

# Loot boxes and potential links gambling addiction

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BSc (Hons) Computer Games Technology

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May 2020

CMP6200/DIG6200  
Individual Undergraduate Project

## ABSTRACT

Loot Boxes have become a common aspect of modern video games, appearing in major video game franchises such as Fortnite (made by Epic Games), Apex Legends (made by Respawn Entertainment) and Overwatch (made by Blizzard). Due to the nature of how Loot Boxes are implemented in video games it is a popular opinion that it should be classified as gambling. This research paper aims to find if a connection between Loot Boxes and gambling exists. This was done by creating a loot box simulation that emulated existing systems as closely as possible and testing this on people and recorded their choices and collecting data.

*Add more Here when results are gathered.*

## ACKNOWLEDGEMENTS

Example, re-do nearer end of project

I would like to thank all the lecturers at Birmingham City University that helped in the design and implementation of this project, Chris Creed my Supervisor who provided valuable support and feedback. I should also like to thank: Kimberley Kings, Mum, Dad, Dave, Erv, Colette, Abigail Evangeline Bailey and everyone else who helped.

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## GLOSSARY

of symbols and abbreviations

When creating the glossary, it is best to insert a table and then remove the borders. This will make the glossary look neatly organised.

Example:

E&OE	Errors and Omissions Excepted
RAD	Rapid Application Development
SAD	Systems Analysis and Design
SDLC	Systems Development Lifecycle
XML	Extensible Mark-up Language

## LIST OF DIAGRAMS, TABLES, PHOTOGRAPHS

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## 1. Introduction

The idea for this project was to test not only how addictive loot box systems are but also to see if there is any connection to other forms of gambling. This was achieved by creating a loot box simulation and checking results gathered from the simulation as well as data gathered from participants answers in a survey of their experience against the current known methods of detecting gambling addiction displayed by people

### 1.1. Problem Definition

Loot boxes are quite a common practice in modern day video games. The idea is that the player can spend in-game currency, that can either be earned in game or purchased with real money, in order to open a 'box' which contains virtual rewards to be used within the game. This includes but not limited to new weapons, new vehicles, new costumes etc.

With these loot box systems becoming more popular it is a common thought that they are a form of gambling <sup>1</sup>. These systems are believed to have the un-desired effect of instilling unhealthy mental behaviours that could lead to the users developing mental health issues such as anxiety and depression and an addiction to gambling in other forms.

### 1.2. Scope

*In this section I will identify the boundaries of the project, what was included and what was excluded from the project. This should be justified and underpinned by research,*

### 1.3. Rationale

Loot Boxes within video games have been a hot topic at current with many negative views on them. This research aims to show whether these negative views are justified. This research will benefit video game developers and publishers to help determine if there are any negative effects due to loot boxes. These negative effects are linked to gambling addiction and all the adverse aspects of this condition, these adverse aspects are:

- Financial trouble from excessive gambling.
- Relationship troubles with family and friends (this can be linked to the first aspect as financial trouble can be the cause of relationship issues).
- Mental health issues such as anxiety and depression.

It will also benefit the consumers of video games that have loot boxes in them for the same reasons.

### 1.4. Aims

The aim of the project is to find potential links between video game loot boxes and gambling and a gateway to gambling addiction.

### 1.5. Objectives

- Research what gambling is and the factors that make a person have gambling addiction and how to collect data that correlates to this research, this should be done before any other research or work commences, within the first week of the project start date.

- Research existing implementation of loot boxes in video games in order to help create a loot box opening simulator by analysing current systems and replicating the look and feel to make the results as accurate as possible and any connection these loot box systems have to gambling addiction if any exists.
- Follow an Agile methodology as the project progresses
- Create a loot boxing opening simulator in Unity Game Engine that simulates real world systems. Add a virtual horse racing mini-game to simulate a gambling environment.
- Measure the participants choices and record them in order to correlate between the results gathered and the results of the research into gambling and gambling addiction.
- Create a physical reward system for participants of the tests that are linked directly to the virtual loot boxes within the loot box opening simulator, with the better virtual rewards giving better physical rewards.
- Evaluate the results and compare them to the research into gambling and gambling addiction, considering the factors that define a person as having a gambling addiction.
- Gather the results and show them in an appropriate format within the research paper to best illustrate the findings of the study.
- Create a research paper that explains everything about the study, looks at and references relevant literature, compiles and displays the results in a format easy to understand for people of any knowledge level and summarises the study.

## 2. Planning and Research

Before any design could be undertaken some initial research needed to be carried out. This research would look at existing knowledge of Loot box systems in video games and current research into gambling and the definition of gambling addiction.

The following section will detail this research and go into detail about the methodologies that were used in this project and the reason why these approaches were taken.

### 2.1. Review of Existing Knowledge

In order to begin understanding how to design the project there were several topics that needed to be researched and understood.

