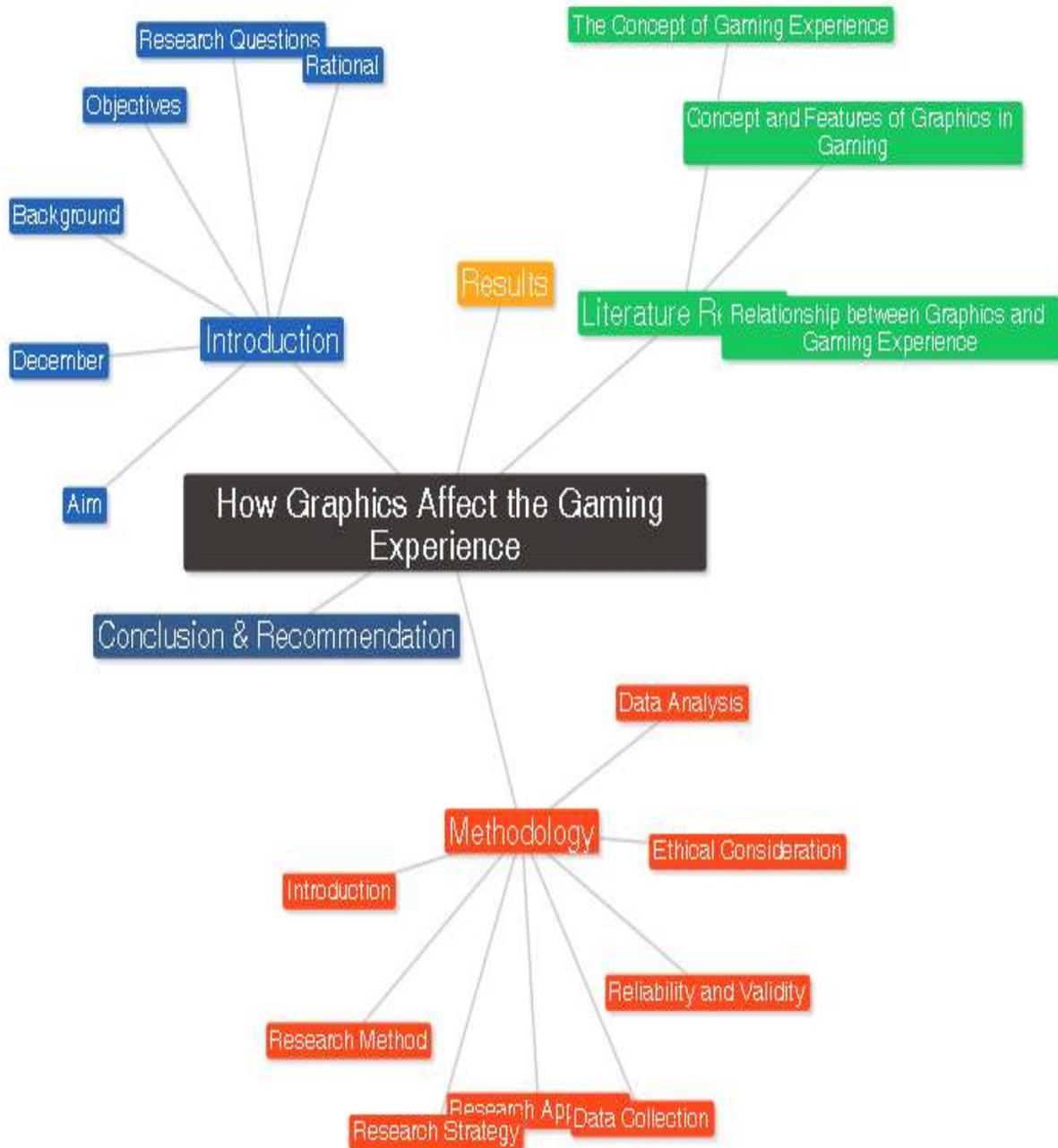
10 Do you think game graphics effects your motivation?

- Yes
- No
- Don't Know

11 Do you think game graphics affects your overall experience?

- Little
- Very Much
- Extremely
- Not at all

## Progress Map



**Progress Map table**

<b>Month</b>	<b>Research</b>	<b>Type</b>	<b>Note</b>
July 2015	<p>Various websites helping me to produce a plan and gain a basic understanding of the topic</p> <p>I formulated my core research question “how graphics affect gaming experience.</p>	Secondary	This included going through various tutorial websites and videos on YouTube such as Sopa, pirate bay
July 2015	The review of literate illuminated me that the understanding of gaming experience can contribute significantly to the game development but there is very little available on the impact of graphics on gaming experience	Secondary	
Aug 2015	<p>I explored through the contemporary literature to understand what shapes or forms gaming experience.</p> <p>My survey of literature identified various determinants of gaming experience which I could use in answering my research question</p>	Secondary	
Aug 2015	I conducted a key word search of various academic data bases the gather relevant studies	Secondary	These data basis included Itpapers.com, Wiley.com Ebscohost.com etc.
Aug 2015	Explored on internet to choose appropriate research methodology for my study	Secondary	This included going through various tutorial websites and videos on
Aug 2015	Meet with supervisor to discuss the methodology		
Aug 2015	I decided that I will conduct survey to gather primary data for my dissertation		
Aug 2015	Explored survey conducting		This included going

	techniques and found it's very important to develop a questionnaire.		through various tutorial websites and videos on
Aug 2015	Explored the literature and online websites to understanding art of making questionnaire		This included going through various tutorial websites and videos on
Aug 2015	Prepared Questionnaire		
	Pilot test of Questionnaire	Primary	Tis involved requesting four classmates who are very fond of computer gaming.
Sep 2015	Collection of email addressed of university students.  Assortment of email ID data	Secondary	I request university research department for the data I explained the aim and scope of my dissertation  I was given a hard copy of data so I transcribed it on MS word
Sep 2015	Survey for was distributed	Primary	I distributed 350 survey questioner to university students
Sep 2015	Data Collection  Data scrutiny	Primary	I set 24 Sep last data for data collection and received 113 responses.  Found 6 forms were not filled properly
Oct 2015	Data Analysis	Primary	
Oct 2015	Preparing results and Conclusion		