The first topic researched was delving into mental health and its relation to gambling. This was an important place to start as it formed the foundation of the project, by understanding how mental health was affected by gambling the project could be designed to target these specific affects to find a real world correlation between the project and known issues.

Another important topic was looking into gambling addiction itself. As the main aim of the project was to look into loot boxes and their connection to gambling addiction it was vital to understand exactly what was meant by 'gambling addiction'.

The final topic to research and fully understand was actual loot box systems currently in video games. This research was of upmost importance as in order to get results that



were as accurate as possible a full understanding of loot boxes was needed. The project would rely on this research to create an artefact that emulated these systems as closely as possible to give the users an authentic experience, ensuring the results gathered could be validated as useful data that could prove or disprove the main aim of the project.

### 2.1.1 Mental health in relation to gambling

When it comes to looking into gambling addiction the first place to start is to look at mental health and the affect that gambling has on it. Gambling can harm mental health, causing stress, anxiety and depression, as well as being associated with hazardous alcohol and drug use. <sup>2-4</sup> One review found that 58% of problem gamblers had a substance use disorder and 38% had a mood or anxiety disorder. <sup>5</sup>

### 2.1.2 Gambling addiction

As the mental health of someone that gambles becomes worse there is a chance they will develop a gambling addiction. The harms to individuals from gambling include health, relationship and financial difficulties such as loss of money, debt and occasionally bankruptcy. <sup>6</sup> Financial difficulties can lead to lowered living standards, lost opportunities and sometimes homelessness and involvement with the criminal justice system.

### 2.1.3 Loot box systems in video games



Figure 1: An example Loot Box taken from the video game Overwatch developed by Blizzard Entertainment.

Loot boxes have been defined as “items in video games that may be bought for real-world money, but which provide players with a randomised reward of uncertain value.” They often appear as chests, crates, or card packs <sup>7</sup>.

Most modern popular games use these loot boxes, this includes well known games such as FIFA by Electronic Arts and Fortnite by Epic Games.

These loot boxes work by having the user be able to open them by buying in game currency with real world money and receive a random selection of in game items. These items are each given a ‘rareness value’, the idea being, the rarer an item is, the lower chance the user has to get that item out of a loot box. This re-enforces the user to keep purchasing loot boxes to earn these rarer and more prestigious rewards.

## 2.2. Methodology

Scrum and Kanban were chosen as the development methodologies to be used within this project.

Scrum was chosen as it broke the project down into smaller, more manageable chunks (known as sprints). This is particularly useful as this project needed to fit in around other University assignments, so the smaller goals set were more achievable by creating realistic targets to hit for each sprint, almost as if each sprint was a module.

Scrum was useful as it uses a meeting system known as stand-ups. These were taken the form of a solo meeting once a week where current project progress was written down. This included the next steps of the project and any problems facing the project which could then be resolved.

Kanban was chosen as it works very well with the Scrum methodology. Each Scrum sprint was broken down further into what is known as tickets (smaller goals that once all completed result in the main sprint goal being completed) and visualised using Kanban.

Kanban was useful as it provided a visual representation of the current state of not only the project but the current state of the sprint currently being developed.

For this project a Trello board was used as the Kanban methodology.

While looking into development methodologies a Waterfall methodology was researched into and considered. However due to its lack of adaptability across all stages of the development life cycle it was rejected as the project requires a much more flexible approach to development than this methodology could provide.

The overall approach taken proved very valuable to the entire project. Tasks were taken one at a time according to the progress of the Scrum meetings and the tickets on the Kanban Trello board. This allowed the project to progress at the required rate and ensured targets were hit and the project remained on track.

### 3. Design

*In this section I will talk about the initial design of the loot box simulation and everything to do with it. This will go from initial design, up to how the design was finalized based on research*

#### 3.1. Initial Design Concept

*This sub section will look at the initial ideas for the design and why they were initially chosen*

#### 3.2. Changes to initial Design Concept

*This section will detail all the changes that were made to the initial concept and the reasons for this (using references to research conducted if this was the reason for said changes).*

#### 3.3. Finalised design

*This sub section will detail the final design and the reasons why this was ultimately chosen (again references to research if any aspects were decided upon as a result of research).*

### 4. Development

*In this section I will talk about the development of the artefact (loot box simulation). This will include how well the development matched the finalised design and if any changes had to be made to the development and the reason for these changes*

#### 4.1. From Design to Development

*In this sub section I will talk about how I turned the design into an actual application, considering any changes that needed to be made and the reason behind these changes.*

#### 4.2. Application of Methodology

*In this sub section I will talk about how the chosen methodology was used in real time in order to get the project finished. I will include any problems and if deadlines were missed and the reasons behind this.*

#### 4.3. The Finished Application

*In this sub section I will talk about the final application that was created. I will detail all the features of it and how it differed to the initial design concept and plan that was set in place and the reasons behind these changes.*

#### 4.4. Development of Testing and Evaluation

*In this sub section I will talk about how I went about my approach to testing and evaluation of the project. I will talk about what measures I will be gathering data for and the reasons behind this. I will not include any actual results in this section.*

## 5. Discussion

*This section will be all about the implementation of the artefact and overall project. I will evaluate the whole project (including the artefact). I will talk about the limitation of the project and the areas for potential development or further work.*

### 5.1. Findings

*This sub section will look at the results / findings of the project and my observations and judgements about them.*

### 5.2. Issues

*This sub section will be about reflecting on issues raised in the project.*

## 6. Conclusions

*In this section I will summarise the important results and findings that arose from the results and discussion section. This will be addressing the original project objective and concluded whether from my results a link has been found between loot boxes and gambling addiction.*

## 7. Recommendations for further work

*Many projects follow on from previous work and, owing to time constraints and the generation of ideas whilst undertaking the work, lead on to the possibility of further work. These recommendations should be summarised briefly.*

Further Information:

All Projects should have a Recommendations section

The recommendations will come out of the conclusions.

Read tip sheet: Writing up the report: Recommendations

## 8. List of References

1. Mattha Busby (2019). Loot boxes increasingly common in video games despite addiction concerns. [online] the Guardian. Available at: <https://www.theguardian.com/games/2019/nov/22/lootboxes-increasingly-common-in-video-games-despite-addictionconcerns> [Accessed 28 Nov. 2019]
2. Cowlshaw, S. and Kessler, D. (2015). Problem Gambling in the UK: Implications for Health, Psychosocial Adjustment and Health Care Utilization. *European Addiction Research*, 22(2), pp.90–98 [Accessed 30 Nov. 2019].
3. Leeman, R.F. and Potenza, M.N. (2012). Similarities and differences between pathological gambling and substance use disorders: a focus on impulsivity and compulsivity. *Psychopharmacology*, [online] 219(2), pp.469–90. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/22057662> [Accessed 29 Nov. 2019].
4. Worhunsky, P.D., Potenza, M.N. and Rogers, R.D. (2017). Alterations in functional brain networks associated with losschasing in gambling disorder and cocaine-use disorder. *Drug and alcohol dependence*, [online] 178, pp.363–371. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/28697386> [Accessed 1 Dec. 2019].
5. Lorains, F.K., Cowlshaw, S. and Thomas, S.A. (2011). Prevalence of comorbid disorders in problem and pathological gambling: systematic review and meta-analysis of population surveys. *Addiction*, 106(3), pp.490–498 [Accessed 3 Dec. 2019].
6. Reith, G. and Dobbie, F. (2012). Gambling careers: A longitudinal, qualitative study of gambling behaviour. *Addiction Research & Theory*, 21(5), pp.376–390. [Accessed 6 Dec. 2019].
7. Tom's Guide. (2008). Tom's Guide. [online] Available at: <https://www.tomsguide.com/us/what-are-loot-boxesmicrotransactions,news-26161.html...> [Accessed 8 Dec. 2019].

## 9. Bibliography

1. Hern, A. and Davies, R. (2019). Video game loot boxes should be classed as gambling, says Commons. [online] the Guardian. Available at: <https://www.theguardian.com/games/2019/sep/12/video-game-loot-boxes-should-be-classedas-gambling-says-commons> [Accessed 23 Nov. 2019].
2. Sky News. (2019). Govt urged to crack down on 'gambling' loot boxes in games like FIFA. [online] Available at: <https://news.sky.com/story/govt-urged-to-crackdown-on-gambling-lootboxes-in-games-like-fifa-11806964> [Accessed 24 Nov. 2019].
3. Oberdörfer, S. (2019). The Effects of Immersion on Harm-inducing Factors in Virtual Slot Machines - IEEE Conference Publication. [online] [ieeexplore.ieee.org](http://ieeexplore.ieee.org). Available at: <https://ieeexplore.ieee.org/document/8798021> [Accessed 28 Nov. 2019].
4. Wiley.com. (n.d). An Unsafe Bet?: The Dangerous Rise of Gambling and the Debate We Should Be Having | Wiley. [online] Available at: <https://www.wiley.com/en-gb/An+UnSafe+Bet%3F%3A+The+Dangerous+Rise+of+Gambling+and+the+Debate+We+Should+Be+Having-p-9780470661208> [Accessed 3 Dec. 2019].

## 10. Appendices

Appendices, which should have short titles, are separate documents appended at the end of the report. Only include appendices if they are necessary to support particular details to understand the main report.

You should include copies of your Gantt chart in the appendix

Generally work in an appendix gains no marks directly.

A report should flow freely and be easy to read. Diagrams, tables and pictures should support the content of the report not impinge on it. Only put information into an Appendix if it improves the report and the report would not make sense without it. However, generally what you have actually done should be in the body of the main report.

Do not put journal articles or any information that can be located using a reference.

The Appendix is not is not an opportunity to make a report look thicker. Do not include information that was not referred to in the report.

The Appendix can include:

Detailed statistics

Computer code

Large diagrams

Complex graphs and tables